Chapter 3 MITIGATION STRATEGY

In This Chapter

The Oregon NHMP Mitigation Strategy is divided into five sections:

1. **Introduction:** States the purpose of the mitigation strategy.
2. **Mission, Vision, and Goals:** Presents Oregon's natural hazard mitigation mission, vision, and goals, and describes the review and revision of the goals that guide the selection of mitigation actions. Discusses the links between the risk assessment, goals, and mitigation actions and demonstrates how the goals guide the selection of mitigation actions.
3. **Mitigation Actions:** Includes the following components:
   - Mitigation Actions: Describes the process for identifying, evaluating, and prioritizing cost-effective, environmentally sound, and technically feasible mitigation actions and activities the state is considering implementing over the next 5 years (Priority); that the state implements as part of its agencies' regular work programs (Ongoing); and that the state has or will not implement (Removed). Presents the 2020 Priority, Ongoing, and Removed mitigation action tables. Descriptions of the mitigation actions in the tables explain how each action contributes to the overall mitigation strategy. Identifies changes in mitigation action priorities from the 2015 Plan. A crosswalk shows the disposition of the 2015 mitigation actions in the 2020 Plan. The survey instrument and results are located in **Appendix 9.2**.
   - Funding Sources for Mitigation Actions: Current and potential sources of funding for mitigation actions are discussed briefly in this section and more fully in the State Capability Assessment section of this chapter. They are also noted on the Priority and Ongoing mitigation action tables. The sources of funding used to implement mitigation actions since approval of the 2015 Oregon NHMP are noted on the Ongoing and Removed mitigation action tables in this chapter.
   - Mitigation Successes: Describes successful mitigation actions throughout Oregon since 2014.
4. **Capability Assessment:**
   - State: Assesses the state's capability to carry out the mitigation strategy through its pre- and post-disaster hazard management policies (including those related to development in hazard-prone areas), programs, and funding capabilities. Discusses changes in these capabilities since approval of the 2015 Oregon NHMP.
   - Local: Generally describes and analyzes in table format the effectiveness of local mitigation policies, programs, and capabilities. Also in table format, indicates status of local jurisdictions' NHMPs and participation in the National Flood Insurance and CRS Programs.
5. **Coordinating State and Local Mitigation Planning:** Describes the state's support of local mitigation planning through funding and technical assistance, as well as the way the state prioritizes funding for local mitigation planning and projects. Describes the processes the state uses to review local NHMPs and to coordinate and link local NHMPs to the Oregon NHMP.

3.1 Introduction

The purpose of this chapter is to establish Oregon's mission and vision for mitigation planning, and to present the State's strategy for achieving that vision. The mission, vision, and goals are purposefully aspirational, providing the foundation for the state's overall mitigation strategy. The culture of our state is influenced by its rich natural resources and pioneering spirit. Oregon has often taken a leading role in the development of innovative and progressive strategies to address issues that impact our residents, our economy and our natural 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.

As it relates to natural hazard mitigation, Oregon is no less visionary. The state adopted its first natural hazards mitigation plan in 1992 with subsequent updates occurring in 2000, 2004, 2006, 2009, 2012, 2015 and now 2020. In addition, Oregon's Clackamas County adopted the nation's first FEMA-approved natural hazards mitigation plan under DMA2K in 2002. Hazard mitigation planning as a foundation for risk reduction project activities is a top priority in Oregon when using available state funding, post-disaster FEMA mitigation grants, and non-disaster FEMA grant funding.

Given the current economic climate and global pandemic, it is important to acknowledge that state resources are increasingly limited and operating conditions are far from normal. Oregon is not unique in that regard. Even so, Oregon is committed to remaining at the forefront of mitigation planning and will continue to innovate and leverage limited resources to reduce losses resulting from natural hazards. The mitigation strategy presented herein reflects that commitment.

3.2 Mission, Vision, and Goals

> ***Requirement 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.*

MISSION — Create a disaster-resilient state of Oregon.

VISION — Natural hazard events result in no loss of life, minimal property damage, and limited long-term impacts to the economy.

GOALS

1. Protect life and reduce injuries resulting from natural hazards.
2. Minimize property damage from natural hazards.
3. Minimize damage to critical or essential infrastructure and services from natural hazards.
4. Enhance the ability of Oregon's economies to rebound quickly from the effects of natural hazard events.
5. Minimize project impacts to the environment and utilize natural solutions to protect people and property from natural hazards.

6 Enhance the state's capability to implement a comprehensive statewide natural hazards mitigation strategy.

7 Motivate the "whole community" to build resilience and mitigate against the effects of natural hazards through engagement, listening, learning, information-sharing, and funding opportunities.

8 Eliminate development within mapped hazardous areas where the risks to people and property cannot be practicably mitigated.

9 Minimize damage to historic and cultural resources from natural hazards.

10 Enhance communication, collaboration, and coordination among agencies at all levels of government, sovereign tribal nations, and the private sector to mitigate natural hazards.

11 Mitigate the inequitable impacts of natural hazards by prioritizing and directing resources and investments to build resilience in the most vulnerable populations and the communities least able to respond and recover.

12 Develop, integrate, and align natural hazards mitigation and climate adaptation efforts based on the evolving understanding of the interrelationships between climate change and natural hazard events.

13 Reduce repetitive and severe repetitive flood losses.

14 Minimize or eliminate potential impacts from dams posing the greatest risk to people, property, and infrastructure

3.2.1 Goals: Review and Revision

During the 2015 NHMP update, Oregon's NHMP goal statements were reviewed and revised during a single convening of the State IHMT. During that meeting, eight goals from the 2012 plan were either affirmed or revised and three additional goals were added to better align the State IHMT goal statements with those in Oregon's local natural hazard mitigation plans. Due to the novel coronavirus pandemic, this process could not be repeated in 2020. In lieu of in-person meetings, the Plan's goal statements were reviewed and revised using an online survey.

In early July 2020, the survey was distributed to members of the State IHMT and other state agency staff concerned with hazard mitigation. In total, the survey was sent to sixty-eight individuals and twenty-two responses were collected for a 32% response rate. Respondents were asked to review the results of the 2020 Risk Assessment and based on those results, to review the eleven goal statements from the 2015 plan and recommend retaining, revising, or removing each goal. An explanation was requested when a respondent recommended revising or removing a goal. Additionally, respondents were provided an opportunity to suggest new general goals as well as hazard- or region-specific goals. DLCD used this feedback to make revisions to the 2015 goal statements. Of the eleven existing goals, eight were revised, two (Goals 6 and 11) were removed, and one (Goal 1) remained unchanged. Additionally, one goal (Goal 2) was divided into two, and four new goal statements were added: Goals 11, 12, 13, and 14.

The new goals were derived directly from respondents' suggestions and Goals 13 and 14 also from program requirements. Other suggested goals were mitigation actions in character (very specific) or already covered by other goals. When in-person meetings are possible again, during the plan maintenance process we will return to this discussion and re-review the 2020 mitigation goals. **Table 3-1** presents the goal statements from the 2015 NHMP, the revised 2020 NHMP goal statments, and explanations for the changes that were made.

Table 3-1. From 2015 to 2020 NHMP Goal Statements

#	2015 Statement	#	2020 Statement	Explanation
1	Protect life and reduce injuries resulting from natural hazards.	1	Protect life and reduce injuries resulting from natural hazards.	While survey responses indicated a need for rewording, they were not sufficiently consistent to justify revision. Therefore the goal remains unchanged.
2	Minimize public and private property damages and the disruption of essential infrastructure and services from natural hazards.	2	Minimize property damage from natural hazards.	Survey respondents suggested that while both are important, preventing damage to public and private property and to critical infrastructure are not equivalent, and a separate goal focused on critical or essential infrastructure is warranted. In addition, respondents indicated that it is unnecessary to specify public and private property
		3	Minimize damage to critical or essential infrastructure and services from natural hazards.	
3	Increase the resilience of local, regional, and statewide economies.	4	Enhance the ability of Oregon's economies to rebound quickly from the effects of natural hazard events.	Multiple survey respondents recommended making this goal more inclusive to recognize various subeconomies that exist within the state. The language was changed to keep the statement concise while expanding the scope to recognize the value of Oregon's many economic actors and clarifying "resilience" in this context.
4	Minimize the impact of natural hazards while protecting, restoring, and sustaining environmental processes.	5	Minimize project impacts to the environment and utilize natural solutions to protect people and property from natural hazards.	This goal was refined for clarity. Survey respondents were unclear about its intent. The revision underscores that the intent is to implement mitigation actions that are environmentally sound and to leverage environmental processes that inherently mitigate the impacts of natural disasters.
5	Enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy.	6	Enhance the state's capability to implement a comprehensive statewide natural hazards mitigation strategy.	This goal was revised for clarity. Survey respondents found the phrase "loss reduction strategy" confusing and preferred the more commonly used phrase "natural hazards mitigation strategy."
6	Document and evaluate Oregon's progress in achieving hazard mitigation.			This goal was removed because FEMA requires states to document and evaluate their hazards mitigation progress.

#	2015 Statement	#	2020 Statement	Explanation
7	Motivate the public, private sector, and government agencies to mitigate against the effects of natural hazards through information and education.	7	Motivate the "whole community" to build resilience and mitigate against the effects of natural hazards through engagement, listening, learning, information-sharing, and funding opportunities.	Survey respondents pointed to the redundancy of naming both the public sector and government agencies. Additionally, some recommended specifying more partners. The phrase "whole community" was used to recognize all of the state's partners in its mitigation work. This goal was also revised to recognize the value of engagement – in which listening, learning and information sharing are multi-directional instead of informing and educating which are uni-directional – along with the importance of motivating through funding opportunities, both suggestions of respondents.
8	Eliminate development within mapped hazardous areas where the risks to people and property cannot be mitigated.	8	Eliminate development within mapped hazardous areas where the risks to people and property cannot be practicably mitigated.	This change acknowledges that with modern engineering and building practices much can be done to mitigate against natural hazards but that such action is not always practicable — financially or otherwise.
9	Minimize damage to historic and cultural resources.	9	Minimize damage to historic and cultural resources from natural hazards.	Survey respondents recommended specifying "from natural hazards" to be more clear about the threat to historic and cultural resources.
10	Increase communication, collaboration, and coordination among agencies at all levels of government and the private sector to mitigate natural hazards.	10	Enhance communication, collaboration, and coordination among agencies at all levels of government, sovereign tribal nations, and the private sector to mitigate natural hazards.	This statement was revised to highlight that the state aspires to improve the quality of communication, collaboration, and coordination between its public, private, and indigenous partners.
11	Integrate local NHMPs with comprehensive plans and implementing measures.			This statement was determined to be a mitigation action rather than a goal and therefore was removed.
		11	Mitigate the inequitable impacts of natural hazards by prioritizing and directing resources and investments to build resilience in the most vulnerable populations and the communities least able to respond and recover.	Multiple survey respondents underscored the need to center equity when prioritizing natural hazard mitigation investments. This goal demonstrates Oregon's commitment to directing resources for mitigating the impacts of natural disasters and building resiliency toward vulnerable populations and frontline communities.
		12	Develop, integrate, and align natural hazards mitigation and climate adaptation efforts based on the evolving understanding of the interrelationships between climate change and natural hazard events.	Climate change, while not a natural hazard in and of itself, influences the severity and frequency of natural hazard events. The state strives to better understand and align mitigation and climate adaptation efforts.
		13	Reduce repetitive and severe repetitive flood losses.	Repetitive loss and severe repetitive loss structures present clear opportunities for mitigation where hazard risk is well understood.
		14	Minimize or eliminate potential impacts from dams posing the greatest risk to people, property, and infrastructure.	Through adopting this new goal, the state is demonstrating its commitment to improve the safety of high hazard potential dams, mitigating the threat such dams pose to people, property, and critical or essential infrastructure.

3.2.2 Goals: Linking the Risk Assessment and Mitigation Actions

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

The risk assessment speaks directly to protection of life and property, infrastructure and services, and local, regional, and state economic resilience, the topics of Goals 1, 2, 3 and 4. The vulnerability assessments for each hazard and the potential loss estimates highlight the importance of informing and educating citizens about the risks and what they can do to reduce potential losses, including eliminating development where risks cannot be practicably mitigated, the topics of Goals 7, 8, 9, and 10. New Goal 13 specifically calls out the need to reduce losses from structures that have been damaged repetitively by flooding, one of the hazards with the greatest risk statewide according to the 2020 risk assessment. New Goal 14 sets policy direction for addressing the flood hazard posed by high-hazard potential dams. Goal 8 sets policy direction for prohibiting development in or moving development out of hazard areas, a clear connection to the vulnerabilities established by the risk assessment. Environmental stewardship, the topic of Goal 5, plays a role in mitigating some hazards, and must be considered in designing mitigation projects.

New Goal 12 speaks to the connections between natural hazards and climate change—discussed in the risk assessment—and sets policy direction for aligning climate adaptation and natural hazard mitigation efforts. New Goal 11 underscores the inequitable impacts of natural hazards and the importance of prioritizing and directing resources to vulnerable populations and those communities least able to respond and recover from hazard events. This is also a focus of climate change adaptation. Both equity and climate change are among Governor Brown's priorities and gaining attention statewide.

Finally, Goal 6 focuses on the state's ability to implement the Plan, providing a policy foundation for state support of mitigation actions and activities.

The mitigation action tables (Priority, Ongoing, and Removed) demonstrate the link between the goals and mitigation actions by noting the goal(s) that each mitigation action addresses.

3.3 Mitigation Actions

Requirement 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:

(iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.

(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.

3.3.1 Identification, Evaluation, and Prioritization

Mitigation actions are detailed recommendations for activities that the state is considering implementing to reduce risk and prevent loss from natural hazards.

The 2015 NHMP update placed mitigation actions into one of three categories: priority, ongoing, or removed. Priority actions are those the state aspires to begin or complete. Ongoing actions are those the state is doing in the normal course of business, continually over a long period of time. Removed actions are those that have been completed; will not be completed for various reasons; have been replaced by other actions; are not mitigation actions; or have been determined not to be within the State's purview. These categories were utilized again for the 2020 update. The first step in updating the tables was to document the status of each action included in the 2015 plan. This was done by IHMT agency leads responsible for implementing and monitoring the progress of the various actions. Based on the status reports, some mitigation actions were removed from the Priority and Ongoing tables. The leads and other subject matter experts drafted new mitigation actions for consideration.

The next task was to prioritize the remaining and new mitigation actions. That was accomplished using the same online survey as the review of mitigation goals. The survey asked respondents to review and evaluate the priority mitigation actions from the 2015 Plan along with new mitigation actions. Due to the number of mitigation actions and the time required for the survey, only the actions on the Priority table were prioritized.

The 2020 Risk Assessment addressed risk for each of the hazards by region, county and statewide. Therefore, the mitigation actions were grouped and prioritized by hazard in the survey. Although climate change is not considered a hazard in and of itself but rather an influence on the character and probability of hazard events, for purposes of the survey climate change-related actions were grouped separately. Reviewers were asked to evaluate each mitigation action based on the following nine criteria drawn from the 2015 Plan goals and the results of the 2020 Risk Assessment:

1. Save lives
2. Reduce property damage
3. Reduce infrastructure damage
4. Reduce environmental damage

5. Address greatest hazards (according to 2020 Risk Assessment results)
6. Addresses highiest risk counties (according to 2020 Risk Assessment results)
7. Create, enhance, maintain partnerships
8. Addresses capability or capacity gaps
9. Inform, educate

Scores were calculated for each mitigation action by adding the total number of times respondents considered a criterion to be addressed by the action and then summing the scores of all criteria by mitigation action. Put differently, if seven respondents said a mitigation action addressed only the second criterion,"reduce property damage," and three respondents said it addressed only the first, "save lives," the total score for that mitigation action would be ten. These scores were used to prioritize each hazard mitigation action within its respective hazard group. Beyond the eleven hazard groups—one for each hazard addressed in the Plan—two additional groups were used. The first is for migitation actions that address all hazards and the second is for mitigation actions that address multiple hazards. Climate change is included in this group because it influences multiple but not all hazards.

3.3.2 Mitigation Action Tables: Priority, Ongoing, Removed

The 2020 Oregon NHMP mitigation actions are arranged in a series of three tables: *Priority*, *Ongoing*, and *Removed* (**Table 3-2**, **Table 3-3**, and **Table 3-4**, respectively). On each table, mitigation actions are numbered and presented as a brief statement with a longer description that explains its contribution to the overall mitigation strategy of the 2020 Plan. The goal(s) each action addresses are identified as are the hazards. The Priority table includes the individual action item scores that resulted from the survey process. Only the actions pertaining to high hazard potential dams were not scored against other actions as they are an element of a discrete body of mitigation work and are all considered high priority. On the Priority and Ongoing tables, other state initiative(s) with which an action is integrated are identified, although fully updating all relevent initiative(s) was not prioritized during this update since the 2020 Oregon NHMP is being submitted as a standard plan.

Current and potential funding sources are also identified. Funding sources should be understood primarily as potential sources since the state budget is being adjusted based on a drastically reduced revenue forecast resulting from the economic consequences of the coronavirus pandemic, and many are based on outside grant funding that is still uncertain.

A crosswalk (**Table 3-5**) has been developed to aid in demonstrating how the 2015 Plan's mitigation actions are represented in the 2020 plan.

3.3.3 Changes in Mitigation Action Priorities

The 2015 Plan identified 78 priority mitigation actions and 71 ongoing mitigation actions for a total of 149. The priority mitigation actions were ranked using a numerical scoring method that incorporated an indirect measure of cost-effectiveness and political feasibility and were not prioritized by hazard. For the 2020 NHMP, mitigation actions were evaluated against a different set of criteria based on the Plan's mitigation goals and 2020 risk assessment results and, for consistency with the risk assessment results, prioritized within hazard groups. The use of two different methods makes a direct comparison between the 2015 and 2020 priorities very difficult. There are 107 priority mitigation actions and 73 ongoing mitigation actions in the 2020 NHMP, for a total of 180.

Of the 2015 Plan's 78 priority and 71 ongoing actions:

- Twenty-two were completed
- Twenty-four are no longer being pursued.
    - Ten are no longer being pursued due to lack of funding or other resources.
    - Six are no longer being pursued because the intent is being met through other means.
    - Four are no longer being pursued because they were dependent on another action that is no longer being pursed because it was determined no longer needed.
    - The intent of two were incorporated into new mitigation actions and are therefore no longer being pursued.
    - One is not actively being pursued but the State does engage upon request.
    - One is not being pursued because it was linked to the State Risk MAP Coordinator, a position Oregon no longer has.

In total, 46 priority and ongoing mitigation actions from the 2015 NHMP were either completed or removed; 103 remain in the 2020 Plan.

Of the ten no longer being pursued for lack of funding or other resources, only those that would establish new programs and therefore require large financial commitments would be unlikely to be reconsidered. The majority would probably be pursued once again were funding and other resources to become available. They could be generally categorized as outreach, education, data development, and capacity-building. Most of those no longer being pursued for other reasons have been addressed in other ways or determined unnecessary. Therefore, the removed items do not represent a major shift in mitigation priorities.

3.3.4 Funding Sources for Mitigation Actions

Oregon's mitigation activities are funded directly and most visibly through sources such as FEMA's Pre-Disaster Mitigation Grant, Flood Mitigation Assistance, Public Assistance, and Hazard Mitigation Grant Programs, as well as NOAA grants with state, local, or private funds providing the non-federal cost share. The State's Seismic Rehabilitation Grant Program is a direct funding source for earthquake mitigation projects. The Oregon Disaster Assistance Loan and Grant account provides post-disaster mitigation funds to local governments and school districts. Currently the state's 2021-2023 budget is being re-evaluated based on the drastically reduced state revenue forecast resulting from the global pandemic. Final State budget decisions will be made by the Oregon Legislature. More indirect and less visible funding comes from state general funds through in-kind activities and other state funds. More detailed information about mitigation funding sources is in the State Capability Assessment, **Funding Sources** section.

Table 3-2. Priority Mitigation Actions

2020 MITIGATION ACTIONS—PRIORITY																				
Action Item				**Goal**													**Hazard**	**Integrated**	**Implementation**			
#	**Score**	**Statement**	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Hazard**	**Other Initiative**	**Lead**	**Support**	**Current or Potential Funding Source(s)**	**Target Date**
1	69	Update hazard probabilities in NHMP for all hazards	The method to develop hazard probabilities in the 2025 NHMP should incorporate best scientific methods.	**X**	**X**			**X**									All Hazards		DOGAMI	DLCD	DLCD	2022
2	67	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.	**X**	**X**				**X**	**X**							All Hazards	Statewide Planning Goals	DLCD	DOGAMI, ODF	State-DLCD	2025
3	67	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 amendments are likely to result. This funding and technical assistance will promote integration of local natural hazards mitigation plans with comprehensive plans.	**X**					**X**								All Hazards	Statewide Planning Goals	DLCD		State-DLCD	2025
4	67	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.	**X**	**X**			**X**									All Hazards	Climate Change Adaptation Framework	DLCD	DOGAMI, ODF, OWRD, OHA, ODOT, OPUC, OCCRI	FEMA (HMGP, BRIC), State	2024
5	66	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.	**X**					**X**			**X**					All Hazards	Statewide Planning Goal 7	DLCD, OPDR	OEM	FEMA-PDM, Risk MAP, State-DLCD	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
6	63	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.	**X**	**X**							**X**	**X**				All Hazards	Oregon Resilience Plan, NFIP, Risk MAP, Oregon Climate Change Adaptation Framework, Oregon Health Authority	DLCD	DOGAMI, ODF, OWRD, OHA, ODOT, OPUC, OCCRI	FEMA (HMGP, BRIC), State	2024
7	60	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.	**X**				**X**	**X**								All Hazards	Oregon Local Disaster Assistance Loan and Grant Account.	DLCD	OEM	State-OEM, DLCD	2023
8	60	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.	**X**				**X**	**X**			**X**					All Hazards	Business Oregon-IFA, NFIP, Climate Change Adaptation Framework, DCBS-DFR	OEM	DLCD, all IHMT agencies	State	2022
9	60	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 facilitate communication, cooperation, collaboration among state, local, and tribal governments, enhancing mitigation planning statewide.	**X**				**X**	**X**			**X**					All Hazards	Local Governments' and Tribes' natural hazards mitigation programs, FEMA Region X's Mitigation Division	DLCD	OEM, OPDR, local and tribal governments	State of Oregon	2023
10	59	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.	**X**				**X**	**X**			**X**					All Hazards	Climate Change Adaptation Framework, Oregon Explorer	DLCD	OEM, OPDR, FEMA	State of Oregon	2022

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
11	58	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).	**X**	**X**			**X**			**X**						All Hazards	Climate Change Adaptation Framework	DOGAMI	DAS GEO, ODOT	DAS GEO	2025
12	57	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.					**X**				**X**					All Hazards	Climate Change Adaptation Framework	DLCD	All IHMT agencies	State of Oregon	2022
13	56	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.	**X**	**X**				**X**								All Hazards	DLCD Technical Assistance Grants	OEM	BusOR-IFA	State-EMPG	2023
14	54	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.	**X**	**X**			**X**									All Hazards	Oregon Resilience Plan	DAS-CFO, DAS-CIO	DOGAMI	State-DAS-CFO, DAS-CIO	2021
15	53	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.	**X**					**X**			**X**						All Hazards	Risk MAP; Risk Plan; Framework Implementation Teams; OEM’s Master Data Set; Local Natural Hazards Mitigation Plans; Governor’s interagency collaboration initiative; Goal 7 implementation; NFIP; DEQ’s IRIS database; etc.	DLCD	DAS-GEO, DEQ, DOGAMI, OWRD, OEM, FEMA, USACE, NDWS, USGS	FEMA (HMGP), State-DAS-GEO	2025
16	53	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.	**X**	**X**				**X**			**X**					All Hazards	Oregon Resilience Plan	OEM, DAS-GEO	DOGAMI	FEMA (HMGP, BRIC), State-OEM, DAS-GEO	2023

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#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
17	48	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.		X			X	X	X		X					All Hazards	Silver Jackets	DOGAMI	OEM, DLCD	FEMA (HMGP, BRIC, Risk MAP), USGS, USACE, NOAA, State-DOGAMI, OEM	2025
18	47	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.		X	X	X	X	X	X	X	X	X	X			All Hazards	NFIP, Goal 7	OEM	State IHMT Agencies	State-OEM	2021
19	41	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.			x			X			X					All Hazards	Climate Change Adaptation Framework	DCBS-DFR	DCBS-IFA, private partners	State	2021
20	40	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.					X			X						All Hazards	OSSPAC	OEM, State Resilience Office	IHMT agencies	State, EMPG	2023
21	38	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.									X					Multi-Hazard / Climate Change	All state and quasi-state agencies' hazards mitigation or climate change adaptation programs	OEM	DLCD	State, EMPG	2021
22	80	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.		X	X		X					X				Multi-Hazard / Climate Change		DOGAMI	DLCD	DLCD	2022

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23	79	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.									**X**		**X**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	DLCD	DOGAMI, OCCRI, IHMT agencies, Climate Work Group agencies	State, FEMA (HMGP, BRIC), NOAA	2023
24	74	Develop 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 event. Currently, power and water infrastructure is extremely vulnerable. Cost effective methods to ensure a reliable power and water are urgently needed.		**X**							**X**					Multi-Hazard / Climate Change	Oregon Resilience Plan	OHA	DOGAMI, ODOE, OERS	State, FEMA, NOAA, Oregon Coastal Hospital Resilience Network	2022
25	74	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.											**X**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	The Governor's Carbon Policy Office	Natural Resources Cabinet, Global Warming Commission, and Environmental Justice Task Force	State	2023
26	72	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.	**X**	**X**							**X**					Multi-Hazard / Climate Change	Oregon Resilience Plan, NFIP	DAS-CFO	DOGAMI	State-DAS-CFO, Local Gov'ts	2022
27	71	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.		**X**								**X**				Multi-Hazard / Climate Change		DOGAMI	DLCD	DLCD	2022
28	71	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.		**X**				**X**			**X**	**X**				Multi-Hazard / Climate Change		DOGAMI	DLCD	DLCD	2022

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29	69	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.		**X**			**X**									Multi-Hazard / Climate Change	Oregon Highway Plan (OHP); The Oregon Resilience Plan	ODOT	DOGAMI	FEMA (HMGP, BRIC), State-ODOT	2023
30	69	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.	**X**									**x**				Multi-Hazard / Climate Change	Oregon Resilience Plan, NFIP, Risk MAP, Oregon Climate Change Adaptation Framework	DOGAMI	NOAA	NOAA, State-DOGAMI	2025
31	69	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.		**X**				**x**				**X**				Multi-Hazard / Climate Change		DOGAMI	DLCD	DLCD	2022
32	67	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.									**X**		**X**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	The Governor’s Office	Carbon Policy Office, Natural Resources Cabinet, and Global Warming Commission	State	2023
33	66	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 Office, Natural Resources Cabinet, and Global Warming Commission. One state agency will be assigned to coordinate the Work Group.									**x**		**x**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	The Governor’s Office	Carbon Policy Office, Natural Resources Cabinet, and Global Warming Commission	State	2023
34	65	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.									**x**		**x**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	The Governor’s Office	Carbon Policy Office, Natural Resources Cabinet, and Global Warming Commission	State	2023
35	64	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.	**x**	**x**												Multi-Hazard / Climate Change	Oregon Resilience Plan	DOGAMI	Governor’s Office, ODOT, OERS, local governments	State, Local Governments, FEMA (Risk MAP), NOAA	2022

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36	62	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.	**X**	**x**		**x**										Multi-Hazard / Climate Change	Oregon Resilience Plan, NFIP	DAS-EAM	DOGAMI	State-DAS-EAM, Local Gov'ts	2021
37	60	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.					**x**				**x**		**X**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	The Governor's Office	Carbon Policy Office, Natural Resources Cabinet, and Global Warming Commission	State	2025
38	59	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.	**X**	**x**			**x**									Multi-Hazard / Climate Change	Oregon Resilience Plan, NFIP	DAS-CFO	DAS-EAM, DOGAMI	State-DAS-CFO	2023
39	58	Collaborate on a landslide workshop to increase the State's understanding of coseismic landslides	We believe there will be many coseismic landslide triggered in the next earthquake. However, we don't understand where and how far inland and the risk. The coseismic landslides will be a significant portion of the earthquake hazard and understanding it will help with pre and post disaster mitigation.	**X**				**X**									Multi-Hazard / Climate Change		DOGAMI	DOGAMI, OEM, USGS Landslide Program, NOAA	FEMA (Risk MAP), USGS, USACE, NOAA, NASA	2023
40	58	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.	**X**				**X**									Multi-Hazard / Climate Change	USDA Natural Resources Conservation Service	DLCD	OWRD, OHA, OPUC, ODOT, OCCRI	State of Oregon, FEMA (HMGP, BRIC), NOAA, FHWA, USDA	2020-2025
41	57	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 minimize future damage or loss of property and the environment.				**x**							**X**			Multi-Hazard / Climate Change	Climate Change Adaptation Framework	DOGAMI	DLCD	NOAA through OSU	2022
42	57	Collaborate on a workshop to increase the State's understanding of coseismic landslide triggered tsunami	We have a very poor understanding of coseismic 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.					**x**				**x**					Multi-Hazard / Climate Change	Oregon Resilience Plan	DOGAMI	DOGAMI, OEM, USGS Landslide Program, NOAA	FEMA (Risk MAP, NEHRP), USGS, USACE, NOAA, NASA	2021

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43	46	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.									x	X	x			Coastal Hazards	Climate Change Adaptation Framework	The Governor's Carbon Policy Office	Global Warming Commission and three to five state agency executives	State	2025
44	82	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 in order to determine susceptibility and risk from storm-induced erosion, overtopping and flooding.					X						X			Coastal Hazards		DOGAMI	DLCD, OPRD, ODOT	NOAA, Universities, ODOT, OPRD, DLCD	2025
45	52	Undertake inner bay total water level modeling	Modeling would incorporate inner bay and outer coast processes, similar to modeling performed in Grays Harbor, WA					X						X			Coastal Hazards		DOGAMI	DLCD, OPRD, ODOT	NOAA, Universities, ODOT, OPRD, DLCD	2025
46	63	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.					X					X				Drought	Goal 7	OWRD, OCCRI	OEM	State-OWRD, OEM, OCCRI	2023
47	63	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 in order to assess the appropriate response. Comprehensive information is not currently available by region, or statewide.					X					X				Drought	Integrated Water System Strategy	OWRD	OEM	State-OWRD, OEM	2023
48	56	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. 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.	X		X		X						X			Earthquakes	USDA Natural Resources Conservation Service	OWRD	Lead Agency OWRD, ODA, OEM	National Integrated Drought Information System (NIDIS), State General Fund	2025

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49	82	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 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.	**X**	**X**			**X**	**X**								Earthquakes	Oregon Resilience Plan	OEM	BCD, ODE, DOGAMI, ODF, OHA, DLCD, ODOT, OPDR, PUC, UO, OSU, PSU	State-OEM	2025
50	82	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.	**X**	**X**			**X**									Earthquakes		DOGAMI	DLCD, OEM, OERS	DLCD	2023
51	82	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.	**X**	**X**												Earthquakes	Oregon Resilience Plan	DOGAMI	all IHMT agencies	FEMA (HMGP, BRIC)	2025
52	74	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.	**X**	**X**												Earthquakes	Oregon Highway Plan (OHP); The Oregon Resilience Plan	ODOT		FHWA, STATE-ODOT	2025
53	72	Update Statewide Ground deformation maps	Updated maps of soil amplification and liquefaction should be used to make new maps of the risks of coseismic liquefaction and landslide ground deformation to be included in an update of 2013 statewide earthquake hazard layers.					**X**									Earthquakes	Oregon Resilience Plan	DOGAMI	DAS GEO	DAS GEO	2021
54	72	Conduct an earthquake risk analysis that focuses 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.					**x**									Earthquakes	Oregon Resilience Plan	DEQ	DOGAMI, OERS	DEQ	2023
55	71	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.	**x**	**x**												Earthquakes	Oregon Resilience Plan	OBDD	OSSPAC, DHS, OERS	OBDD Seismic Rehabilitation Grant Program	2025
56	70	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.					**x**									Earthquakes	Oregon Resilience Plan	DOGAMI	DAS GEO	FEMA (HMGP, BRIC, NEHRP), State	2021
57	70	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.					**x**				**x**					Earthquakes	Oregon Resilience Plan	DOGAMI	DAS GEO	DAS GEO	2021

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58	70	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.			x			x			x					Earthquakes	Oregon Resilience Plan	DCBS-DFR	OEM, DOGAMI	State Funds	2021
59	69	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.						x								Earthquakes	Oregon Resilience Plan	DOGAMI	DAS GEO	DAS GEO	2021
60	68	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.					x	x			x					Earthquakes		DOGAMI	DAS GEO	DAS GEO	2021
61	66	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.					x									Earthquakes	Oregon Resilience Plan	DOGAMI	USGS	USGS, State-DOGAMI	2020
62	66	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.					x	x				x				Earthquakes	Oregon Resilience Plan	OEM	Governor's office, OSSPAC, ODOE, DEQ, DOGAMI, OERS, OSSPAC	OEM	2021
63	66	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					x	x				x				Earthquakes	Oregon Resilience Plan	DOGAMI	SRO, DAS, all IHMT agencies	FEMA (Risk MAP)	2023
64	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.					x									Earthquakes		DOGAMI	Universities	USGS NEHRP	2021

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65	63	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		x			x									Earthquakes	Oregon Resilience Plan	DOGAMI	DAS GEO	DAS GEO	2023
66	61	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 infrastructure resilience in the face of seismic events, by providing useful information to planners, design professionals and decision makers prior to delivery system construction.		x			x									Earthquakes	Oregon Resilience Plan	DOGAMI	ODOT	State-ODOT	2022
67	61	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 need to be evaluated and descriptions need to be published in order for them to be used by USGS.					x									Earthquakes		DOGAMI	USGS, Universities	USGS NEHRP	2021
68	60	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.	X					X			X					Earthquakes	Oregon Resilience Plan	DOGAMI	ODOT, Dept. of Aviation, all IHMT agencies	FEMA (Risk MAP, NEHRP), DHS, ODOT	2022
69	53	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.	X					X								Extreme Heat	Oregon Resilience Plan	OEM		FEMA (NEHRP), State-EMPG	2025
70	44	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.	X									X				Extreme Heat		OHA	OCCRI	State, private partners	2025
71	43	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.										X	X			Flood	Climate Change Adaptation Framework	OHA	OCCRI	State	2023
72	86	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.	X				X									Flood	NFIP, Risk MAP	DOGAMI	DLCD	State, FEMA (Risk MAP), Local Gov'ts	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
73	83	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.	**X**					**X**								Flood	NFIP	DOGAMI	DLCD	FEMA (Risk MAP)	2023
74	78	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.	**X**													Flood	Integrated Water Resource Strategy; Silver Jackets	OWRD	Silver Jackets	State-OWRD	2022
75	77	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.											**X**			Flood	Climate Change Adaptation Framework	DOGAMI	DOGAMI, USGS, USACE	FEMA (HMGP, BRIC, CAP-SSSE), EPA, USGS, BLM, USACE, USFS, DOGAMI, OCCRI, Oregon counties, cities, watershed councils and other entities	2025
76	75	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 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.						**X**			**X**					Flood	NFIP	DLCD	FEMA	FEMA-CAP-SSSE	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
77	75	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.					**X**									Flood	Integrated Water Resource Strategy	OWRD	ODOT OEM	State-OWRD	2025
78	72	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.					**X**				**X**					Flood	NFIP	DOGAMI DLCD	Silver Jackets, ODF	FEMA (CAP-SSSE), State-DOGAMI, DLCD	2023
79	68	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.	**X**											**X**		Flood	NFIP	DLCD	FEMA	FEMA (CAP-SSSE), State	2025
80	66	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.						**X**								Flood	NFIP	Silver Jackets	OEM, DLCD	USACE, FEMA (CAP-SSSE)	2022
81	62	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.			**X**			**X**								Flood	NFIP, CRS	DLCD	OEM	FEMA (CAP-SSSE)	2023
82	50	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 home owners and businesses			**X**			**X**								Flood	NFIP, CRS	DCBS-DFR, State Lands, DLCD	OEM, OFD	DCBS	2021

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
DS1	NA	Complete risk assessments for 16 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.	X	X		X			X				X		X	Flood/Dam Safety		OWRD	FEMA	State, FEMA (HHPD Rehab)	2022
DS2	NA	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.	X	X		X			X				X		X	Flood/Dam Safety		OWRD	Governor's Office, State Resilience Officer	State	2025
DS3	NA	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.	X		X	X		X	X	X	X	X	X		X	Flood/Dam Safety		OWRD	OWRD. FEMA, City of La Grande, City of Newport	State, FEMA (HHPD Rehab)	2022
DS4	NA	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.	X	X			X				X		X		X	Flood/Dam Safety		OWRD	Governor's Office, State Resilience Officer	State	2023
DS5	NA	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.	X	X		X							X		X	Flood/Dam Safety		OWRD	Governor's Office, State Resilience Officer	State	2024
83	84	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.							X		X					Landslide	Statewide Planning Goal 7	DOGAMI		State-DOGAMI, Local Gov'ts	2025
84	78	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.						X			X					Landslide		DOGAMI	DOGAMI, ODF, OEM, USGS Landslide Program	FEMA (HMGP), USGS, USACE, BLM, ODF, USFS	2025
85	73	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.	X													Landslide		DOGAMI		DOGAMI, USGS	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
86	73	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.											**X**			Landslide	Oregon Climate Change Adaptation Framework	DOGAMI		NOAA, State-DOGAMI	2022
87	73	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.		**X**			**X**									Landslide		DOGAMI	DOGAMI, ODOT	FEMA (HMGP, BRIC, Risk MAP), USGS, USACE, BLM, ODOT, Federal Highways	2025
88	71	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 infrastructure resilience in the face of landslide events, by providing useful information to planners, design professionals and decision makers prior to delivery system construction.		**X**			**X**									Landslide	Statewide Planning Goal 7	DOGAMI	ODOT	State-ODOT	2022
89	68	Collect repeat LIDAR in 5 communities and use 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.					**X**									Landslide		DOGAMI	DOGAMI, USGS 3-DEP, ODOT, FEMA	FEMA, USGS, USACE, BLM, State (Lidar Consortium)	2025
90	68	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.	**X**	**X**												Landslide		ODOT	DOGAMI,	ODOT, Federal Highway Administration	2025
91	55	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.					**X**									Landslide		DOGAMI	DOGAMI, ODF, OEM, USGS Landslide Program	FEMA (Risk MAP), USGS, USACE, BLM, ODF, USFS	2023
92	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 input of large amounts of sediment. Evaluation of erosion potential by watershed would help the regulators and providers identify areas for mitigation.		**X**			**X**									Landslide	DEQ and ODFW Water Quality Programs	DOGAMI	DEQ, OHA	Federal, State-DEQ, OHA, and Local Gov'ts	2025
93	46	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.									**X**		**X**			Tsunami		DOGAMI	DOGAMI, OEM, USGS Landslide Program	FEMA (Risk MAP), USGS, USACE, BLM, NOAA, NASA	2023

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
94	77	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 way-finding of tsunami evacuation routes to natural high ground. Where natural 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.	**X**													Tsunami	Oregon Resilience Plan	OEM	DOGAMI	NOAA-NTHMP, Local Gov’ts	2023
95	74	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.	**X**													Tsunami	Oregon Resilience Plan	DOGAMI	OEM	NOAA	2023
96	72	Develop evacuation plans for ports and harbors at the rate of one per year.	Ports and harbors are the haven 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.	**X**	**X**	**X**											Tsunami	Oregon Resilience Plan, OSU Extension Sea Grant Program	DOGAMI	DLCD, OPDR	NOAA	2023
97	70	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.	**X**				**X**	**X**			**X**					Volcanic Hazards	OSSPAC, Statewide Planning Goal 7, ORS 455	DOGAMI	OEM, DLCD	NOAA	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
98	58	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.	X	X			X	X								Volcanic Hazards		DOGAMI	DOGAMI, USGS	USGS, FEMA (Risk MAP), Counties, Cities	2025
99	57	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.	X				X									Volcanic Hazards		DOGAMI	DOGAMI, USGS	FEMA (Risk MAP), USGS, USACE, BLM	2025
100	51	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.	X				X	X			X					Volcanic Hazards		DOGAMI	DOGAMI, USGS	USGS, FEMA (Risk MAP), Counties, Cities	2025
101	50	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)	X				X									Volcanic Hazards		DOGAMI	DOGAMI, USGS, USFS, BLM	USGS, FEMA (Risk MAP), Counties, Cities	2025
102	45	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.	X				X									Volcanic Hazards		DOGAMI	DOGAMI, USGS, USFS, BLM	USGS, FEMA (Risk MAP) , Counties, Cities	2025
103	45	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.	X				X									Volcanic Hazards		DOGAMI	DOGAMI, USGS, USFS, BLM	USGS, FEMA (Risk MAP), Counties, Cities	2025
104	65	Update wildfire risk assessment data every 5 years with more up to date data.	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.	X				X	X								Wildfire		ODF	USFS, OSU Extension, OCCRI	Federal grants. OSU Extension was awarded $2 million to map and assess parcel level wildfire risk.	2025

2020 MITIGATION ACTIONS—PRIORITY

Action Item				Goal													Hazard	Integrated	Implementation			
#	Score	Statement	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)	Target Date
105	60	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.	**X**					**X**	**X**					**X**			Wildfire	Climate Change Adaptation Framework	ODF	USFS, OSU Extension, OCCRI	Federal grants. OSU Extension was awarded $2 million to map and assess parcel level wildfire risk.	2025
106	56	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 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 homeowners and renters insurance.	**X**		**x**			**X**								Wildfire		DCBS-DFR	ODF	State Funds and Federal Grants	2021
107	39	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.					**X**				**X**					Winter Storm	Climate Change Adaptation Framework	ODOT	OEM, NOAA-NWS	NOAA-NWS, State-OCCRI	2023

Table 3-3. Ongoing Mitigation Actions

2020 MITIGATION ACTIONS—ONGOING																				
Action Item			**Goal**													**Hazard**	**Integrated**	**Implementation**		
#	**Statement**	**Description**	**1 – Protect Life**	**2 – Essential Infrastructure**	**3 – Economic Resilience**	**4 – Environmental Impact**	**5 – Enhance Capabilities**	**6 – Whole Community**	**7 – Eliminate Dev.**	**8 – Historic and Cultural**	**9 – Communication**	**10 – Inequitable Impacts**	**11 – Climate Change**	**12 – Repetitive Losses**	**13 – Dams Posing Risk**	**Hazard**	**Other Initiative**	**Lead**	**Support**	**Current or Potential Funding Source(s)**
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.					**X**									All Hazards	Oregon Resilience Plan; Goal 7; NFIP; Risk MAP; Oregon Climate Change Adaptation Framework; Integrated Water Resources Strategy; Community Wildfire Protection Plans, Seismic Lifeline Studies	DOGAMI, ODF, OWRD, OEM, ODOT, OHA	FEMA, NOAA, BLM, OCCRI, OCS, Other State IHMT Agencies	FEMA (HMGP, BRIC, NEHRP), NOAA, BLM, National Fire Plan, State-DOGAMI, ODF, OWRD, OEM, ODOT
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 waste water, 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.					**X**									All Hazards	Oregon Resilience Plan; Goal 7; NFIP; Risk MAP; Oregon Climate Change Adaptation Framework; Integrated Water Resources Strategy; Community Wildfire Protection Plans, Seismic Lifeline Studies	DOGAMI, ODF, OWRD, OEM, ODOT, DLCD, OHA	FEMA, NOAA, BLM, OCCRI, OCS, OPDR, Other State IHMT Agencies	FEMA (HMGP, BRIC, NEHRP), NOAA, BLM, National Fire Plan, State-DOGAMI, ODF, OWRD, OEM, ODOT, 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.					**X**									All Hazards	Oregon Resilience Plan; Goal 7; NFIP; Risk MAP; Oregon Climate Change Adaptation Framework; Integrated Water Resources Strategy; Community Wildfire Protection Plans, Seismic Lifeline Studies	DOGAMI, ODF, OWRD, OEM, ODOT, DLCD, OHA	FEMA, NOAA, BLM, OCCRI, OCS, OPDR, Other State IHMT Agencies	FEMA, (HMGP, BRIC, NEHRP), NOAA, BLM, National Fire Plan, State-DOGAMI, ODF, OWRD, OEM, ODOT, DLCD

2020 MITIGATION ACTIONS—ONGOING

Action Item			Goal												Hazard	Integrated	Implementation		
#	Statement	Description	1 – Protect Life	2 – Essential Infrastructure	3 – Economic Resilience	4 – Environmental Impact	5 – Enhance Capabilities	6 – Whole Community	7 – Eliminate Dev.	8 – Historic and Cultural	9 – Communication	10 – Inequitable Impacts	11 – Climate Change	12 – Repetitive Losses	13 – Dams Posing Risk	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)
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.	**X**	**X**	**X**											All Hazards	Oregon Resilience Plan; Goal 7; NFIP; Risk MAP; Oregon Climate Change Adaptation Framework; Integrated Water Resources Strategy; Community Wildfire Protection Plans, Seismic Lifeline Studies	DOGAMI, ODF, OWRD, OEM, ODOT, DLCD, OHA	FEMA, NOAA, BLM, OCCRI, OCS, OPDR, Other State IHMT Agencies	FEMA, (HMGP, BRIC, NEHRP), NOAA, BLM, National Fire Plan, State-DOGAMI, ODF, OWRD, OEM, ODOT, DLCD
112	Provide support for development and update of local and state hazard mitigation plans	The State provides support for development of local NHMPs and the state NHMP by managing federal grant funding in ways that assist the state and local governments with NHMP development and update tasks and processes.						**X**			**X**					All Hazards	Goal 7	OEM	DLCD, OPDR, DOGAMI	FEMA (HMGP, BRIC), State-DLCD, Local Gov'ts
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 increase 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.						**X**			**X**					All Hazards	Oregon Resilience Plan, NFIP, Risk MAP	OEM, DOGAMI	State IHMT Agencies	DOGAMI, NOAA, FEMA (HMGP, BRIC, NEHRP), USGS, STATE-EMPG, Local Gov'ts
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.					**X**									All Hazards	Oregon Resilience Plan	DAS-CFO	DOGAMI	State-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.	**X**					**X**			**X**					All Hazards		OEM	OERS agencies	NEHRP, State-EMPG

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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, 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.						X								All Hazards	NFIP, Risk MAP, Goal 7, Oregon Resilience Plan	DOGAMI	DAS-GEO	State-DOGAMI and Local Gov'ts
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						X								All Hazards		DOGAMI	SRO, OSSPAC, all IHMT agencies	FEMA (HMGP, BRIC, Risk MAP)
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					X	X			X					All Hazards		DLCD	OEM, all IHMT agencies	FEMA (HMGP, BRIC), State of Oregon
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		X				X			X					All Hazards		DOGAMI	DLCD, OEM, all IHMT agencies	FEMA (BRIC)
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.									X		X			Multi-Hazard / Climate Change		DLCD		State
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.									X		X			Multi-Hazard / Climate Change		DLCD		State, NOAA
122	Embrace diversity equity & inclusion 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.										X				Multi-Hazard / Climate Change		DLCD		State

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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.										X		X		Multi-Hazard / Climate Change		DLCD		State
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.					X					X		X		Multi-Hazard / Climate Change		CCAWG	Other State agencies	State
125	Measure overall state progress toward climate adaptation	Develop baseline metrics against which progress toward adaptation is compared.					X						X			Multi-Hazard / Climate Change		Global Warming Commission	Governor's Climate Policy Office	State
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.									X		X			Multi-Hazard / Climate Change		DLCD		State
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.									X		X			Multi-Hazard / Climate Change		DLCD		State, NOAA
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.					X						X			Multi-Hazard / Climate Change		Global Warming Commission	Governor's Climate Policy Office	State
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.					X						X			Multi-Hazard / Climate Change		DLCD		State

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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.	X	X				X			X					Multi-Hazard / Climate Change	Oregon Highway Plan (OHP); The Oregon Resilience Plan	ODOT	OEM, DOGAMI, DLCD	FHWA, FTA, STATE-ODOT, OEM, DOGAMI, DLCD
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.		X												Multi-Hazard / Climate Change	Oregon Resilience Plan, Oregon Highway Plan	OPUC, OWRD, ODOT	Other State IHMT Agencies	FEMA (HMGP, BRIC, Risk MAP), State-OWRD, State Highway Fund, Private Utility Fees, Private Property Owners
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, 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.					X									Multi-Hazard / Climate Change	NFIP, Risk MAP, Goal 7, Oregon Resilience Plan	DOGAMI	State IHMT Agencies	FEMA (Risk MAP), USGS, NRCS, BLM, State-DOGAMI, Local, Gov'ts, Lidear Consortium
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.		X				X			X					Multi-Hazard / Climate Change	NFIP, Oregon Resilience Plan, Integrated Water Resources Strategy Action 7B	OWRD		OWRD, Local Gov'ts, FEMA (HMGP, BRIC)

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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.					**X**									Multi-Hazard / Climate Change	NFIP, Oregon Resilience Plan	BCD	OEM, ODOT	State-BCD
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 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.					**X**				**X**					Multi-Hazard / Climate Change	Integrated Water Resources Strategy Action 1B	OWRD		USFWS, State-OWRD, OWEB
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.	**X**	**X**		**X**		**X**			**X**					Multi-Hazard / Climate Change	ODF Urban Forestry Strategy	ODF	PUC, OSU Ext.	ODF, OSU Ext.
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.	**X**					**X**			**X**					Multi-Hazard / Climate Change	Oregon Resilience Plan	OEM	Governor's Office	NEHRP, State-EMPG

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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, 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.					X	X			X					Coastal Hazards	Goal 7, Risk MAP, NFIP	DLCD, OPRD		NOAA, State-OPRD
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					X						X			Coastal Hazards	NFIP, Risk MAP, Goal 7	DOGAMI, OSU	DLCD	NOAA (309)
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.	X				X	X			X					Coastal Hazards	NFIP, Risk MAP, Goal 7	DOGAMI	OSU, DLCD, OPRD	NOAA, State-DOGAMI, OPRD, OSU, and Local Gov'ts
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.					X	X			X					Coastal Hazards		OPRD		Permit Fees
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.	X					X			X					Earthquake	Oregon Resilience Plan	OEM	OSSPAC, BCD, OSFM, ODE	NEHRP, State- SRGP

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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.	X					X			X					Earthquake	Oregon Resilience Plan	OEM	Governor's Office	NEHRP, State-EMPG
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, partnering with other agencies and organizations to bring insurance information to the public.			X			X			X					Earthquake	Oregon Resilience Plan	DCBS-ID	DOGAMI, OEM	State-DCBS-ID
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.	X	X				X								Earthquake	Oregon Resilience Plan	BusOR-IFA	OSSPAC, DOGAMI, BCD, OSFM (SB 3). OEM, OHD	State-BusOR-IFA

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146	Continue seismic rehabilitation of public schools 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 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.	**X**	**X**				**X**								Earthquake	Oregon Resilience Plan	BusOR-IFA	OSSPAC, DOGAMI, BCD, ODE	State-BusOR-IFA
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.				**X**										Earthquake	Governor's Office	OSSPAC		State
148	Continue implementing the Oregon 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.			**X**			**X**			**X**					Flood	NFIP, Goal 7, Local Natural Hazards Mitigation Plans	DLCD	FEMA, Local Gov'ts	FEMA (CAP-SSSE)

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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.			**X**			**X**								Flood	NFIP	DLCD	DCBS-ID	FEMA (CAP-SSSE)
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.				**X**		**X**								Flood	NFIP, DEQ-Water Quality	ODFW	ODR	State-ODFW
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.						**X**			**X**					Flood	Silver Jackets	OEM	ODOT	USACE, State-EMPG
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 (http://www.oregon.gov/LCD/HAZ/index.shtml) 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.						**X**			**X**					Flood	NFIP	DLCD		FEMA (CAP-SSSE)

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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.						**X**			**X**					Flood	NFIP	DLCD	OEM, DCBS-DFR	FEMA (CAP-SSSE)
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.						**X**			**X**					Flood	NFIP	DLCD		FEMA (CAP-SSSE)
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 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.						**X**	**X**		**X**			**X**		Flood	NFIP	OEM, DLCD	State IHMT Agencies	FEMA (CAP-SSSE), Local Gov'ts
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.					**X**				**X**				**X**	Flood	Integrated Water Resources Strategy Action 7a	OWRD	Silver Jackets	FEMA (HHPD Rehab), State-OWRD
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.	**X**						**X**							Landslide	Goal 7	OEM	DOGAMI, ODF, DLCD	FEMA (HMGP, CAP-SSSE, FMA), Local Resources
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.						**X**	**X**		**X**					Tsunami	Goal 7	DLCD		NOAA, State-DLCD

2020 MITIGATION ACTIONS—ONGOING

Action Item			Goal													Hazard	Integrated	Implementation		
#	Statement	Description	1 – Protect Life	2 – Essential Infrastructure	3 – Economic Resilience	4 – Environmental Impact	5 – Enhance Capabilities	6 – Whole Community	7 – Eliminate Dev.	8 – Historic and Cultural	9 – Communication	10 – Inequitable Impacts	11 – Climate Change	12 – Repetitive Losses	13 – Dams Posing Risk	Hazard	Other Initiative	Lead	Support	Current or Potential Funding Source(s)
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.					**X**		**X**							Tsunami	Goal 7	DLCD		NOAA, State-DLCD
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.						**X**			**X**					Tsunami	Oregon Resilience Plan	OEM	DLCD, DOGAMI	NOAA, State-EMPG
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.						**X**			**X**					Tsunami	Oregon Resilience Plan, Goal 7	OEM, DOGAMI	DLCD, ODOT	NOAA, State-EMPG, DOGAMI
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.						**X**			**X**					Tsunami	Oregon Resilience Plan, Goal 7	OEM, DOGAMI	DLCD, ODOT	NOAA, State-EMPG, DOGAMI
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.						**X**			**X**					Tsunami	Oregon Resilience Plan, Goal 7	OEM, DOGAMI	DLCD, ODOT	FEMA (Risk MAP, HMGP), NOAA, State-EMPG, DOGAMI

2020 MITIGATION ACTIONS—ONGOING

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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.		**X**				**X**	**X**		**X**					Tsunami	Oregon Resilience Plan	BCD, DLCD	DOGAMI, OEM	State-BCD, DLCD
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 zones 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.	**X**								**X**					Tsunami	Oregon Resilience Plan	OEM	ODOT	NOAA, Local Gov’ts
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.	**X**								**X**					Volcanic Hazards	Oregon Resilience Plan	DOGAMI	ODOT, OEM	DOGAMI, USGS
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.						**X**			**X**					Volcanic Hazards	Oregon Resilience Plan	OEM	Governor’s Office	NEHRP, State-EMPG

2020 MITIGATION ACTIONS—ONGOING

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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.	**X**				**X**	**X**			**X**					Wildfire		ODF	OSFM, BCD, DCBS-ID, DLCD, KOG, OSU Ext.	BLM-Title III, ODF, OSFM
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.	**X**					**X**			**X**					Wildfire	Local Community Wildfire Protection Plan processes, Goal 7	ODF, BCD	OSFM	BLM-Title III, State-ODF
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 refer to CWPP's as their Wildfire Chapters, aligning CWPP updates with NHMP updates will ensure consistency and promote efficiencies in planning processes.						**X**			**X**					Wildfire	Community Wildfire Protection Plans	ODF	OSFM	BLM-Title III, USDA-USFS & USDOI-National Fire Plan, FEMA (BRIC, HMGP, FMAG)

2020 MITIGATION ACTIONS—ONGOING

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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.	**X**					**X**			**X**					Wildfire		ODF	OSFM	National Fire Plan, State-ODF
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 to 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.	**X**					**X**								Wildfire	Goal 7	ODF	OSFM	State-ODF
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 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.					**X**				**X**					Wildfire	PNWCG	ODF	OSFM, KOG	State-ODF, OSFM

2020 MITIGATION ACTIONS—ONGOING

Action Item			Goal													Hazard	Integrated	Implementation		
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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.					**X**				**X**					Wildfire		ODF	PNWCG	State-ODF
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.					**X**				**X**					Wildfire		OSFM, ODF		State-OSFM, ODF

2020 MITIGATION ACTIONS—ONGOING

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176	Upload the newest available data into the Oregon Wildfire Explorer portal as available	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.					**X**	**X**			**X**						Wildfire		ODF	USFS, OSU Extension, OCCRI	Federal grants. OSU Extension was awarded $2 million to map and assess parcel level 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.		**X**				**X**			**X**						Windstorm	OSU Land Steward Program, Oregon Small Woodland Association Tree Schools	ODF	PUC, OEM, OSU Ext.	ODF, OSU Ext.
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.		**X**				**X**			**X**						Windstorm		PUC	ODF, ODOT, OR-OSHA	State-OPUC, Public and Private Utilities

2020 MITIGATION ACTIONS—ONGOING

Action Item			Goal													Hazard	Integrated	Implementation		
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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 State Fire Marshal and its work with local fire departments through the 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.	**X**					**X**			**X**					Winter Storm		OSFM	OPH, BCD	State-OSFM
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.	**X**					**X**			**X**					Winter Storm		ODOT	OSP	State-ODOT

Table 3-4. Removed Mitigation Actions

2015 MITIGATION ACTIONS—REMOVED				
Action Item				
#	**Statement**	**Description**	**Reason for Removal**	**Comments**
3	Enroll three coastal communities in the Tsunami Ready Program each year	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 National Tsunami Hazard Mitigation Program (NTHMP), three communities per year will be added to the rolls of the program. 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.	Completed	2019
5	Develop model risk reduction techniques and ordinances for landslide-prone communities	Techniques can involve requiring geological or geotechnical studies for new development, stormwater control for neighborhoods on hillsides, strict land use ordinances for active landslides, working with infrastructure operators to increase reliability of services after storms, and more.	Completed	DOGAMI and DLCD developed and issued a Landslide Guide for Oregon Communities in 2019.
6	Form an Oregon Landslide Workgroup	An Oregon Landslide Workgroup will be created to prioritize areas for new mapping projects, to promote landslide hazard awareness through education & outreach, to develop and influence policy at the federal state, and local levels, and to assist in response & recovery efforts during disasters.	Completed	However, the group has had a slow start. The group will need to be expanded in the future. https://www.oregongeology.org/Landslide/olrrt.htm
8	Create a new lidar-based statewide landslide susceptibility map	DOGAMI will develop a statewide landslide susceptibility map of Oregon as part of the Oregon Geographic Information Council (OGIC) Framework Data Development Program. This map will be used by the Oregon Landslide Workgroup (#6, Priority) to prioritize locations for more detailed Landslide Inventory and Susceptibility Maps.	Completed	Although this item is "completed," there will be needed updates in the future as more lidar, landslide inventory, and geology maps are completed. https://www.oregongeology.org/pubs/ofr/p-O-16-02.htm
10	Implement the Rapid Assessment of Flooding Tool (RAFT)	The RAFT has been funded and developed by the U.S. Army Corps of Engineers (USACE) through FY 14 for $115,000. The goal of the RAFT is to take real time flood forecasts and relate them to flood frequency curves from FEMA, USGS, and OWRD. This will help decision makers prioritize real-time flood fighting assistance. The tool will also incorporate other important decision-influencing factors, possibly including structures in danger of flooding, population affected, and likelihood of levee failure. The RAFT is intended to work in concert with and feed data to other emergency management tools, such as OEM's RAPTOR. The RAFT is in very early development, and the scope and schedule are under development. Once RAFT is completed, OEM will have operational oversight when the ECC is activated.	Completed	The US Army Corps of Engineers (USACE) developed the Rapid Assessment of Flooding Tool and has completed this task before 2019. This is tool is regularly used by USACE staff to assess potential flooding impacts. The tool is being considered for national-level deployment by FEMA.
14	Create an informational website for the new Base Flood Elevation Determination Service	Create website that describes the state's base Flood Elevation Determination Service. Website will include brochure, pricing, map of completed determinations, and data clearinghouse for completed determinations.	Completed	DOGAMI created an informational website with pricing and a data clearinghouse for completed determinations. No brochure or map of completed determinations will be created.
16	Complete a Climate Change Vulnerability Assessment and Adaptation Pilot for north coast highways	The goal of ODOT's pilot is to conduct a regional vulnerability assessment and prepare options for adaptation actions and priorities. In coordination with ODOT Maintenance, the project will collect and map vulnerability and risk data based on climate science, asset conditions, and known and anticipated natural hazards. Hazard sites will be selected within a study corridor for more detailed analysis. Based on engineering and technical reviews, adaptation measures will be developed for vulnerable infrastructure and assembled into a coastal adaptation implementation plan. ODOT received a Federal Highway Administration grant to conduct the project, scheduled for completion in fall 2014.	Completed	Completed in 2015.
17	Request LCDC to include Local Natural Hazards Mitigation Planning as a priority for DLCD Technical Assistance Grant awards to use as match for federal funds when available	The Land Conservation and Development Commission (LCDC) awards Technical Assistance Grants to local Gov'ts to support local planning efforts in certain priority land use topic areas which at this time do not include natural hazard mitigation. If LCDC were to include natural hazards mitigation planning as a priority topic area, local Gov'ts would have the opportunity to compete for funding and the state would be better able to provide technical assistance for natural hazards mitigation planning.	Completed	LCDC has included natural hazards mitigation planning as Priority #3 of five priorities for Technical Assistance Grants.
18	Develop a process for implementing Goal 7.	Under Goal 7, DLCD is responsible for notifying local Gov'ts if new hazard information requires a local response. The process for determining which information should trigger local land use evaluations and notifying local Gov'ts, however, remains untested. DLCD will implement the process, review the results, and determine whether any changes are necessary. This action is necessary to ensure that local Gov'ts evaluate new hazard information and take necessary action to protect life and property.	Completed	DLCD has developed a process for implementing Goal 7.

2015 MITIGATION ACTIONS—REMOVED

Action Item				
#	**Statement**	**Description**	**Reason for Removal**	**Comments**
19	Work with Business Oregon to introduce in 2015 legislation allowing reconstruction of structures that cannot feasibly be retrofitted	Revise SRGP legislation or develop an alternate funding mechanism to help replace schools and emergency facilities that are too structurally deficient for cost-effective retrofit and need to be replaced instead. This would also include structures in the "local" tsunami inundation zone that should not be retrofit in-place but, rather, rebuilt on natural high ground.	Not being pursued	The Department of Education has a new bond funded program for this type of activity.
21	Update the inventory of shoreline protective structures	Update the inventory of existing and new coastal engineering (shore protection) structures on the Oregon Coast in order to provide local Gov'ts and applicable agencies an important coastal management tool to address anticipated increasing coastal erosion.	Completed	Inventory has been up to date since 2015 and is added to as new permits are issued.
22	Develop flood protection standards for state-owned/leased buildings	According to the SB 814 Task Force (Oregon Legislature, 1997 Session), there is a need to develop and effectively implement a strict standard governing the siting, construction, and leasing of buildings occupied by state agencies in flood-prone areas.	Completed	Flood protection standards for state-owned and –leased buildings were in place and were updated in 2015.
25	Integrate the GIS database of tsunami safe zones and assembly areas into local government databases	Assist counties not only with how to integrate the data, but also how the data can be used for tsunami evacuation planning.	Completed, where possible	2019. Not all communities have a GIS department. Also, these have been integrated into RAPTOR.
26	Incorporate text addressing hazard mitigation into natural resource agencies' guidance and process documents focusing on environmental quality to ensure that natural resources are protected in the design and construction of hazard mitigation projects	Government and private nonprofit agencies in Oregon must address complex issues associated with flood hazard mitigation in the context of clean drinking water, riparian habitat, watershed health, fisheries, wetlands protection, and overall environmental quality. An important plan related to this effort is the *Oregon Plan for Salmon and Watersheds.* Solutions require multi-agency and intergovernmental efforts. While the decisions and projects will vary with each disaster, the state will continue its efforts to develop appropriate policies and criteria to ensure that these are considered along with hazard mitigation needs. This includes guidance on large wood placement, restoration after flood events, and habitat-friendly methods to accomplish pre- and post-disaster hazard mitigation. Watershed assessments being completed around the state by local watershed councils will be used in the evaluation of flood hazards and floodplain processes.	Completed	2015
28	Establish a web page where building owners can register their interest in participating in acquisition programs for flood-damaged buildings	FEMA funds can be used to buyout repetitive loss and severe repetitive loss properties in the floodplain. The paperwork and process to achieve a buyout are lengthy and complex. First and foremost, a property owner must be willing to sell. Buyout funds could be more efficiently and effectively spent if willing sellers were identified and paperwork prepared before funds became available. This registry would augment the state's current outreach efforts, making it easy for willing sellers to identify themselves and for the state to prepare for and execute buyouts.	Not being pursued	Lack of resources
35	Investigate/inventory DAS-owned buildings for seismic risk	Determine 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.	Completed	2016
36	Host at least one workshop or other educational opportunity on a biennial basis in communities where a Volcano Coordination Plan has been adopted	The State of Oregon will actively work to increase the public's knowledge of the volcano hazard in Oregon.	Not being pursued	Lack of funding
41	Develop an incentive or subsidy program for retrofit of one and two family residences	Design a system of grants or tax credits to encourage homeowners to retrofit residences to minimize displaced post-earthquake shelter demand and reduce population loss during recovery. At the same time, take advantage of weatherization measures such as energy audits, cash rebates, and tax credits to help keep the cold out during winter.	Not being pursued	Lack of resources
45	Develop a system for prioritizing and ranking state-owned facilities, including critical facilities, for mitigation	Create an evaluation framework for determining a comprehensive list of critical state-owned facilities in terms of local and regional service needs in the event of a natural disaster; prioritize these critical facilities based on mitigation needs by disaster type; and evaluate each critical facility on the basis of investment cost and potential relocation/decommission in locations with increased hazard risk.	Not being pursued	Lack of resources

2015 MITIGATION ACTIONS—REMOVED

Action Item				
#	Statement	Description	Reason for Removal	Comments
46	Provide the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* to local goventments	To encourage communities to use *Planning for Natural Hazards: Oregon Technical Resource Guide* it must be provided to them.	Not being pursued	The Technical Resource Guide has not been updated, and therefore the updated Guide has not been provided to local governments.
47	Produce Coastal Development Handbook	Produce a *Coastal Development Handbook* that addresses coastal process and hazards, beach and shoreland public policy, buying oceanfront property [what to look for, what questions to ask], building on oceanfront property, choosing appropriate hazard mitigation techniques, and choosing and using geotechnical consultants and engineers.	Not being pursued	This was considered and it was determined that this information already exists and is available to the public through DLCD's website. Video: "Living on the edge: Buying and building property on the OR coast." DLCD, NOAA, Sea Grant.
50	Update *Planning for Natural Hazards: Oregon Technical Resource Guide*	*Planning for Natural Hazards: Oregon Technical Resource Guide* was published in 2000 and needs to be updated.	Not being pursued	This was considered. It was determined that the Guide, while old, is still useful, and updating the Guide is not necessary.
51	Facilitate self-sustaining outreach programs staffed by Community Emergency Response Teams (CERT) in each coastal population center aimed at creating a culture of preparedness and response for both local Cascadia and distant tsunami events	Establish Community Emergency Response Teams (CERT). These teams will work to save lives and restore communities following a major disaster. Encourage CERT to use outreach techniques tested in a 2005 pilot study of Seaside (#1 priority = door-to-door education; #2 priority = community evacuation drill; #3 = K-12 education supplemented by workshops targeted at specific user groups such as the lodging industry). Create measures of sustainability and success.	Not being pursued	Lack of funding
52	Determine the effectiveness of and the feasibility of using the Emergency Alert System (EAS) in dust prone areas to provide timely information to the traveling public about dangerous blowing dust conditions and make improvements if needed	ODOT and OSP have primary responsibility for activating the traffic advisory components of the dust storm response plan for the Mid-Columbia Region. The National Weather Service can also activate EAS from their forecast offices in Pendleton, Boise, Medford, and Portland. Many local emergency program managers can also activate the system. Providing this information can save lives in the event of a dust storm.	Not being pursued	ODOT already has reader boards and low power radio stations that broadcast traveler information throughout the Mid-Columbia region that are dedicated for weather related incidents like dust storms, severe weather, and blowing snow that are triggered by NWS alerts. Additionally, locally emergency managers already have access to EAS and IPAWS. Through IPAWS, they can issue a Wireless Emergency Alert (WEA), which is much more effective and reliable than EAS. Our current EAS infrastructure in Oregon is antiquated and much less reliable that IPAWS. Many of the units at the local level are more than 20 years old and are not very reliable. Additionally, not all county PSAPs have EAS units and rely on neighboring counties for analog access to EAS. The Oregon Association of Broadcasters has put together a package to request funding from the Oregon Legislature to upgrade the EAS network, but the bill was never voted on, due to early shutdown of the senate.
53	Add at least three new flood inundation forecast points to the National Weather Service's Flood Inundation Mapping website and the USGS's Flood Inundation Mapper before 2018	The National Weather Service (NWS) Advanced Hydrologic Prediction Service (AHPS) has developed inundation mapping sites for various stream gage locations nationwide. Currently there are none in Oregon. This is a useful tool for understanding potential inundation areas based on NWS forecasts. NWS: http://water.weather.gov/ahps/inundation.php; USGS: http://wim.usgs.gov/fimi/)	Not being pursued	The National Weather Service's Advanced Hydrologic Prediction Service uses dozens of real-time or near-real-time observed water level data in Oregon from the United State Geological Survey's National Streamflow Information Program to produce a suite of River Forecast Center products. These products include water resource forecasting, ensemble streamflow prediction, and hydrometeorological analysis and support that enable government agencies, private institutions, and individuals to make more informed decisions about risk-based policies and actions to mitigate the dangers posed by floods and droughts. (NWS: https://water.weather.gov/ahps/rfc/rfc.php; USGS: https://waterdata.usgs.gov/nwis/rt)
56	Identify, prioritize, and map areas susceptible to rapid channel migration	Identify areas susceptible to rapid channel migration. Prioritize those areas' susceptibility and rank their risk from a rapid channel migration event. Create channel migration zone and risk maps for the areas determined to have the highest risk for rapid channel migration.	Completed.	DOGAMI completed and published the Statewide Subbasin-Level Channel Migration Screening for Oregon in 2017 (IMS-56). This study classified first-order streams into segments of high, medium, and low channel migration susceptibility for each of the 86 subbasins in Oregon, made recommendations for further mapping and assessment based on classifications, and produced a geodatabase containing the classified stream segments and associated metadata.
57	Prepare model coordination protocols for local Floodplain Managers and Building Officials	Local government Floodplain Managers and Building Officials are often unaware of the other's role in floodplain management and how they could work together to better manage floodplain development and mitigate flood hazards. Providing model protocols for the two positions to coordinate would increase each one's awareness of the other's role, ultimately enhancing local flood hazard mitigation.	Completed	Model Standard Operating Procedures for processing floodplain development permits have been developed that address and incorporate model protocols for coordination between local Floodplain Managers and Building Officials.

2015 MITIGATION ACTIONS—REMOVED

Action Item				
#	**Statement**	**Description**	**Reason for Removal**	**Comments**
59	Schedule three opportunities over the life of this Plan for state-local dialogue on vulnerability assessments to improve consistency and mutual understanding	Traditionally, local jurisdictions have used the OEM Hazard Analysis Methodology to update LNHMP vulnerability assessments. State agencies with hazard oversight use a wide range of methods to conduct statewide vulnerability assessments for the Oregon NHMP. The results are varying degrees of similarities and differences among local and state vulnerability scores. This dialogue is intended for the state and local Gov'ts to educate each other on the rationale behind the differing scores and to identify ways to better align local and state vulnerability assessments.	Not being pursued	One state-local dialog on this topic took place at the Oregon Emergency Management Conference in April 2016. This action can be incorporated into the continued development of a new standardized risk assessment methodology.
62	Develop incentives to increase the rate of replacement of 6 times seismically deficient buildings	Develop tax incentives, permit facilitation, and other means to increase the natural rate of building turnover.	Not being pursued	Lack of funding
63	Identify areas on the coast that will be "islands", or cut off, from other cities or critical recovery resources following a Cascadia Subduction Zone earthquake & tsunami	Produce GIS database of resources in each "island" expected to be isolated after a Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami in order to preplan for response. Shape files are to be imported into RAPTOR, Oregon Explorer, and other GIS tools. This action item supports the local community's ability to prepare for and sustain or recover function following a CSZ earthquake and tsunami.	Completed	2016
67	Initiate an outreach strategy to encourage local jurisdictions to disseminate volcano preparedness educational materials	Increase the ability of Oregonians to prepare for and recover from volcanic hazards.	Not being pursued	Lack of funding
69	Update the 2000 Guidelines for conducting site-specific geohazard investigations	The state has guidelines for conducting site-specific seismic investigations. The guidelines date from 2000 and need to be updated. The update should expand the scope of the guidelines to cover site-specific investigations for all geohazards. This will improve local government implementation of development regulations in areas subject to geohazards.	Completed	The Oregon State Board of Geologist Examiners guidelines were updated to "Guidelines for Engineering Geologic Reports (2014), and is at: https://www.oregon.gov/osbge/Documents/engineeringgeologicreports_5.2014.pdf For liquefaction, this National Academies Liquefaction Study Report (2016) should be used: https://www.nap.edu/catalog/23474/state-of-the-art-and-practice-in-the-assessment-of-earthquake-induced-soil-liquefaction-and-its-consequences
72	Update DOGAMI Special Paper 29 (Wang & Clark, 1999)	Update 1999 Special Paper 29, Earthquake Damage In Oregon: Preliminary Estimates of Future Earthquake Losses, a statewide damage and loss estimation study (Wang & Clark, 1999). This update, at a minimum, should incorporate damage and loss estimates for a magnitude 9 Cascadia earthquake, an exposure analysis of tsunami hazards, and probabilistic hazards including updated probabilistic earthquake ground motions and flooding zones. School and emergency facilities from the 2007 DOGAMI database should be incorporated.	Removed	Replaced with an updated mitigation action.
76	Establish process for assigning inspection teams to needed areas for post-disaster facility inspection	Work with OEM, local government building officials, and emergency planners to establish an effective process for assigning inspection teams to needed areas and educating local Gov'ts regarding the circumstances and process for initiating BCD and state involvement.	Completed	Current process is for local staff to meet this need. If local staff is unable to meet the need, the county makes a request (may be elevated from a city to the County) to the State Emergency Management response team through the Ops Center portal. After this request is made, the State will work to identify resources. This system was tested and was successful for the Umatilla flooding in February of 2020.
83	Assist local governments in using the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* to update their comprehensive plans and development regulations	The original purpose of *Planning for Natural Hazards: Oregon Technical Resource Guide* was to assist communities in amending their comprehensive plans and development regulations to reduce risk from natural hazards, implementing Statewide Goal 7. The updated document will also be helpful in developing local hazard mitigation plans and integrating them with local comprehensive plans and development regulations.	Not being pursued	The Technical Resource Guide has not been updated and therefore technical assistance in using it is not being provided to local governments.
84	Monitor the implementation of the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* provided to local governments by tracking the number of jurisdictions that have used it	Monitoring success of *Planning for Natural Hazards: Oregon Technical Resource Guide* will allow the State to adjust its approach and update the guidance as necessary, leading to better protection of life and property.	Not being pursued	The Technical Resource Guide has not been updated and therefore not provided to local governments so its use is not being monitored.
89	Continue to assist local governments with GIS capability development	Assist local governments with GIS program development, including system planning, hardware/software costs, training, and data development in relation to all hazards mapping and regulation of coastal development.	Not being pursued	The State will not be establishing a formal program but does assist local governments upon request.
95	Educate citizens about the different National Weather Service announcements	State agencies should work with the National Weather Service and local governments to educate the public about the meaning of the different National Weather Service announcements: winter storm watch, winter storm warning, ice storm warning, heavy snow warning, blizzard warning, severe blizzard warning, dust storm and high wind warning.	Not being pursued	ODOT already has reader boards and low power radio stations that broadcast traveler information throughout the Mid-Columbia region that are dedicated for weather related incidents like dust storms, severe weather, and blowing snow that are triggered by NWS alerts. Additionally, locally emergency managers already have access to EAS and IPAWS. Through IPAWS, they can issue a Wireless Emergency Alert (WEA), which is much more effective and reliable than EAS.

2015 MITIGATION ACTIONS—REMOVED

Action Item				
#	**Statement**	**Description**	**Reason for Removal**	**Comments**
98	Better coordinate, fund, and publicize programs to reduce the abundance of juniper trees in arid landscapes across Oregon	Juniper trees develop extensive root systems that draw critically needed water from arid soils, transpiring water vapor into the atmosphere, intensifying drought and increasing the risk of wildfire. There are programs in Oregon to reduce juniper trees from areas where their competition for groundwater resources is harmful, but these programs need to be better coordinated, funded, and publicized.	Not being pursued	ODF currently doesn't have a dedicated program, but other programs including NRCS have funded similar projects. Might be better phrased as supporting rangeland health, combatting juniper encroachment and noxious weeds and grasses that pose threats to the ecosystem and alter fire regimes. A common theme seems to be prescribed fire with these juniper treatments.
106	Publicize and facilitate the implementation of both structural and non-structural seismic mitigation measures for home owners, business owners, renters, and contractors, including methods of reducing hazards	Working with federal partners, such as FEMA, and non-profit industry groups, such as AIA, Oregon will enhance education on structural and non-structural seismic mitigation measures by adopting the following actions: • Increase the number of educational opportunities by working with FEMA to offer courses from the National Earthquake Technical Assistance Program. • Work with the Construction Contractors Board, public and private sector lenders, private sector construction material suppliers and nonprofit organizations to develop programs to assist home and business owners and renters to implement innovative structural and non-structural seismic mitigation measures.	Completed	2017
114	Update the Model Ordinance for Flood Damage Prevention	FEMA Region 10 has approved for use in Oregon a model ordinance for flood damage prevention. DLCD views the model ordinance as a living document and will continue to work with Region 10 and other interested parties to develop model ordinance provisions that address issues such as "fish-friendly" floodplain management, reducing flood insurance costs, etc.	Completed	The Oregon Model Flood Hazard Ordinance was updated and approved by FEMA Region X in August 2019.
121	Continue implementation of FEMA's Risk MAP program in Oregon, including building effective community strategies for reducing risk	Measurably increase the public's awareness of flood and other natural hazards through a combination of regulatory and non-regulatory products, tools, community outreach. Address gaps in flood hazard data, identifying areas of dated and/or inconsistent mapping and updating high-priority areas with new mapping and innovative natural hazard mapping techniques that lead to actions that reduce risk to life and property. Provide support to help manage the FEMA Map Modernization projects that remain to be completed.	Not being pursued	The State no longer has a Risk MAP Program Coordinator. FEMA has taken over management of the Risk MAP program for the State of Oregon.
123	Implement flood protection standards for state-owned/leased buildings	According to the Senate Bill 814 Task Force (Oregon Legislature, 1997 Session), there is a need to develop and effectively implement a strict standard governing the siting, construction, and leasing of buildings occupied by state agencies in flood-prone areas.	Completed	2015
133	Work with ODOT to develop additional signage as needed to increase awareness of the tsunami hazard	Existing tsunami hazard zones 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. There is need for increased public education program to let the public, including motorists who are not local residents, know what the signs mean and what actions they should take.	Not being pursued	Lack of funding
134	Work with Oregon Parks & Recreation Department and Oregon Travel Experience to increase the number of interpretive educational installations along US-101	Existing tsunami hazard zones signs are considered inadequate for placement along stretches of US-101, or on any roads, that are within the tsunami hazard zone. There is need for increased public education program to let the public, including motorists who are not local residents, know what the signs mean and what actions they should take.	Not being pursued	Lack of funding
144	Collaborate through work groups within the Pacific Northwest Coordination Group to encourage the U.S. Forest Service to allow the owners of long-term dwelling leases to apply mitigation standards adjacent to their dwellings	In Oregon, several thousand seasonal homes, which are located in high-risk wildland-urban interface areas, are on lands owned by the U.S. Forest Service. Because these structures are located on ground owned by the federal government, they are not subject to the *Oregon Forestland-Urban Interface Fire Protection Act*. In many locations, even when the owners of these homes desire to complete wildfire mitigation practices, federal lease requirements totally or substantially prevent them from doing so. Under this action item, a survey will be made of all lease locations in Oregon and the federal mitigation limitation and prohibitions will be identified. This information will then be used to approach the appropriate federal officials with a request to change their policies or regulations, to allow for the application of mitigation practices on leased property.	Not being pursued	Due to capacity issues and lack of funding, this is not being pursued by ODF at this time.

Table 3-5. Crosswalk—2015 to 2020 Mitigation Actions

2015 TO 2020 MITIGATION ACTION CROSSWALK				
2015 #	**2020 #**	**Statement**	**Disposition**	**Table**
1	**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	Retained	Priority
2	**15**	Create a "Clearinghouse" for natural hazards data	Retained	Priority
3	**—**	Enroll three coastal communities in the Tsunami Ready Program each year	Removed	Removed
4	**18**	Complete a hazard mitigation policy legislative needs assessment	Retained	Priority
5	**—**	Develop model risk reduction techniques and ordinances for landslide-prone communities	Removed	Removed
6	**—**	Form an Oregon Landslide Workgroup	Removed	Removed
7	**73**	Through FEMA's Risk MAP program, update 1,000 miles of streams with lidar-based flood mapping	Retained	Priority
8	**—**	Create a new lidar-based statewide landslide susceptibility map	Removed	Removed
9	**85**	Upgrade the Oregon Landslide Warning System	Retained	Priority
10	**—**	Implement the Rapid Assessment of Flooding Tool (RAFT)	Removed	Removed
11	**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	Retained	Priority
12	**95**	Assist one coastal community per year in considering vertical evacuation structures and improved evacuation routes due to evacuation constraints	Retained	Priority
13	**72**	Produce new lidar-based flood hazard maps	Retained	Priority
14	**—**	Create an informational website for the new Base Flood Elevation Determination Service	Removed	Removed
15	**6**	Develop new standardized risk assessment methodology across all hazards, at the state and local levels	Revised	Priority
16	**—**	Complete a Climate Change Vulnerability Assessment and Adaptation Pilot for north coast highways	Removed	Removed
17	**—**	Request LCDC to include Local Natural Hazards Mitigation Planning as a priority for DLCD Technical Assistance Grant awards to use as match for federal funds when available	Removed	Removed
18	**—**	Develop a process for implementing Goal 7	Removed	Removed
19	**—**	Work with Business Oregon to introduce in 2015 legislation allowing reconstruction of structures that cannot feasibly be retrofitted	Removed	Removed
20	**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	Retained	Priority
21	**—**	Update the inventory of shoreline protective structures	Removed	Removed
22	**—**	Develop flood protection standards for state-owned/leased buildings	Removed	Removed
23	**77**	Update the state's Peak Discharge Estimation Program	Retained	Priority
24	**96**	Develop evacuation plans for ports and harbors at the rate of one per year	Retained	Priority
25	**—**	Integrate the GIS database of tsunami safe zones and assembly areas into local government databases	Removed	Removed
26	**—**	Incorporate text addressing hazard mitigation into natural resource agencies' guidance and process documents focusing on environmental quality to ensure that natural resources are protected in the design and construction of hazard mitigation projects	Removed	Removed
27	**81**	Develop a statewide strategy to encourage the purchase of flood insurance	Retained	Priority
28	**—**	Establish a web page where building owners can register their interest in participating in acquisition programs for flood-damaged buildings	Removed	Removed

2015 TO 2020 MITIGATION ACTION CROSSWALK

2015 #	2020 #	Statement	Disposition	Table
29	**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	Retained	Priority
30	**5**	Provide technical assistance to local Gov'ts to help integrate hazard mitigation plans with local comprehensive plans	Retained	Priority
31	**14**	Improve state agency procedures for tracking data on state-owned/leased buildings and critical or essential facilities	Retained	Priority
32	**26**	Request and compile seismic and flood information for personnel-occupied buildings from other agencies	Retained	Priority
33	**36**	Request seismic and flood information from landlords as part of analyzing potential leased spaces going forward in new leases and potential renewals	Retained	Priority
34	**88**	Lidar survey the State's ROW (rights of way), west of the Cascade Range, to determine where landslide potential exists	Retained	Priority
35	**—**	Investigate/inventory DAS-owned buildings for seismic risk	Removed	Removed
36	**—**	Host at least one workshop or other educational opportunity on a biennial basis in communities where a Volcano Coordination Plan has been adopted	Removed	Removed
37	**69**	Achieve 100% state agency participation in the Great Oregon ShakeOut	Retained	Priority
38	**97**	Fund and provide technical assistance for local Gov'ts to engage in evacuation route planning and project implementation	Retained	Priority
39	**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	Retained	Priority
40	**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	Retained	Priority
41	**—**	Develop an incentive or subsidy program for retrofit of one and two family residences	Removed	Removed
42	**13**	Request the Oregon Legislature to fund the "State Disaster Loan and Grant Account" immediately following a presidentially declared disaster or other disaster	Retained	Priority
43	**21**	Review and adjust State IHMT membership	Retained	Priority
44	**20**	Establish formal and official authority for the State IHMT	Retained	Priority
45	**—**	Develop a system for prioritizing and ranking state-owned facilities, including critical facilities, for mitigation	Removed	Removed
46	**—**	Provide the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* to local governments.	Removed	Removed
47	**—**	Produce Coastal Development Handbook	Removed	Removed
48	**86**	Evaluate the impact of climate change on landslides	Retained	Priority
49	**83**	Create new lidar-based Landslide Inventory and Susceptibility Maps, especially near population centers	Retained	Priority
50	**—**	Update *Planning for Natural Hazards: Oregon Technical Resource Guide*	Removed	Removed
51	**—**	Facilitate self-sustaining outreach programs staffed by Community Emergency Response Teams (CERT) in each coastal population center aimed at creating a culture of preparedness and response for both local Cascadia and distant tsunami events	Removed	Removed
52	**—**	Determine the effectiveness of and the feasibility of using the Emergency Alert System (EAS) in dust prone areas to provide timely information to the traveling public about dangerous blowing dust conditions and make improvements if needed	Removed	Removed
53	**—**	Add at least three new flood inundation forecast points to the National Weather Service's Flood Inundation Mapping website and the USGS's Flood Inundation Mapper before 2018	Removed	Removed
54	**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	Retained	Priority
55	**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	Retained	Priority
56	**—**	Identify, prioritize, and map areas susceptible to rapid channel migration	Removed	Removed

2015 TO 2020 MITIGATION ACTION CROSSWALK

2015 #	2020 #	Statement	Disposition	Table
57	**—**	Prepare model coordination protocols for local Floodplain Managers and Building Officials	Removed	Removed
58	**53**	Develop a database of non-state-owned critical/essential facilities and their property values	Retained	Priority
59	**—**	Schedule three opportunities over the life of this Plan for state-local dialogue on vulnerability assessments to improve consistency and mutual understanding	Removed	Removed
60	**29**	Identify funding to support various public transportation providers and local jurisdictions to conduct comprehensive vulnerability assessments of their transportation facilities and services	Retained	Priority
61	**80**	Install High Water Mark (HWM) signs after flood events and co-locate stage crest gages on select HWM signs	Retained	Priority
62	**—**	Develop incentives to increase the rate of replacement of 6 times seismically deficient buildings	Removed	Removed
63	**—**	Identify areas on the coast that will be "islands", or cut off, from other cities or critical recovery resources following a Cascadia Subduction Zone earthquake & tsunami	Removed	Removed
64	**92**	Evaluate sediment impacts to Oregon's water resources	Retained	Priority
65	**52**	Prioritize mitigation and retrofit projects on seismic lifelines	Retained	Priority
66	**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	Retained	Priority
67	**—**	Initiate an outreach strategy to encourage local jurisdictions to disseminate volcano preparedness educational materials	Removed	Removed
68	**78**	Develop guidance on determination of mudslides triggers and relation to rain or flood events	Retained	Priority
69	**—**	Update the 2000 Guidelines for conducting site-specific geohazard investigations	Removed	Removed
70	**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	Retained	Priority
71	**17**	Coordinate development of a post-disaster scientific and technical clearinghouse with other state and federal agencies, higher education, and associations	Retained	Priority
72	**—**	Update DOGAMI Special Paper 29 (Wang & Clark, 1999)	Removed	Removed
73	**30**	Develop probabilistic multi-hazard risk maps for the Oregon Coast	Retained	Priority
74	**66**	Lidar survey the State's ROW (rights of way), west of the Cascade Range, to determine where seismic fault potential exists	Retained	Priority
75	**61**	Assess hazards associated with active crustal faults newly discovered by statewide lidar program	Retained	Priority
76	**—**	Establish process for assigning inspection teams to needed areas for post-disaster facility inspection	Removed	Removed
77	**46**	Develop an improved methodology for gathering data and identifying the communities most vulnerable to drought and related impacts	Retained	Priority
78	**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	Retained	Priority
79	**108**	Continue to refine statewide natural hazard identification and characterization	Retained	Ongoing
80	**109**	Continue to refine the State's risk assessment methodology and statewide assessments of natural hazard exposure, vulnerability, and potential losses	Retained	Ongoing
81	**110**	Continue to refine statewide identification and prioritization of the greatest risks from and communities most vulnerable to Oregon's natural hazards	Retained	Ongoing
82	**111**	Continue to develop and implement resilience initiatives statewide	Retained	Ongoing
83	**—**	Assist local governments in using the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* to update their comprehensive plans and development regulations	Removed	Removed
84	**—**	Monitor the implementation of the updated *Planning for Natural Hazards: Oregon Technical Resource Guide* provided to local governments by tracking the number of jurisdictions that have used it	Removed	Removed

2015 TO 2020 MITIGATION ACTION CROSSWALK

2015 #	2020 #	Statement	Disposition	Table
85	**112**	Provide support for development and update of local and state hazard mitigation plans	Retained	Ongoing
86	**113**	Improve and sustain public information and education programs aimed at mitigating the damage caused by natural hazards	Retained	Ongoing
87	**114**	Continue to improve inventory of state-owned/leased buildings in all hazard areas	Retained	Ongoing
88	**115**	Encourage citizens to prepare and maintain at least two weeks' worth of emergency supplies	Retained	Ongoing
89	**—**	Continue to assist local governments with GIS capability development	Removed	Removed
90	**116**	Use lidar for statewide analysis of all natural hazards	Retained	Ongoing
91	**130**	Continue to act upon opportunities to advance the State's lifeline mitigation investment practice	Retained	Ongoing
92	**131**	Improve reliability and resiliency of critical infrastructure statewide by adopting industry-specific best practices, guidelines, and standards	Retained	Ongoing
93	**132**	Acquire statewide lidar coverage for the purpose of improving natural hazard mapping and infrastructure inventories	Retained	Ongoing
94	**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	Retained	Ongoing
95	**—**	Educate citizens about the different National Weather Service announcements	Removed	Removed
96	**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	Retained	Ongoing
97	**135**	Expand the state's stream gaging network. Seek stable funding for the operation, and maintenance of stream gages	Retained	Ongoing
98	**—**	Better coordinate, fund, and publicize programs to reduce the abundance of juniper trees in arid landscapes across Oregon	Removed	Removed
99	**136**	Educate homeowners about choosing ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards in future ice storms	Retained	Ongoing
100	**137**	Each year, ask the Governor to designate October to be Earthquake and Tsunami Awareness Month	Retained	Ongoing
101	**138**	Continue to facilitate accessibility and use of the *Coastal Atlas* GIS resources	Retained	Ongoing
102	**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	Retained	Ongoing
103	**140**	Survey coastline to monitor erosion	Retained	Ongoing
104	**141**	Maintain the updated inventory of shoreline protection structures	Retained	Ongoing
105	**47**	Implement the improved methodology for gathering data and identifying the communities most vulnerable to drought and related impacts	Retained	Priority
106	**—**	Publicize and facilitate the implementation of both structural and non-structural seismic mitigation measures for home owners, business owners, renters, and contractors, including methods of reducing hazards	Removed	Removed
107	**142**	Provide information and technical assistance to implement mitigation of non-structural hazards in K-12 schools	Retained	Ongoing
108	**143**	Each year, ask the Governor to designate the third Thursday of the month of October as the Great Oregon ShakeOut Day by proclamation	Retained	Ongoing
109	**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	Retained	Ongoing
110	**145**	Continue seismic rehabilitation of hospital, fire, and police facilities under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division	Retained	Ongoing
111	**146**	Continue seismic rehabilitation of public schools buildings under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division	Retained	Ongoing
112	**148**	Continue implementing the Oregon CRS Users Group Program	Retained	Ongoing

2015 TO 2020 MITIGATION ACTION CROSSWALK

2015 #	2020 #	Statement	Disposition	Table
113	**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	Retained	Ongoing
114	**—**	Update the Model Ordinance for Flood Damage Prevention	Removed	Removed
115	**150**	Maintain the Riparian Lands Tax Incentive Program	Retained	Ongoing
116	**151**	Provide information and potentially resources to local governments for developing "flood fight" plans and protocols	Retained	Ongoing
117	**152**	Continue the State's active Floodplain Management Outreach Program	Retained	Ongoing
118	**153**	Continue the State's active Floodplain Management Training Program	Retained	Ongoing
119	**154**	Prepare text for local broadcast of one Public Service Announcement (PSA) each year on a seasonal topic	Retained	Ongoing
120	**155**	Assist local communities in securing funding to mitigate damage to repetitive flood loss properties or those substantially damaged by flooding	Retained	Ongoing
121	**—**	Continue implementation of FEMA's Risk MAP program in Oregon, including building effective community strategies for reducing risk	Removed	Removed
122	**156**	Continue developing Emergency Action Plans for all remaining high hazard dams in Oregon	Retained	Ongoing
123	**—**	Implement flood protection standards for state-owned/leased buildings	Removed	Removed
124	**157**	Acquire existing homes and businesses seriously threatened or damaged by landslide hazards	Retained	Ongoing
125	**158**	Assist local governments in implementing the tsunami land use guidance	Retained	Ongoing
126	**159**	Monitor implementation of the tsunami land use guidance by tracking the number of jurisdictions that have used it	Retained	Ongoing
127	**160**	Continue to renew coastal communities' enrollments in the Tsunami Ready Program	Retained	Ongoing
128	**161**	Continue supporting school participation in annual tsunami evacuation drills	Retained	Ongoing
129	**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	Retained	Ongoing
130	**163**	Continue innovative outreach activities, such as tsunami evacuation route fun runs	Retained	Ongoing
131	**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	Retained	Ongoing
132	**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	Retained	Ongoing
133	**—**	Work with ODOT to develop additional signage as needed to increase awareness of the tsunami hazard	Removed	Removed
134	**—**	Work with Oregon Parks & Recreation Department and Oregon Travel Experience to increase the number of interpretive educational installations along US-101	Removed	Removed
135	**166**	Develop volcanic hazard evacuation maps	Retained	Ongoing
136	**167**	Each year, ask the Governor to designate May to be Volcano Awareness Month by proclamation	Retained	Ongoing
137	**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	Retained	Ongoing
138	**169**	Continue to increase the number of local governments using the Wildfire Hazard Zone process to mitigate wildfire risk and losses	Retained	Ongoing
139	**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	Retained	Ongoing
140	**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	Retained	Ongoing
141	**172**	Implement the Oregon Forestland-Urban Interface Fire Protection Act ("Senate Bill 360") in all Oregon counties that meet criteria under the law	Retained	Ongoing

2015 TO 2020 MITIGATION ACTION CROSSWALK

2015 #	2020 #	Statement	Disposition	Table
142	**173**	Analyze wildfire ignition probability statistics to better target prevention efforts at the leading causes of fires	Retained	Ongoing
143	**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	Retained	Ongoing
144	**—**	Collaborate through work groups within the Pacific Northwest Coordination Group to encourage the U.S. Forest Service to allow the owners of long-term dwelling leases to apply mitigation standards adjacent to their dwellings	Removed	Removed
145	**175**	Develop a single, comprehensive statewide method or process to collect and analyze wildfire occurrence data in a timely manner	Retained	Ongoing
146	**177**	Continue to educate communities, workers, and the public about the role of proper tree pruning and care in preventing damage during windstorms	Retained	Ongoing
147	**178**	Use industry best practices to minimize impact and outages to service delivery system of overhead line operators, during windstorm events	Retained	Ongoing
148	**179**	Educate citizens about safe emergency heating equipment	Retained	Ongoing
149	**180**	Continue educating motorists on safe winter driving, including how to be prepared for traveling over snowy and icy mountain passes	Retained	Ongoing

3.3.5 Mitigation Successes

Oregon maintains documentation of "mitigation success stories." These are completed mitigation actions that have shown to be successful by either (a) avoiding potential losses or (b) demonstrating cost-effectiveness through benefit-cost analysis, qualitative assessment, or both. Likewise, actions that support mitigation efforts, like risk or vulnerability assessment studies, are included. Mitigation success stories are completed by or with input from the action's coordinating agency.

Previous success stories can be found in Appendix **9.2.3**.

3.3.5.1 Mitigation Success — Oregon State Resilience Office and Governor's Resilience 2025 Vision

Hazard: Earthquake, Tsunami, and All Hazards
Location: State of Oregon

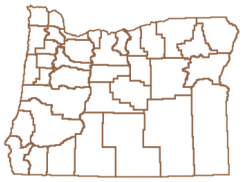
Problem:

Oregonians face a tremendous threat of a magnitude 9 earthquake on the Cascadia subduction zone, a 600-mile long fault zone located just off the Pacific Northwest coastline. The Cascadia earthquake will cause extensive ground shaking damage, create a destructive tsunami that will reach coast within 10–15 minutes, and result in serious impacts to all Oregonians. Although disaster preparations have been made, serious deficiencies remain.

Shortly after the 2011 Tohoku, Japan disaster with over 16,000 fatalities, the Oregon Legislature passed House Resolution 3 that directed the Oregon Seismic Safety Policy Advisory Commission (OSSPAC) to develop a Cascadia resilience plan for the State. By 2013, the Oregon Resilience Plan (ORP) outlining the urgency to build resilience over the next 50 years was delivered to the Legislature. Among about 150 recommendations, a top recommendation was "Establishing a State Resilience Office to provide leadership, resources, advocacy, and expertise in implementing statewide resilience plans."

Solution:

In response to the numerous ORP findings, the Legislature passed 2013 Senate Bill 33, which created a task force to prioritize the recommendations and guide next steps. By October 2014, the task force determined that the highest priority recommendation was to establish a Resilience Policy Advisor to the Governor. The 2015 House Bill 2270, passed in July 2015 and codified as Oregon Revised Statute 401.913, formally established a State Resilience Office (https://www.oregon.gov/gov/policy/Pages/resilience.aspx) in the Office of the Governor. The executive appointment of a State Resilience Officer is unique: Senate confirmation is required as stipulated by Article III, Section 4 of the Oregon Constitution.



Quick Facts

Goals:
1 Protect Life
2 Minimize property damage
3 Minimize critical infrastructure damage
4 Enhance economic resilience
5 Minimize environmental impacts and utilize natural solutions
6 Enhance the state's natural hazards mitigation capability
7 Motivate the "whole community" to build resilience and mitigate
10 Enhance communication, collaboration, coordination

Mitigation Actions:
18 Complete a hazard mitigation policy legislative needs assessment
49 Support and implement the actions in the February 2014 Oregon Resilience Plan and October 2014 Task Force Report
…and many others

Lead agencies: Office of the Governor
Project Type: State of Oregon Resiliency Vision, Priorities, and Leadership
Project Start: 5/25/16
Project End: Statutory; Ongoing
Project Cost: $150,000 Annually
Funded by: State General Funds

On May 25, 2016, Michael K. Harryman (Figure 1), officially became the first State Resilience Officer (SRO) in the nation to be instated BEFORE the disaster strikes. Mr. Harryman, working in the Office of Governor Kate Brown, is a well-recognized leader who focuses on Cascadia disaster resilience. In his SRO role and through his influence highlighting urgent disaster preparation needs, the State of Oregon has made great strides in improving Cascadia disaster resilience.

Figure 1. Mike Harryman, State Resilience Officer

Benefit:

With the adopted 2013 ORP as the State's roadmap, SRO Harryman assisted in defining State of Oregon priorities in the Governor's Resiliency 2025 Vision (https://www.oregon.gov/gov/policy/Documents/resiliency-policy-agenda.pdf), released in October 2018. In the Vision, Governor Brown highlights her six resilience priorities:

1. Continue state investments in seismic upgrades of schools and emergency services buildings throughout Oregon.
2. Develop a plan for the Critical Energy Infrastructure (CEI) Hub to prevent and mitigate catastrophic failure and ensure fuel supplies and alternate energy sources are available to responders and the public.
3. Implement a state-wide earthquake early warning system by 2023.
4. Work with local governments, community groups, and the American Red Cross to ensure that 250,000 vulnerable homes have 2-week ready supplies within the next three years.
5. Strengthen local emergency management organizations and develop more robust logistical staging bases, local supply chains, and more earthquake and mass displacement insurance options.
6. Update the Oregon Resilience Plan in 2021 to reflect current best practices, community input, and academic research, including a specific plan for the Oregon Coast.

These six resilience priorities took shape in the Governor's Recommended Budget 2019-2021 (released November 28, 2018) as these six initiatives:

1.	Seismic Rehabilitation Grants:	$120 million
2.	CEI Hub Mitigation:	$500,000
3.	ShakeAlert, an earthquake early warning system, and Alert Wildfire:	$12 million
4.	2 Weeks Ready for 250,000 Homes:	$1.7 million
5.	Logistical Staging Bases to include selected public airports:	$10.1 million
6.	Update the 2013 ORP and assist coastal schools and hospitals:	$300,000

The purpose of these investments is to build infrastructure, improve citizen awareness and education, and ultimately ensure that more Oregon families are supplied for an eventual Cascadia subduction earthquake and other large-scale natural disasters. By July 2019, resilience Seismic Rehabilitation Grants and CEI Hub Mitigation were partially funded by the Legislature.

For the 2020 Legislative "short" Session, the Senate Committee on General Government and Emergency Preparedness introduced Senate Bill 1537 (SB 1537) at the request of Governor Brown. Three of her unfunded resilience priorities were included. The bill also included a fourth component that focused on dam safety. Governor Brown testified (http://oregon.granicus.com/MediaPlayer.php?clip_id=27838)

before the Senate Committee on February 6, 2020, underscoring the gravity of the coming Cascadia event and the importance of SB 1537 to saving lives.

Although SB 1537 did not pass into law due to unrelated political challenges, Governor Brown has called the State to action by:

1. Establishing the State Resilience Office;
2. Installing the first Senate-confirmed State Resilience Officer;
3. Issuing the Governor's Resiliency 2025 Vision; and
4. Initiating SB 1537 to fund priority, life-saving resilience initiatives.

Not only has Governor Brown clearly articulated the challenges of the forthcoming Cascadia subduction zone earthquake and tsunami, she has identified and robustly supported priority initiatives to minimize disruption and prepare the people of Oregon. The Governor's message was well-received by the Legislature and SB 1537 was recommended to pass. It is anticipated that in the future these priorities will indeed be funded.

3.3.5.2 Mitigation Success — Oregon's Unique Seismic Rehabilitation Grant Program (SRGP)

Hazard: Earthquake
Location: State of Oregon

Background:

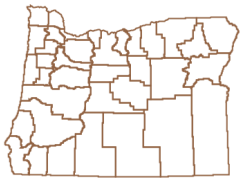
Schools are often considered as the hearts of communities where children receive education and neighbors congregate. Emergency service facilities, including fire and police stations and hospitals, are considered as community safety nets due to the emergency response services they help provide to the public. Schools and emergency response facilities are critically important community assets that support our modern way of life. When they are not functioning, such as due to earthquake damage, our society can be seriously disrupted and harmed. A future Cascadia earthquake will cause extensive ground shaking damage, create a destructive tsunami that will reach the coast within 10-15 minutes, and is expected to damage many hundreds of schools and emergency response facilities. This would result in terrifying societal impacts.

Problem:

In Oregon, seismic building codes that address Cascadia earthquakes were not adopted until the mid-1990s. Consequently, many existing kindergarten through 12th grade (K-12) school buildings, community colleges, and education service district buildings were built to standards currently known as seismically deficient. Similarly, emergency service buildings built before the mid-1990s are also at-risk of serious seismic damage. In 2007, DOGAMI completed a statewide seismic needs assessment (https://www.oregongeology.org/pubs/ofr/p-O-07-02.htm) that indicated hundreds of at-risk facilities that may be dangerous. Oftentimes, the public expects schools and emergency service buildings to perform to a higher standard during disasters; however, Oregon communities with pre-mid-1990s facilities, unless mitigated, may suffer enormous setbacks.

Solution:

To mitigate existing dangerous critical community assets, the State of Oregon created a unique program that is



Quick Facts

Goals:
- **1** Protect Life
- **3** Minimize critical infrastructure damage
- **4** Enhance economic resilience
- **6** Enhance the state's natural hazards mitigation capability
- **7** Motivate the "whole community" to build resilience and mitigate
- **9** Minimize damage to historic and cultural resources
- **10** Enhance communication, collaboration, coordination

Mitigation Actions:
- **49** Support and implement actions in the 2013 Oregon Resilience Plan
- **111** Continue to develop and implement resilience initiatives statewide.

…and many others

Lead agencies: Oregon Business Development Department (OBDD)
Project Type: Earthquake Mitigation Grants for Schools and Emergency Service Buildings
Project Start: 07/2005
Project End: Ongoing
Project Cost: Approximately $460 Million
Funded by: State General Obligation Bonds

improving community resilience across the state. The Seismic Rehabilitation Grant Program (SRGP) is a state of Oregon competitive grant program that provides funding for the seismic rehabilitation of critical public buildings, particularly public schools and emergency services facilities. This includes hospital buildings with acute inpatient care facilities, fire stations, police stations, sheriff's offices, 911 centers, and Emergency Operations Centers. More can be viewed at http://www.orinfrastructure.org/Infrastructure-Programs/Seismic-Rehab/. The buildings Oregon communities depend on in the face of a disaster will be stronger and improved due to Oregon's unique SRGP.

Oregon's SRGP provides state general obligation bond funds to retrofit public schools and emergency services buildings to meet current or exceed Oregon building code performance levels. Schools must meet a life-safety performance level so students can safely exit the retrofitted building. Seismic rehabilitation of common areas within schools, such as cafeterias, gyms, auditoriums, and emergency service public buildings must be built to immediate occupancy performance levels so that the building can function soon after the disaster. These retrofits help to reduce initial damage, minimize response needs for the facility that was upgraded, allow its resources to be community assets, and accelerate local recovery efforts.

In 2005, due to the leadership of Senator Peter Courtney (Figure 1), the Oregon Legislature authorized Oregon Office of Emergency Management (OEM) to administer the SRGP. In 2009, OEM awarded its first grants. In 2014, administration was transferred to Business Oregon, a state agency better suited to manage bond-dependent funds. Business Oregon administers this grant program to help develop safe, livable, and prosperous communities. The SRGP provides up to $2.5 million of state funds per project on a reimbursable basis.

Figure 1. Peter Courtney, Oregon Senate President, standing in front of the Oregon State Capitol (Source: Office of Senator Peter Courtney)

This program is not intended to address all school and emergency districts' needs, but to be a safety net for those owners who cannot fund their own retrofits. The State offers assistance when possible and is eliminating the risk of mass casualties. The SRGP is dependent on the Legislature allocating funding to Oregon Constitutional Article M (education) and Article N (emergency services) bond sales. In general, the funding awarded is broken into two bond sales each spring of the biennium. Eligible school buildings must (a) have a capacity of 250 or more persons; (b) be routinely used for student activities by K-12 public schools, community colleges and education service districts (ESDs); and (c) be owned by a school district, an education service district, a community college district, or a community college service district.

Figure. 2. Kindergarten to 8th grade students from the Applegate School in Grants Pass pose after being awarded with 2009-2010 SRGP grant funds (Source: SRGP)

As of May 2020, a total of 252 schools and 108 emergency services buildings have been awarded $456,732,427 in funding for improvements since the program's first awards in 2009. This includes 35 grants totaling $74,478,834 in the SRGP's sixth round of funding announced in May 2020. Figures 2 and 3 provide examples of school awardees.

Figure 3. The 1915 Central Elementary School in Albany was a 2010-2011 SRGP awardee (Source: SRGP)

Benefits:

Benefits from the SRGP include protecting students in public schools, as well as teachers, school staff and administrators and visitors from injuries. Seismic retrofit activities garner attention due to the planning and construction activities, which at times can be disruptive. As such, retrofits often serve to increase awareness about the importance of earthquake safety, and provides education opportunities to students, parents, neighbors, and other stakeholders. Opportunities include engaging in earthquake safety drills, such as practicing "drop, cover and hold on" during the annual ShakeOut exercise, preparing emergency kits, learning about earthquake science, and more. Oftentimes, school activities and concerns serve as catalysts for the larger community, thus education extends well beyond the schools. As an example, parents learn about earthquake preparedness from their children, and take steps to prepare at home and their workplace.

The SRGP provides direct benefits by protecting the lives of people in emergency service facilities as well as their assets. Further benefits involve improving the ability for first responders to provide their services, whether operating a 9-11 call center, fighting fires, enforcing laws, or caring for injured victims. Having reliable emergency services is a fundamental part of community resilience.

All SRGP applicants are required to conduct a quantitative benefit cost analysis as part of their application. Direct project benefits are clearly presented for all awardees.

3.3.5.3 Mitigation Success — State-of-the-Art Tsunami Vertical Evacuation Building at Oregon State University

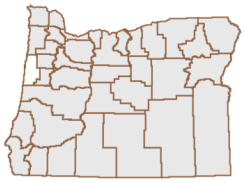
Hazard: Tsunami, Earthquake
Location: Lincoln County, Oregon

Background

Cascadia earthquakes pose a significant risk to the State of Oregon due to a combination of the existing seismic and tsunami hazards, vulnerability of the built infrastructure and potential consequences to communities. A Magnitude 9 Cascadia earthquake and tsunami would likely produce an unprecedented catastrophe much larger than any disaster the U.S has faced. Tsunamis are expected to flood low lying coastal communities and inflict catastrophic damage. Constructing disaster resilient buildings in coastal communities is needed to improve personal safety and safeguard communities.

Problem:

Oregon State University (OSU) has the prestigious Hatfield Marine Science Center (HMSC) that boasts internationally recognized research as well as education for public members. HMSC is located on the banks of Yaquina Bay, Newport, and has a high Cascadia earthquake and tsunami hazard. More building space is needed for marine studies, education and research. Although a conventional new building would be designed to tolerate earthquake shaking, such a building would not withstand tsunami forces. After a Cascadia earthquake, occupants in a conventional building would need to immediately drop, cover and hold on to protect oneself from earthquake shaking impacts, then quickly evacuate to high ground in the attempt to avoid an arriving tsunami. However, at HMSC, tsunami evacuation would very challenging given the short evacuation time constraints combined with the long evacuation route options to high ground that provides safety from tsunami hazards. Furthermore, the closest tsunami assembly area currently would require HMSC employees and visitors to travel towards (not away from) the incoming tsunami.



Quick Facts

Goals:
1 Protect Life
7 Motivate the "whole community" to build resilience and mitigate
10 Enhance communication,

Mitigation Actions:
95 Assist one coastal community per year in considering vertical evacuation structures
49 Support actions to assist coastal communities in the 2013 Oregon Resilience Plan
131 Improve resiliency of critical infrastructure by adopting industry-specific standards.
161 Support school participation in tsunami evacuation drills

Lead agencies: Oregon State University
Project Type: Tsunami Vertical Evacuation Building
Project Start: 03/2018
Project End: 06/2020
Project Cost: $61.7 Million
Funded by: Oregon State University Revenue Bonds; Wayne and Gladys Valley Foundation and other donors; State Paid Bonds; Oregon State University Paid Bonds.

Solution:

Figure 1. Image showing the wide ramp designed for tsunami vertical evacuation by many people to access the rooftop, which is designed to be above the tsunami inundation levels (Source: https://today.oregonstate.edu/news/osu-marine-studies-building-be-national-model-tsunami-"vertical-evacuation")

Instead of building a conventional building that meets building code requirements, OSU elected to build a new three-story tsunami resistant building with "above code" design parameters. The new Gladys Valley Marine Studies Building is specifically designed to accommodate tsunami "vertical evacuation" for its building occupants as well as hundreds of nearby people. Building occupants would evacuate up, or vertically, via stairs or a wide outdoor ramp onto the spacious rooftop up to a height above the tsunami hazards (Figure 1). Similarly, nearby people would not need to attempt the tenuous journey along the long evacuation route to high ground. Instead, they could use the wide outdoor ramp designed for mass ingress to escape the tsunami. The ramp leads from ground level to the top of the auditorium, and from there to the roof of the three-story building at a height of 47 feet. This solution will dramatically shorten the evacuation time to arrive at a community designated tsunami-safe assembly location and will safely harbor more than 900 people.

Figure 2. The construction of the new tsunami resistant building nearing completion. Accessed on February 12, 2020 from http://webcam.oregonstate.edu/cgm/msisouth/live/live.jpg

Hundreds of lives may be saved due to the Gladys Valley Marine Studies Building, which is in the final stages of construction. The new building is scheduled to officially open in the summer of 2020 (Source: Bob Cowen, written communication, director of the Hatfield Marine Science Center, April 28, 2020). According to Dr. Cowen, "this new building will not only meet our programming goals for the Marine Studies Initiative, coastal and oceanic research, and public outreach, but it will include added safety options for the Hatfield campus through its vertical evacuation." The 72,000 square-foot building has a three-story academic and research core, where the core is connected to a two-story wing that includes community space, an auditorium, an innovation laboratory, and other facilities (Figure 2).

Dr. Cowen explains that the building will not only increase the region's marine science education and research capacity, it will use state-of-the-art architectural and engineering techniques to serve as one of the first "vertical evacuation" (http://today.oregonstate.edu/news/osu-marine-studies-building-be-national-model-tsunami-%E2%80%9Cvertical-evacuation%E2%80%9D) tsunami sites in the United States. This will serve as an international model on how to apply newly available engineering methods as well as help other coastal communities with safety. According to Dr Cowen, "We have designed academic spaces that will enhance collaboration among students as a teaching tool, as well as drawing on the diversity of disciplines that the Marine Studies Initiative will represent. There also will be an innovation lab and studio that will enable students, faculty researchers and even entrepreneurs to

design, build, test and market new technologies, as well as promote creative artistic projects. The auditorium will not only enhance OSU's academic mission, but also serve the Hatfield Marine Science Center's community role."

As a result of this new building as part of OSU's Marine Studies Initiative, OSU plans to have up to 500 students annually studying and doing research at the Hatfield campus by 2025. In addition to the new building supporting Marine Studies Initiative programs, it will provide headquarters for OSU's nationally recognized Marine Mammal Institute and its marine genetics and genomics programs. The move by those programs into the new building will free up space for expanding Hatfield's seawater laboratories in existing buildings, Dr. Cowen said.

Economic development and growth are more results of this new building. OSU has purchased a site of more than five acres near Oregon Coast Community College, where it will begin construction of a residence hall that will house up to 360 students. For more information, see OSU news article dated November 22, 2017 (https://today.oregonstate.edu/news/osu-marine-studies-building-be-national-model-tsunami-%E2%80%9Cvertical-evacuation%E2%80%9D).

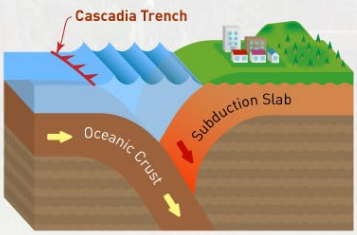
FEMA

HMA Hazard Mitigation Assistance

Mitigation Minute

Shaking Up Seismic Preparedness in Newport, Oregon

Newport's South Beach district is a low-lying area at risk of major seismic impacts and tsunamis due to its proximity to the Cascadia subduction zone.



A study of this area has documented at least 40 high-magnitude earthquakes in the past 10,000 years, all with corresponding tsunamis.

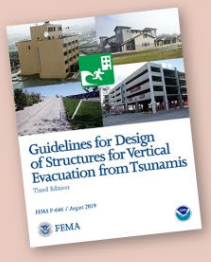
To ensure the safety and resilience of the South Beach community, FEMA awarded the city **$680,478 in Hazard Mitigation Grant Program funding** to retrofit **SAFE HAVEN HILL**, an existing tsunami evacuation zone.

RETROFITS INCLUDED:

Establishing a **cleared safe area** at the top of the hill for people to assemble.

Installing a **disaster cache** with enough supplies to support evacuees for up to 72 hours.

> **Community engagement and collaboration was a key to the success of the Safe Haven Hill tsunami evacuation assembly area retrofit project.**
>
> —Derrick Tokos, City of Newport Community Development Director



SAFE HAVEN HILL BY THE NUMBERS

80 feet above sea level*

23,000 square feet (about 1/2 acre)

2,300 people can safely assemble in the safe area (10 square feet per person)

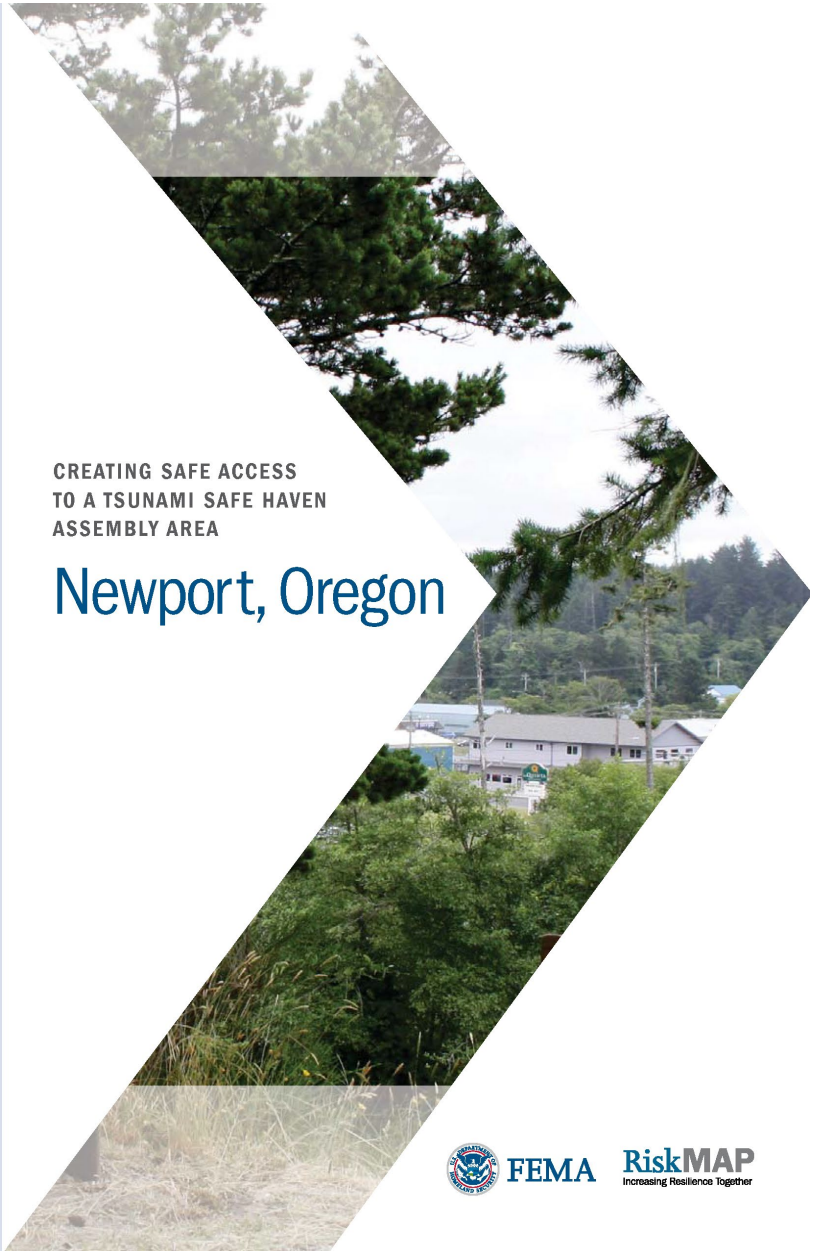
* FEMA-recommended safe elevation for tsunami vertical evacuation as specified in FEMA P-646: *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis* (Third Edition, 2019)

FEMA

"The community of Newport and the Hatfield Marine Science Center would like to recognize the exceptional leadership of Maryann Bozza. Maryann was instrumental in the Safe Haven Hill project and her tireless efforts helped the community make great strides in emergency preparedness. She may be gone from us, but her vision and planning will live on in all our endeavors to build a more resilient and prepared coastal community."

– Mark Farley, On Behalf of the Hatfield Marine Science Center and Newport Community

www.fema.gov



CREATING SAFE ACCESS TO A TSUNAMI SAFE HAVEN ASSEMBLY AREA

Newport, Oregon

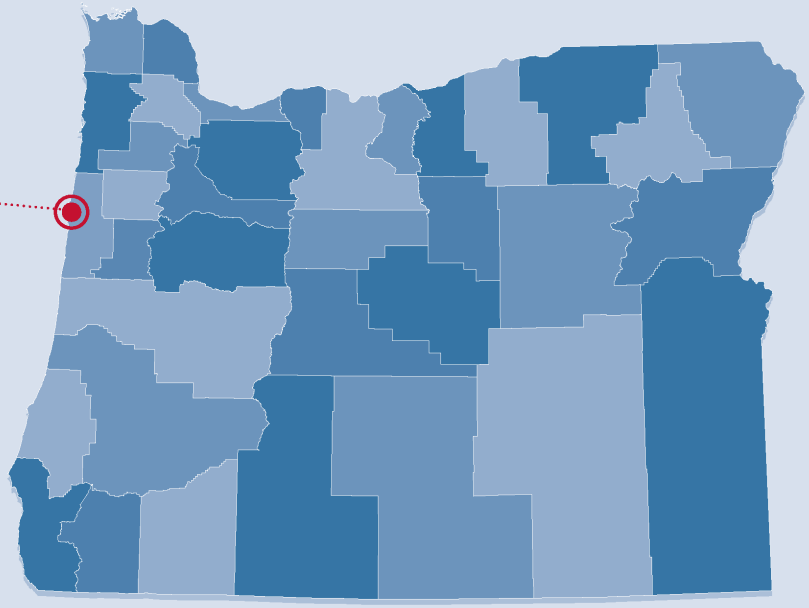
FEMA RiskMAP Increasing Resilience Together

NEWPORT, OR

The Place, Its History, and Life on the Coast

Since 2011, Newport, Oregon has worked to increase the safety of its residents and businesses against the threat of a tsunami. In partnership with other public and private entities, the city identified and retrofitted a tsunami assembly area, "Safe Haven Hill." This effort ensured a stable, elevated tsunami evacuation area is accessible to surrounding communities and that these communities know how and where to evacuate in the event of a tsunami.

This guide highlights how the City of Newport achieved a successful tsunami mitigation project by coordinating key partnerships, leveraging and managing a FEMA Hazard Mitigation Assistance grant, and engaging and encouraging public outreach and awareness efforts. This information is intended to support other communities who are interested in pursuing similar projects.



Goal of Showcase:

This booklet provides information how the City of Newport increased the public safety of its community by successfully completing a tsunami mitigation project. This booklet, telling Newport's story, is part of a collection, the FEMA Region X Mitigation Showcase, to illustrate different ways in which local communities have leveraged partnerships and collaborated with state and federal partners to complete mitigation projects that address vulnerabilities to earthquakes and/or tsunamis. These narratives describe how project partners worked together to effectively navigate FEMA Hazard Mitigation Assistance requirements, build political and public support, and describe what lessons were learned throughout the project process. Information provided in each booklet intends to inspire and support other communities that wish to pursue similar mitigation action.

Mitigation Project:

In 2016, the City of Newport, Oregon increased the community's access to a safe assembly area through the Tsunami Safe Haven Hill mitigation project. This project improved an existing evacuation area, Safe Havel Hill, and leveraged additional resources to improve an existing evacuation route and provide interpretative signs estimating travel time to the assembly area. Success of the project can be attributed to robust public-private partnerships developed throughout the process and strategic collaboration with state. The Comprehensive Plan and Hazard Mitigation Planning processes were leveraged to engage the public. The process of completing the mitigation project increased public awareness by bringing the community together to make tsunami preparedness, such as evacuation drills, a part of regular life in Newport.

Defining the Hazard:

The City of Newport's risk to a tsunami is approximately 100 times higher than the risk to a tornado anywhere in the United States. The Safe Haven Hill project addresses Newport's vulnerability of access to high ground in the event of a tsunami due to an earthquake. While tsunamis may result from other events, the paleoseismic study of the Cascadia Subduction Zone (CSZ) has documented at least 40 high magnitude (M8+ to M9.0+) earthquakes in the past 10,000 years, all with corresponding tsunamis. The last major earthquake occurred in January 1700—over 300 years ago.

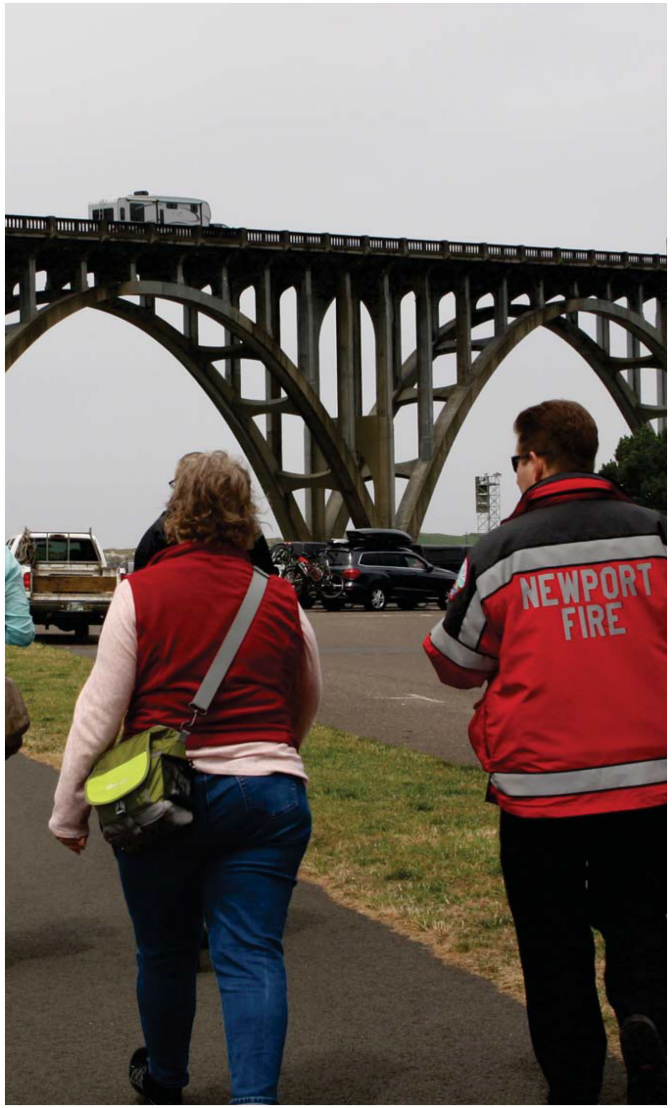


PHOTO: Walking the evacuation route to Safe Haven Hill from Hatfield Marine Center.

PHOTO: Looking north from top of Safe Haven Hill.

Risk to Community

The geography of Newport's South Beach community, a low-lying area at the base of steep hillsides, leaves it at risk to the impacts of a tsunami, especially a local tsunami generated by an earthquake along the Cascadia subduction zone. The risk of a tsunami striking South Beach is about 100 times greater than the risk of a tornado occurring anywhere in the United States. Therefore, an easily identifiable evacuation route and short-term (1 to 3 days) assembly area people can reach quickly are critical to ensuring the safety, economy, community identity, and overall resilience of the South Beach community.

The South Beach community is the area most vulnerable to tsunamis in Newport because: (1) Most of the community is situated at a very low elevation and is mapped within tsunami inundation zones; (2) Only one location is reachable in under 30 minutes that is also high enough to be safe from a tsunami (80 feet); (3) This high elevation area, which is owned by the Oregon Department of Transportation (DOT), was known for having poor access with steep and heavily forested slopes; and (4) More than 1,000 people in the South Beach community are at risk to the next major tsunami. The culmination of elevated public concern around seismic hazards, new data depicting tsunami inundation areas, public and political interest, and available financial assistance led to the creation of a project to improve the tsunami evacuation route and to designate and retrofit the high elevation area as an official tsunami assembly area.

> "This great project shows us what can be accomplished when stakeholders come together. Everyone just dug in and got to work on making the South Beach area safer."
>
> – Althea Rizzo, *Tsunami and Earthquake Program Manager*

Project Timeline:

2005
- Hatfield Marine Science Center Begins Practicing Tsunami Evacuation Drills

2011
- Tohoku, Japanese Earthquake and Tsunami
- DOGAMI Finalized Oregon Coast Tsunami Inundation Data

2012
- DOGAMI Works with the City of Newport to Update Tsunami Evacuation Route Maps
- Debris from Japanese Tsunami Washes Ashore
- Hatfield Marine Science Center-led Tsunami Evacuation Drill

2013
- DOGAMI Updates Tsunami Inundation Maps for Newport
- Tsunami Readiness Rally
- Tsunami Interpretive Trail Signs Complete
- Project Phase 1: City Completed a Supplemental Geotechnical Assessment & Benefit-Cost Analysis to Meet FEMA Requirements for Release of HMGP Funds

2014
- HRA Archeological Survey of the Project Area
- Project Phase II: Approval for Project Construction

2015
- *The Really Big One*, by Kathryn Schulz, New Yorker Article Published

2016
- Follow-Up Archaeological Monitoring Report
- Completion of Evacuation Route and Safety Refuge Assembly Area

2017
- Project Closeout

Timeline

In March 2011, Tohoku, Japan experienced a devastating magnitude 9.0 earthquake and a subsequent tsunami. The impacts of these events mobilized Newport public safety officials to ensure their community would be prepared if a similar event struck Oregon. The Oregon Department of Geology and Mineral Industries (DOGAMI) had also finalized data to begin improving tsunami inundation maps (TIMs) for the entire Oregon coast through the National Oceanic and Atmospheric Administration's (NOAA) National Tsunami Hazard Mitigation Program. Final TIMs were published in 2013. DOGAMI began working closely with the City of Newport in 2012 to improve tsunami evacuation maps by identifying assembly areas, ground-truthing recommended routes, and verifying base maps. These updated and improved evacuation and inundation maps confirmed that the proposed tsunami assembly area, Safe Haven Hill, would indeed be a safe assembly area during a tsunami event. The new data, followed by the updated maps, provided further purpose and encouraged momentum to continue with the allocation of city funds for tsunami mitigation efforts.

Other essential partners in the South Beach area that significantly contributed to the project's success were Rogue Brewery, the Oregon Museum of Science and Industry's Camp Gray, NOAA's Pacific Marine Operations Center, and the Oregon Coast Aquarium.

Key Partnerships

Coordinating with partners and community representatives was key to these efforts. One primary partner was Oregon State University's Hatfield Marine Science Center. Hatfield is a critical facility located in the tsunami inundation zone with a historic presence and an engaged community. Hatfield was an essential partner in ongoing tsunami public outreach efforts and has been hosting evacuation drills regularly since 2005. A tsunami evacuation drill in 2012 complemented recent city efforts to pursue FEMA grant funding to enhance an evacuation and assembly area. The 2012 drill also helped foster partnerships that contributed to public and political support, securing success for the future of Safe Haven Hill. The drill included participation from the Newport Police and Fire Department, Lincoln County Emergency Management, local Community Emergency Response Team (CERT) members, the Oregon State Office of Emergency Management, and the Oregon DOT. Public safety officials participated by closing Highway 101 and escorting participants of the tsunami evacuation drill across to the base of the hill. Participants walked to the top of the hill; approximately a 20-minute walk from the Hatfield Marine Science Center. At the time of this drill in 2012, the proposed Safe Haven Hill had limited pedestrian access to the safe elevation, as terrain was steep, rough, and overgrown. With the city facilitating the process, community partners were motivated and engaged throughout the entire project.

"Those of us working in the inundation zone who rely on Safe Haven Hill's accessibility after an earthquake were grateful for the chance to provide input at every stage of the project. The result is increased confidence in our ability as individuals to get ourselves up and out of the danger zone. Knowing that the city cared about our safety and was willing to go the distance on this complex and difficult project inspired us to strengthen and grow a lasting culture of preparedness."

– Maryann Bozza, *Program Manager, Hatfield Marine Science Center*

PHOTO: Disaster cache on the top of Safe Haven Hill. Partners continually monitor and contribute to growing emergency supplies.

Grants Management

In 2012, the city's Community Development Department Director took the lead on leveraging the momentum of post-Tohoku public and political interest in tsunami risk reduction to pursue a project increasing the city's level of tsunami preparedness. Since the city had already identified Safe Haven Hill as a potential evacuation assembly area, and because of feedback from the Hatfield Marine Science Center's evacuation drills, a potential mitigation project to improve the accessibility and public awareness of this evacuation route was put forward. Around this same time, the Oregon State Tsunami and Earthquake Program Manager connected city officials with the State Hazard Mitigation Officer (SHMO) who had available FEMA Hazard Mitigation Assistance funds through the Hazard Mitigation Grant Program (HMGP). The State Earthquake Program Manager served as a matchmaker for the city's project and the available FEMA funding, administered by the State. This success highlights the importance of establishing strong relationships with partners, especially those who can be an advocate for critical projects.

The city Community Development Director and the SHMO worked together throughout 2013, in collaboration with other city, county, private, and public entities, to navigate options for the HMGP grant's required funding match and management needs. In the end, the city provided $221,091 through the South Beach Urban Renewal District and $43,473 from other funds as the local match for $680,478 in HMGP funds. The official purpose given on the HMGP application for this tsunami mitigation project was to "increase life safety and avoid deaths and injuries in future tsunami events by improving access and safety of trails to and on the Safe Haven Hill assembly area."

The city was awarded an HMGP grant with the condition that more information be provided to the SHMO and FEMA about the feasibility of the project, including a benefit-cost analysis and an archeological assessment. To help meet this requirement, the city leveraged an existing neighborhood refinement planning process to develop and seek public input on a low-cost (approximately $2,000) concept plan using the city's Urban Renewal funds. This plan illustrated the site work that would be needed to retrofit Safe Haven Hill so that it could safely support 2,300 people for at least 24 hours. Incorporating this concept plan into the neighborhood refinement planning process allowed this mitigation project to be a part of a larger and ongoing neighborhood refinement planning process. This resulted in the integration of tsunami risk reduction conversations into larger community planning discussions around how and where to invest and develop in the city and neighborhood's future.

Retrofits to Safe Haven Hill included establishing a cleared safe area at the top of the hill for people to assemble, stabilizing and improving trails to the top of the hill from many directions, installing a disaster cache, and installing a retaining wall near the highway to prevent erosion of the hill onto the highway. Participation and input from partners continued throughout the entire design and construction process. The evacuation routes were designed with the entire community and surrounding neighborhoods in mind, ensuring the connection of new trails to the city's existing trail system. Before the Safe Haven Hill retrofits were complete, a tsunami interpretive trail was completed through support from FEMA's National Earthquake Hazards Reduction Program, coordinated by the Oregon State Earthquake Program Coordinator. Educational and evacuation informational signs begin at the Hatfield Marine Science Center and continue along a pedestrian path, past the Rogue Brewery, up to the top of the hill. These signs illustrate the locations of the tsunami inundation zone, information on earthquake and tsunami safety, and an estimated walking time to reach a safe elevation.

Lessons Learned

City, State, and public and private partnerships were strengthened over the course of this mitigation project through continued meetings, discussions, public outreach efforts, and collaborative funding. They continue today to support the maintenance of Safe Haven Hill and the emergency supply cache. As resources become available, partners—including the Oregon Museum of Science and Industry's Camp Gray, Hatfield Marine Science Center, and the city—take turns purchasing supplies for the cache, such as food, water, batteries, solar panels, tents, and supplies for survivors, and building latrines. Ongoing coordination ensures partners know the conditions of the trails and assembly area and can identify needs to ensure the cache will support up to 2,300 people in the event of a tsunami evacuation. Further, both Camp Gray, Hatfield and the south beach community regularly participate in evacuation drills to maintain public awareness of where the evacuation trails are, to provide expectations for the level of effort required to get to safe ground, and to increase the public's comfort in how to proceed after an earthquake. An evacuation drill and review of safety procedures are also now integrated into the onboarding process for new hires at the Hatfield Marine Science Center and for students new to camp at OMSI.

The Safe Haven Hill project not only resulted in a safe assembly area, but also included a comprehensive public outreach strategy and extensive collaboration among partners that has led to the integration of tsunami safety into daily activities.

"Community engagement and collaboration was a key to the success of the Safe Haven Hill tsunami evacuation assembly area retrofit project. Our partners in the area recognized the need and were generous with their time to assist the city, from conceptual design all the way through construction and now maintenance of the emergency supply cache. It was then, and continues to be, truly a team effort!"

– Derrick Tokos, *City of Newport Community Development Director*

PHOTO: Interpretive trail sign at the top of Safe Haven Hill providing tsunami information.

Technical Grant Information

Hazard Mitigation Grant Program, DR-1964, HMGP-1964-5-R Newport Tsunami Safe Haven Hill Retrofit, Hardening and Access Improvements – Phase 1 (Feasibility Study) and Phase II (Construction)

TOTAL COST OF PROJECT:

- $945,042
- $16,000+ overrun because ODOT required a change to the type of retaining wall materials and the height of the wall. The redesign and the material for these changes were costly.

GRANT ORGANIZATION:

- Two Grant Phases – (1) Feasibility Study, (2) Construction. The feasibility study in Phase I was completed to determine the Benefit-Cost Analysis (BCA) of the tsunami hill retrofit. This was a geotechnical evaluation and engineering analysis to determine if the hill retrofit would be both feasible and effective as high ground to protect people from tsunami inundation. In this phase, the project was considered an "outdoor tsunami safe area" similar to a tornado or hurricane safe area and subject to post-closeout operations and maintenance requirements consistent with that eligible project type. The BCA was completed by a contractor using FEMA Version 4.8 Damage-Frequency Assessment BCA software. The only category of benefits counted in the BCA was deaths avoided. The project was found to be very cost-effective. With the conservative, lower-bound type estimates for the number of deaths under the as-is before mitigation condition of Safe Haven Hill, and for the effectiveness of the proposed improvements to facilitate access to the safe area, the results yielded a benefit-cost ratio of 26.40.

  Approval for Phase II was granted after Phase I analysis was completed and clearly demonstrated the cost benefit to FEMA. Phase II included surveying, final engineering and design of the retrofit, Environmental Planning and Historic Preservation (EHP) requirements, construction, post-construction site stabilization, signage/lighting, and construction management costs.

SCOPE OF WORK DETAIL:

- Establish a clear and safe area at the top of Safe Haven Hill.
- Improve existing crude trail on the north side and the existing gravel path on the southwest side of the hill and stabilize these pathways to prevent failure from slumping/sliding during strong earthquake ground shaking preceding tsunami arrival.
- Add a stairway on the south side of the hill to expedite access to the safe area for people approaching the hill from the south.
- Add a sidewalk on the east side of the hill (west edge of Highway 101) to ensure safe access for people coming from the east.
- Improve access, visibility, and awareness of the tsunami safe area with path lighting and signage.
- Install a disaster supply shed in the safe area.
- Install a retaining wall near the highway to prevent erosion of the hill onto the highway.
- **Permits were required by ODOT of the city to construct a necessary retaining wall. The city obtained permits and ODOT participated in a review of the retaining wall engineering and design plans.**

  [Note to highlight, lesson learned: ODOT required a late change to the design of the retaining wall above Highway 101 resulting in a change order with the contractor and engineer to redesign the wall. The result was a significant overrun in the cost of the project that the city absorbed.]

SAFE HAVEN HILL NUMBERS:

- 80 feet above sea level
- Above the FEMA recommended safe elevation for tsunami vertical evacuation as specified in FEMA P-646: Guidelines for Design of Structures for Vertical Evacuation from Tsunamis (Second Edition, 2012).
- 23,000 square feet (about one-half acre)
- Provides safe assembly area for 2,300 people (10 square feet per person)
- Current state – can be accessed easily from all sides of the hill, with a paved path and two other stairways that access the hill. The area is open and lighted, and contains a large storage unit that houses supplies to last 48-72 hours, depending on the number of people that access the hill during a tsunami event.

For more information, contact: Amanda.Siok@fema.dhs.gov

3.3.5.4 Mitigation Success — Student Safety in Seaside, Oregon

Hazard: Tsunami, Earthquake, Landslide
Location: Clatsop County, Oregon

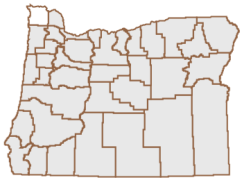
Background:

Seaside School District in coastal Oregon has the highest risk of injuries and fatalities from an expected magnitude 9 Cascadia subduction zone earthquake and accompanying tsunami among Oregon's school districts. Three of the four existing schools—Gearhart Elementary, Broadway Middle, and Seaside High Schools—which serve the communities of Seaside, Gearhart, Cannon Beach and surrounding communities, are located in the tsunami hazard zone and face an extremely high likelihood of destruction in a Cascadia earthquake and tsunami.

Problem:

Despite many years of disaster planning to drop, cover and hold on during earthquake shaking followed by evacuation by foot to high ground to escape a tsunami, students remained inadequately protected. The existing schools were built long before there was an understanding of the hazards posed by the Cascadia subduction zone. Consequently, three were constructed in the tsunami zone and all four with insufficient seismic design provisions. The extensive, hazardous tsunami evacuation routes proved too burdensome. Based on scientific studies and student education, exercises and drills, a high number of casualties would likely occur. New, modern schools would need to be constructed above the tsunami zone to protect students from collapse-prone buildings and powerful tsunami waves.

In November 2013, a $129 million school bond to construct a safe, new school campus in the hills overlooking Seaside was issued. Due to the costs associated with building an elementary, middle and high school, the bond failed with a 39 percent "yes" to 62 percent "no" vote. At that time, it appeared that the current students and upcoming generations of students would remain at high risk.



Quick Facts

Goals:

1 Protect Life
3 Minimize critical infrastructure damage
4 Enhance economic resilience
7 Motivate the "whole community" to build resilience and mitigate
8 Eliminate development where mitigation is impracticable
10 Enhance communication, collaboration, coordination

Mitigation Actions:

94 Create…elevated safe areas above the level of modeled inundation
95 Assist local gov't with tsunami mitigation
…and many others

Lead agencies: Seaside School District; DOGAMI; Oregon Department of Education

Project Type: Tsunami Mitigation
Project Start: 11/07/16
Project End: 03/31/20
Project Cost: $100 Million
Funded by: Seaside School District; Oregon Department of Education; Oregon Business: Seismic Rehabilitation Grant Program

Solution:

Figure 1. Seaside High School students rallying for support for the 2016 school bond.

In 2016, Dr. Doug Dougherty, Seaside School District Superintendent, made an important personal decision that would change the course for the residents of the greater Seaside area. Dr. Dougherty opted to retire so that he could focus on his vision to create a new school campus where students would be safe and able to learn in modern facilities. He also wanted to offer a gathering space for community activities as well as an area that, after a Cascadia disaster, could provide a safe haven for the region. He banded with students, community leaders and residents to find a solution.

As a result of Dr. Dougherty's leadership as Superintendent Emeritus, the Weyerhaeuser Company donated 80 acres of land for the new school campus in June 2016. With the support of this new public-private partnership, in November 2016 a similar but significantly trimmed school bond for $100 million was proposed. With Dr. Dougherty as the champion, new partnership and student supporters in place, the bond passed (Figure 1).

As a result of the bond passage, the Oregon Department of Education provided $4 million of additional matching funds from state bond funds. Oregon Business provided a $2.5 million grant to perform seismic rehabilitation of Seaside Heights Elementary School, which is co-located with the new school campus in the hills. A new safe and modern school campus is under construction and scheduled to open in fall 2020 (Figure 2).


Figure 2. Photograph of the new Seaside School District campus during construction in January 2020. The view is from the hills looking southwest towards the community of Seaside and the Pacific Ocean. (Source: http://www.seaside.k12.or.us; credit Seth Morrisey of Kelis Social Media; downloaded 2/12/20)

Benefits:

The most significant benefit is that the lives of over 1600 students are protected from earthquake and tsunami hazards. Faculty, staff, volunteers and visitors will also be out of harm's way. In addition to protecting lives, the existing school buildings in the tsunami zone will be closed when the new campus opens.

The new campus will offer new modern educational facilities and opportunities. The campus design embraces sustainable and disaster resilient elements, such as being served by a new seismically robust city water reservoir and having solar-ready facilities for a future solar-plus-battery microgrid. The campus will serve as a community gathering location during normal and post-disaster times. This includes Seaside Heights Elementary School, which is co-located with the new campus, and is undergoing seismic rehabilitation.

The development of the new school campus also encourages future development opportunities above the tsunami hazard zone in the City of Seaside. The likelihood of post-disaster recovery for the entire city is now apparent. This Seaside experience serves as a role model for other coastal communities.

3.3.5.5 Mitigation Success — Disaster Planning in the Portland Metropolitan Region

Hazard: Earthquake, Landslide
Location: Clackamas, Columbia, Multnomah, Washington Counties, Oregon

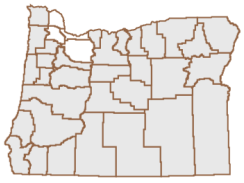
Problem:

The Portland metropolitan area faces significant earthquake hazards from a Cascadia earthquake and Portland Hills fault earthquake. However, the impacts of earthquakes in the greater Portland Oregon area were not well quantified, which prevented the development of science-based disaster planning. Earthquake impact analyses using updated data, current subduction zone science and the latest mapping and modelling techniques were needed.

Solution:

Leaders from the Regional Disaster Preparedness Organization (RDPO) worked with the Oregon Department of Geology and Mineral Industries (DOGAMI) and the Oregon Office of Emergency Management (OEM) to perform earthquake impact studies for the Portland Oregon metropolitan area, including Clackamas, Columbia, Multnomah and Washington counties in Oregon and Clark County in Washington. In February 2018, an initial study (https://www.oregongeology.org/pubs/ofr/p-O-18-02.htm) was released and results were integrated into planning activities. By March 2020, DOGAMI issued a second report (https://www.oregongeology.org/pubs/ofr/p-O-20-01.htm) that covered the remainder of the two part study area. The results include building and infrastructure damage, casualty and debris estimates for a magnitude 9 Cascadia earthquake (Figures 1 and 2) and magnitude 6.8 earthquake on the Portland Hills Fault.

The DOGAMI earthquake impact analyses address a major need for consistent, updated earthquake damage estimates in the Portland metropolitan region and enhance the understanding of potential impacts for the region. This allows for improved planning by communities, the region, and the state to prepare for, respond to, and recover from major earthquakes.



Quick Facts

Goals:
1 Protect Life
2 Minimize property damage
3 Minimize critical infrastructure damage
4 Enhance economic resilience
7 Motivate the "whole community" to build resilience and mitigate
10 Enhance communication, collaboration, coordination
11 Mitigate the inequitable impacts of natural hazards

Mitigation Actions:
108 Refine hazard characterization
109 Refine risk assessment methods
110 Identify greatest risks
133 Assist local NHMP plans
134 Assist with post-disaster inspection planning

Lead agencies: Regional Disaster Preparedness Organization (RDPO)
Project Type: Earthquake Risk Assessment and Hazard Mapping
Project Start: 10/01/15
Project End: 03/31/20
Project Cost: $462,698.00
Funded by: FEMA UASI

Damage and casualty estimates are tabulated at county, jurisdiction, and neighborhood levels, providing actionable information for further use in emergency planning, earthquake mitigation, public awareness, and post-earthquake response and recovery.

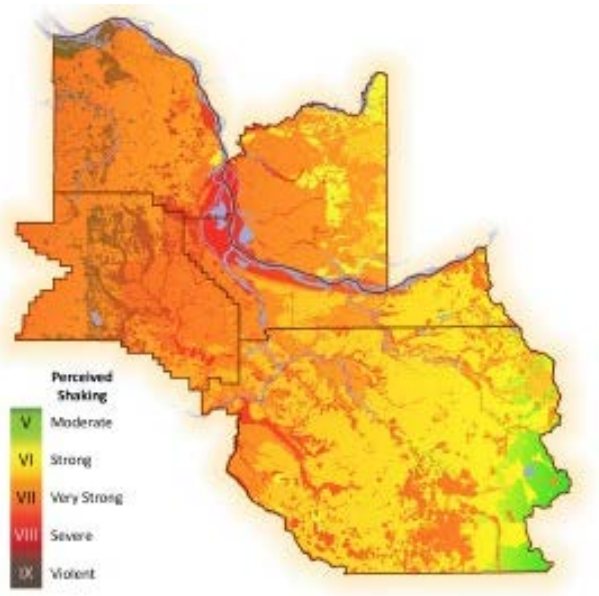


Figure 1. An earthquake intensity map for the Portland Oregon metropolitan region showing areas with expected moderate to violent shaking from a Magnitude 9 Cascadia earthquake (Bauer and others, 2020)

Benefits:

According to Laura Hanson, RDPO Senior Regional Planning Coordinator, since DOGAMI's publication of the first phase of the RDPO enhanced earthquake impact study for Clackamas, Multnomah and Washington Counties, the data has been put to use in a variety of other regional and local projects.

Hanson states, "First, the RDPO commissioned an economic impact study with ECONorthwest (ECONW) that is building directly on the DOGAMI dataset to construct an economic impact model and test various policies that could improve economic resilience to a catastrophic earthquake in the region.

Second, the RDPO and Metro are partnering on an update to the region's Emergency Transportation Routes to apply a seismic lens, using the earthquake damage and earthquake induced landslide estimates produced by DOGAMI. The seismic updates from DOGAMI also informed seismic route resilience work with the Oregon Department of Transportation (ODOT); counties in the region are working with ODOT to conduct a cost benefit analysis of needed upgrades to make the state lifeline routes more seismically resilient, including investigations into adjacent county level routes that could serve as more cost-effective seismically hardened detours for the state lifelines.

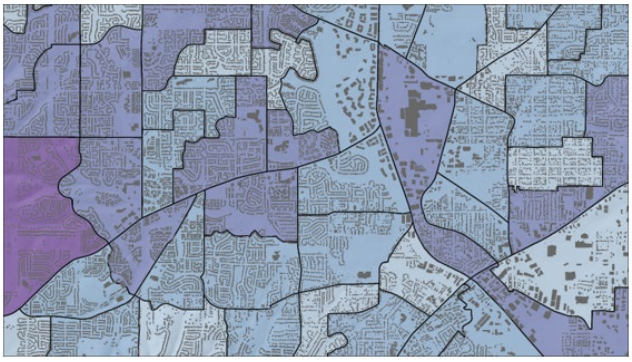


Figure 2. An example of damage results on a neighborhood level where areas darker colors indicate higher damage and lighter colors indicate lower damage (Source: DOGAMI, unpublished).

The DOGAMI earthquake impact studies will inform each local county's Mitigation Plan Update in the next five-year plan update cycle; and is likely to be referenced in an upcoming October 2020 regional mitigation plan analysis workshop with the EPA and FEMA.

The DOGAMI and ECONW earthquake impact studies also led to an RDPO project to develop more robust mapping of social vulnerabilities in the region. This was done so planners and policy makers in the region can better understand how the damage to infrastructure will impact the most vulnerable

populations, and how economic policies can influence the resilience and recovery of those populations as well.

Finally, the DOGAMI studies inform the annual Threat and Hazard Identification and Risk Assessment (THIRA) submitted to FEMA on behalf of the Urban Area Security Initiative (UASI) grant program; the enhanced earthquake estimates are of great value for that annual assessment process" (Written personal communication, March 4, 2019).

The study results and accompanying data are intended not as an end in themselves, but as a platform for counties, jurisdictions, and communities to better understand their needs to prepare for, respond to, and recover from a major earthquake. The publicly available information from the DOGAMI studies are being used to reduce the region's vulnerability, shorten recovery time, and improve emergency operations in a variety of ways, as described (above).

Publicly available information that are being used for planning purposes include:

- **Building and infrastructure databases:** a region-wide building footprint database, a building database containing detailed descriptions of each building, and an electric power transmission structure database
- **Geotechnical mapping updates:** earthquake-induced landslide susceptibility, liquefaction susceptibility, and soil classification, using recently published high-resolution geologic mapping
- **Ground motion and ground deformation updates:** local ground motion and ground failure data for two earthquake scenarios using the geotechnical mapping updates
- **Earthquake damage estimates:** estimated impacts to buildings and the people that occupy them, to the region's designated emergency transportation routes, and to the electrical grid

3.3.5.6 Mitigation Success — Coastal Hospital Resilience Project

Hazard: Earthquake, Tsunami
Location: Clatsop, Tillamook, Lincoln, Lane, Douglas, Coos, and Curry Counties, Oregon

Background:

A magnitude 9 Cascadia earthquake is expected to produce destructive ground shaking and a tsunami that could arrive at the coast in 10 minutes. Due to expected highway damage, coastal communities will be geographically isolated and experience long-term disruptions with emergency fuel and water supplies (Wang, 2017). Hospitals are expected to be severely impacted, which will limit their ability to provide healthcare services in the communities at a time when there will be a high demand for services (OSSPAC Oregon Resilience Plan, 2013; Wang, 2018). Hospitals serve as community safety nets. Even during extreme events, they need to be resilient—they should incur only minimal losses and recover quickly to provide healthcare services.

Problem:

All eleven of the coastal hospitals are prepared to provide services after major storms, where lifeline service downtimes can last for several hours to several days. However, hospital personnel who work in emergency management determined that they need to make more preparations in order to be prepared for future Cascadia disasters. They require more information, collaboration, and support, including increased support from their top leaders as well as technical support.

Solution:

The Oregon Health Authority (OHA) Public Health Division, Health Security Preparedness and Response (HSPR) program worked with DOGAMI on the Coastal Hospitals Resilience Project to provide subject matter expertise on earthquake and tsunami hazards, risk and building resilience. The main purpose of this project was to:

1. Assess the level of disaster preparedness of all eleven hospitals located along Oregon's coast;

Quick Facts

Goals:
1 Protect Life
3 Minimize critical infrastructure damage
4 Enhance economic resilience
6 Enhance the state's natural hazards mitigation capability
7 Motivate the "whole community" to build resilience and mitigate
10 Enhance communication, collaboration, and coordination

Mitigation Actions:
49 Implement the actions in the February 2013 Oregon Resilience Plan
110 Continue to refine statewide identification and prioritization of the greatest risks from and communities most vulnerable to Oregon's natural hazards
111 Continue to develop and implement resilience initiatives
…and many others

Lead agencies: Oregon Department of Geology and Mineral Industries, Oregon Health Authority, Health Security Preparedness and Response
Project Type: Coastal Hospitals Technical Assistance
Project Start: 01/2017
Project End: 06/30/2020
Project Cost: Approximately $280,000
Funded by: OHA HSPR funds from a Center for Disease Control and

2. Elevate the awareness of the importance to prepare for a magnitude 9 Cascadia earthquake and accompanying tsunami to coastal hospital leadership; and
3. Provide technical assistance to coastal hospitals on resilience planning so hospitals will be able to be locally self-sufficient for 3 weeks to provide post-disaster medical services. OHA HSPR information can be found at https:\www.oregon.gov\OHA\PH\PREPAREDNESS\Pages\Program-Information.aspx

This project addressed the problem that hospitals would be too overwhelmed to provide adequate medical services after a major Cascadia earthquake and accompanying tsunami. Hospitals provide critical services in their communities every day and are especially needed to provide medical services after major disasters. Project activities listed below have been highly effective in reducing earthquake risk on a local, regional, and state level.

1. At the start of the Coastal Hospital Resilience Project, OHA and DOGAMI assessed the preparedness levels of 11 coastal hospitals and determined that they are prepared for typical winter storms but not prepared for a Cascadia earthquake and tsunami. This publication summarizes the assessment findings: Oregon Coastal Hospitals Preparing for Cascadia, DOGAMI report O-18-03 (http://www.oregongeology.org/pubs/ofr/O-18-03_report.pdf).
2. OHA and DOGAMI convened a meeting of leaders from all eleven of the coastal hospitals to discuss the need for all hospital to be ready for Cascadia earthquakes and to develop resilience action plans. Activities of the meeting helped to elevate to hospital leadership the importance of preparing for Cascadia earthquakes and tsunamis. As a result of the meeting, hospital leaders committed to preparing themselves to be able to provide healthcare services immediately after a Cascadia earthquake and tsunami. Hospital personnel gained a stronger appreciation of the need to not only strengthen their own hospital but to also work with community partners including water districts, electricity providers, fuel suppliers, county emergency managers and many others.

   Dr. Lesley Ogden, CEO of two coastal hospitals, said, "I had always thought that, in the event of a natural disaster, we could rely on our other hospitals throughout the system to send help our way, but I now understand that they will have their own challenges and we will be cut off from each other. We need to factor that into our planning. We've got a good start with new and safer facilities, but there is more we need to do to be a resource to our communities in the event of disaster." Dr. Ogden has built a new resilient hospital (Figure 1) and said that planning is now ramping up for both her hospitals to create hospital resilience action plans.

   This publication summarizes the first event that gathered leadership from the 11 coastal hospitals: Summary report on the Oregon Coastal Hospital Special Leadership Event, DOGAMI Report O-19-01 (https://www.oregongeology.org/pubs/ofr/p-O-19-01.htm).

Figure 1. Dr. Lesley Ogden, hospital CEO standing next to robust steel members for the new resilient coastal hospital that opened in February 2020.

3. OHA and DOGAMI provided technical assistance, including at regional group meetings as well as individualized on-site support to each of the eleven hospitals. Guidance was developed and provided on reducing hospital building (structural and nonstructural) vulnerabilities, and on developing reliable water and power services. These guidelines refer to best practices, standards, building codes and seismically certified equipment (Figure 2). DOGAMI Report O-19-02 (http://www.oregongeology.org/pubs/ofr/p-O-19-02.htm.) was developed with the support from the Cascadia Region Earthquake Workgroup (CREW) and includes guidance specifically developed for the coastal hospitals: Resilience Guidance for Oregon Hospitals (https://www.oregongeology.org/pubs/ofr/p-O-19-02.htm). In addition, hospital resilience planning maps have been developed for each hospital to assist hospitals to prepare for Cascadia earthquakes and to encourage community activism to seismically improve water and power systems for the hospitals among other activities (Figure 3). Continued engagement is needed to help hospitals with their journey of building disaster resilience.

Figure 2. This hospital chiller equipment has been tested to perform well after earthquake shaking and has a "seismically certified" label.

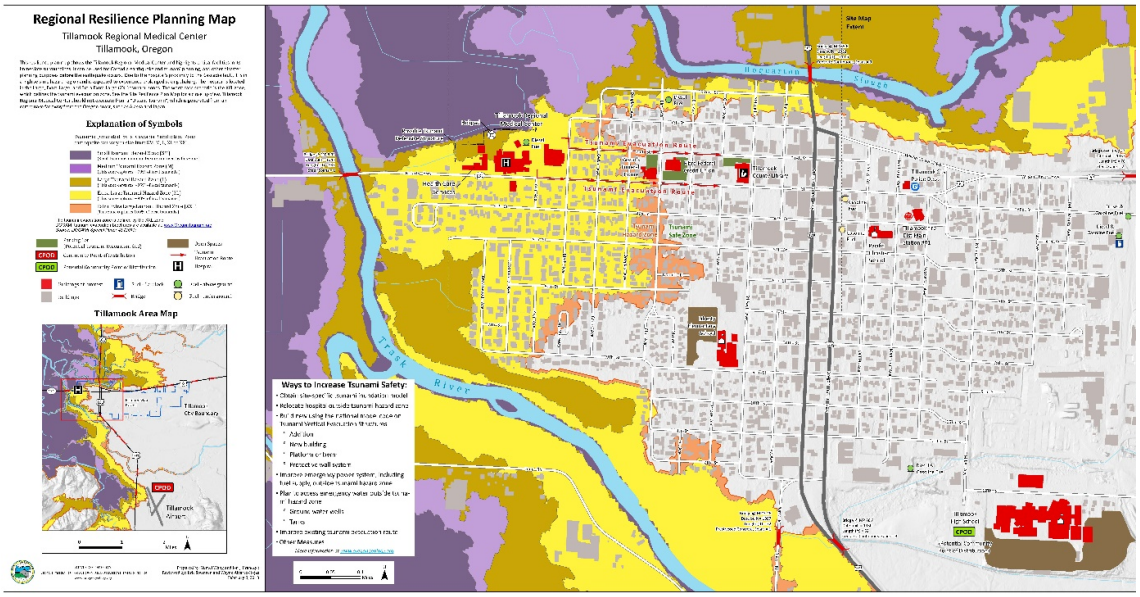


Figure 3. Example of a Regional Resilience Planning Map showing the hospital with tsunami hazards as well as other community facilities, such as the nearby school outside of the tsunami hazard zone.

4. Seven key messages were repeatedly discussed as a means to improving coastal hospital resilience:
    - Identify alternate care sites
    - Plan to be locally self-sufficient for three weeks
    - Evaluate seismic vulnerabilities for hospital buildings, emergency power and emergency water
    - Develop a hospital resilience action plan to address identified vulnerabilities
    - Engage in the Oregon Coastal Hospital Resilience Network
    - Partner with community members
    - Lead as a community resilience champion

Benefits:

As part of this project, we have established strong public-private partnerships (P3) as a foundation to enable continued strides in strengthening disaster resilience.

OHA HSPR has received overwhelming enthusiasm, engagement and support from coastal hospital staff and their partners about the effectiveness and importance of the Coastal Hospital Resilience Project. Many talks, conference sessions, news articles, papers and other educational and outreach activities have taken place. OHA received the 2019 recognition mitigation award (https://www.wsspc.org/wp-content/uploads/2020/02/February-2020-Bulletin-1.pdf) on earthquake mitigation from the Western States Seismic Policy Council at the 2020 National Earthquake Conference.

Widespread actions have recently been taken and more is continually underway. Coastal hospital executives from two hospitals created new full-time Hospital Emergency Preparedness Manager positions, based upon their realization of the need in relation to Cascadia earthquake and tsunami impacts as indicated on DOGAMI tsunami inundation zone maps and information shared at the Coastal Hospitals Special Leadership Event. Example of resilience actions include: seismically upgrading hospital buildings and equipment; improving business continuity plans; signing memoranda of understanding their suppliers; adopting the Oregon Crisis Care Management Guidelines; partnering with water and electricity service providers; and more.

Hospital personnel feedback on project activities has been positive—comments include, “it was tremendously helpful for us;“ “We have gained further insight into our water and power needs;” “I gained knowledge that I have been able to share with the community multiple times;” and “It has brought our community partners closer to us.”

Project studies have helped to support the replacement of a highly vulnerable hospital to the building of a new resilient hospital (https://www.samhealth.org/find-a-location/s/samaritan-north-lincoln-hospital/new-hospital-project-lincoln-city). The new hospital, opened in February 2020, includes numerous features that will help the community in a post- Cascadia earthquake situation.

Two hospitals have received State of Oregon funds to conduct seismic mitigation. In 2019, one coastal hospital (https://www.oregon4biz.com/About-Us/Investments-Report/FY2018.php;%20https:/djcoregon.com/news/2018/02/15/samaritan-pacific-communities-hospital-in-the-rise-in-newport/) received $1.5 million from Oregon Business’s Seismic Rehabilitation Grant Program (SRGP; see listing near bottom of list. In 2019, another coastal hospital (https://www.peacehealth.org/florence-peace-harbor-seismic-grant) received $2.5 million SRGP funds.

Project activities have also involved lifeline infrastructure owners that provide hospitals with power and water. Innovative ways to address prolonged electrical outages with solar plus battery microgrids are being explored (https://www.opb.org/news/article/hospitals-oregon-coast-earthquake-preparedness), along with ways to address financial needs.

Many new and creative approaches taken for this project were particularly effective, which included:

- Hosting a Coastal Hospitals Special Leadership Event focused on engaging executive leadership from all coastal hospitals for the purpose of:
  - Elevating understanding of the impact of a Cascadia Subduction Zone earthquake and tsunami
  - Encouraging progressive ways to prepare to be able to serve coastal communities post-disaster
  - Exploring launching a coastal hospital-driven collaborative network
- Having the State Resilience Officer from the Governor's Office speak out on the importance of hospital leadership engagement on disaster resilience
- Describing the need to prepare to be self-sufficient for three weeks for a Cascadia earthquake, and that the 96 hours required by hospital regulators is insufficient
- Partnering with the Oregon Association of Hospitals and Healthcare Systems to support a new Coastal Hospital Resilience Network to facilitate resilience planning at coastal hospitals
- Encouraging a hospital-led community approach to improving resilience, including water and electricity service providers as well as ShakeAlert
- Conducting feasibility analyses of installing a solar plus battery storage microgrid for resilient local power to hospitals

3.4 Capability Assessment

Requirement 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:

(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

3.4.1 State Capability Assessment

3.4.1.1 State Capability Changes Since Approval of the 2015 Oregon NHMP

One of the most visible and important changes in state capability since 2014 is the establishment of the Governor's Resilience Policy Office and hiring of a State Resilience Officer in 2016. These actions directly implement a mitigation action in the 2015 Oregon NHMP and recommendations in the 2013 Oregon Resilience Plan (ORP). Following publication of the ORP, the Oregon legislature appointed a Resilience Task Force to suggest which of the ORP's mitigation actions should be undertaken first. The Task Force reported to the legislature on October 1, 2014 that establishment of long-term, statewide oversight was essential for resilience, and aresilience policy advisor appointed by and reporting directly to the Governor was the top priority.

Another very visible and important effort championed by Governor Brown was the establishment of the Governor's Council on Wildfire Response in January 2019. The Council was "tasked with reviewing Oregon's current model for wildfire prevention, preparedness and response, and analyzing the sustainability of the current model to provide recommendations to strengthen, improve, or replace existing systems." The Council undertook a very intense, multi-faceted process and issued its final report and recommendations in November 2019 (https://www.oregon.gov/gov/policy/Documents/FullWFCReport_2019.pdf). A bill to fund some of the recommended foundational work was supported but left unfunded with the early end of the 2019 legislative session. Efforts to fund that work are continuing.

In May 2012, the Oregon Department of Transportation completed the Oregon Seismic Lifeline Routes (OSLR) Identification project. The OSLR project study recommends a specific list of highways and bridges that comprise the seismic lifeline network; and establishes a three-tiered system of seismic lifelines to help prioritize investment in seismic retrofits on state-owned highways and bridges. In May 2013 ODOT released the Oregon Seismic Options Report that presents options for mitilgation against damage to roadways and bridges that may be caused by seismic events. In September 2014, the Resilience Task Force recommended that additional revenue be identified to complete the most critical backbone routes identified in ODOT's Seismic Options Report within a decade, and the complete program by 2060. In October 2014, ODOT completed a prioritization of these options in the Oregon Highways Seismic Plus Report. Phase I of the Oregon Highways Seismic Plus Report received funding in 2017 that has allowed

scoping for seismic work on I-5 near Eugene for the 2021-2024 State Transportation Improvement Program (STIP). Phase I also includes portions of I-84 that are planned for to be retrofitted moving from east to west. The 2021-2024 STIP funding includes $31M to address ODOT bridge seismic needs.

After taking on lead responsibility for coordinating update and maintainance of the Oregon NHMP in 2012, DLCD stepped up to fill a need for directly assisting local governments with NHMP updates. That effort started with the Pre-Disaster Mitigation grant cycle for federal fiscal year 2014 (PDM 14). At that time, FEMA notified OEM and DLCD that special districts also need NHMPs to establish funding eligibility. DLCD began reaching out to special districts and inviting them to participate in multi-jurisdictional NHMP updates, develop or update stand-alone NHMPs. In February 2018, OEM and DLCD delivered a presentation on mitigation planning to the Special Districts Association of Oregon. It generated a lot of interest and was well-attended.

The work on PDM 14 was delayed for administrative reasons and began in earnest in 2016. Since then, DLCD hired one additional natural hazards planner in 2016 and two in 2018. DLCD has worked with 13 counties on multi-jurisdictional plan updates covering about 36 cities, some for the first time, and a similarly large number of special districts; one stand-alone city plan update; and one tribal plan update. This is the first time tribe in Oregon has worked with the state rather than directly with FEMA. DLCD has applied for PDM 18 and 19 funds to assist with five multi-jurisdictional plan updates and three stand-alone city plan updates, and intends to continue to assist local governments in this way with the transition to FEMA's new program, Building Resilient Infrastructure and Communities (BRIC).

In addition, DLCD's Ocean and Coastal Management Division devotes significant resources to natural hazards mitigation in coastal communities through the work of its Coastal Specialist. In particular during this period, efforts have focused on assisting local goverments with planning for tsunami mitigation including adoption of tsunami overlay zones and development of vertical evacuation structures using its 2014 publication Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities. The Coastal Specialist has also assisted coastal communities with adopting or updating other natural hazard mitigation-related codes.

In 2012 and 2013 respectively, DOGAMI developed a lidar-based method for mapping shallow and deep landslide susceptibility. Building on that work, in 2016 DOGAMI published a statewide landslide susceptibility map. It is contains generalized, regional-scale information that provides a broad understanding of relative risk and highlights areas where more detailed mapping is needed. Following this, DOGAMI and DLCD partnered to produce Preparing for Landslide Hazards: A Land Use Guide for Oregon Communities, published in October, 2019. The effort was funded by a FEMA CTP grant.

DOGAMI and DLCD have continued to partner on coordinating multi-hazard risk assessments with local NHMP updates. These assessments are a product of work along the Risk MAP multi-hazard track "decoupled" from the flood mapping track. DLCD suggested this pathway and FEMA agreed several years ago. These assessments are invaluable to the NHMP updates and we have made a lot of progress in coordinating their schedules. Because lidar needs to be collected and geologic mapping completed before the risk assessment work can begin, and because the two efforts are generally funded through two different grants on two different schedules, we need to look years ahead to ensure that the risk assessement schedule lines up with the NHMP update schedule. Grant funding priorities are not always aligned with the timing of needed NHMP updates so the reality is that there will always be some efforts that won't sychronize. Nevertheless, we are coordinating and collaborating well for the benefit of the Oregon's local governments and residents.

DLCD continues to encourage local governments to integrate NHMPs with comprehensive plans. Following approval of its NHMP (with which DLCD directly assisted) in 2017, the City of Medford fully integrated the NHMP into its comprehensive plan. Between 2016 and 2019, the following coastal jurisdictions adopted Tsunami Hazard Overlay Zones into their comprehensive plans: Coos County, Douglas County, Reedsport, Florence, North Bend, Rockaway Beach, Gearhart, Port Orford, and Tillamook County. Most of those jurisdictions have also completed Tsunami Evacuation Facilities Improvement Plans to identify evacuation routes and improvement projects. Coos County also adopted new and updated provisions to their Natural Hazard Overlay Zone, which addressed mitigation actions identified in their NHMP. DLCD and ODF continue to encourage local governments to update Community Wildfire Protection Plans and integrate them with local NHMPs and comprehensive plans.

ODF has also developed and rolled out an online interactive web application called the Oregon Wildfire Risk Explorer, an integral part of the Oregon Explorer, maintained under contract with OSU's Institute for Natural Resources. It employs a new wildfire risk assessment model, the Quantitative Wildfire Risk Assessment prepared by Pyrologix for the US Forest Service in 2018.

Since working with the Oregon Climate Change Research Institute (OCCRI) to introduce climate change into the 2015 Oregon NHMP, DLCD has engaged OCCRI to develop downscaled, county-level future projection reports for the local NHMP updates with which it is assisting directly. The reports provide information on how climate change is likely to influence hazards a county faces. They have been very well received and very helpful in assessing risk. DLCD and OCCRI plan to continue this work as funding is available with the goal of eventually producing a report for every county.

OCCRI also played a very important role in this 2020 Oregon NHMP update by reviewing and revising the Introduction to Climate Change section; addressing the ways in which climate change can be expected to influence hazards at the state level and updating the climate-related sections in the regional risk assessments; taking the lead in developing the new Extreme Heat chapter as well as assisting in updating other climate-related hazard chapters.

Further, OCCRI and DLCD have reprised their partnership on the 2010 Climate Change Adaptation Framework (CCAF) to produce an update. DLCD is the lead with OCCRI playing an essential supporting role. In August 2019, OCCRI hosted an event entitled Oregon Climate Change Effects, Likelihood, and Consequences Workshop during which subject matter experts convened and discussed these topics relative to both the CCAF and Oregon NHMP updates. The outcomes of this workshop were captured in a report of the same title and used for both efforts (http://www.occri.net/media/1115/oregonclimatechangeworkshopsummaryreport_fall2019.pdf). Acknowledging the interrelationship between climate change adaptation and natural hazards mitigation, and because the two efforts were on similar schedules, the intent was to integrate the two updated documents. However, the CCAF document and project scope have evolved significantly over this period and the timeline has evolved as well. Therefore, the two documents could not be fully integrated. A climate change goal and mitigation/adaptation actions have been incorporated into the 2020 Oregon NHMP. NHMP maintenance will provide opportunities for further integration. This deepening relationship with OCCRI is a very important and exciting enhancement of the State's natural hazard mitigation capability.

DAS's Chief Financial Office with DOGAMI's assistance in 2015 issued DAS CFO Facility Planning Guidelines for Development with Natural Hazards. DAS-CFO and DOGAMI also partnered to address seismic issues with state builidngs and developed a plan (currently on hold) to build two new buildings

that would house state government core functions and continue to be operational during and after a Cascadia subduction zone event.

DLCD's initiative to establish and support two Community Rating System Users Groups (northern and southern Oregon) to encourage current participants to maintain their participation and increase their ratings, and to encourage non-participating communities to join the CRS Program had to be tabled due to turnover, capacity, and NFIP funding priorities. It has since been supported primarily by FEMA's insurance specialist with DLCD providing advocacy and encouragement to local governments to join the program during every CAV and CAC.

The Office of Emergency Management is the proud recipient of an ESRI 2020 Special Achievment in GIS award for its GIS system (https://oregon-oem-geo.hub.arcgis.com/) that provides data and information to emergency managers and decision makers about current and anticipated hazard events.

While the state has made great progress and improved capability in a number of ways during the life of the 2015 Oregon NHMP, a few events have hampered advancement of several hazard mitigation-related initiatives of late. There has been a lot of turnover in state agencies involved in hazard mitigation. In some cases positions have remained vacant and in others there has been a lag in filling them. Both cases have meant a decrease in capacity that has affected the 2020 update. By agreement with FEMA, Oregon no longer has a Risk MAP Coordinator, and FEMA Region X staff is filling that role. The unexpected early termination of the 2019 and 2020 legislative sessions resulted in a number of hazard mitigation and resilience-related bills not having been acted upon and therefore remaining unfunded. In between the two sessions, the novel coronavirus pandemic took hold, and in March 2020 schools, businesses, and state offices closed and state employees began working virtually. This has required major adjustments in how business is conducted which in many ways has slowed progress. The shutdown has also caused a sharp decline in state revenues with deepening shortfalls expected over the next several years. Lawmakers are in the process of cutting agency budgets, including personnel and services, statewide. We have yet to learn what this will mean specifically for hazard mitigation programs and activities in the State of Oregon.

3.4.1.2 Policies, Programs, and Capabilities

Pre-Disaster Hazard Mitigation Policy Framework

Oregon maintains a robust pre-disaster natural hazard mitigation policy framework. The foundation of this framework is rooted in the Oregon statewide land use planning requirements passed in 1973. Goal 7, the natural hazard planning component of a community's comprehensive land use plan, provided an incentive for all of Oregon's flood-prone communities to participate in the National Flood Insurance Program. A number of Oregon communities have chosen to participate in the Community Rating System Program as well. Oregon updated Goal 7 in 2002, largely driven by the flooding and landslides of the February 1996 major disaster declaration (DR-1099). In its current form, Goal 7 directs communities to regulate development in hazard-prone areas through local comprehensive plans and implementing ordinances. At minimum, local comprehensive plans in Oregon must address floods (coastal and riverine), landslides, earthquakes and related hazards, tsunamis, coastal erosion, and wildfires where applicable. Accordingly, all of Oregon's cities and counties are required to plan for Oregon's major natural hazard events and to mitigate impacts through regulatory controls.

Table 3-6 provides an overview of the various policies and federal programs related to specific natural hazards in Oregon.

Table 3-6. Policies and Federal Programs Related to Specific Natural Hazards in Oregon

Hazard	Oregon Statewide Planning Goals & Policies	Federal Programs & National Resources
Multi-Hazard	Local Comprehensive Plans	Pre-disaster mitigation planning grants (FEMA)
	Goal 2: Land Use Planning	
	Goal 7 Natural Hazards	American Planning Association (Resources on landslides, flooding, and post-disaster recovery)
	Oregon Building Codes	
Coastal Hazards	Goal 17: Coastal Shorelands	National Flood Insurance Program (NFIP)
	Goal 18: Beaches and Dunes	NFIP V-Zone Construction
	Ocean Shore Regulation	Army Corps of Engineers Permit Program
	Tsunamis — ORS 336.071, ORS 455.446, and ORS 455.448	
Flood	Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces	National Flood Insurance Program (NFIP)
	Division of State Lands (DSL) Fill and Removal Permit Program	NFIP Community Rating System Flood Mitigation Assistance Programs (includes Severe Repetitive Loss and Repetitive Flood Claims Programs as of 2013)
	The Oregon Plan for Salmon and Watersheds	FEMA Region X's Policy on Fish Enhancement Structures in the Floodway
	Oregon's Wetlands Protection Program	Army Corps of Engineers Permit Program
Landslide	Goal 17: Coastal Shorelands	American Planning Association: Landslide Hazards and Planning
	The Oregon Plan for Salmon and Watersheds	
	1997 Senate Bill 12: Rapidly Moving Landslides	
Seismic	2005 Senate Bill 2: Statewide seismic needs assessment for schools and emergency facilities	USGS Earthquake Hazards Program
	2005 Senate Bill 3: Seismic earthquake rehabilitation grant program	
	2005 Senate Bill 4 and 5: State bond authorization	
	2001 Senate Bill 13: Seismic Event Preparation	
	2001 Senate Bill 14: Seismic Surveys for School Buildings	
	2001 Senate Bill 15: Seismic Surveys for Hospital Buildings	
	1991 Senate Bill 96: Seismic Hazard Investigation	
	Tsunamis — ORS 336.071, ORS 455.446, and ORS 455.448	
Fire–WUI	1997 Senate Bill 360: Wildland-Urban Interface	National Fire Protection Agency Firewise Program
	Additional Criteria for Forestland Dwellings — ORS 215.730	
	Urban Interface Fire Protection — ORS 477.015-061	

Source: OPDR

State Pre-Disaster Hazard Management Policies

Multi-Hazards

Statewide Land Use Planning Goals Related to Natural Hazards

In Oregon, every city and county has a comprehensive plan that includes inventories, policies, and implementation measures (e.g., laws and ordinances) to guide community land use decisions. Comprehensive plans are required to address local concerns and issues raised by each of the state's 19 land use planning goals. While all of the goals have some connection to natural hazards mitigation, a few are highlighted here.

GOAL 2: LAND USE PLANNING

Statewide Land Use Planning Goal 2 establishes a planning process and policy framework as a basis for decisions and actions related to use of land. It also assures that an adequate factual base exists for such decisions and actions.

GOAL 5: NATURAL RESOURCES, SCENIC AND HISTORIC AREAS, AND OPEN SPACES

Statewide Land Use Planning Goal 5 requires local governments to adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. Conservation of resources promotes a healthy environment and natural landscape that contributes to Oregon's livability.

GOAL 7: AREAS SUBJECT TO NATURAL HAZARDS

Statewide Land Use Planning Goal 7 aims to protect people and property from natural hazards. Local governments are required to adopt comprehensive plans (inventories, policies and implementing measures) to reduce risk to people and property from natural hazards. Natural hazards for the purpose of this goal are: floods (coastal and riverine), landslides (including "rapidly moving landslides" regulated by ORS 195.250-275, 1999 edition), earthquakes and related hazards, tsunamis, coastal erosion, and wildfires. Local governments may also identify and plan for other natural hazards.

GOAL 15: WILLAMETTE RIVER GREENWAY

The purpose of Goal 15 is to protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Oregon Building Codes

With the adoption of the 2019 Oregon Structural Specialty Code (OSSC) on October 1, 2019, building designs in Oregon must now comply with latest building and construction science available. This includes lateral force resisting elements to address; wind, earthquake, flood and where adopted locally, tsunami. It also captures the best science available for establishing ground snow loads.

While HB 3309, 2019 session removed the prohibition of constructing essential facilities and other defined structures in the tsunami inundation zone, the state adopted an Appendix O in the 2019 Oregon Structural Specialty Code addressing tsunami loading which is available for local adoption.

In addition, a new section, R327 Wildfire Hazard Mitigation was adopted as part of the Oregon Residential Specialty Code effective January 24, 2019. These amendments provide additional wildfire hazard mitigation provisions that are available for local adoption.

Oregon's Wetlands Protection Program

Oregon's Wetlands Program was created in 1989 to integrate federal and state rules concerning wetlands protection with the Oregon Land Use Planning Program. The Wetlands Program has a mandate to work closely with local governments and the Division of State Lands (DSL) to improve land use planning approaches to wetlands conservation. A Local Wetlands Inventory (LWI) is one component of that program. DSL also develops technical manuals, conducts wetlands workshops for planners, provides grant funds for wetlands planning, and works directly with local governments on wetlands planning tasks.

The Oregon Plan for Salmon and Watersheds

"The Oregon Plan" is the state's program to restore native salmon and trout populations and to improve water quality. The overall goal of the Oregon Plan is to restore fish populations to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits.

Division of State Lands Fill and Removal Permit Program (ORS 196.800-990)

The Division of State Lands (DSL) Fill and Removal Permit Program (ORS 196.800-990) requires individuals who remove or fill 50 cubic yards or more in "waters of the state" to obtain a permit from the DSL. In State Scenic Waterways or areas designated by DSL as essential indigenous anadromous salmonid habitat, most removal-fill activities require a permit, regardless of the number of cubic yards affected. In addition, the Oregon Department of Environmental Quality is responsible for water quality certification under section 401(a) of the Clear Water Act. This certification is required as part of the DSL permitting process.

In addition, the Removal/Fill Law and implementing regulations contain specific standards and requirements for riprap and other bank and shore stabilization projects in areas that extend from the Pacific Ocean shore to the line of established upland vegetation or the highest measured tide, whichever is greater. The Oregon Parks and Recreation Department (OPRD) administers the removal/fill regulations jointly with the Ocean Shore Permit Authority. Activities permitted under these regulations are required to comply with the Statewide Planning Goals and be compatible with corresponding provisions of local comprehensive plans. Permits for shoreline protective structures may be issued only when development existed prior to January 1, 1977, as required under Goal 18. Foredune management plans, often implemented as hazard mitigation strategies, require a permit from OPRD because these strategies affect the structure of the shoreline. Other hazard mitigation strategies that require OPRD approval include: natural product (dirt) removal, re-sloping of a vertical bank below the statutory line of vegetation, and mitigating for erosion by altering the course of a stream that flows into the ocean.

Coastal Hazards

Statewide Land Use Planning Goals Related to Natural Hazards

GOAL 16: ESTUARINE RESOURCES

The purpose of Goal 16 is twofold: to recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain,

where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity, and benefits of Oregon's estuaries. Comprehensive management programs to achieve these objectives are to be developed by appropriate local, state, and federal agencies for all estuaries.

GOAL 17: COASTAL SHORELANDS

Statewide Land Use Planning Goal 17 is concerned with conservation and protection, as well as appropriate development of Oregon's coastal shorelands. It aims to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat resulting from the use and enjoyment of Oregon's coastal shorelands.

GOAL 18: BEACHES AND DUNES

The purpose of Statewide Land Use Planning Goal 18 is to conserve, protect, and where appropriate, to either develop on or restore resources and benefits of coastal beach and dune areas. It is also concerned with reducing the hazard to human life and property from natural or human-induced actions associated with these areas.

Ocean Shore Regulation

The Oregon Parks and Recreation Department (OPRD) is responsible for protecting the scenic, recreational, and natural resource values of the Oregon coast. OPRD accomplishes this through an extensive permitting program for shoreline protection under the authority of The Ocean Shore Law (ORS 390.605-390.770), also known as the "Beach Bill." While not responsible for activities above the statutory vegetation line, the survey line, or the line of established vegetation, OPRD is the permitting authority for actions affecting the ocean shorelands. This distinction can be seen visually at the line of established vegetation that backs the shoreline.

The Division of State Lands (DSL) has co-authority with the OPRD over rocky intertidal areas. The DSL manages the state-owned seabed within three nautical miles of low tide at the ocean shore. Specifically, the DSL regulates removal and filling of seabed and estuaries, including any dredged materials or seabed minerals. DSL may also issue leases for the harvest of Bull Kelp, a large seaweed in rocky areas of Oregon's coast. The Beach Bill requires that a permit be obtained from OPRD for all "beach improvements" west of a surveyed beach zone line. Communities can check their comprehensive plan or contact OPRD to obtain the location of this surveyed line.

Earthquakes/Tsunamis

Tsunamis — ORS 336.071, ORS 455.446, and ORS 455.448

Fourteen earthquake-related bills were introduced during the 1995 session. Several passed, including a new requirement for earthquake education and tsunami drills to be conducted in public schools (ORS 336.071), a requirement for essential and special-occupancy structures to be built outside of tsunami inundation zones (ORS 455.446), provisions for the inspection and entrance of buildings damaged by earthquakes (ORS 455.448) and specific provisions for the abatement of buildings damaged by earthquakes. Senate Bill 1057 created a task force to evaluate the risks impacting existing buildings and make recommendations to the 1997 legislature.

House Bill 3309 (2019)

This bill removed the prohibition of constructing essential facilities and other defined structures in the tsunami inundation zone. However, the state adopted an Appendix O in the 2019 Oregon Structural Specialty Code addressing tsunami loading which is available for local adoption.

Senate Bill 96 (1991): Seismic Hazard Investigation

The legislature passed Senate Bill 96 in 1991. This law requires site-specific seismic hazard investigations before the construction of essential facilities, hazardous facilities, major structures, and special-occupancy structures (e.g., hospitals, schools, utilities and public works, police and fire stations). These requirements were adopted into the State Building Code. The law also provides for the installation of strong-motion sensors in selected major buildings and mandates that school officials in all public schools lead students and staff in earthquake drills.

Senate Bill 13 (2001): Seismic Event Preparation

Senate Bill 13, signed by the Governor on June 14, 2001, requires each state and local agency and persons employing 250 or more full-time employees to develop seismic preparation procedures and inform their employees about the procedures. Further, the bill requires agencies to conduct drills in accordance with Oregon Office of Emergency Management guidelines. These drills must include "familiarization with routes and methods of exiting the building and methods of duck, cover and hold during an earthquake."

Senate Bill 14 (2001): Seismic Surveys for School Buildings

The Governor signed Senate Bill 14 on July 19, 2001. The bill required the State Board of Higher Education to conduct seismic safety surveys of buildings that have a capacity of 250 or more persons and are routinely used for student activities by public institutions or departments under the control of the board. A seismic safety survey was not required for buildings that had previously undergone seismic safety surveys, or that had been constructed to meet state building code standards. For buildings that were found to pose an undue risk to life and safety during a seismic event, the bill required the State Board of Higher Education to develop plans for seismic rehabilitation or seismic risk reduction. Subject to available funding, all seismic rehabilitation or risk reduction activities must be completed before January 1, 2032.

Senate Bill 15 (2001): Seismic Surveys for Hospital Buildings

The Governor signed Senate Bill 15 on July 19, 2001. The bill required the Health Division to conduct seismic safety surveys of hospital buildings that contain acute inpatient care facilities. Subject to available funding, seismic surveys must also be conducted on fire stations, police stations, sheriffs' offices, and similar facilities. The surveys were completed in January, 2007.

A seismic survey was not required for buildings that had previously undergone seismic safety surveys, or that had been constructed to meet state building code standards. For buildings that were found to pose an undue risk to life and safety during a seismic event, the bill required building occupants to develop plans for seismic rehabilitation or seismic risk reduction. Subject to available funding, all seismic rehabilitation or risk reduction activities must be completed before January 1, 2022.

Oregon Seismic Safety Policy Advisory Commission (OSSPAC) — ORS 401.337 to 401.353

The Oregon Seismic Safety Policy Advisory Commission (OSSPAC), otherwise known as the Earthquake Commission, is a state advisory commission that was created in February 1990

through an executive order from Governor Neil Goldschmidt. The group is composed of 18 individuals who represent a variety of interests concerned with the formulation of public policy regarding earthquakes. It has six representatives of government, six representatives of the public interest, and six representatives of industries and stakeholders. This variety of interests helps direct the goals of the Commission for the benefit of all Oregon citizens.

The Earthquake Commission has the unique task of promoting earthquake awareness and preparedness through education, research, and legislation. OSSPAC seeks to positively influence decisions and policies regarding pre-disaster mitigation of earthquake and tsunami hazards, and to increase public understanding of hazards, risk, exposure, and vulnerability. In order to fulfill the goals of the commission, OSSPAC members have developed five primary objectives. These objectives are to increase or improve:

- Earthquake awareness, education, and preparedness;
- Earthquake risk information;
- The earthquake safety of buildings and lifelines;
- Geoscience and technical information; and
- Emergency pre-disaster planning, response and recovery efforts.

For information on OSSPAC, contact the Oregon Office of Emergency Management.

Senate Bill 2 (2005): Statewide Seismic Needs Assessment Using Rapid Visual Screening

Oregon Senate Bill 2 directed DOGAMI, in consultation with project partners, to develop a statewide seismic needs assessment that includes seismic safety surveys of K-12 public school buildings and community college buildings that have a capacity of 250 or more persons, hospital buildings with acute inpatient care facilities, fire stations, police stations, sheriffs' offices and other law enforcement agency buildings.

The statewide needs assessment consisted of rapid visual screenings (RVS) of these buildings, information gathering to supplement RVS, and ranking of RVS results into risk categories. The results are posted on DOGAMI's website.

Senate Bill 2 (2005) provided the first step in a pre-disaster mitigation strategy that is further defined in Senate Bills 3-5 (2005).

Wildfires and Wildland-Urban Interface

Oregon Forestland-Urban Interface Fire Protection Act (SB 360)

The Oregon Forestland-Urban Interface Fire Protection Act, often referred to as Senate Bill 360, enlists the aid of property owners toward the goal of turning fire-vulnerable urban and suburban properties into less-volatile zones where firefighters may more safely and effectively defend homes from wildfires. Senate Bill 360 established Oregon's first comprehensive statewide policy regarding mitigation in wildland-urban interface areas. It broadly defined the WUI and set in place a process to identify and classify these areas. The legislation also required the development of standards, which WUI owners are to apply in order to manage and minimize wildfire hazards on their property. When work to implement Senate Bill 360 begins in a county, a committee of local representatives formally identifies and classifies WUI areas. Individual property owners in these areas are then contacted and informed of the standards they are required to meet. They have up to 2 years to bring their property into compliance with the

standards and then to certify that they have done so. Owners who fail to certify become subject to a potential liability of up to $100,000 for certain costs of suppressing fires which start on their property.

The Oregon Forestland-Urban Interface Fire Protection Act is fully described in Oregon Revised Statutes 477.015 through 477.061, and Oregon Administrative Rules 629-044-1000 through 629-044-1110.

Oregon Revised Statute 215.730: Additional Criteria for Forestland Dwellings

ORS 215.730 (County Planning; Zoning, Housing Codes) provides additional criteria for approving dwellings located on lands zoned for forest and mixed agriculture and forest use. Under its provisions, county governments must require, as a condition of approval, that single-family dwellings on lands zoned as forestland meet the following requirements:

1. Dwelling has a fire retardant roof;
2. Dwelling will not be sited on a slope of greater than 40%;
3. Evidence is provided that the domestic water supply is from a source authorized by the Water Resources Department and not from a Class II stream as designated by the State Board of Forestry;
4. Dwelling is located upon a parcel within a fire protection district or is provided with residential fire protection by contract;
5. If dwelling is not within a fire protection district, the applicant provides evidence that the applicant has asked to be included in the nearest such district;
6. If dwelling has a chimney or chimneys, each chimney has a spark arrester; and
7. Dwelling owner provides and maintains a primary fuel-free break and secondary break areas on land surrounding the dwelling that is owned or controlled by the owner. If a governing body determines that meeting the fourth requirement is impractical, local officials can approve an alternative means for protecting the dwelling from fire hazards.

This can include a fire sprinkling system, on-site equipment and water storage, or other methods that are reasonable, given the site conditions. If a water supply is required under this subsection, it must be a swimming pool, pond, lake or similar body of water that at all times contains at least 4,000 gallons or a stream that has a minimum flow of at least one cubic foot per second. Road access must be provided to within 15 feet of the water's edge for fire-fighting pumping units, and the road access must accommodate a turnaround for fire-fighting equipment.

Oregon Revised Statute 477.015-061 Urban Interface Fire Protection

These provisions were established through efforts of the Oregon Department of Forestry, the Office of the State Fire Marshal, fire service agencies from across the state, and the Commissioners of Deschutes, Jefferson, and Jackson Counties. It is innovative legislation designed to address the expanding interface wildfire problem within Oregon Department of Forestry Fire Protection Districts. Full implementation of the statute will occur on or after January 1, 2002. The statute does the following:

1. Directs the State Forester to establish a system of classifying forestland-urban interface areas;
2. Defines forestland-urban interface areas;

3. Provides education to property owners about fire hazards in forestland-urban interface areas;
4. Allows for a forestland-urban interface county committee to establish classification standards;
5. Requires maps identifying classified areas to be made public;
6. Requires public hearings and mailings to affected property owners on proposed classifications;
7. Allows property owners appeal rights;
8. Directs the Board of Forestry to promulgate rules that set minimum acceptable standards to minimize and mitigate fire hazards within forestland-urban interface areas;
9. Creates a certification system for property owners meeting acceptable standards; and
10. Establishes a $100,000 liability limit for cost of suppressing fires, if certification requirements are not met.

Oregon Revised Statute Chapter 478: Rural Fire Protection Districts

ORS 478, Rural Fire Protection Districts, includes the following provisions, among others, related to wildfire hazard mitigation:

478.120 Inclusion of forestland in district. The authority to include forestland within a rural fire protection district pursuant to ORS 478.010 (2)(c) applies to forestland within the exterior boundaries of an existing district and to forestland on which structures subject to damage by fire have been added after July 20, 1973.

478.140 Procedure for adding land to district by consent of owner. Any owner consenting to add the forestland of the owner to the district under ORS 478.010 (2)(c) shall do so on forms supplied by the Department of Revenue. The owner shall file the original with the district. The district shall forward a copy to the assessor of each county in which the land is located, within 20 days of receipt.

478.910 Adoption of fire prevention code. A district board may, in accordance with ORS 198.510 to 198.600, adopt a fire prevention code.

478.920 Scope of fire prevention code. The fire prevention code may provide reasonable regulations relating to:

1. Prevention and suppression of fires.
2. Mobile fire apparatus means of approach to buildings and structures.
3. Providing fire-fighting water supplies and fire detection and suppression apparatus adequate for the protection of buildings and structures.
4. Storage and use of combustibles and explosives.
5. Construction, maintenance, and regulation of fire escapes.
6. Means and adequacy of exit in case of fires and the regulation and maintenance of fire and life safety features in factories, asylums, hospitals, churches, schools, halls, theaters, amphitheaters, all buildings, except private residences, which are occupied for sleeping purposes, and all other places where large numbers of persons work, live, or congregate from time to time for any purpose.
7. Requiring the issuance of permits by the fire chief of the district before burning trash or waste materials.

8. Providing for the inspection of premises by officers designated by the board of directors, and requiring the removal of fire hazards found on premises at such inspections.

478.927 Building permit review for fire prevention code. A district adopting a fire prevention code shall provide plan review at the agency of the city or county responsible for the issuance of building permits for the orderly administration of that portion of the fire prevention code that requires approval prior to the issuance of building permits.

The state adopted a new section, R327 Wildfire Hazard Mitigation as part of the Oregon Residential Specialty Code. These amendments became effective on January 24, 2019 and provide additional wildfire hazard mitigation provisions that are available for local adoption.

Landslides

Senate Bill 12: Rapidly Moving Landslides

Following the flood and landslide events of 1996, legislation was drafted to reduce risk from future landslide hazards. The legislature passed Senate Bill 1211 in 1997, which dealt with rapidly moving landslide issues around steep forestlands, and not in typical urban or community settings. Senate Bill 1211 granted authority to the State Forester to prohibit forest operations in certain landslide-prone locations, and created the Interim Task Force on Landslides and Public Safety. SB 1211 charged the Interim Task Force with developing a comprehensive, practicable, and equitable solution to the problem of risks associated with landslides.

The Interim Task Force developed the legislative concept that resulted in Senate Bill 12 in the 1999 session (ORS 195.250 et seq.). Senate Bill 12 directs state and local governments to protect people from rapidly moving landslides. The bill has three major components affecting local governments: detailed mapping of areas potentially prone to debris flows (i.e., “further review area maps”), local government regulating authority, and funding for a model ordinance. The legislature allocated funding to the Department of Geology and Mineral Industries (DOGAMI) to prepare the “further review area maps,” and provided $50,000 for a grant to a local government to develop a model program to address rapidly moving landslides. Senate Bill 12 applies only to rapidly moving landslides, which are uncommon in many communities, but are very dangerous in areas where they do occur.

Dam Safety

The Oregon Water Resources Department is the state authority for dam safety with specific authorizing laws and implementing regulations.

As of December 2019, there were 945 state regulated dams and another 252 federal regulated dams that met Oregon statutory dam safety criteria (at least ten feet high and storing at least three million gallons). The largest dams are under federal ownership or regulation. An additional 12,000 or so dams have water right permits for storage from the Department but are smaller than Oregon statutory thresholds. In general, the dam safety programs for the large federal dams have significant dam safety staffing while state dam safety staffing is limited.

The Oregon dam safety program has the following responsibilities:

- Review designs for dams proposed to store water and wastewater prior to construction, and required approval before construction and after design safety is demonstrated;
- Maintain design, construction and inspection information in its files (many electronic);
- Conduct dam breach inundation analysis for hazard rating (consequence of failure);
- Inspect dams with a frequency based mostly on hazard but which can also consider the condition of dams;
- Evaluate the general condition of dams;
- Take regulatory action on dams that are unsafe;
- Require an Emergency Action Plan (EAP) for high hazard dams, providing a template for owners to develop these plans;
- Respond to unusual conditions and potential emergencies; and
- Coordinate with federal agencies on emergency inspection and response.

Oregon's dam safety laws were re-written by HB 2085 which passed through the legislature and was signed by Governor Brown in 2019. This law (ORS 540.443-540.491) became operative on July 1, 2020, with rules and guidance under active development. The state dam safety program coordinates on but does not directly regulate dams owned by the United States or most dams used to generate hydropower.

Post-Disaster Hazard Mitigation Policy Framework

Following the Presidential Disaster Declaration for the December 2007 winter storm event (DR-1683), Governor Kulongoski signed Executive Order 08-20 establishing the Governor's Emergency Recovery Framework. The Order established a Recovery Planning Cell (RPC) comprised of emergency recovery advisors, state agency leadership, and others as the situation requires. The RPC directs emergency recovery in Oregon, providing leadership and coordinating private and government sector recovery efforts. It is charged with the development and initial execution of a "day after" plan for recovery efforts. The Order also established the Governor's Recovery Cabinet to coordinate ongoing recovery efforts following the initial emergency response.

State Post-Disaster Hazard Management Policies

Earthquakes/Tsunamis

More recently, the legislature passed House Resolution 3 following the 2011 Great Tohoku Earthquake in Japan and the resulting tsunami that impacted the Oregon coast (DR-1964). HR 3 recognizes risks and susceptibility of Oregon to catastrophic damage and loss of life resulting from megathrust earthquakes and tsunamis associated with Cascadia fault. Furthermore, it directed the creation and legislative consideration of an "Oregon Resilience Plan." The Oregon Seismic Safety Policy Advisory Committee published that Plan in February 2013. The plan identifies the state's vulnerabilities in the event of a Cascadia earthquake and tsunami, and contains mitigation actions. Following publication, the legislature appointed the Resilience Task Force to recommend which mitigation actions to take first. The Resilience Task Force's report (**Appendix 9.2.4**) was provided to the legislature on October 1, 2014. Several of its recommendations have been and are being acted upon.

Floods

Substantial Damage Policy

Under the NFIP, a building is considered to be substantially damaged when the total cost of repair equals or exceeds 50% of the pre-damage market value of the structure. A substantial damage determination provides opportunities for mitigation through acquisition, relocation, demolition, and elevation. For NFIP-insured properties, timely determinations of substantial damage are critical for meeting the application period for an **Increased Cost of Compliance (ICC)** mitigation claim. If approved for ICC, the ICC payment of up to $30,000 may be used as the property owner's non-federal cost share. Timely substantial damage determination is a standard protocol for all flood disaster declarations in Oregon.

Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Policy

Repetitive Losses and **Severe Repetitive Losses** properties are defined in the State Risk Assessment.

RL and SRL properties are a top priority for mitigation in Oregon. However, several criteria must generally align for their mitigation to be executable. In addition to meeting the federal statutory criteria for mitigation projects — technically feasible, cost-effective, and environmentally sound — the state will vigorously pursue mitigation of RL and SRL properties if:

- The structure is substantially damaged and eligible for funding under the NFIP's Increased Cost of Compliance provision;
- The structure is located in a community with a FEMA-approved local NHMP;
- The structure is located in a community with ability to manage federal grant funds;
- Elected officials support pursuing flood mitigation projects;
- The structure is located in a declared county (post-disaster) and post-disaster mitigation funding is available; and
- The owners of the structure are interested in mitigation through elevation, flood-proofing, relocation, or demolition.

In addition, geographic distribution of properties and alignment of repetitive loss and severe repetitive loss property mitigation with other mitigation efforts (such as restoring natural and beneficial floodplain functions) may play a role. It is the state's policy to distribute mitigation assistance and funding to impacted communities and repetitive loss and severe repetitive loss properties in different areas of the state whenever practicable.

Pre- and Post-Disaster Hazard Mitigation Programs and Capabilities Framework

Oregon Lidar Consortium

Formed by the Department of Geology and Mineral Industries, the Oregon Lidar Consortium (OLC) develops cooperative agreements for the collection of high-quality lidar that benefits the public at large, the business community, and agencies at all levels of government. The goal of the OLC is to provide high-quality lidar coverage for the entire state. The collection of lidar data can assist governments in better identifying hazardous areas.

Oregon Seismic Safety Policy Advisory Committee

OSSPAC is a state advisory commission created in February 1990 through an executive order from Governor Neil Goldschmidt and established in statute by the 1991 Oregon Legislature (ORS 401.337). The purpose of the 18-member group is to reduce exposure to Oregon's earthquake hazards.

Hazard Mitigation Grant Review Board

The Hazard Mitigation Grant Review Board is an intergovernmental body which, when convened, reviews, discusses, ranks, and recommends projects for funding under Section 404 of the Stafford Act (also known as Hazard Mitigation Grant Program or HMGP).

Drought Council

The Drought Council is responsible for assessing the impact of drought conditions and making recommendations to the Governor's senior advisors.

Numerous additional agency-specific hazard mitigation programs and capabilities also exist or are under development. For example, OPDR is a coalition of public, private, and professional organizations working collectively toward the mission of creating a disaster resilient and sustainable state. Developed and coordinated by the Community Service Center at the University of Oregon, OPDR employs a service learning model to increase community capacity and enhance disaster safety and resilience statewide. Similarly, DLCD is currently working to incorporate the principles of FEMA's Risk Map program into an Oregon-specific initiative called Risk Plan. The Risk Plan program is conceptual at this point, but when implemented will offer an integrated state-wide framework for delivering information, guidance, technical assistance and other resources to local governments.

Agencies/Organizations

State Interagency Hazard Mitigation Team

First convened by Governor Kitzhaber in 1996, the State Interagency Hazard Mitigation Team (IHMT) meets quarterly and provides leadership in addressing natural hazards mitigation in Oregon. The State IHMT is an important state mechanism for interagency coordination. The Team's focus is to understand losses arising from natural hazards, including secondary losses that occur when natural hazard events impact technological systems and critical infrastructure, and to coordinate recommended strategies to mitigate loss of life, property, economic and natural resources by maintaining the FEMA-approved and Governor-adopted *Oregon Natural Hazards Mitigation Plan*.

The State IHMT's goals are:

1. Coordinate hazard mitigation programs and activities at all levels in the state of Oregon.
2. Describe and evaluate the natural hazards to which the state of Oregon is vulnerable.
3. Describe and evaluate state, local government, and private sector hazard mitigation policies, programs, and capabilities, consistent with federal codes and regulations.
4. Identify sources of hazard mitigation funding and the procedures that must be followed to obtain such funding; make this information widely available.

5. Identify and evaluate proposed hazard mitigation strategies, projects, and legislation to ensure consistency and to proactively integrate natural resource goals into mitigation activities.
6. Continue to develop, implement, monitor, evaluate, and update the Oregon Natural Hazards Mitigation Plan.
7. Provide education and information about natural hazards and steps which can be taken to mitigate against their effects.
8. Facilitate integration of hazard mitigation into the activities and programs of state and local government agencies, and to the extent practical, into the activities of private sector organizations.
9. Strive to integrate into natural hazard mitigation: natural resource protection and restoration, stormwater management, ecosystem concerns, floodplain management, and protection of water quality for public use.
10. Promote and facilitate the concept of a disaster resistant economy in Oregon.

OEM houses the State Hazard Mitigation Officer who serves as Chair of the IHMT. In addition, OEM provides overall staff support through routine communication with the membership, agenda development, and meeting logistics. Members of the State IHMT are called upon to assist with various mitigation activities outside of the scheduled State IHMT meetings to include such things as updating the Oregon NHMP and identifying and reviewing projects, particularly following major disaster declarations.

State IHMT meetings are open to the public. Liaison representatives from non-state IHMT agencies and organizations can be added as needed. Descriptions of the State IHMT agencies' hazard mitigation roles, responsibilities, and authorities are provided in **Table 3-7**.

Table 3-7. IHMT Agencies' Hazard Mitigation Roles, Responsibilities, and Authorities

State IHMT Agency	Hazard Mitigation Roles and Responsibilities	Natural Hazards Mitigation Legal Authority
Department of Administrative Services (DAS), Chief Financial Office	Works to prepare state government offices for emergency evacuation planning using the State of Oregon's *Sound the Alarm RisKey* guide. DAS works to improve safety among the workplace by identifying risks and developing tools to manage risks. DAS also works to protect state-owned property and buildings, and sets standards for leasing and constructing state buildings.	No legal authority for natural hazards mitigation, except that which may arise from a claim under self-insurance property coverage.
Oregon Department of Agriculture (ODA)	Works to exclude or eradicate certain insect pests from becoming established in the state. Using the Insect Pest Prevention and Management program (IPPM), the ODA works to protect Oregon's agriculture, horticulture and timber resources from damaging insect pests, thus preventing the defoliation of vast acreage of trees and reducing fire and erosion hazards; works with soil and water conservation districts to help landowners implement best management practices to reduce erosion, thereby preventing slides, floods, and erosion-related problems; actively involved in watershed health and maintaining natural resources through education, technical assistance, and regulatory programs for landowners.	ORS, Chapter 568 provides authority for water quality and soil conservation measures, and Chapter 570 provides authority for pest and disease control programs.
Department of Consumer and Business Services (DCBS), Building Codes Division (DCBS-BCD)	Works to implement statewide building codes through a permitting program. . BCD has adopted construction standards that help create disaster resistant buildings. BCD administers the post-earthquake inspection program for damaged buildings and provides technical assistance and training for building inspectors, plans examiners, designers, and contractors. A post-earthquake inspector carries out post-earthquake habitability assessments for all structures affected by an earthquake. BCD has compiled an active list of certified post-earthquake inspectors. BCD generally adopts nationally recognized model codes that include various standards to ensure building safety. Technical assistance is provided to designers, contractors, building officials, and the public through its code specialists, its web page, regular mailings to interested parties and local building officials, and its quarterly publication *Codelink.*	ORS, Chapter 455 provides legal authority for the Building Codes Division's (BCD) natural hazard mitigation activities including 455.020 (code adoption), .725 (training), .440 (site soil analysis), .446 (construction in tsunami zones), .447 (seismic site hazard analysis), and .448-.449 (entry and inspection of earthquake damaged buildings).
DCBS - Department of Financial Regulation (DCBS-DFR)	Works to perform a major balancing role, protecting the public's interests through ensuring the financial soundness of insurers, the availability and affordability of insurance, and the fair treatment of policyholders and claimants while maintaining a positive business climate. DCBS-DFR helps home and business owners prepare for natural hazards through the provision of insurance-related educational material and trainings. DCBS-DFR also works to help ensure insurance compensation to insurance holders in the wake of a natural disaster.	ORS Chapter 731 provides authority to DCBS-DFR. House Bill 3605 allows the director of the Department of Consumer and Business Services (DCBS) to modify insurance policy terms in times of emergency.
Business Oregon, Infrastructure Finance Authority (BusOR-IFA)	Works with the Governor and all state agencies to prioritize programs and modify services that help those affected by natural disasters. Works with current loan customers to address needs during recovery from a natural disaster. Works with communities to prioritize infrastructure needs resulting from a natural disaster, which is used to develop state and federal funding solutions for Oregon communities. Offers Emergency Response Funding Programs. Also supports hazard mitigation by promoting development of new facilities and infrastructure in appropriate locations. As of January 1, 2014, administers the Seismic Rehabilitation Grant Program.	ORS Chapter 285A-C provides authority to Oregon Business, including 285B.020 (infrastructure).

State IHMT Agency	Hazard Mitigation Roles and Responsibilities	Natural Hazards Mitigation Legal Authority
Oregon Climate Change Research Institute (OCCRI) and the Oregon Climate Service (OCS)	OCCRI, housed at Oregon State University, is authorized to: 1. Facilitate research by Oregon University System faculty on climate change and its effects on natural and human systems in Oregon 2. Serve as a clearinghouse for climate change information 3. Provide climate change information to the public in integrated and accessible formats 4. Support the Oregon Global Warming Commission in developing strategies to prepare for and to mitigate the effects of climate change on natural and human systems 5. Provide technical assistance to local governments to assist them in developing climate change policies, practices and programs In addition, at least once each biennium, OCCRI assesses the state of climate change science as it relates to the state of Oregon, and the likely effects of climate change on the state and delivers the assessment to the Governor's Office and the Legislative Assembly. OCS is part of the College of Earth, Ocean, and Atmospheric Sciences at OSU, and has been absorbed by OCCRI. OCS: 1. Collects, maintains and distributes Oregon weather and climate data; 2. Educates Oregonians on current and emerging climate issues; and 3. Performs research related to climate issues.	HB 3543 (2007)
Department of Environmental Quality (DEQ)	Works to protect and maintain waters of the state for public health and safety as well as for all future beneficial uses under EPA delegated programs from the Clean Water Act and Safe Drinking Water Act. Emergency actions related to natural hazards must meet environmental protection requirements. If a natural hazard were to result in hazardous materials being released into the environment, DEQ's Emergency Response Program is designed to respond. DEQ's Environmental Cleanup Division takes action should a release occur or the threat of a release. DEQ assists OEM, DLCD, and FEMA in conducting environmental assessments related to watershed restoration, hazard mitigation projects, and provides matching grants for projects under the Clean Water Act. DEQ plays a central role in the disposal of disaster debris. DEQ also works with Oregon Natural Events Action Plan for Wildfire Smoke. DEQ offers the Wildfire Air Quality Rating to monitor air pollution throughout the state to ensure that air quality standards are being met.	ORS, Chapter 468, water pollution control, enables DEQ to protect all future beneficial uses of waters of the state (surface and groundwater), and allows DEQ to act should there be a threat of release or a spill. ORS, Chapter 468a, enables the DEQ to regulate and monitor air quality. ORS, Chapters 465 and 466 enables the DEQ to respond to hazardous waste and materials that have been released into the environment.
Oregon Department of Fish and Wildlife (ODFW)	Has a primary role in determining the effects of potential hazard mitigation projects on fish and wildlife habitats and recommending measures that enhance or at least do not degrade such habitats; administers the state's Riparian Tax Incentive Program and Restoration and Enhancement Program, and can provide cost-share funding, grants and technical assistance.	ORS, Chapter 496 (application, administration, and enforcement of wildlife laws), Chapter 497 (licenses and permits), Chapter 498 (hunting, angling and trapping) and Chapter 501 (refuges and closures).

State IHMT Agency	Hazard Mitigation Roles and Responsibilities	Natural Hazards Mitigation Legal Authority
Oregon Department of Forestry (ODF)	Works to protect communities from wildfires through the implementation of the Communities at Risk Assessment Program. ODF Identifies communities and assigns each a low, moderate, or high risk rating for the following categories: risk, hazard, protection, capability, value, and overall. ODF works with communities to create Community Wildfire Protection Plans (CWPP): a process involving collaboration between communities and agencies interested in reducing wildfire risk. ODF is responsible for all aspects of wildland fire protection on private, state and BLM forestlands. ODF administers regulations, including landslide mitigation, on non-federal lands. ODF does all of the following things which advance natural hazards mitigation: requires landowners to control fires on their lands; controls fires that other landowners cannot control; administers the industrial fire prevention program; investigates wildfires; administers the Forest Practices Act; coordinates with other agencies; maintains technical expertise on wildfire sciences, geosciences, and hydrology; completes debris flow hazard mapping for Western Oregon; and leads many aspects of the *Oregon Plan for Salmon and Watersheds.*	ORS, Chapter 477 addresses the fire protection of forests and vegetation, including sections on urban interface fire protection, hazard abatement, fire abatement, fire prevention, and related sections. Chapter 527 contains provisions which pertain to timber harvest and road construction regulations in landslide areas.
Department of Geology and Mineral Industries (DOGAMI)	Works to develop geologic maps and data to enable Oregonians to understand geology and to mitigate the hazards resulting from earthquakes, tsunamis, landslides, and other hazards; works with project partners, to develop a statewide seismic needs assessment; focuses much effort on risk reduction, often in partnership with other federal, state, and local agencies, and the private sector; provides information which leads to the construction of safer buildings; works on siting of natural gas cogeneration power plants, correctional facilities, gas pipelines using policy decisions related to geologic, seismic and coastal hazards; also works with local partners to develop systematic evaluations of risk to people and property so mitigation efforts can be prioritized.	ORS, Chapter 516 creates and defines the duties; Section 516.030(3) directs DOGAMI to administer on a cooperative basis studies and programs that will reduce the loss of life and property by understanding and mitigating geological hazards.
Oregon Health Authority — Public Health Division (OHA)	The Oregon Health Authority's Health Security, Preparedness and Response (HSPR) Program develops public health systems to prepare for and respond to major, acute threats and emergencies that impact the health of people in Oregon. The Program addresses eight of the 11 natural hazards in the Oregon NHMP, extreme heat, and bioterrorism. The Oregon Health Authority's Climate and Health Program Oregon's Climate and Health Program is working with partners to study, prevent, and plan for the health effects of climate change.	ORS 431 provides authority for state and local administration and enforcement of health laws including public health emergency planning and response.
Department of Land Conservation and Development (DLCD)	Manages the statewide land use planning program; Goal 7 of which addresses development in places subject to natural hazards, requiring that jurisdictions apply "appropriate safeguards" when planning for development there. The goal requires local comprehensive plans to include inventories, policies, and ordinances which will reduce losses. DLCD supports local government's and tribe's efforts to address natural hazards through technical assistance during periodic plan review, comprehensive plan and zoning code updates, and development and updates of NHMPs; provides workshops and responds to local government requests for information. As of 2013, DLCD is responsible for facilitating updates of the Oregon Natural Hazards Mitigation Plan. DLCD manages the National Flood Insurance Program (NFIP) in the State of Oregon through an agreement with FEMA. DLCD also manages the Oregon Coastal Management Program, which implements a coastal hazards and assessment program.	ORS, Chapter 197 provides the basis for comprehensive land use planning in the State of Oregon, including provisions governing development in floodplains and in other areas subject to natural hazards, which are intended to mitigate the effects of such hazards. ORS, Chapter 476 provides the basis for the Conflagration Act.

State IHMT Agency	Hazard Mitigation Roles and Responsibilities	Natural Hazards Mitigation Legal Authority
Department of State Lands (DSL)	Responsible for a variety of service-related functions relating to land management and implementation of state removal-fill law. DSL's role in hazard mitigation is in the issuing of removal and fill permits or enforcement actions on wetlands waters of the state.	ORS 196 and 390 address wetlands, removal and fill permits or enforcement actions on the beds and banks of the waters of this state. Many of these provisions have a tangential effect on floodplain management and flood hazard mitigation.
Oregon Military Department, Office of Emergency Management (OEM)	Convenes the IHMT and provides overall coordination of natural hazards mitigation in the State of Oregon. The State Hazard Mitigation Officer (SHMO) is on the staff of the Oregon Office of Emergency Management. Among OEM's related responsibilities are chairing the Oregon Emergency Response System (OERS) Council, staffing the Oregon Seismic Safety Policy Advisory Commission (OSSPAC), developing and maintaining the State *Emergency Management Plan* and related documents, managing the Chemical Stockpile Emergency Preparedness Program and providing training and other assistance which help mitigate hazards.	ORS, Chapter 401 Includes many of the state's emergency management statutes one section of which states that the general purpose of the law is to reduce the vulnerability of the State of Oregon to loss of life, injury to persons or property, human suffering, and financial loss resulting from emergencies.
Oregon State Police, Office of State Fire Marshal (OSFM)	Develop, promote, and maintain protection of life, property, and the environment from fire and other perils through leadership, direct action, and coordination of public safety resources; provides hazard mitigation through programs to educate, inspect, survey, investigate, respond to emergency incidents, and communicate with the public and emergency responders. The Conflagration Act and the State Fire Services Mobilization Plan are coordinated at all levels of state, county, and city government and they foster cooperation in responding to fires and emergency incidents. OSFM employs Regional HazMat Emergency Response Teams to help ensure public safety regarding hazardous materials incidents occurring throughout the state. OSFM provides education and programs, inspections, information, reports, data and brochures, training programs, and emergency responses to incidents for the schools, governments, and the public.	ORS, Chapters 453 and 476-480 authorize the State Fire Marshal to perform a wide variety of education and training programs, inspections, investigative and information reports and other activities related to fire prevention, safety, and management.
Public Utility Commission (OPUC)	A regulatory agency for certain electric, gas, telecommunication, and water utility companies; enforces the National Electrical Safety Code and the Federal Gas Pipeline Safety Regulations, which address utility operations under both normal and emergency conditions; monitors utilities' actions and infrastructure under a wide variety of conditions, including natural hazards, to ensure code compliance and prudent practices. OPUC promotes effective vegetation management practices to improve system safety and reliable service delivery by its ongoing enforcement of Oregon statutes and administrative rules, specifically in Chapter 860, Division 024.	ORS, Chapters 756-759, 772, and 774 authorize the PUC to carry out its purpose.

State IHMT Agency	Hazard Mitigation Roles and Responsibilities	Natural Hazards Mitigation Legal Authority
Oregon Department of Transportation (ODOT)	Is the road authority for all state highways in Oregon, including interstate highways; works to maintain drainage, open culverts, clean ditches, and perform hydraulic studies; helps prevent or reduce damage to the state highway system caused by floods or landslides. ODOT invites and works with local public works agencies to become participating parties in the Oregon Public Works Emergency Response Cooperative Assistance Agreement. ODOT and local agencies completed a seismic retrofit prioritization study of Oregon's bridges in 1997. As of January 1999, ODOT completed seismic retrofit projects on 124 state bridges.	ORS, Chapter 810 designates ODOT as the road authority for all state highways and specifies a wide range of maintenance, operations, and analysis activities related to hazard mitigation, for example: drainage maintenance, culvert inventory, and the bridge seismic retrofit program.
Water Resources Department (OWRD)	Responsible for allocation of the water that is produced by watersheds each year; quantifies and provides public notification of flows throughout the state, and insures safe operation of certain dams and other hydraulic structures.	ORS Chapter 540 provides OWRD statutory authorities for dam safety and a statewide hydrographic program for measuring river and stream flows.
Oregon Parks & Recreation Department (OPRD)	Works to provide and protect outstanding natural, scenic, cultural, historic, and recreational sites for the enjoyment and education of present and future generations. OPRD is responsible for land stewardship, marine conservation , rocky shores, several permit programs, department-wide resource policies, and park plants and animals. OPRD strives to provide a safe environment while maintaining the natural beauty and historic importance of our parks. In certain areas providing a safe environment for park users involves planning for natural disasters.	ORS Chapter 390 provides deals with the role of OPRD in dealing with state and local parks, recreation programs, scenic waterways and recreation trails
Oregon Partnership for Disaster Resilience (OPDR)	OPDR is a coalition of public, private, and professional organizations working collectively toward the mission of creating a disaster resilient and sustainable state. Developed and coordinated by the Community Service Center at the University of Oregon, OPDR employs a service learning model to increase community capacity and enhance disaster safety and resilience statewide. Primary activities include community plan and project development support; applied research and technical resource development; training programs and capacity building; and the development of strategic alliances.	N/A
University of Oregon, Emergency Management and Continuity	The Emergency Management & Continuity Program protects the University's ability to meet its mission of teaching, research and public service that is vulnerable to any emergency resulting in the loss of vital resources such as buildings, equipment, infrastructure, technology, or personnel. The emergency management team manages, coordinates, and supports planning, training and exercises to enable the university to protect against, respond to, continue during, and recover from natural and human-caused emergencies.	N/A

Cascadia Regional Earthquake Workgroup

The Cascadia Region Earthquake Workgroup (CREW) is a coalition of private and public representatives working together to improve the ability of Cascadia Region communities to reduce the effects of earthquake events.

CREW's goals include the following:

- Promote efforts to reduce the loss of life and property damage from earthquakes.
- Educate and motivate decision makers, managers, and the general public to reduce risks associated with earthquakes.
- Foster productive linkages between scientists, critical infrastructure providers, businesses, and governmental agencies in order to improve the viability of communities after an earthquake event.

Drought Council

The Drought Council is responsible for assessing the impact of drought conditions and making recommendations to the Governor's senior advisors. The Drought Council is, in turn, advised by the Water Availability Committee, a subcommittee of technical people who monitor conditions throughout the state and report these conditions monthly. In this manner the Drought Council keeps up-to-date on water conditions. Members combine this knowledge with information they bring from their organizations and differing geographic areas of the state in order to make recommendations for policy, response, and mitigation.

The Drought Council is chaired and facilitated by the Oregon Office of Emergency Management. Members of the Council include state and federal agencies, and private organizations involved in drought forecasting, assessment, response, or recovery. The goal of the Drought Council is to "strive to reduce the effects of an impending drought through a coordinated federal, state, local, and voluntary effort, consisting of the development of drought plans, policies, and procedures, and through coordinated state response." (Oregon Office of Emergency Management, 2014 rev.)

Specific tasks of the Drought Council include:

- Monitoring meteorological and hydrological conditions to determine the current and future severity of a drought;
- Estimating the severity of a drought and its impact on electric power consumption and generation, agricultural production, essential human needs, industrial output, fish and wildlife, state forests, and other areas as appropriate;
- Developing an inventory of physical, economic, or other resources available for responding to anticipated drought impacts;
- Determining potential conflicts between water users and electric power users, and initiating actions to minimize these conflicts;
- Coordinating drought response and recovery efforts;
- Acting as a clearinghouse for questions and requests for state and federal drought declarations;
- Assisting the Governor and the Oregon Office of Emergency Management in determining the need for various federal disaster declarations and other federal assistance;
- Reporting to the Governor's Natural Resource Advisor;

- Facilitating and coordinating development of water and power conservation plans; and
- Facilitating and coordinating public information processes that encourage voluntary conservation measures.

Energy Facility Siting Council

The Energy Facility Siting Council reviews proposed energy facilities for seismic vulnerability through its structural standard, Oregon Administrative Rule (OAR) 345-022-0020. This standard is a safety standard rather than a reliability standard. It ensures that structural failure at an energy facility will not endanger workers or the public. It does not require that energy facilities be proven to remain operable in a seismic event because the Council assumes that key safety facilities such as hospitals will have backup electricity.

The standard requires that:

- The applicant, through appropriate site-specific study, has adequately characterized the site as to appropriate seismic design category and expected ground motion and ground failure, taking into account amplification during the maximum credible and maximum probable seismic events;
- The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable seismic events (as used in the rule, "seismic hazard" includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence);
- The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and
- The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified.

The Council reviews proposed energy facilities such as power plants, major electric transmission lines, major gas pipelines (greater than 16 inch diameter) for compliance with this standard. They do so in consultation with Oregon Department of Geology and Mineral Industries under an interagency agreement.

In response to an electricity shortage, the 2001 Oregon Legislature created an expedited review process for certain qualifying power plants. These power plants are generally not required to meet the structural standard; however, the Oregon Office of Energy, in consultation with Oregon Department of Geology and Mineral Industries, can still impose conditions on these plants related to the structural standard.

Hazard Mitigation Grant Review Board

The Hazard Mitigation Grant Review Board is an intergovernmental body which when convened reviews, discusses, ranks, and recommends project selections for funding under Section 404 of the Stafford Act (also known as the Hazard Mitigation Grant Program — HMGP).

With requirements for FEMA-compliant (201.6) local mitigation plans to be eligible for Section 404 grants, the need to convene the Hazard Mitigation Grant Review Board has been largely

replaced by project actions and priorities identified in those local mitigation plans. In order to expedite the Section 404 grant offering early in the post-disaster recovery process, HMGP project funding is first prioritized to the disaster-declared counties (and all eligible applicant entities therein) on a pro rata share basis of their Public Assistance and Individual Assistance eligible costs as initially determined during the Preliminary Damage Assessment. The pro rata applicant share can be further refined at either the 12-month or 18-month HMGP lock-in. HMGP planning grant funding is available statewide from the onset of the program's availability.

During the PA and HMGP Applicant Briefing, the state promulgates broad priorities and project categories for Section 404 project pre-applications that tend to focus on the nature of the disaster and related mitigation opportunities. Representatives from the Hazard Mitigation Grant Review Board and the State IHMT are encouraged to provide their input into establishing the broad priorities and project categories for Section 404 project pre-applications early in the process. The Hazard Mitigation Grant Review Board plays a key role in selecting state 5% initiative projects as there are often many more "5%" projects than available funding.

Board membership includes:

- Director of the Oregon Office of Emergency Management or designee (most usually the Section Director, Mitigation and Recovery Services who is also the State Coordinating Officer for major disaster declarations), who chairs the Board;
- State NFIP Coordinator of the Department of Land Conservation and Development (DLCD) or designee;
- President of the Oregon Emergency Management Association (OEMA) or designee;
- A representative of the Association of Oregon Counties (AOC) and/or the League of Oregon Cities (LOC); and
- For flood disasters and related projects, Chief of the Emergency Management Branch, Portland District, U.S. Army Corps of Engineers (USACE) or designee.

The State Hazard Mitigation Officer (SHMO) of the Oregon Office of Emergency Management provides staff and technical assistance and presents hazard mitigation projects to the Board, but is not a voting member.

Oregon Board of Geologist Examiners

In 1990 the Oregon Board of Geologist Examiners adopted guidelines to assist professionals in preparing engineering geologic reports in the state. Then in 1996, the Board adopted additional guidelines for site-specific seismic hazard reports for essential and hazardous facilities, major structures, and special occupancy structures as provided in ORS 455.447. A complete listing of all report elements is included in Section 1802.6.1 of the *Oregon Structural Specialty Code.* In 2001, the Board established a Memorandum of Understanding with the Engineering & Land Surveying Examiners Board to clarify the roles of Certified Engineering Geologists and Geotechnical Engineers.

Oregon Emergency Management Association

Oregon Emergency Management Association (OEMA) is the association for Oregon's emergency management professionals. OEMA provides over 200 public, private, and non-profit members with the following:

- A network for training, education, and preparedness information and professional development;
- A forum for the sharing of knowledge, ideas, processes and building partnerships; and
- A collective and unified voice for emergency management issues in Oregon.

OEMA promotes the efforts of Oregon's communities to plan for all natural and human caused hazards through improved mitigation, preparedness, response, and recovery capabilities.

Oregon Lidar Consortium

Formed by the Department of Geology and Mineral Industries, the Oregon Lidar Consortium (OLC) develops cooperative agreements for the collection of high-quality lidar that benefits the public at large, the business community, and agencies at all levels of government. The goal of the OLC is to provide high-quality lidar coverage for the entire state. The collection of lidar data can assist governments in better identifying hazardous areas.

Oregon Seismic Safety Policy Advisory Committee

OSSPAC is a state advisory commission created in February 1990 through an executive order from Governor Neil Goldschmidt and established in statute by the 1991 Oregon Legislature (ORS 401.337).

It is made up of 18 members with interests in earthquake safety: Building Codes Division, Oregon Office of Emergency Management, Department of Geology and Mineral Industries, Department of Land Conservation and Development, Oregon Department of Transportation, two representatives from the Oregon Legislature, one local government representative, one member from education, three from the general public and six members from affected industries, such as homebuilders and banking industries.

The purpose of the work of OSSPAC is to reduce exposure to Oregon's earthquake hazards by:

- Developing and influencing policy at the federal, state, and local government levels;
- Facilitating improved public understanding and encouraging identification of earthquake risk; and
- Supporting research and special studies, appropriate mitigation, response, and recovery.

The Commission has proposed concepts to the Oregon Legislature on improving seismic safety in Oregon. They have prepared a document entitled *Oregon at Risk,* which outlines seismic hazards in the state. In 2004 the Commission provided a venue to the General Obligation (GO) Bond Task Force to develop policy recommendations for implementation of SB 14 & 15 (2001). These bills and general obligation bonds for funding of the grant program would improve the earthquake safety of public schools and emergency response facilities across the state.

Oregon Sea Grant Extension

The Oregon State University Extension Service conveys research-based knowledge to a variety of businesses owners, growers, foresters, youth and community leaders in an effort to improve their lives, their homes, their businesses and their communities. The Oregon Sea Grant program provides education regarding watershed health and creating hazard resilient coastal communities with particular attention placed to earthquake and tsunami hazards.

Pacific Northwest Seismograph Network

The Pacific Northwest Seismograph Network operates seismograph stations and locates earthquakes in Oregon and Washington. They are funded by the U.S. Geologic Survey, the Department of Energy, and the State of Washington. The PNSN website provides information on Pacific Northwest earthquake activity and hazards.

Pacific Northwest Wildfire Coordinating Group

The Pacific Northwest Wildfire Coordinating Group provides leadership in interface and wildland fire management for local, tribal, state, and federal agencies. The PNWCG is comprised of USDA-Forest Service, USDOI-Bureau of Land Management, Bureau of Indian Affairs, National Park Service, Fish and Wildlife Service, Oregon Department of Forestry, Washington Department of Natural Resources, Washington Association of Fire Chiefs, Oregon Fire Chiefs Association, the Oregon State Fire Marshal, and the Washington State Fire Marshal.

State Pre-Disaster Hazard Mitigation Programs

Conservation Reserve Program (CRP)

CRP retires eligible cropland from agricultural production and plants the land to permanent grass cover that reduces erosion and benefits wildlife populations. CRP does a very good job of providing cover that reduces windblown dust and has been effective in reducing soil erosion in the areas most prone to wind erosion. However, silt soils easily stay suspended for long periods of time and can move great distances affecting visibility on roads away from the protected fields. The strategy to encourage a strip of CRP along the freeway has been determined to probably be ineffective at reducing dust storm intensity. Also, the fire hazard could be worse than the dust hazard. In Umatilla County, NRCS has designated an area near I-84 as a wind erosion priority area to influence enrollment into the Conservation Reserve Program.

Community Rating System Users Groups

The NFIP's Community Rating System (CRS) is a voluntary program that rewards communities for engaging in floodplain management activities that exceed the minimum NFIP requirements by discounting flood insurance premium rates to reflect the reduced flood risk resulting from those activities. Other benefits resulting from community participation in the CRS program include:

- Reducing flood damage to insurable property,
- Strengthening and supporting the insurance aspects of the NFIP, and
- Encouraging a comprehensive approach to floodplain management.

Relatively few of Oregon's communities participate in the CRS Program. In 2014, DLCD convened two new CRS Users Groups (northern and southern) to encourage greater participation. The two groups were open to communities already participating in the CRS program and to any other community interested in floodplain management best practices. DLCD was the coordinating body, but the effort had to be tabled for a time due to turnover, capacity, and NFIP funding priorities. It has since been supported primarily by FEMA's insurance specialist with DLCD providing advocacy and encouragement to local governments to join the program during every CAV and CAC.

Oregon Coastal Management Program

The Oregon Coastal Management Program (OCMP) is the combined effort of 32 cities, seven counties, and a host of state agencies to carry out the statewide land use program on the Oregon Coast. OCMP's mission is to work in partnership with coastal local governments, state and federal agencies, and other stakeholders to ensure that Oregon's coastal and ocean resources are managed, conserved, and developed consistent with statewide planning goals.

To accomplish this mission OCMP provides substantial financial and technical assistance to coastal local governments for planning, capacity building, and special projects. OCMP also coordinates and integrates programs of local, state, and federal agencies to support local planning and to protect and restore coastal natural resources, and reviews state and federal permits to ensure compliance with local, state, and federal program requirements. OCMP also uses the Internet to provide coastal data and information to a wide public through the Oregon Coastal Atlas.

DOGAMI Partnership with U.S. Geological Survey National Landslide Hazard Program

DOGAMI has entered into a collaborative partnership with the U.S. Geological Survey National Landslide Hazard Program, centered on three targeted goals for Western Oregon: (a) develop inventory maps and digital databases of existing deep-seated landslides, (b) develop predictive hazard maps of areas prone to rapidly moving landslides, and (c) develop susceptibility maps of deep-seated landslides for targeted developable areas. The second of these incorporates the mandates of Oregon Revised Statutes 195.260 (2003) to produce *further review areas* of rapidly moving landslide hazard. This will be conducted in cooperation with local governments and will provide some technical assistance to local governments to facilitate the use and application of this information. A Landslide Advisory Committee consisting of local government stakeholders and state and federal agencies will aid the agency in prioritizing projects.

DOGAMI Earthquake Hazard Mitigation Program

DOGAMI's enabling statute gives the agency broad responsibility and authority for evaluating all geologic hazards statewide, including earthquake hazards. DOGAMI has published numerous maps and reports on the earthquake hazards of the state. The agency, in partnership with other state and federal agencies, has undertaken a wide-ranging program in Oregon to identify seismic hazards, including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake induced landslides.

DOGAMI Tsunami Hazard Mitigation Program

The primary goal of the Oregon Tsunami Hazard Mitigation Program is to reduce loss of life and property damage from tsunamis. Additionally, the program aims to promote community preparedness through development of mitigation products and the implementation of a coast-

wide, volunteer driven education and outreach initiation to support the National Weather Service's *TsunamiReady*™ program. Funding granted from the National Tsunami Hazards Mitigation Program is being used to complete the next generation of tsunami inundation maps along Oregon's 43 *TsunamiReady*™ communities.

ODF National Fire Plan Implementation in Oregon

Under the National Fire Plan (NFP), funding opportunities for local wildland-urban interface (WUI) planning, prevention and mitigation projects first became available in 2000. Since that time, Oregon has aggressively sought funding for a wide variety of projects, including fuels reduction work, education and prevention projects, community planning, and alternative uses of fuels. The majority of these monies have been used to fund fuels reduction projects on individual properties and to establish community fuel breaks in the most wildfire prone portions of the state. NFP funds have also been used to expand fire prevention efforts, to educate local officials about how they may help address the WUI situation, to implement Senate Bill 360, to improve public awareness about the wildfire problem, and to better identify areas especially exposed to wildland fire.

ODFW Habitat Resources Program — Riparian Lands Tax Incentive

The Riparian Tax Incentive Program, authorized by ORS 308A.350 through 308A.383, offers a property tax incentive to property owners for improving or maintaining qualifying riparian lands. Under this program, property owners receive complete property tax exemption for their riparian property. This can include land up to 100 feet from a stream.

When the Riparian Tax Incentive law was passed in 1981, the Oregon Legislative Assembly declared that "it is in the best interest of the state to maintain, preserve, conserve, and rehabilitate riparian lands to assure the protection of the soil, water, fish, and wildlife resources of the state for the economic and social well-being of the state and its citizens." Healthy riparian zones are important to the resource by providing cooler water due to shading resulting in better habitat for salmon, trout, and steelhead; more and better varieties of habitat for wildlife; increased water during summer low flow periods; erosion control by stabilizing stream banks with protective vegetation; and flood control.

ODFW Fisheries Restoration and Enhancement Program

The Fisheries Restoration and Enhancement Program is a comprehensive program to restore state-owned hatcheries, enhance natural fish production, expand hatchery production, and provide additional public access to fishing waters. The R&E Program provides increased sport fishing opportunities, and also supports and improves the commercial salmon fishery.

The program was authorized by the Oregon Fisheries and Enhancement Act of 1989 and was renewed in 2009. The program focuses on projects that increase fish production (either hatchery or natural production), increase recreational or commercial opportunities or access to the fish resources, or improve fish management capabilities. Restoration projects that facilitate fish passage may also provide flood-control benefits.

OEM Pre-Disaster Mitigation Planning and Project Activities

State pre-disaster mitigation planning and project activities are an integral component of OEM's mission. OEM's Mitigation and Recovery Services Section provides oversight and administration of financial services and related funding that is sub-granted to local governments. Specifically,

the Section Director, SHMO, Alternate SHMO, Facilities Engineer (Public Assistance Officer), Seismic Grants Coordinator, and financial support staff work together closely on pre-disaster mitigation grant programs and project activities. Although OEM has limited staff support available for mitigation planning and project implementation activities, the state is able to effectively secure and manage FEMA's PDM and FMA grants.

The success of mitigation planning activities statewide combines Oregon's past history of land use planning and goals with the integration of resources from FEMA's mitigation grants leveraged through the Oregon Partnership for Disaster Resilience. The concept of aggregating regional, jurisdictional mitigation planning needs that leverage and target financial and technical resources to geographic areas around the state has proven to be successful in securing funding and completing local mitigation plans.

OPDR Pre-Disaster Mitigation Planning Program

Despite the growing recognition of the need for long-term coordination to reduce risk from natural disasters, many communities in Oregon continue to experience difficulty in developing and implementing natural hazard risk reduction plans, policies and activities. Communities regularly suffer from a lack of technical and funding assistance, as well as insufficient coordination among public, private, and non-profit sectors at the local, regional, and statewide levels. OPDR works to address these challenges and offers a model of how increased communication, coordination, and collaboration between diverse partners can assist communities in reducing their risk from natural hazards. The Pre-Disaster Mitigation (PDM) program is completely funded by nationally competitive federal grants with in-kind match coming from local communities and the University of Oregon. Mitigation planning occurs in partnership with the Oregon Office of Emergency Management, the Department of Land Conservation and Development, Department of Geology and Mineral Industries, FEMA Region X, and local governments throughout Oregon.

OPDR Disaster Resilient University Initiative

The Oregon Disaster Resilient University (Oregon-DRU) is a new initiative between University of Oregon Emergency Management, Oregon Partnership for Disaster Resilience and Oregon's post-secondary institutions. The concept is to build a collaborative service center model between campuses in Oregon to link the skills, expertise, resources, and innovation of post-secondary education, federal agencies, professional and trade organizations, and state agencies to reduce risk on Oregon campuses. The Oregon-DRU has five specific service areas geared to enhance and support emergency management and risk reduction efforts within post-secondary institutions in Oregon.

ODF Community Wildfire Protection Plans

A Community Wildfire Protection Plan (CWPP) is developed by a community in an area at-risk from wildfire. CWPs have three primary requirements: (a) they must be developed collaboratively between local and state government representatives in consultation with federal agencies and other interested parties, (b) they must identify and prioritize areas for hazardous fuels reduction treatments while also recommending methods for treatments that will protect at-risk communities and essential infrastructure, and (c) they must recommend measures that homeowners and communities can take to reduce ignitability of structure throughout the plan area. The statutory definition of a CWPP appears in Title I of the Healthy Forest Restoration Act of 2003. Oregon has 35 County CWPPs and 26 additional community CWPPs.

Oregon Plan for Salmon and Watersheds — Covered in Policies

"The Oregon Plan" is the state's program to restore native salmon and trout populations and to improve water quality. The overall goal of the Oregon Plan is to restore fish populations to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits.

Statewide Land Use Planning Program

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals. The goals express the State's policies on land use and related topics, such as citizen involvement, housing, and natural resources. Oregon Statewide Planning Goal 7- *Areas Subject to Natural Hazards* was developed to protect people and property from natural hazards in Oregon. Goal 7 provides guidelines for local government planning officials to follow that can reduce their vulnerability to natural hazards. These guidelines include what factors local governments can consider in adopting policies and measures to protect people and property from natural hazards, and several ways in which local governments can implement mitigation measures more effectively.

DLCD's Natural Hazards Mitigation Planning Program facilitates the update and maintenance of Oregon's NHMP, assists local governments and tribes directly with developing and updating NHMPs, and undertakes other activities to implement Goal 7. This Program, the NFIP staff and the Ocean and Coastal Management Program staff work together to promote intra-departmental awareness of and action on hazard mitigation issues and opportunities in land use planning as well as working directly with communities to advance hazard mitigation statewide.

NFIP and Cooperating Technical Partners

NFIP: The Oregon Department of Land Conservation and Development serves as the state NFIP coordinating agency, partnering with DCBS-BCD, DOGAMI, and OEM. These agencies are responsible for existing flood mitigation strategies and programs. In addition to state programs, the NFIP is designed to help minimize flood losses through local floodplain management. The NFIP relies on flood hazard mapping, flood insurance, and floodplain development standards implemented at the local level to reduce flood losses. In Oregon, 259 cities and counties and two tribal nations participate in the NFIP (total of 259 "NFIP" communities) and thus play a key role in flood mitigation.

Cooperating Technical Partners: FEMA's Risk MAP Program's partnership mechanism provides the opportunity to pool resources and extend the productivity of limited public funds. Risk MAP partners include State or regional agencies and federally recognized tribes that serve communities participating in the National Flood Insurance Program (NFIP). Risk MAP partner activities include, but are not limited to, assessing mapping needs, reviewing hydrologic and hydraulic studies prepared for flood map revisions, and providing an inventory of base maps.

FEMA partners with State and regional organizations in the management of Risk MAP activities for the following reasons:

- Management participation will help ensure that the products resulting from Risk MAP do not conflict and are complementary, not duplicative;

- Risk MAP provides a means to interject a tailored, local focus into a national program. Where unique conditions may exist, special approaches to communication, coordination, and compliance that may be necessary can be taken; and
- The Risk MAP partnership mechanism provides the opportunity to combine resources and extend the productivity of limited public funds.

Oregon Coastal Management Program

Oregon's Coastal Management Program (OCMP) is the combined effort of 32 cities, seven counties, and a host of state agencies to carry out the statewide land use program on the Oregon coast. All statewide planning goals apply to the coast, but the OCMP emphasizes four coastal-related goals: Goal 16, Estuarine Resources; Goal 17, Coastal Shorelands; Goal 18, Beaches and Dunes; and Goal 19, Ocean Resources. The Department of Land Conservation and Development is the state's Coastal Management Agency and provides overall program administration and coordination. The OCMP assists coastal planners to identify and plan for costal hazards to prevent property damage and avoid loss of life. The OCMP also works with the Oregon Department of Geology and Mineral Industries and Oregon Sea Grant to identify and communicate natural hazards such as shoreline erosion and tsunami inundation.

Oregon Emergency Response System

Oregon's Emergency Response System coordinates and manages state resources in response to natural and technological emergencies and civil unrest involving multijurisdictional cooperation between all levels of government and the private sector. Established in 1972, OERS was the first state plan of its kind, it serves as the primary point of contact by which any public agency reports the state with notice of an emergency or disaster or from which they can request access to state or federal resources.

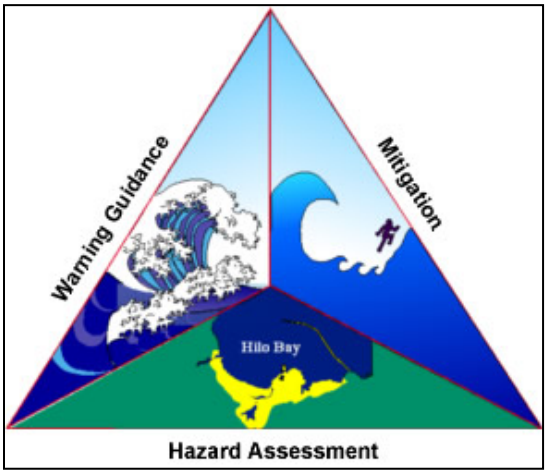
Oregon's Wetlands Protection Program

Oregon's Wetlands Program was created in 1989 to integrate federal and state rules concerning wetlands protection with the Oregon Land Use Planning Program. The Wetlands Program has a mandate to work closely with local governments and the Division of State Lands (DSL) to improve land use planning approaches to wetlands conservation. A Local Wetlands Inventory (LWI) is one component of that program. DSL also develops technical manuals, conducts wetlands workshops for planners, provides grant funds for wetlands planning, and works directly with local governments on wetlands planning tasks.

National Tsunami Hazard Mitigation Program

The National Tsunami Hazard Mitigation Program (NTHMP) is a state and federal partnership. The program's Coordinating Committee includes emergency management and geoscience representatives from the original five Pacific states (Alaska, California, Hawaii, Oregon, and Washington), emergency management representatives from the Atlantic and Gulf Coast states, the United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), National Oceanographic and Atmospheric Administration (NOAA), and the National Science Foundation (NSF). Funds to administer the program are provided by NOAA and have been available every fiscal year since federal FY 1997.

Figure 3-1. Tsunami Hazard Mitigation Program



The 2006 *Tsunami Warning and Education Act* (PL 109-424) called for a Forecasting and Warning Program, a Tsunami Hazard Mitigation Program, and a Tsunami Research Program. These programs include the upgrade of seismic networks and installation of open ocean tsunami detection equipment designed to reduce the number of false alarms; development of tsunami inundation models and maps; and education, preparedness, and mitigation work, including an implementation plan to ensure that the goals of the program were met.

Water Resources Department Dam Safety Program

The Water Resources Department Dam Safety Program reviews design plans, reports and specifications and approves for construction, modification, or enlargement all hydraulic structures greater than or equal to 10 feet height and 3,000,000 gallons reservoir capacity. Design approval for High Hazard hydraulic structures typically includes a satisfactory review of Emergency Action Plans and inundation maps.

The Dam Safety Program maintains for the National Inventory of Dams, a database of all Oregon dams and reservoirs that exceed statutory size criteria regardless of ownership. The program also performs regular inspections of all existing non-federal dams statewide. The OWRD dam safety program participates cooperatively with existing established federal dam safety programs such as U.S. Army Corps Engineers, U.S. Bureau Reclamation, Federal Energy Regulatory Commission and others in their design review and inspection of federal project dams, reservoirs, and appurtenant works.

OWRD is the designated state agency and the Hydroelectric Licensing Program is the lead for review and license permitting for new and existing hydroelectric projects. OWRD's licensing program collects data and requests from other state agencies, negotiates settlements, and assembles the state's criteria for power development and operation. When the process is completed, the conditions and requirements are incorporated into and apply concurrently with issuance of the federal license for all regulated hydroelectric projects statewide.

Wildfire Awareness Week

Since 2001, when Governor John Kitzhaber proclaimed Oregon's first Wildfire Awareness Week, this interagency effort has grown with each passing year. That year, a coalition led by the Office

of State Fire Marshal, and including the Department of Forestry, structural fire agencies, insurance industry representatives, and others developed and distributed a campaign tool kit with model proclamations and recorded public service announcements designed for distribution to media outlets. In 2008, the Keep Oregon Green Association became the caretaker of the annual campaign.

OEM Statewide Earthquake and Tsunami Drills

Earthquake and tsunami drills are conducted annually by OEM. On January 25, 2011 the first annual Great Oregon Shake Out occurred throughout Oregon with over 39,000 participants. In partnership with DOGAMI, OEM also conducts voluntary tsunami evacuation drills. The community-wide drills incorporate aircraft public address systems in addition to the tsunami warning issued by the National Weather Service in areas where sirens have limited coverage.

ODOT Winter Maintenance Practices

ODOT's winter maintenance practices include plowing, sanding, and applying anti-icing liquids in order to increase efficiency of snow removal and to reduce motor vehicle crashes. To increase motorist safety in collaboration with local media, ODOT Region 5 publishes a special multi-page flyer known as the Winter Roadway Guide. Additionally, ODOT publishes winter driving tips and information on its website and readerboards geared to motorists and bicyclists.

Public Health Mitigation Planning

The Oregon Public Health Emergency Preparedness Program is an effort to anticipate, detect, assess, and understand health risks associated with an emergency. The mitigation aspect focuses on long-term measures for reducing or eliminating risk including technological and policy changes. The department promotes guidance from the National Health Security Strategy, Interim Implementation Guides, and Community Mitigation Strategies.

Oregon Seismic Safety Policy Advisory Commission

The Oregon Seismic Safety Policy Advisory Commission has the unique task of promoting earthquake awareness and preparedness through education, research, and legislation. The mission of OSSPAC positively influence decisions and policies regarding pre-disaster mitigation of earthquake and tsunami hazards, increase public understanding of hazard, risk, exposure, and vulnerability through education seminars, etc., and be responsive to the new studies and or issues raised around earthquakes and tsunamis.

As a result of the Loma Prieta Earthquake in the Bay Area of California in 1989, Oregon residents wanted the State to address the earthquake hazard and preparedness. As a result, the Interagency Seismic Task Force recommended that a new state commission be formed in response to this need. OSSPAC was formed as a result of Senate Bill 96 in 1991. Since this time, OSSPAC has continued to increase Oregon's awareness to earthquake hazards by supporting earthquake education, research, and legislation. Every 2 years, OSSPAC provides a summary report to the Governor of the Commission's activities. OSSPAC has also formed relationships with the Western States Seismic Policy Council (WSSPC) and the California Seismic Safety Commission which provides a persuasive advantage to affect federal policy for the West Coast.

National Programs & Organizations

American Planning Association (APA)

The APA's Hazards Planning Research Center brings together solutions from multiple disciplines into a single source. The center provides original and applied research to identify best practices that that protect communities from natural and man-made hazards. APA's efforts are accomplished through its Hazard Mitigation and Disaster Recovery Planning Division, research, outreach, education, policy and resource guides and other publications.

Firewise

Firewise is a program developed within the National Wildland-Urban Interface Fire Protection Program, and it is the primary federal program addressing interface fire. It is administered through the National Wildfire Coordinating Group whose extensive list of participants includes a wide range of federal agencies. The program is intended to empower planners and decision makers at the local level. Through conferences and information dissemination, Firewise increases support for interface wildfire mitigation by educating professionals and the general public about hazard evaluation and policy implementation techniques. Firewise offers online wildfire protection information and checklists, as well as listings of other publications, videos, and conferences.

FireFree Program — Bend, Oregon

FireFree is a unique private/public program for interface wildfire mitigation involving partnerships between an insurance company and local government agencies. It is an example of an effective non-regulatory approach to hazard mitigation. Originating in Bend, the program was developed in response to the city's "Skeleton Fire" of 1996, which burned over 17,000 acres and damaged or destroyed 30 homes and structures. Bend sought to create a new kind of public education initiative that emphasized local involvement. Safeco Insurance Corporation was a willing collaborator in this effort. Bend's pilot program included:

- A short video production featuring local citizens as actors, made available at local video stores, libraries, and fire stations
- Two city-wide yard debris removal events
- A 30-minute program on a model FireFree home, aired on a local cable television station
- Distribution of brochures, featuring a property owner's evaluation checklist and a listing of fire-resistant indigenous plants

The program continues to provide educational materials on fire risk reduction strategies and fire resistant plants.

National Flood Insurance Program (NFIP)

The function of the NFIP is to provide flood insurance to homes and businesses located in floodplains at a reasonable cost, and to encourage the location of new development away from the floodplain. The program is based upon mapping areas of flood risk, and requiring local implementation to reduce that risk, primarily through restrictions on new development in floodplains. Elevation Certificates are forms published by FEMA required to be maintained by communities participating in the NFIP. New development is required to be elevated or otherwise designed to protect against flooding. The NFIP requires local governments to obtain

certificates for all new construction in floodplains and to keep the certificates on file. Local governments must insure that elevation certificates are filled out correctly for structures built in floodplains.

V-ZONE CONSTRUCTION

In many of Oregon's coastal communities, FEMA has mapped "V zones" (velocity zones), areas of special flood hazard that are subject to high velocity wave action from storm surges or seismic events. Because of the potential force associated with this wave action, special regulations apply for new construction and substantial improvements in "V zones."

COMMUNITY RATING SYSTEM (CRS)

Community Rating System (CRS) is a program operated by the NFIP that recognizes communities who go beyond the minimum requirements of the NFIP. CRS offers reduced flood insurance premiums for communities who adopt higher standards and encourages community activities that reduce flood losses, facilitate accurate insurance rating, and promote flood insurance awareness.

FEMA Region 10 Policy on Fish Enhancement Structures in the Floodway

Local communities regulate development in the floodway. The regulations require that a community prohibit encroachments (including fill, new construction, and other development) within the floodway unless it is demonstrated by engineering analysis that the proposed encroachment will not result in any increase in flood levels during the occurrence of a 100-year flood event. The recent designation of several northwest salmon and steelhead runs as threatened or endangered has resulted in an increased effort to restore fish habitat. Restoring habitat often involves placing structures in stream.

Army Corps of Engineers Permit Program

The U.S. Army Corps of Engineers is responsible for the protection and development of the nation's water resources, including navigation, flood control, energy production through hydropower management, water supply storage, and recreation. The Corps administers a permit program to ensure that the nation's waters are used in the public interest, and requires any person, firm, or agency planning work in the waters of the United States to first obtain a permit from the Corps. Permits are required even when land next to or under the water is privately owned. It is a violation of federal law to begin work before a permit is obtained and penalties of fines and/or imprisonment may apply. Examples of activities in waters that may require a permit include: construction of a pier, placement of intake and outfall pipes, dredging, excavation, and depositing of fill. Permits are generally issued only if the activity is found to be in the public interest. In Oregon, the Division of State Lands (DSL) and the U.S. Army Corps of Engineers jointly issue permits for development of these activities. As mentioned in the discussion of DSL permits, local planning agencies are required to sign off on any permits issued by DSL and the U.S. Army Corps of Engineers and water quality certification is required by the Department of Environmental Quality.

Pre-Disaster Hazard Mitigation Projects

Tsunami Evacuation Signs

The Oregon Department of Transportation (ODOT) collaborated with DOGAMI, OEM, and coastal counties to develop signs denoting tsunami hazard zones, evacuation routes, and

evacuation sites. ODOT manufactures the signs and makes them available to local governments at cost. The signs also have been used in California, Washington, Alaska, the Philippines, and Japan.

A project started in 2003 with OEM, DOGAMI, and coastal counties involved the development of signs that tell motorists when they are entering or leaving a tsunami hazard zone. The new signs are placed on US-101, the Pacific Coast Highway, when local communities establish the locations of their tsunami evacuation routes.

As local tsunami evacuation plans are developed, ODOT will work with communities to develop corresponding alternate route plans for U.S. 101 and other state highways.

Wind Erosion Control Practices

The Natural Resources Conservation Service (NRCS) and local soil and water conservation districts (SWCD) have long sought to reduce wind erosion of cropland. Farming practices commonly used in dryland cropping areas, such as reduced tillage and residue management, reflect this interest. However, occasionally after long periods with little or no precipitation any activities that disturb soil or reduce vegetation can lead to conditions conducive to dust storms.

Nationally, NRCS has developed quality criteria for wind erosion control practices and use a wind erosion equation model for predicting potential wind erosion under various farming systems.

Since 1985, to maintain eligibility for USDA Farm Program benefits, landowners have been required to meet minimum standards for control of erosion, both from water and wind. Participating farmers have developed and are responsible for implementing conservation plans for all farmland designated as highly erodible. Plans address practices such as residue management, tillage methods, and irrigation management.

At this time, wind erosion control is a requirement under the Federal Farm Bill for certain commodities such as wheat and corn, but depending on the rotation, may not be a requirement for other commodities such as potatoes or vegetables. USDA-NRCS is generally responsible for these programs.

Wind erosion is ranked high among concerns for funding under the Environmental Quality Incentive Program, the current USDA cost-share program available to landowners.

No-Till Cropping

SWCDs have been actively promoting, through education and incentives, direct seeding methods. Direct seeding or no-till cropping systems use technology that places seed and fertilizer into undisturbed soil and residue from the previous crop. This results in minimal soil disturbance and reduced potential for wind and water erosion.

Research funded by the Cooperative State Research, Education, and Extension Service (CSREES) research on the Columbia Plateau has demonstrated that no-till cropping can reduce predicted dust emissions by 94% during severe wind events, compared to conventional wheat-fallow. Research continues on measuring dust emissions from fields on the Columbia Plateau, a 50,000 square-mile region in Washington, Oregon, and Idaho containing one of the driest, yet most productive, rain-fed wheat regions in the world. No-till only works for some crops under certain

conditions, however, and even in situations where it does work, some farmers find that they need to till the soil periodically to reduce diseases and redistribute soil moisture.

Trip Check

TripCheck is an online travel planning resource, developed by the Oregon Department of Transportation (ODOT) to provide travelers with the latest travel conditions and information via road cameras, continuous winter travel updates, year-round highway construction details, and other valuable tips. Several projects were included in providing the public with this resource, including installation of closed circuit television cameras on remote state highways, installation of Road Weather Information Systems (RWIS) on state highways. The RWIS's are used to make winter road maintenance decisions, and data is shared with the public. Installation of Wind Warning Systems on state highways to alert drivers to hazardous wind conditions at bridge crossings and along coastal highways.

Highway Advisory Radio

ODOT has coordinated the installation of Highway Advisor Radio transmitters for Highway Advisory Radio in select travel corridors. Locations include; installation of radio transmitters along I-84 in Morrow and Umatilla Counties for, and along the full length of US-101.

When an emergency occurs, the ODOT District 12 office selects the appropriate pre-recorded message on the system and transmits it via radio. At the same time, ODOT activates yellow flashing beacons. Motorists seeing the signs and flashing lights should tune to 1610 AM and comply with any messages. In the case of a dust storm, motorists are advised to slow down and exit the freeway as soon as possible. ODOT worked with OEM's Chemical Stockpile Emergency Preparedness Program office in Pendleton and local emergency management personnel on this project.

Also installed in the system is the ability to re-broadcast National Weather Service (NWS) weather information. NOAA Weather Radio is re-broadcast on a continuous basis unless there is an emergency. An emergency broadcast then overrides the NOAA Weather Radio service

ODOT Mitigation Efforts

ODOT has several implemented several hazard mitigation measures and increase motorists' safety, including:

- Installation of debris flow warning signs at designated locations on three at-risk highways: OR-38, OR-6, and I-84;
- Installation of automated flood warning systems on some state highways to monitor water levels and to notify maintenance crews and the public of potentially hazardous conditions;
- Installation of snow zone signs on state highways notifying motorists of chain and traction tire requirements ahead;
- Installation of tsunami zone signs on state highways; and
- Establishment of a 511 statewide toll-free telephone number allowing drivers to hear road and weather information by phone.

Publications/Studies

Energy Assurance Plan

As the designated State Energy Office, the Oregon Department of Energy (ODOE) is responsible for developing and maintaining the State Energy Emergency Plan under the State Energy Program. ODOE was required to review and update the State Energy Emergency Plan annually for submission to USDOE as the state energy Plan of Record.

The September 2009 Oregon Energy Emergency Response Plan was revised and renamed the Oregon State Energy Assurance Plan as a result of a grant awarded to ODOE by the USDOE's Office of Electricity Delivery and Energy Reliability (USDOE-OE) to enhance state government energy assurance resiliency. As a result, new information was added to the state's 2009 plan.

The Plan includes information on seismic vulnerabilities and earthquake impacts on the critical energy infrastructure in Oregon from a magnitude nine Cascadia Subduction Zone earthquake. Furthermore, the state is considering the integration of new energy portfolios like alternative fuels as well as smart grid technologies into Oregon's response strategies to energy emergencies to improve energy assurance resiliency.

"Resiliency" is defined as the ability of critical infrastructure to absorb, adapt to, and rapidly recover from a potentially severe and disruptive event. "Critical infrastructure" includes energy lifelines that, if disrupted, could significantly impact public health and safety, the economy, or national security. Any prolonged interruption of the supply of basic energy — whether it is petroleum products, electricity, or natural gas — could do considerable harm. As a result, improving energy assurance and resiliency in Oregon's energy infrastructure is intended to help mitigate the impacts of an energy supply interruption and help the state return to normal conditions as quickly as possible, regardless of the cause of the interruption.

Oregon's energy assurance and resiliency planning takes into account four key components: (a) understanding the energy infrastructure, Oregon's Energy Profile, and system interdependencies; (b) assessing potential risks and hazards threatening the state's critical energy infrastructure and considering short- and long-term mitigation measures to reduce risk and vulnerability; (c) developing effective plans and procedures to help minimize the impacts of an energy supply interruption and rapidly restore the energy infrastructure should an emergency occur; and (d) increasing public awareness. The Oregon State Energy Assurance Plan is designed to provide an overview of the first three components to help achieve the fourth component, which is to increase general awareness of the energy infrastructure, risks to the state energy lifelines, and the state's approach to restore fuel, power, and natural gas should an emergency occur.

The Oregon State Energy Assurance Plan is an introduction to how Oregon prepares for, responds to, and recovers from energy emergencies. The Oregon State Energy Assurance Plan complies with the National Association of State Energy Officials (NASEO) guidelines, the NASEO Energy Assurance Planning Framework, the National Response Framework, the National Infrastructure Protection Plan, and the National Incident Management System. The Oregon Energy Assurance Plan is also consistent with the Oregon Emergency Management Plan and Oregon Revised Statute (ORS) 401 to "coordinate the activities of all public and private organizations providing emergency services within this state." ODOE will review and update the

Oregon State Energy Assurance Plan annually or as needed to reflect changing response trends and strategies and to incorporate

Oregon Climate Change Adaptation Framework (2010)

This document provides a framework for state agencies to identify authorities, actions, research, and resources needed to increase Oregon's capacity to address the likely effects of a changing climate.

Given the broad range of expected changes to Oregon's climate in the coming decades, the breadth of state-level responsibilities, authorities, and programs that will likely need to respond to the effects of future climate conditions, and limited time, it has only been possible to begin the development of a climate change adaptation strategy for Oregon. This report constitutes a *framework* for the continued development of strategies and plans to address future climate conditions. This Climate Change Adaptation Framework (CCAF) provides context, identifies risks, lays out short-term priorities, and provides momentum and direction for Oregon to prepare for future climate change. The framework has been developed in parallel with the Oregon Climate Assessment Report (OCAR) by the Oregon Climate Change Research Institute (OCCRI). The OCAR and this framework are intended to complement each other. The OCAR identifies the most likely impacts from climate change, which will help the state prioritize resources to prepare for and adapt to a changing and variable climate. OCCRI assisted in the development of this Framework.

This Framework lays out expected climate-related risks, the basic adaptive capacity to deal with those risks, short-term priority actions, and several steps that will evolve into a long-term process to improve Oregon's capacity to adapt to variable and changing climate conditions.

The 2010 CCAF is currently being updated and evolving into a foundation for a statewide, interagency, climate adaptation program under the auspices of the Governor's Office. This update and the 2020 Oregon NHMP update are being coordinate to the extent feasible given the evolution of the CCAF and the timelines of the two efforts.

Oregon Climate Assessment Report (2010)

In 2007, the Oregon State Legislature charged the Oregon Climate Change Research Institute, via HB 3543, with assessing the state of climate change science including biological, physical, and social science as it relates to Oregon and the likely effects of climate change on the state. This inaugural assessment report is meant to act as a compendium of the relevant research on climate change and its impacts on the state of Oregon. This report, published December 2010, draws on a large body of work on climate change impacts in the western United States from the Climate Impacts Group at the University of Washington and the California Climate Action Team. The report continues to be updated regularly, most recently in 2019, and published on OCCRI's website.

State Emergency Management Plan

This Natural Hazards Mitigation Plan is a document within Volume I, Preparedness and Mitigation, of the State Emergency Management Plan, administered by the Oregon Office of Emergency Management. The other volumes of the Emergency Management Plan are: Volume II, Emergency Operations Plan, and Volume III, Relief and Recovery.

Volume I: "Preparedness and Mitigation" includes the plans and guidance necessary for the state to prepare and mitigate the effects of a disaster. It includes the state disaster hazard assessment, exercise, and training programs, and plans to lessen the physical effects of a disaster to citizens, the environment, and property. Volume I also includes this natural hazards mitigation plan.

Volume II: "Emergency Operations Plan," which is also referred to as the Basic Plan, describes in broad terms the organization used by the state to respond to emergencies and disasters. The EOP is supplemented by emergency Support Function Annexes, Support Annexes, and Incident Annexes. It describes common management functions including areas common to most major emergencies or disasters such as communications, public information, and others.

Volume III: "Relief and Recovery" gives guidance, process, and rules for assisting Oregonians with recovering from the effects of a disaster. It includes procedures to be used by government, business, and citizens.

State Fire Services Mobilization Plan

The State Fire Services Mobilization Plan is an all-hazard based plan used to mobilize fire resources to any incident beyond local fire service capabilities that are necessary to protect life, property, and the environment. It assumes the prior existence of mutual aid agreements that organize district and regional firefighting forces to cope with local emergencies.

The primary purpose of mutual aid is to supplement resources of a fire agency during a time of critical need. Mutual aid is based on reciprocal, non-reimbursed contributions for services rendered and is contingent upon a responding fire chief's approval. Mutual aid is given only when equipment and resources are available and dispatch will not jeopardize local firefighting capabilities.

Under the Emergency Conflagration Act, local firefighting forces will be mobilized when the state fire marshal believes that a fire or emergency is causing, or may cause, undue jeopardy to life or property and the Act is invoked by the governor.

For purposes of this Plan, Oregon has been divided into fire defense districts. The Emergency Conflagration Act fire suppression resources of each fire defense district include the county, city, and rural fire protection departments and districts, as well as any other resources available through mutual aid agreements.

The Mobilization Plan may be used separately from the Conflagration Act to mobilize local structural fire agencies for any emergency situation exceeding local mutual aid resources. However, reimbursement for responding resources is assured only when the governor invokes the Conflagration Act. Federal or state disaster assistance reimbursement may or may not apply to emergency services mobilizations.

The objectives of the Oregon Fire Service Mobilization Plan are:

- To provide organizational structure and operating guidelines for the expeditious mobilization and direction of Oregon fire service forces;

- To promote effective communication among agencies during the preparation for, progress of, and demobilization from a fire suppression operation or other emergency response activity;
- To effectively cooperate and coordinate the efforts of various participating agencies through the use of a common command structure and terminology;
- To ensure prompt, accurate and equitable apportionment of fiscal responsibility for fire suppression or other emergency response activity; and
- To provide an OSFM Incident Management Team for effective support to local agencies and fire defense districts during major operations.

Oregon's Communities at Risk Assessment

A statewide task force was formed in February 2004 as part of the Oregon Department of Forestry's Fire Program Review to develop a statewide assessment of *Communities at Risk*. The assessment was used to develop a statewide fuels strategy, and to help set large-scale priorities across geographic areas. A *Community at* Risk is a "geographic area within and surrounding permanent dwellings with basic infrastructure and services, under a common fire protection jurisdiction, government, or tribal trust or allotment, for which there is significant threat due to wildfire." The assessment identifies communities and assigns each a *low, moderate,* or *high* risk rating for *Risk, Hazard, Protection, Capability, Value,* and *Overall*. The *Communities at Risk* assessment was updated and published in January 2020.

The Water Quality Model Code and Guidebook is a companion to the Model Development Code and User's Guide for Small Cities. These documents were developed by the Department of Land Conservation and Development and the Department of Transportation under the Transportation and Growth Management Program (TGM). This guidebook integrates many of the "smart development" inspired code recommendations of the TGM project with recommended code language to achieve water quality objectives. The goal of this guidebook is to provide local communities, both small cities and counties, with a practical guide to protecting and enhancing water quality through improved land use regulations. The guidebook includes both model zoning code ordinances and comprehensive plan policies that are ready for implementation. It also provides references to other publications and resources which provide background information on the link between development activity and water quality.

While Goal 7 does not point specifically toward the issue of water quality, Goal 7 compliance entails measures that will help improve water quality. This goal notes that comprehensive plans "should consider as a major detriment, the carrying capacity of the air, land, and water resources… (and) should not exceed the carrying capacity of such resources." In protecting against floods and other natural disasters, local governments may jointly address issues of water quality, such as limiting development within floodways and reducing impervious surfaces that increase runoff and flooding.

DOGAMI Tsunami Evacuation Maps

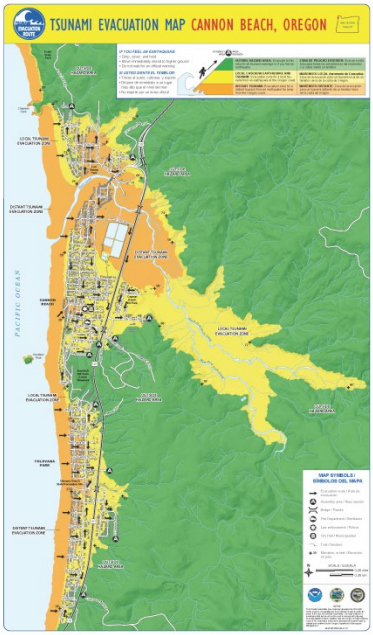
The Department of Geology and Mineral Industries has statutory authority to take a lead role in the mitigation of geologic hazards statewide and assists the BCD in administering ORS 455.446 and .447. Tsunamis can potentially cause the most loss of life of any geologic hazard in the state, so mitigation and assessment of these hazards has a high priority in the agency.

DOGAMI's Newport Coastal Field Office, in collaboration with OEM and DLCD, has developed tsunami evacuation maps for every coastal population center. These maps and evacuation routes have been compiled into an online Geographic Information System developed for the coast by DLCD. Strong ground shaking at the coast should trigger evacuation of the Cascadia zone, whereas the NOAA warning system will trigger evacuation of the distant tsunami zone.

DOGAMI, in collaboration with the Oregon Health and Science University and NOAA, has developed detailed tsunami inundation maps for several areas on the coast, including Gold Beach, Coos Bay, Siletz Bay (southern Lincoln City), Alsea Bay (Waldport), Yaquina Bay (Newport), Cannon Beach, Seaside-Gearhart, and Warrenton/Astoria.

The Cascadia Subduction Zone earthquake sources developed for maps produced prior to 2008 were also used as standards for similar mapping in Washington State. These sources for the northern Oregon coast and Washington were updated in a 2008 pilot study of Cannon Beach by DOGAMI (**Figure 3-2**).

Figure 3-2. Cannon Beach Tsunami Evacuation Map, 2013



Source: DOGAMI website, http://www.oregongeology.org/tsuclearinghouse/pubs-evacbro.htm

These more detailed maps are used as guides for emergency response planning. DOGAMI plans to develop detailed inundation maps for other areas according to a priority list. Local steering groups established for each map project ensure that maps meet local needs. Local emergency officials review inundation and evacuation maps in the field to ensure that the boundaries are accurate and meet the practical necessities of local government.

DLCD Tsunami Land Use Guide

DLCD released *Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities*

(http://www.oregon.gov/lcd/ocmp/docs/publications/tsunamiguide20140108.pdf) on January 15, 2014. Its purpose is to assist vulnerable communities as they incorporate tsunami resilience measures into their local land use programs. The guide can be tailored by communities for their individual risk and location. It includes information on map amendments, sample tsunami related comprehensive plan text and policies, a model tsunami hazard overlay zone, financing and incentive concepts, evacuation route planning assistance, and web links to other helpful information. The guide is designed to be used with the Department of Geology and Mineral Industries' Tsunami Inundation Maps (TIMs).

DLCD/DOGAMI Landslide Guide

In October 2019, DLCD and DOGAMI released *Preparing for Landslide Hazards: A Land Use Guide for Oregon Communities*. The projet was funded by a Risk MAP CTP grant. Its goal was to address questions from communities receiving new lidar-based shallow and deep landslide susceptibility maps about how best to use the maps to reduce the newly identified risk from landslide hazards. The *Landslide Guide* provides examples of comprehensive plan language and development code provisions allowing communities to tailor land use policies and regulations to their individual circumstances.

DLCD Water Quality Model Code and Guidebook

In Oregon it is no longer possible to ignore the connection between urban development and degraded water quality. Extensive findings demonstrate that our urban streams do not meet state water quality standards, and do not adequately support native salmon populations. The best way to reverse these trends is to think differently about land use planning at the local level. Local governments are already rethinking the connection between land use and transportation as it relates to air quality. The new challenge is to amend local plans and codes to protect water quality.

Mount Hood Coordination Plan

The Mount Hood Coordination Plan provides vital Mount Hood volcanic event response information for the areas that will be most affected by a volcanic event. The purpose of the Mount Hood Coordination Plan is to coordinate the actions that various agencies must take to minimize the loss of life and damage to property before, during, and after hazardous geologic events at Mount Hood volcano. The plan strives to ensure timely and accurate dissemination of warnings and public information.

Planning for Natural Hazards: Oregon Technical Resource Guide, 2000

Developed for DLCD by the Community Service Center's Oregon Natural Hazards Workgroup at the University of Oregon, the Technical Resource Guide (TRG) provides contacts, documents, and internet resources to assist planners, emergency managers, and citizens in mitigating earthquake hazards along with several other hazards.

Natural Hazards Mitigation in Oregon: An Evaluation of Natural Hazards Mitigation Planning and Implementation in Oregon

In January 2010, the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center received a grant from the Hazard Mitigation Grant Program (HMGP) to facilitate and document the State's Enhanced Natural Hazards Mitigation Plan update process. As part of the plan update process, OPDR and the Department of Land Conservation and Development (DLCD) were tasked with conducting a survey of natural hazards mitigation

planning in Oregon. This report is a summary of the findings of the natural hazards mitigation planning survey.

The survey assessed (a) the extent to which natural hazards mitigation strategies were being implemented at the local level and (b) the availability and applicability of technical resources designed to assist jurisdictions in planning for or mitigating the effects of natural hazards. Additionally, the survey asked for suggestions on how to make hazards planning and mitigation more effective at both the state and local levels.

Where applicable, results are compared to a similar survey that was conducted by DLCD and the University of Oregon's Community Planning Workshop (CPW) in 1998. Survey results will be used to inform content within the State's Enhanced Natural Hazards Mitigation Plan and to develop more effective long-term statewide mitigation efforts.

Seismic Transportation Lifelines

The Oregon Department of Transportation has been engaged for several decades in data collection on highway and bridge conditions (Oregon Seismic Lifelines Identification Project, May 2012; https://www.oregon.gov/ODOT/Planning/Documents/Seismic-Lifelines-Evaluation-Vulnerability-Synthese-Identification.pdf), development of options for mitigation against damage to roadways and bridges that may be caused by seismic events (Oregon Seismic Options Report, May 2013; ftp://ftp.odot.state.or.us/bridge/bridge_website_chittirat/Oregon_Highways_Seismic_Options_Report_3_2013.pdf) and in 2014 completed a prioritization of these options in the Oregon Highways Seismic Plus Report (https://www.oregon.gov/ODOT/Bridge/Docs_Seismic/Seismic-Plus-Report_2014.pdf) published in October 2014. These bodies of work are currently being implemented.

Oregon Transportation Plan

A sound transportation network is what enables Oregonians to reach jobs and recreation access goods and services, and meet daily needs. Due to the extent of the existing transportation infrastructure, and the importance of sustaining that infrastructure, there are numerous ways in which Oregon's transportation system could be adversely affected by any of Oregon's natural hazards. Just as other critical infrastructure can be vulnerable to natural hazards, so too can Oregon's transportation system. The Oregon Transportation Plan addresses the risk and vulnerability to natural hazards by outlining strategies for reducing risk, such as "Evaluate the impacts of geological hazards and natural disasters including earthquakes, floods, landslides and rockfalls, on the efficiency and sustainability of the location and design of new or improved transportation facilities as appropriate."

Oregon Highway Plan

Oregon's state highways are a critical component of the state's transportation network. Oregonians rely on highways to go between the state's widespread cities, towns, parks, forests, and businesses. Oregon's industries, including agriculture, timber, tourism, and technology, all depend on highways.

The Oregon Department of Transportation owns, operates, and maintains 7,483 miles (12,040 kilometers) of roads in every corner of Oregon. The state highway system is as diverse as Oregon itself–ranging from six-lane, limited access freeways with metered ramp entrances in the

Portland area to the gravel road from Prineville to Brothers. The challenge facing Oregon is to efficiently and effectively guide this diverse highway system into the next millennium. Oregon will continue to grow. Forecasts predict that the state will have 1.2 million new residents by 2020. With limited funding, intelligent investment strategies must be devised to help Oregon meet its long-term goals. Intelligent investments include planning for, and reduce vulnerability to natural hazards. The Oregon Highway Plan addresses this issue by recommending actions and policy elements that include identifying hazards, and improving the safety of potentially hazardous sites and corridors. Mitigation measures listed within the recommended actions include advance maintenance, structural reinforcement, flood proofing, emergency response planning, and development of emergency alternative routes. These risk reduction efforts can also bolster the State of Oregon's emergency response and post-disaster recovery efforts.

Drought Annex to the State Emergency Operations Plan

Droughts occur within drainage basins (watersheds) that usually involve more than one city or county. Some cities and counties benefit by planning on a regional level. The state Drought Annex provides information to facilitate regional planning efforts, model water curtailment measures for water utilities, and other strategies. It describes the state system for addressing drought emergencies, but it does not carry the force of law. Its purpose is to coordinate local, state, and federal agency response to drought emergencies and to provide water supplies for human consumption and use under conditions of inadequate supply.

Post-Disaster Hazard Mitigation Programs and Capabilities

Hazard Mitigation Grant Program

The state and local communities integrate mitigation into post-disaster recovery operations by taking advantage of Hazard Mitigation Grant Program (HMGP) dollars that become available after presidentially declared disasters.

OEM Disaster Recovery and Post-Disaster Mitigation

State post-disaster mitigation planning and project activities following disasters are an integral component of OEM's mission. OEM's Mitigation and Recovery Services Section provides oversight and administration of financial services and related funding that is passed through to local governments. Additionally, the Mitigation and Recovery Services Section manages disaster recovery activities for state and local governments in the event of a devastating emergency or disaster. Specifically, the Section Director, SHMO, Alternate SHMO, Facilities Engineer (Public Assistance Officer), Seismic Grants Coordinator, and financial support staff work together closely post-disaster mitigation grant programs and project activities. Although OEM has limited staff support available for post-disaster mitigation planning and project implementation activities, the state is able to effectively secure and manage FEMA's HMGP grants.

OEM also staffs county liaisons that are assigned specific counties to support operations both during and after disasters. By working closely with the state's Public Assistance Officer, the state is able to identify early mitigation opportunities immediately following a disaster declaration that can frequently be implemented quickly as a component of Section 406 disaster assistance.

DCBS-BCD Post-Earthquake Inspection Program

DCBS-BCD supports training to inspectors, architects, engineers, contractors and post-earthquake inspectors by providing funding to agencies that provide training. Various classes in

seismic design and construction techniques have been sponsored by the division during the last several years Other classes covering subjects such as soils classification, excavation and grading and landslides, which are often related to earthquakes, have also been sponsored.

DCBS-BCD maintains a roster of persons qualified to inspect buildings following an earthquake. As part of this program, the division adopted rules establishing qualifications and training required to be registered as a post-earthquake damage inspector.

DEQ Emergency Response Program

DEQ's Emergency Response Program is designed to carry out legislative direction to work with other agencies and industry to prevent and respond to spills of oil and hazardous materials. Oil and hazardous material spills pose a major potential threat to Oregon's waters, air, land, and wildlife. Large volumes of oil move along the Columbia River and along the coast. Hazardous materials are shipped along the highways and by rail. DEQ works with other agencies and industry to prevent and respond to spills of these materials. The program also coordinates removal of drug lab materials which would otherwise present a risk to the public.

Office of State Fire Marshal — Conflagration Act

OSFM works in a collaborative role in helping to respond to WUI fire issues. As part of its fire prevention program, OSFM provides statewide standardization and technical assistance to local fire agencies and to communities with no structural fire protection. Coordination of structural firefighting resources occurs pursuant to the *Conflagration Act.* When directed by the Governor, the Act allows the State Fire Marshal to mobilize structural firefighting personnel and equipment, when a significant number of structures or lives are threatened by fire, and the local capacity to provide structural protection has been exhausted.

The *Conflagration Act* was established as a civil defense measure to provide a mechanism to mobilize structural fire suppression resources for massive urban fires. It was first used in 1959 to coordinate aid resulting from the explosion of a dynamite filled truck in downtown Roseburg. The Act was not invoked again until 1972, when a wildland fire in Yamhill County exceeded the capacity of local structural agencies to protect isolated structures and agricultural lands. Since then, the Act has been invoked more and more frequently — and nearly always for lightning caused wildfires threatening structures in the WUI. In the decade after 1977, the average number of declared conflagrations was about one per year. In the decade after 1987 (a record year) the average number of declarations per year more than doubled. Since 1998, the average has doubled again.

Under this law, only the Governor may invoke the Act to mobilize fire suppression resources from the across the state, but only if local resources, including what is available under mutual aid agreements, has first been fully committed. The increasing frequency of *Conflagration Act* utilization has caused funding concerns and challenges because no dedicated funds are set aside for this purpose. Especially troubling is the increasing frequency and public expectation to use the Act to protect structures in communities having minimal or nonexistent structural protection. Since 2002, with onset of stronger mitigation efforts, *Community Wildfire Protection Plans* along with ODF's surge in initial attacks on wildfires threatening structures, the use of the Act has dropped significantly.

OPDR Post-Disaster Recovery Planning for Catastrophic Disasters

In collaboration with the Cascadia Region Earthquake Workgroup (CREW), the United States Geological Survey (USGS), the City of Cannon Beach, and the Oregon Office of Emergency Management, OPDR developed a pilot long-term catastrophic post-disaster recovery planning process in the City of Cannon Beach. [2006]

OPDR developed a Post-Disaster Recovery Planning Forum: How-To Guide for communities desiring a framework to identify redevelopment issues they will face after a disaster. [2007]

OPDR assisted Douglas County in obtaining over $250,000 in grant funding from the Federal Emergency Management Agency to develop long-term, catastrophic post-disaster recovery plans for Coos, Curry, Douglas, and Lane Counties. [2009–2011]

3.4.1.3 Funding Sources

Funding Overview

Oregon uses a number of local, state, and federal funding sources to support natural hazard mitigation projects and planning. In general, FEMA Hazard Mitigation Assistance (HMA) grants figure prominently in the state's funding strategy. Several of the grant programs are available "pre-disaster" while others are available only after a federally declared disaster has occurred.

State funding to support hazard mitigation and risk reduction remains limited. However, Oregon has an excellent track record of leveraging limited local resources to successfully complete mitigation planning and projects throughout the state. State funding often consists of "General Fund" money that pays for the labor costs of state officials who are working to support local and statewide hazard mitigation activities. These labor costs are often used as non-federal cost-share for projects that are otherwise federally funded. For example, all of OEM's mitigation staff are funded in part by state dollars that are used to match other federal, homeland security based funding sources. Notably, the majority of state-level staff positions dedicated to hazard mitigation planning and implementation (and a growing number of those at the local level) are funded through federal programs or grants.

Chief among the federal funding sources used to support local mitigation planning in Oregon is FEMA's Pre-Disaster Mitigation Grant Program (PDM). PDM funds generally support one or more local mitigation projects each year as well. The Flood Mitigation Assistance Program (FMA) provides federal funds for flood mitigation projects. FEMA's Risk MAP Program also provides funding for hazard studies, flood mapping products, risk assessment tools, mitigation, and planning and outreach support.

Post-disaster, the Hazard Mitigation Grant Program (HMGP), Public Assistance (PA) Program, and Small Business Association's (SBA) Physical Disaster Loan Program each support varying levels and types of mitigation planning and projects. Oregon is experiencing presidentially declared disasters more often in recent years. Each of these disaster declarations has opened up funds through HMGP that Oregon has used to support local and statewide hazard mitigation planning as well as numerous local mitigation projects.

The Oregon Water Resources Department (OWRD) has heard from the owners of dams – both public and private – that lack of funding sources to address dam deficiencies is a significant barrier. Oregon is not the only state that faces this challenge; many other states have also identified funding for dam safety as a challenge. Funding sources for private dam owners to repair, rehabilitate, or remove dams are limited. There are a few more options for publicly owned dams; however, even for public entities, the costs may still be prohibitive. Overall, funding for the repair, replacement, rehabilitation, or removal of dams is limited and inadequate to address the need. OWRD is continuing to try to identify potential sources of funding for dam rehabilitation.

In addition, cities, counties, and special districts use a variety of funding mechanisms to support local mitigation projects. Capital improvement funds, service fees, general funds, levies, and local grants are used to support mitigation projects across Oregon. For example, Lincoln County voters have approved several bond measures that specifically supported the relocation of

schools outside the tsunami inundation zone. In one case, local bond funds leveraged the first FEMA supported (PDM) tsunami school buy-out in the nation. These examples reflect the creative, innovative and proactive methods communities in Oregon are using to support risk reduction.

Federal Funding Sources Pre-Disaster

Unified Hazard Mitigation Assistance (HMA)

According to the 2013 HMA Program Guidance, U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA) HMA programs present a "...critical opportunity to reduce the risk to individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds." HMA programs include the (a) Pre-Disaster Mitigation Grant Program, (b) Flood Mitigation Assistance Program, and (c) Hazard Mitigation Grant Program. Together, they fund hazard mitigation plans and projects and span pre- and post-disaster environments. HMA programs are intended to reduce community vulnerability to disasters. Specific information about each HMA grant program is presented below.

Pre-Disaster Mitigation Grant Program

The annual Pre-disaster Mitigation Program grants funds for:

- Mitigation planning,
- Non-flood mitigation projects, and
- Flood mitigation projects.

PDM funds support several local mitigation plan updates in Oregon each year. Like FMA, PDM is administered by OEM as the applicant (grantee when funded), who works with eligible sub-applicants and then as sub-grantees to implement their funded projects. The State IHMT has a long-standing relationship with the University of Oregon's Partnership for Disaster Resilience, which has facilitated the creation and update of the majority of Oregon's local plans using PDM grants. OPDR will continue in this role into the future. PDM grants have sometimes been sub-awarded to individual cities and counties to complete their mitigation plans. Sub-awards to cities will continue to be made on a case-by-case basis. Sub-awards also have been made to DLCD for local plan updates. As the state's regulatory land-use planning agency, DLCD not only assists jurisdictions with their hazard mitigation plan maintenance, but also facilitates integration of plan action items into local comprehensive plans.

FEMA's Risk MAP program supplements these hazard mitigation plan efforts by providing funding for hazard studies, flood mapping products, risk assessment tools, mitigation, and planning and outreach support. DLCD is Oregon's Risk MAP coordinating agency. FEMA also has awarded Risk MAP funds to OPDR and the Department of Geology and Mineral Industries to complete specialized studies.

PDM can also be used to fund flood and non-flood mitigation projects. The state generally uses FMA to fund flood mitigation projects and PDM for non-flood hazard mitigation projects. However, the State may reconsider this position because of a FEMA Mitigation Policy Directive dated June 18, 2014 (FP 204-078-112-1) that allows PDM to be used for projects related to the

construction, demolition, or improvement of dams, dikes, levees, floodwalls, seawalls, groins, jetties, breakwaters, and certain erosion control projects.

Building Resilient Infrastructure and Communities (BRIC)

At this time the PDM grant program is being phased out and replaced by a new program, *Building Resilient Infrastructure and Communities* or *BRIC*. FEMA anticipates that this new program will generally be more well-funded than the PDM grant program. In addition there appears to be a shift in funding priorities and additional funding criteria. FEMA has begun holding informational webinars, but details will not be available until the Notice of Funding Opportunity is released later this year.

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) Program was authorized by the National Flood Insurance Reform Act of 1994 and amended by the Biggert-Waters Flood Insurance Reform Act of 2012. Among other provisions, the amendments dissolved the Severe Repetitive Loss and Repetitive Flood Claims Programs, incorporating their provisions into other existing programs. The FMA Program provides Federal grant funds to pay for up to 100% of the cost of eligible mitigation activities, such as acquiring and demolishing, or elevating SRL structures. In some cases, moving a structure out of the floodplain to high ground (relocation) is a practicable alternative. In addition, mitigated properties may qualify for reduced flood insurance rates.

The overall goal of the Flood Mitigation Assistance (FMA) Program is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other National Flood Insurance Program (NFIP) insurable structures. As of this writing FMA prioritizes mitigation projects on SRL and RL properties. Examples include:

- Acquisition or relocation of at-risk structures and conversion of the property to open space,
- Elevation of existing structures,
- Relocation of structures out of the floodplain, and
- Dry floodproofing of historic properties.

The State of Oregon prefers, where possible, to acquire and demolish, or relocate SRL structures and RL structures, especially those located in the floodway.

The Oregon Military Department's Office of Emergency Management (OEM_ is the applicant for FMA Program grants; cities and counties are eligible sub-applicants. OEM submits project sub-applications for FEMA's consideration in accordance with FEMA and State priorities for the annual grant offering. FEMA's priorities are set forth each year in the grant solicitation. The State then ranks qualifying projects accordingly to ensure a high likelihood of grant award. OEM, with assistance from DLCD, annually reaches out to communities with FEMA-identified SRL and RL properties before FEMA's formal program announcement to make them aware of the program, to train potential sub-applicants on the application and grants management process, and to collect information necessary to develop projects, including owner's willingness to participate voluntarily. Once FEMA releases a formal program announcement, OEM and DLCD follow up with specific technical assistance to help develop sub-applications for projects that are both ready to proceed and most likely to receive grant funding.

The FMA Program also offers funding for:

- Planning — to prepare flood mitigation plans (as part of a community's natural hazards mitigation plan, and
- Management Cost Funding — for the sub-grantee and grantee to help administer the FMA program and activities.

Although FMA can provide federal funds for flood hazard planning, Oregon generally does not pursue planning grants under FMA because funds can only be used to update the flood hazard chapter of a local mitigation plan and we are generally successful at developing and updating all-hazards mitigation plans through the annual Pre-Disaster Mitigation Program (PDM).

NOAA Coastal Zone Management Program

Coastal Zone Management Program works with coastal states and territories to address a wide range of issues including climate change, coastal hazards, coastal development, public access, habitat protection, water quality, ocean governance and planning, and planning for energy facilities. Key elements of the program include:

- protecting natural resources,
- Managing development in high hazard areas,
- Giving development priority to coastal-dependent uses,
- Providing public access for recreation,
- Prioritizing water-dependent uses, and
- Coordinating state and federal actions.

While the legislation includes basic requirements for state partners, it also allows the flexibility needed to design programs that best address local challenges and work within state and local laws and regulations. By using both federal and state funds, the program strengthens the capabilities of each partner to address coastal issues.

National Fire Plan

Under the National Fire Plan (NFP), funding opportunities for local wildland-urban interface (WUI) planning, prevention and mitigation projects first became available in 2000. Since that time, Oregon has aggressively sought funding for a wide variety of projects, including fuels reduction work, education and prevention projects, community planning, and alternative uses of fuels. As of early 2007 the ODF had received approximately $25 million. The majority of these monies have been used to fund fuels reduction projects on individual properties and to establish community fuel breaks in the most wildfire prone portions of the state. NFP funds have also been used to expand fire prevention efforts, to educate local officials about how they may help address the WUI situation, to implement Senate Bill 360, to improve public awareness about the wildfire problem, and to better identify areas especially exposed to wildland fire.

Dam Safety - Potential Federal Funding Sources

The Federal Government has had limited funding for rehabilitating non-federally regulated dams. In recent years, there have been efforts to increase federal involvement; however, funding for new programs in many cases has been authorized but not appropriated. Funding for

the following federal programs is dependent upon Congressional appropriations and applicants meeting the criteria for the program.

FEMA National Dam Rehabilitation Program

Section 5006 of the WIIN Act (P.L. 114-322) authorized a program for rehabilitation of high hazard dams, providing a cost-share of 65 percent federal and 35 percent non-federal. The Act authorized $10 million in appropriations for Fiscal Year (FY) 2019. This grant program is being used to fund risk analysis for the 16 Oregon dams of concern, with the grant award to Oregon of $264 K.

USDA Watershed Rehabilitation Program

The USDA Watershed Rehabilitation Program can provide assistance for the planning, design, and implementation of dam rehabilitation projects; however, dams are only eligible if they were originally built with certain USDA funds. The program may cover up to 65 percent of the total rehabilitation cost. Current projects benefitting from the program are listed online at www.nrcs.usda.gov/wps/portal/nrcs/main/or/programs/planning/wr/.

Federal Funding Sources Post-Disaster

Hazard Mitigation Grant Program

FEMA's Hazard Mitigation Grant Program (HMGP) was created in November 1988 under the authority of the Stafford Act, Section 404. The HMGP assists states and local governments to implement long-term hazard mitigation measures following a Presidential major disaster declaration. Initially, the federal cost-share for projects was established at 50%; however, in 1993 that portion was increased to 75% of a project's total eligible costs. Objectives of HMGP include:

- preventing loss of lives and property due to disasters,
- implementing state and local hazard mitigation plans,
- enabling mitigation measures to be implemented during immediate recovery from a disaster, and
- providing funding for previously identified mitigation measures that benefit the disaster area.

Effective November 2004, the state and its applicants must minimally have a FEMA-approved natural hazards mitigation plan (44 CFR Section 201) to qualify for HMGP funding. Eligible applicants for the HMGP are the same as for the Public Assistance Program (Stafford Act, Section 406):

- state and local governments (including special districts),
- certain private nonprofit organizations or institutions, and
- Native American nations and authorized organizations (in Oregon these entities have a direct relationship with FEMA and do not apply through the state).

Homeowners and businesses whose properties can benefit from hazard mitigation measures cannot apply directly for HMGP funding, but rather must be represented by an eligible applicant, such as the city or county in which their project is located.

HMGP activities are managed by the Oregon Office of Emergency Management as grantee. The state develops a program administrative plan, solicits applicant interest and project applications, establishes priorities and selection criteria, reviews, and selects projects. FEMA reviews all projects submitted by the state, conducts the required environmental reviews and benefit-cost analyses, and approves projects for funding.

The amount of HMGP funding available to the state is calculated at 15% of the federal funds spent on FEMA Public Assistance and Human Services Programs (minus administrative expenses) for each disaster. When a state has a FEMA-approved *enhanced* state hazard mitigation plan (Section 201.5), the calculated amount of HMGP funding increases to 20% of the federal funds spent on FEMA Public Assistance and Human Services Programs.

HMGP allows the state to set-aside up to 5% of the total obligation for projects that are not specifically hazard mitigation, such as warning systems. Another set-aside of 7% of the total HMGP obligation can be earmarked to state and local natural hazards mitigation planning.

Although HMGP project funding is intended for use in the disaster-declared counties, it can be, at the state's request, used in non-declared counties for eligible hazard mitigation projects.

Public Assistance Program

The FEMA Public Assistance (PA) Program (Stafford Act, Section 406) provides disaster response and recovery assistance to communities following a Presidential Disaster Declaration. PA primarily supports debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit (PNP) organizations. However, PA also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. Federal assistance is provided at 75% or more of the eligible costs with the balance of funds provided by the grantee or sub-grantee.

Physical Disaster Loan Program

When Physical Disaster Loans are made to homeowners and businesses by the U.S. Small Business Administration (SBA) following disaster declarations, up to 20% of the loan amount can be used to take specific measures to protect against recurring damage in similar future disasters.

Increased Cost of Compliance (ICC)

The standard Flood Insurance Policy has a provision that will pay the policy holder to comply with a state or local floodplain management law or ordinance regulating repair or reconstruction of a structure that has suffered flood damage and meets other eligibility criteria, such as receiving a substantial damage or repetitive loss determination from a local official. Mitigation activities eligible for payment are: elevation, floodproofing, relocation, or demolition (or any combination of these activities) of the structure. The private-party premium payments are considered non-federal cost share as long as the claim is made within the timeframes allowed by the NFIP. In addition, if the ICC payment is being used as a sub-applicant's non-federal cost share, the NFIP policy holder must assign the claim to the sub-applicant (city or county). Policyholders may receive up to $30,000 under this coverage.

Federal Funding Sources Pre- and Post-Disaster

Community Assistance Program — State Support Services Element (CAP-SSSE)

The CAP-SSSE program is part of the NFIP. It provides grants to states at 75% with a 25% non-federal match to evaluate local governments' NFIP performance and provide technical assistance to help communities successfully implement the various facets of the NFIP. These funds cover the following activities and more:

- Strategic Planning,
- Ordinance Assistance,
- Community Assistance Visits,
- Outreach, Workshops and Other Training,
- General Technical Assistance,
- Mapping Coordination Assistance, and
- Assistance to Communities in Responding to Disasters.

Secure Rural Schools and Community Self-Determination Act

Title III of the Rural Schools and Community Self-Determination Act (frequently referred to simply as "Title III") funds the Firewise and Community Wildfire Protection Plan Programs by passing federal funding through the State of Oregon to its counties. Counties may also be reimbursed for search and rescue and other emergency services, including firefighting, that are performed in national forests.

State Funding Sources

General Fund

State general fund money pays for the labor costs of state officials who are working on mitigation projects for their agencies; these labor costs can be used as non-federal cost-share for projects that are otherwise federally funded. The state also occasionally contributes cash match through one of several funding mechanisms, such as portions of state agency budgets that are funded by a state source of revenue.

Land Conservation and Development Commission Technical Assistance Grant

The Land Conservation and Development Commission oversees a grant program through which each biennium local governments are awarded general funds for purposes that support the statewide land use planning program. One of the grants in the program is the Techncial Assistance Grant or TA Grant. It is a competitive grant that had the following five priorities, in order: (1) promote economic development; (2) advance regulatory streamlining; (3) provide infrastructure financing plans for urbanizing areas; and (4) update comprehensive plans and implementing codes in response to changes in state law; and (5) provide coordinated county-wide population projections. Starting with the 2015-17 biennium, the fifth priority was established as a separate grant and "Natural hazards planning" was added as Priority #3 to assist local governments "with creating local natural hazard mitigation plans and for incorporating new hazards data, and the response to the data, into comprehensive plans and zoning regulations."

This was a very exciting change. Over the next few years it became clear, though, that the scope was too narrow. Beyond supporting mitigation planning and integration with comprehensive plans, there was a need to support mitigation-related efforts for which other funding was not available. DLCD was also beginning to incorporate climate change information into NHMPs and the effort to update the 2010 Climate Change Adaptation Framework was getting started so there was a need to include related climate change adaptation activities. In the 2019-21 biennium, the descriptive language for Priority #3 was revised to acknowledge these needs: "Plan for resilience to natural hazards and climate change adaptation. This priority is for grants that provide assistance with: (a) creating local natural hazard mitigation plans; (b) other studies and activities supporting local resilience to natural hazards and climate adaptation; and (c) incorporating new hazards data, and the response to the data, into comprehensive plans and zoning regulations.

Dam Safety - Potential State Funding Sources

There is no state funding program specific to rehabilitation of dams, and most funding programs are only accessible by public entities. The Oregon Water Resources Department has heard from some dam owners that even low-interest loans may be cost-prohibitive for entities that have a small rate-payer base. In general, the dam safety programs for the large federal dams and state regulated dams in many other states have greater funding for staff and other activities as compared with Oregon dam safety staffing. Some other states have state-funded dam rehabilitation and repair programs. Oregon does have brand new authorities that will allow it to make the most of its limited resources. Addressing the backlog of dams that have not been analyzed for risk, and the dams that are in unsatisfactory or poor conditions will take decades at current resource levels.

Oregon's *Special Public Works Fund* could potentially provide for dam rehabilitation and repairs; however, resources are limited and there are many other competing needs. Eligibility is currently limited to specified public entities.

There are other funding programs that may be able to fund dam rehabilitation, although none are explicitly targeted for this purpose. Examples of funding programs that may be able to provide funding in some circumstances include, but are not limited to:

Water Projects Grants and Loans

This funding source was authorized by the Oregon Legislature in 2013 (SB 839); however, it is generally not an ideal source of funding for dam rehabilitation as it is more targeted at projects that provide new water supplies. Projects are ranked based on public benefits, and projects must provide benefits in three categories: economic, environmental, and social/cultural. In addition, the funding for this program has been around $10-15 million per biennium.

Safe Drinking Water Revolving Loan Fund

The purpose of this loan is to fund drinking water system improvements necessary for compliance with the Federal Safe Drinking Water Act. It may be able to fund dam rehabilitation work in limited instances; however, an EPA waiver is required. Eligibility is limited to owners of water systems that provide service to at least 25 year-round residents or systems that have 15 or more connections.

Clean Water Revolving Loan Fund

In very limited instances, this loan may be able to provide some assistance for dam rehabilitation where it benefits water quality. Eligibility currently is limited to specified public entities.

Seismic Rehabilitation Grant Program

The Seismic Rehabilitation Grant Program (SRGP) provides state funds to strengthen public schools and emergency services buildings so they will be less damaged during an earthquake. Administration of the SRGP was transferred from the Oregon Office of Emergency Management (OEM) to Business Oregon's Infrastructure Finance Authority (BusOR-IFA) on January 1, 2014. The SRGP is a competitive grant program that provides state funds on a reimbursable basis for seismic rehabilitation of critical public buildings:

- Hospital buildings with acute inpatient care facilities;
- Fire stations;
- Police stations;
- Sheriffs' offices; and
- Other facilities used by state, county, or district municipal law enforcement agencies.

In addition, eligible school buildings must (a) have a capacity of 250 or more persons; (b) be routinely used for student activities by K-12 public schools, community colleges, education service districts (ESDs), and higher education institutions; and (c) be owned by the State Board of Higher Education, a school district, an education service district, a community college district, or a community college service district.

The SRGP program is subject to the availability of funding, as well as any directive or restriction made with respect to such funds. SRGP grants are awarded on a competitive basis, and the maximum grant award is $1.5 million.

Table 3-8. SRGP Awarded Projects, 2009-2010

School District/Entity	Project	Award Amount	Project Status
Linn Benton Community College	Science Technology Building	$565,016	complete
Three Rivers School District	Applegate School	$826,018	complete
Beaverton School District	Elmonica Elementary School	$200,200	complete
Beaverton School District	Cooper Mountain Elementary School	$162,640	complete
Beaverton School District	McKay Elementary School	$320,035	complete
Beaverton School District	Oak Hills Elementary School	$120,600	complete
Western Oregon University	Todd Hall	$1,190,895	complete
Lake County School District	Lakeview High School	$589,700	complete
Lake County School District	Fremont Elementary School	$398,100	complete
Medford School District	Washington Elementary School	$271,000	complete
Medford School District	Medford Opportunity High School	$200,926	complete
David Douglas School District	Floyd Light Middle School	$1,489,766	complete
Yamhill Carlton School District	Yamhill Carlton Intermediate School	$76,500	complete
North Clackamas School District	Milwaukie Elementary School	$1,088,604	complete
2009-2010 Schools SRGP Sub-Total		***$7,500,000***	
Emergency Services	**Project**	**Amount Awarded**	**Project Status**
Tuality Healthcare	Tuality Hospital, Building A	$1,380,480	complete
City of Dallas Fire Department	Dallas Fire Station	$887,725	complete
City of Albany Fire Department	Station 12	$280,023	complete
City of Gresham Fire and Emergency Services	Stations 71 (Public Safety Building) and 72	$273,866	complete
Netarts Oceanside Fire District	Station 61	$170,000	complete
City of St. Helens Police Department	St. Helens Police Station	$20,000	complete
Klamath County Fire District No. 1	Station 6	$1,311,704	complete
City of Eugene	Danebo Fire Station Number 8	$66,739	complete
Silverton Fire District	Scotts Mills Station	$131,207	complete
Oregon Health and Science University	University Hospital South	$1,478,256	complete
City of Coos Bay	Coos Bay City Hall	$1,500,000	complete
2009-2010 Emergency Services SRGP Sub-Total		***$7,500,000***	

Source: Business Oregon, Infrastructure Finance Authority

Table 3-9. SRGP Awarded Projects, 2010-2011

	Project	Award Amount	Project Status
School District/Entity			
Greater Albany Public Schools	Central Elementary School	$1,500,000	Open
Klamath Falls City Schools	Mills Elementary School Auditorium	$1,495,212	complete
Tigard-Tualatin School District	Twality Middle School	$835,750	complete
2010-2011 Schools SRGP Sub-Total		***$3,830,962***	
Emergency Services			
Langlois RFPD	Langlois Fire Station	$249,894	complete
City of Garibaldi	Garibaldi Fire Station	$270,000	complete
City of Grants Pass	Hillcrest Public Safety Building	$477,024	complete
City of Astoria	Public Safety Building	$1,500,000	complete
Santa Clara Fire District	Station 1	$570,000	complete
City of Hood River	Hood River Fire Department	$291,225	complete
Woodburn RFPD	Station 22	$310,895	complete
2010-2011 Emergency Services SRGP Sub-Total		***$3,669,038***	

Source: Business Oregon, Infrastructure Finance Authority

Table 3-10. SRGP Awarded Projects, 2011-2012

School District/Entity	Project	Amount Awarded	Project Status
Portland Public Schools	Alameda Elementary School	$1,500,000	complete
Lake County School District	Daly Middle School	$1,186,251	complete
Rogue River School District	Rogue River Elementary School	$1,500,000	complete
Lane Community College	Building 11	$708,718	open
Myrtle Point School District	Myrtle Point High School	$1,470,939	complete
Philomath School District	Philomath Middle School	$284,920	complete
Hillsboro School District	North Plains Elementary School	$593,623	complete
Springfield Public Schools	Walterville Elementary School	$255,549	complete
2011-2012 Schools SRGP Sub-Total		***$7,500,000***	

Source: Business Oregon, Infrastructure Finance Authority

The program is dependent on the legislature allocating funding to Article M (education) and Article N (emergency services) bond sales. In general the funding awarded is broken into two bond sales each spring of the biennium. The following information shows the current awards that have been made for the funding awarded. The 2020 bond sale and the 2021 bond sale each have $50 million allocated for schools and $10 million allocated for emergency services. The awards for those funds will be announced in April/May of each year.

The 2013–2015 state budget includes $30 million in voter-approved bonds that fund this program. No new SRGP projects were funded in 2013. After bond sales in 2014 13 school projects were funded for a total of $14,732,100 and 22 emergency services projects for a total of $13,428,166. All of the projects funded in 2014 are complete.

There were no bond sales for these funds in 2015.

In 2016 there were 41 school projects funded for a total of $50,360,396. There were no bond sale for emergency services buildings in 2016 so there were no emergency services projects funded. All projects funded in 2016 are complete.

In 2017 there were 100 school projects funded for a total of $125,000,000 and 47 emergency services projects for a total of $28,600,000. All projects funded in 2017 are complete.

In 2018 there was a total of 12 school projects funded for a total of $25,000,000 and 8 emergency services projects funded for a total of $10,000,000.

In 2019 there was a total of 34 school projects funded for a total of $75,131,015 and 6 emergency services projects funded for a total of $10,115,416.

Community Development Block Grant

Community Development Block Grants (CDBG) are made available to communities in the State of Oregon, usually via the Infrastructure Finance Authority with funding provided by the U.S. Department of Housing and Urban Development (HUD). While these grants originate with a federal agency, the funding is usually considered non-federal for matching grant purposes (i.e., CDBG can usually be used as non-federal match to other federal funding sources).

In 1981, Congress amended the Housing and Community Development Act of 1974 (HCD Act) to give each state the opportunity to administer CDBG funds for "non-entitlement" areas: local jurisdictions that do not receive CDBG funds directly from HUD through the entitlement program and are (a) cities with populations of less than 50,000 or (b) counties with populations of less than 200,000.

The primary statutory objective of the CDBG Program is to develop viable communities by revitalizing neighborhoods, expanding affordable housing and economic opportunities, and improving community facilities and services, principally for persons of low and moderate income. The state must ensure that a specified percentage of its CDBG grant funds are used for activities that benefit low- and moderate-income persons over a 3-year time period.

However, states may also use their funds to meet other urgent community development needs. A need is considered urgent if it poses a serious and immediate threat to the health or welfare of the community, has arisen in the past 18 months, and the project would serve primarily low- to moderate-income residents. For example, funds can be used as the non-federal match for eligible HMGP, PDM, and FMA Program projects.

Community Development Block Grant — Disaster Recovery

In addition to CDBG funds made available to the state on an annual basis, special HUD funding can become available to the state as a result of natural disasters. This HUD assistance supplements assistance from FEMA and other federal agencies. Traditionally, funds provided via HUD disaster recovery initiatives can be used for long-term recovery efforts, property acquisitions, relocations, and other efforts to reduce future damage. The program is intended to give communities flexibility in meeting local needs quickly. Unless restricted by regulation, these funds can also be used as non-federal, local match for eligible HMGP, PDM, and FMA Program projects.

Congressional supplemental appropriations provide HUD disaster funds. For example, in late 1998, funds were provided to address unmet disaster-related needs in communities affected by recent Presidentially declared disasters. Unmet needs were those that were not addressed by federal disaster relief and recovery programs following these declared disasters. OECDD (now Business Oregon-Infrastructure Finance Authority) was directed to administer these supplemental funds in Oregon for the Crook County and Prineville floods of May and June 1998. These particular HUD funds carried a requirement for other non-federal match.

Oregon Watershed Enhancement Board

Previously known as the Governor's Watershed Enhancement Board (GWEB), the Oregon Watershed Enhancement Board (OWEB) was created by the 1987 Oregon Legislature. OWEB is charged with supporting implementation of *The Oregon Plan for Salmon and Watersheds*, which includes the Oregon Coastal Salmon Restoration Initiative (OCSRI) and the Healthy Streams Partnership.

In 1995 the Legislature directed OWEB to provide support to watershed councils. OWEB directs a grant program through the Natural Resources Division of the Oregon Department of Agriculture by which each of the state's 45 soil and water conservation districts may apply for funds for watershed enhancement projects.

While OWEB's primary responsibilities are implementing projects addressing coastal salmon restoration and improving water quality statewide, these projects can sometimes also benefit efforts to reduce flood and landslide hazards. In addition, OWEB conducts watershed workshops for landowners, watershed councils, educators, and others, and conducts a biennial conference highlighting watershed efforts statewide.

Funding for OWEB programs comes from the general fund, state lottery, timber tax revenues, license plate revenues, angling license fees, and other sources. OWEB awards approximately $20 million in funding annually.

Oregon Local Disaster Assistance Loan and Grant Account

Through the Local Disaster Loan and Grant Account, the Oregon Legislature makes loans to local governments, special districts, and school districts to match federal disaster relief funding for federally declared disasters. It also provides loans and grants to the same entities for paying the costs of responding to disasters whether or not they are federally declared. The Oregon Military Department may use a small percentage of the loan amount to cover the cost of administering the loan. Prior to the 2012 legislative session, this account was a source of loans only. The 2012 Oregon Legislature amended the program to make this account a source of grant funds as well. In 2012, the Account was used to provide grant funds assisting Columbia County with the Vernonia School District Acquisition Project and the City of Salem with financing a flood warning system on the Mill Creek Tributary. It has been activated occasionally since then.

Local Funding Sources

Dam Safety – Potential Local Funding Sources

Public entities, such as municipalities or irrigation districts for example, may be able to utilize revenues from rate payers or patrons to help pay for needed dam repairs or rehabilitation. Some may also be able to raise taxes or issue bonds. However, for many entities these sources by themselves are unlikely to be able to pay for the cost of dam rehabilitation or repair.

Table 3-11. Potential Hazard Mitigation Funding Programs

Program Activity	Type of Assistance	Agency & Contact
Basic and Applied Research/Development		
Community Resilience to Coastal Hazards and Climate Change	Physical and social science **research** aimed at better understanding ocean and coastal processes and the socio-economic barriers to hazard and climate change preparation.	Oregon State University — Oregon Sea Grant http://seagrant.oregonstate.edu/coastal-hazards-and-climate-change
Decision, Risk, and Management Science (DRMS) Program	**Funding** for **research** and related educational activities on risk, perception, communication, and management (primarily technological hazards)	**NSF —** Directorate for Social, Behavioral and Economic Science, Division of Social Behavioral and Economic Research, Decision, Risk, and Management Science Program (DRMS). http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423
Disaster Resilience for Rural Communities	Basic **research** in engineering and in the social, behavioral, and economic sciences on enhancing disaster resilience in rural communities.	**USDA** — National Institute of Food and Agriculture http://www.csrees.usda.gov/fo/disasterresilienceforruralcommunities.cfm
Disaster Resilient Oregon	**Coalition** of public, private, and professional organizations working collectively with graduate students and University of Oregon faculty toward the mission of creating a disaster resilient and sustainable state.	University of Oregon — Oregon Partnership for Disaster Resilience http://csc.uoregon.edu/opdr/
Hazard Mitigation and Structural Engineering (HMSE)	Supports fundamental **research** to mitigate impacts of natural and anthropogenic hazards on civil infrastructure and to advance the reliability, resiliency, and sustainability of buildings and other structures.	National Science Foundation (NSF), Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation. www.nsf.gov/funding/pgm_summ.jsp?pims_id=13358&org=CMM
National Earthquake Hazard Reduction Program (NEHRP) in Earth Sciences	**Research** into basic and applied earth and building sciences.	**NSF —** Directorate for Geosciences, Division of Earth Sciences: (703) 306-1550 http://www.nehrp.gov/index.htm
Natural Hazards Gateway	**Research** into the natural hazards facing the nation. Additionally, provides education and real-time data on natural hazards.	**USDOI —** U.S. Geological Survey (USGS) www.usgs.gov/hazards
Societal Dimensions of Engineering, Science, and Technology Program	**Funding** for **research** and related educational activities on topics such as ethics, values, and the assessment, communication, management and perception of risk	**NSF —** Directorate for Social, Behavioral and Economic Science, Division of Social, Behavioral and Economic Research, Societal Dimensions of Engineering, Science and Technology Program. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5323&org=NSF

Program Activity	Type of Assistance	Agency & Contact
Science, Technology and Society Program	Funding for **research** into the historical, philosophical, and sociological questions that arise in connection with science, engineering, and technology, and their respective interactions with society.	**NSF —** http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5324
Technical and Planning Related Assistance		
Coastal Management Training	Program provides **training** on subjects ranging from coastal hazards to climate adaptation. User selects training format (in-person, on-line, etc.)	NOAA Coastal Services Center (CSC) http://www.csc.noaa.gov/training/
Community Assistance Grants	Grants to communities in Oregon and Washington for **planning** and projects related to wildfire.	Oregon Department of Forestry (via National Forest Service and the Pacific Northwest Wildfire Coordinating Group). http://www.fs.fed.us/r6/fire/fireplan/apply/
Disaster Mitigation Planning and Technical Assistance	**Technical and planning assistance** grants for capacity building and mitigation project activities focusing on creating disaster resistant jobs, workplaces and economies.	U.S. Department of Commerce (**USDOC**), U.S. Economic Development Administration (USEDA) http://www.eda.gov/funding-opportunities/ http://csc.uoregon.edu/eda/
Emergency Management / Mitigation Training	**Training** in disaster mitigation, preparedness, planning.	Federal Emergency Management Agency (FEMA) Emergency Management Institute (EMI) http://www.training.fema.gov/
Environmental Quality Incentives Program (EQIP)	**Technical**, educational, and limited **financial assistance** to encourage environmental enhancement.	**USDA-NRCS** www.nrcs.usda.gov
National Dam Safety Program	**Technical assistance,** training, and grants to help improve State dam safety programs.	Federal Emergency Management Agency (FEMA) http://www.fema.gov/about-national-dam-safety-program
National Earthquake Hazard Reduction Program	**Technical and planning assistance** for activities associated with earthquake hazards mitigation.	**FEMA, USDOI-USGS** Earthquake Program Coordinator: http://www.nehrp.gov/
National Flood Insurance Program	**Formula grants to States** to assist communities to comply with NFIP floodplain management requirements (Community Assistance Program).	FEMA http://www.fema.gov/business/nfip/
Risk Mapping, Assessment, and Planning (Risk MAP) Program	Risk MAP provides **technical assistance** aimed at delivering quality data that increases public awareness and leads to action that reduces risk to life and property.	Federal Emergency Management Agency (FEMA) http://www.fema.gov/risk-mapping-assessment-planning Department of Land Conservation and Development http://www.oregonriskmap.com/
Silver Jackets (Oregon)	Interagency team dedicated to establish and strengthen **intergovernmental partnerships** at the state level as a catalyst in developing comprehensive and sustainable solutions to state flood hazard challenges	U.S. Army Corps of Engineers; Federal Emergency Management Agency; Oregon Interagency Hazard Mitigation Team. http://www.nfrmp.us/state/factOregon.cfm
Volcano Hazards Program	**Technical assistance**: Volcano hazard warnings and operation of four volcano observatories to monitor and assess volcano hazard risk.	**USDOI-USGS** Volcanic Hazards http://volcanoes.usgs.gov/
Watershed Protection and Flood Prevention Program	Watershed and Flood Prevention Operations provides **technical and financial assistance** in authorized watershed projects which have public sponsors.	USDA-NRCS http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/
Hazard ID and Mapping		

Program Activity	Type of Assistance	Agency & Contact
Climate Data, Products and Services	Provides **science and information** for a climate-smart nation.	NOAA http://www.climate.gov/maps-data
Conservation Gateway	The Gateway provides information on **conservation planning and adaptive management**, conservation topics and geographic implications. Includes the West Wide Wildfire Risk Assessment in addition to many other tools.	The Nature Conservancy https://www.conservationgateway.org/Pages/default.aspx https://www.conservationgateway.org/Files/Pages/west-wide-wildfire-risk-a.aspx
National Flood Insurance Program: Flood Mapping	**Flood insurance rate maps** and flood plain management maps for all NFIP communities;	FEMA https://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1
National Flood Insurance Program: Technical Mapping Advisory Council	**Technical guidance and advice** to coordinate FEMA's map modernization efforts for the National Flood Insurance Program.	USDOI-**USGS —** National Mapping Division:
National Digital Orthophoto Program	Develops **topographic quadrangles** for use in mapping of flood and other hazards.	USDOI-USGS — National Mapping Division: http://www.ndop.gov/
National Earthquake Hazards Program	**Seismic mapping for U.S.**	USDOI-USGS http://www.nehrp.gov/ http://earthquake.usgs.gov/ http://earthquake.usgs.gov/earthquakes/map/
National Geophysical Data Center (NGDC)	NGDC provides stewardship, products, and services for **geophysical data** from our Sun to Earth and Earth's sea floor and solid earth environment, including Earth observations from space.	http://maps.ngdc.noaa.gov/index.html http://maps.ngdc.noaa.gov/viewers/hazards/
Oregon Hazard Mapping	Results of **geologic studies** presented in a variety of formats including CD-ROM disks, computer files, and publications such as maps, books, open-file reports, special papers and brochures. Includes the Oregon Lidar Consortium, Oregon HazVu and other mapping resources.	Oregon Department of Geology and Mineral Industries http://www.oregongeology.org/sub/pub%26data/pub%26data.htm http://www.oregongeology.org/sub/hazvu/index.htm http://www.oregongeology.org/sub/projects/olc/
Oregon Explorer	**Information** to help citizens, planners, and policymakers make more informed decisions about Oregon's natural resources and communities.	Oregon State University — Institute for Natural Resources http://oregonexplorer.info/northcoast/NaturalHazards
Risk Mapping, Assessment, and Planning (Risk MAP) Program	Risk MAP provides **technical assistance** aimed at delivering quality data that increases public awareness and leads to action that reduces risk to life and property.	Federal Emergency Management Agency (FEMA) http://www.fema.gov/risk-mapping-assessment-planning Department of Land Conservation and Development http://www.oregonriskmap.com/
Sea Level Rise and Coastal Flooding Impacts Viewer	**Tool** visualizes potential impacts from sea level rise.	NOAA Digital Coast http://www.csc.noaa.gov/digitalcoast/tools/slrviewer
Soil Survey	**Maintains soil surveys** of counties or other areas to assist with farming, conservation, mitigation or related purposes.	USDA-NRCS http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
Stream gauging and Flood Monitoring Network	Operation of a **network of over 7,000 stream gaging stations** that provide data on the flood characteristics of rivers.	USDOE, USGS http://water.usgs.gov/wid/FS_209-95/mason-weiger.html

Program Activity	Type of Assistance	Agency & Contact
U.S. Drought Monitor	Maintains up to date national and regional **drought map resources**.	Partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. http://droughtmonitor.unl.edu/
Project Support		
The Agricultural Conservation Easement Program (ACEP)	Provides **financial and technical assistance** to help conserve agricultural lands and wetlands and their related benefits.	USDA Natural Resources Conservation Service http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/?cid=stelprdb1242695
Aquatic Ecosystem Restoration	**Direct support** for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment.	DOD-USACE http://www.aquatics.org/
Association of State Floodplain Managers	Promotes education, policies, and activities **(information)** that mitigate current and future losses, costs, and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains - all without causing adverse impacts.	ASFPM http://www.floods.org/
Beneficial Uses of Dredged Materials	**Direct assistance** for projects that protect, restore, and create aquatic and ecologically-related habitats, including wetlands, in connection with dredging an authorized Federal navigation project.	DOD-USACE http://el.erdc.usace.army.mil/dots/budm/budm.cfm
Clean Water Act Section 319 Grants	**Grants to States** to implement nonpoint source programs, including support for non-structural watershed resource restoration activities.	Environmental Protection Agency http://water.epa.gov/polwaste/nps/cwact.cfm
Coastal Zone Management Program	**Grants** for planning and implementation of non-structural coastal flood and hurricane hazard mitigation projects and coastal wetlands restoration.	U.S. Department of Commerce (**USDOC**) National Oceanic and Atmospheric Administration (**NOAA**) http://coastalmanagement.noaa.gov/funding/welcome.html
Coastal Services Center Grant Opportunities	**Formula and program enhancement grants** for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce.	National Oceanic and Atmospheric Administration (NOAA) http://www.csc.noaa.gov/funding/
Coastal Wetlands Conservation Grant Program	Matching **grants to states** for acquisition, restoration, management, or enhancement of coastal wetlands.	U.S. Fish and Wildlife Service http://www.fws.gov/Coastal/CoastalGrants/index.html
Community Assistance and Protection Program	Mitigation/prevention experts offer mitigation/prevention **support, education, and outreach** that addresses reduction of wildland fire threats and losses to communities and natural resources by taking actions before a fire starts.	Bureau of Land Management (BLM), Fire and Aviation http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html

Program Activity	Type of Assistance	Agency & Contact
Community Development Block Grant (CDBG) State Administered Program	**Grants to States** to develop viable communities (e.g., housing, a suitable living environment, expanded economic opportunities) in non-entitled areas, for low- and moderate income persons. Includes suite of relevant programs including Entitlement Communities, Section 108 Loan Guarantee Program, and Disaster Recovery Assistance.	U.S. Department of Housing and Urban Development **(HUD)** http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
Community Development Block Grant (CDBG) Disaster Recovery Assistance	Provides **flexible grants** to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations	U.S. Department of Housing and Urban Development http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/drsi
Disaster Assistance for State Units on Aging (SUAs)	Provide **disaster relief funds** to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act.	Administration on Aging. http://www.aoa.gov/
Economic Administration Grants	EDA provides **support and funds** post disaster (pending congressional approval) to support economic recovery and mitigation in disaster areas.	Economic Development Administration http://www.eda.gov/about/disaster-recovery.htm
Emergency Watershed Protection Support Services	**Funds** for public and private landowners to implement emergency measures in watersheds to relieve imminent hazards to life and property created by a natural disaster.	**USDA Natural Resources Conservation Service.** http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ewp/
Farm Service Agency Conservation Programs	Transfers title of certain inventory farm properties owned by FSA to Federal and State agencies for **conservation** purposes (including the restoration of wetlands and floodplain areas to reduce future flood potential)	U.S. Department of Agriculture (**USDA**) –Farm Service Agency (**FSA**) http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=landing
Federal Land to Parks Program	Identifies, assesses, and transfers available Federal real property for **acquisition** for State and local parks and recreation, such as open space.	USDOI-National Park Service http://www.nps.gov/ncrc/programs/flp/index.htm
Firewise Communities Program	To save lives and property from wildfire, NFPA's Firewise Communities program **teaches** people how to adapt to living with wildfire and encourages neighbors to work together and take action now to prevent losses.	Firewise Communities http://www.firewise.org/
Forest Stewardship Program	Helps family forestland owners with hazard reduction **training and funding** to assist with thinning and other actions to reduce wildfire hazard.	**USDA — U.S. Forest Service** http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml
Hazard Mitigation Assistance	Grant programs designed to provide **funding** to protect life and property from future natural disasters.	Federal Emergency Management Agency (FEMA) http://www.fema.gov/hazard-mitigation-assistance
Highway Bridge Replacement and Rehabilitation	Deficient highway **bridges** on all public roads may be eligible for replacement or rehabilitation.	USDOT — Federal Highway Administration https://www.fhwa.dot.gov/bridge/hbrrp.cfm

Program Activity	Type of Assistance	Agency & Contact
HOME Investment Partnerships Program	Provides **formula grants to States** and localities to fund a wide range of activities including building, buying, and/or rehabilitating affordable housing for rent or homeownership.	U.S. Department of Housing and Urban Development http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home/
Indian Housing Assistance (Housing Improvement Program)	**Project grants and technical assistance** to substantially eliminate sub-standard Indian housing.	HUD Office of Public and Indian Housing http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing
Land Trusts	Land trusts assist with the **preservation** of open spaces, scenic vistas, working landscapes and natural areas.	Coalition of Oregon Land Trusts (for more information) http://oregonlandtrusts.org/
National Database of State and Local Wildfire Hazard Mitigation Programs	**Information clearinghouse** related to nonfederal policies and programs that seek to reduce the risk of loss of life and property through the reduction of hazardous fuels on private lands.	USDA — U.S. Forest Service http://www.wildfireprograms.usda.gov/
National Flood Insurance Program (NFIP)	Makes available **flood insurance** to residents of communities that adopt and enforce minimum floodplain management requirements.	FEMA http://www.fema.gov/business/nfip/
National Tsunami Hazard Mitigation Program	Program provides a coordinated, national effort to **assess** tsunami threat, **prepare** community response, issue timely and effective **warnings**, and **mitigate** damage.	Coordinated by **NOAA**, **USGS,** and **FEMA**. http://nws.weather.gov/nthmp/
Partners for Fish and Wildlife Program	Provides **financial and technical assistance** to **private landowners** interested in restoring degraded wildlife habitat.	U.S. Fish and Wildlife Service http://www.fws.gov/partners/
Public Assistance Program (Infrastructure)	**Grants to States and communities** to repair damaged infrastructure and public facilities, and help restore government or government-related services. Mitigation funding is available for work related to damaged components of the eligible building or structure.	Federal Emergency Management Agency (FEMA) http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit
Public Housing Modernization Reserve for Disasters and Emergencies	**Funding** to public housing agencies for modernization needs resulting from natural disasters (including elevation, floodproofing, and retrofit). (24 CFR 968.104)	Housing and Urban Development http://www.hud.gov/ http://www.gpo.gov/fdsys/granule/CFR-2011-title24-vol4/CFR-2011-title24-vol4-sec968-104
Rural Fire Assistance and Volunteer Fire Assistance Grants	**Grants** to fund to improve firefighter skills and to purchase needed equipment; priority areas are located in or adjacent to WUI areas.	Oregon Department of Forestry http://www.oregon.gov/odf/pages/fire/grantopps.aspx
Rural Development Assistance — Utilities	USDA Rural Development provides **funding opportunities** in the form of payments, grants, loans, and loan guarantees, for the development and commercialization of vital utility services.	**USDA**-Rural Development http://www.rurdev.usda.gov/Utilities_Assistance.html

Program Activity	Type of Assistance	Agency & Contact
Rural Development Assistance –Housing	USDA Rural Development provides **funding** for single family homes, apartments for low-income persons or the elderly, housing for farm laborers, childcare centers, fire and police stations, hospitals, libraries, nursing homes, schools, and much more.	**USDA**-Rural Development http://www.rurdev.usda.gov/LP_Subject_HousingAndCommunityAssistance.html
Title III Funds	The Self-Determination Act (SRS Act) has recently been reauthorized and now includes specific language regarding the Firewise Communities program. Counties seeking funding under Title III must use the **funds** to perform work under the Firewise Communities program.	USDA Forest Service http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPwhQoY6BdkOyoCAPkATlA!/?ss=119985&navtype=BROWSEBYSUBJECT&cid=FSE_003853&navid=091000000000000&pnavid=null&position=BROWSEBYSUBJECT&ttype=main&pname=Secure%20Rural%20Schools-%20Home
Watershed Protection and Flood Prevention Program	**Funds** for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land.	USDA Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/
Wetlands Protection — Development Grants	**Grants** support the development and enhancement of State and tribal wetlands protection programs.	U.S. Environmental Protection Agency (**EPA**) http://www.epa.gov/owow/wetlands/initiative/#financial
Watershed Protection and Flood Prevention Program	**Funds** for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land.	USDA Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/
Financing and Loan Guarantees		
Physical Disaster Loans and Economic Injury Disaster Loans	**Disaster loans** to non-farm, private sector owners of disaster damaged property for uninsured losses. Loans can be increased by up to 20% for mitigation purposes.	Small Business Administration (**SBA**) http://www.sba.gov/services/disasterassistance/
Conservation Contracts	**Debt reduction** for delinquent and non-delinquent borrowers in exchange for conservation contracts placed on environmentally sensitive real property that secures FSA loans.	USDA-FSA http://www.fsa.usda.gov/FSA/webapp?area=home&subject=fmlp&topic=landing
Clean Water State Revolving Funds	**Loans** at actual or below-market interest rates to help build, repair, relocate, or replace wastewater treatment plants.	EPA Office of Water State Revolving http://water.epa.gov/grants_funding/cwsrf/cwsrf_index.cfm
Section 108 Loan Guarantee Program	**Loan guarantees** to public entities for community and economic development (including mitigation measures).	HUD http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/108
Section 504 Loans for Housing	**Repair loans, grants and technical assistance** to very low-income homeowners to repair, improve, or modernize their dwellings or to remove health and safety hazards.	U.S. Department of Agriculture (**USDA**) — Rural Housing Service (**RHS**) http://www.rurdev.usda.gov/had-rr_loans_grants.html

Program Activity	Type of Assistance	Agency & Contact
Single Family Housing Loans and Grants	Provides **loans, loan guarantees, and technical assistance** to low- and moderate-income rural Americans through **several loan, grant, and loan guarantee** programs. The programs also make funding available to individuals to finance vital improvements necessary to make their homes decent, safe, and sanitary.	USDA-Rural Development http://www.rurdev.usda.gov/hsf_sfh.html
Community Facilities Direct Loan Program, Guaranteed Loan Program, and Grant Program	**Provide loans, grant and loan guarantee**s for essential community facilities in rural areas. Priority is given to health care, education, and public safety projects. Typical projects are hospitals, health clinics, schools, fire houses, community centers and many other community based initiatives.	USDA — Rural Development http://www.rurdev.usda.gov/hcf_cf.html
Rural Development Assistance –Utilities	Provides funding opportunities in the form of **payments, grants, loans, and loan guarantee**s, for the development and commercialization of vital utility services.	**USDA**-Rural Development http://www.rurdev.usda.gov/utilities_assistance.html
Farm Service Agency Disaster Assistance Programs	**Provides assistance for natural disaster losses**, resulting from drought, flood, fire, freeze, tornadoes, pest infestation, and other calamities	USDA-Farm Service Agency http://www.fsa.usda.gov/FSA/webapp?area=home&subject=diap&topic=landing
Farm Ownership Loans	**Direct loans, guaranteed/insured loans, and technical assistance** to farmers so that they may develop, construct, improve, or repair farm homes, farms, and service buildings, and to make other necessary improvements.	USDA-Farm Service Agency http://www.fsa.usda.gov/FSA/webapp?area=home&subject=fmlp&topic=dflon

Source: OPDR

3.4.2 Local Capability Assessment

3.4.2.1 Policies, Programs, and Capabilities

Table 3-12. Local Policies, Programs, Capabilities, and Their Effectiveness

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Comprehensive Land Use Planning (ORS 197; OAR 660-003, OAR 660-018) Statewide Land Use Planning Goals (ORS 197.225; OAR 660-015, OAR 660-025) Goal 7, Areas Subject to Natural Hazards (RE: Landslides — ORS195.250-195-275; OAR 629-623	In Oregon, comprehensive planning is directed through 19 statewide land use planning goals. Goal 7 is entitled *Areas Subject to Natural Hazards.* Its stated goal is "To protect people and property from natural hazards." Goal 7 requires local governments to adopt inventories, policies, and implementing measures to reduce risk to people and property from floods, landslides, wildfires, earthquakes and related hazards, tsunamis, and coastal erosion, and allows communities to plan for protection from other natural hazards as well. It encourages local governments to use both regulatory and non-regulatory strategies to achieve risk reduction.	All cities and counties in Oregon must have a comprehensive plan acknowledged by the state as compliant.	Land use plans can be used to guide new development to a community's less hazardous areas. Additionally, they can identify opportunities for redevelopment projects that will improve hazard mitigation by adjusting current land uses, and by requiring up-to-date building codes and standards for rehabilitation of existing structures. Compliance with Goal 7 is dependent on the availability of hazard inventory information. Many jurisdictions have not updated the Goal 7 section of their comprehensive plans in many years. Recently, there has been increased interest in addressing landslide hazards and the much anticipated Cascadia earthquake event and resulting tsunami. Landslide susceptibility maps based on lidar have been produced for a few areas of the state, and funding is being pursued to do additional studies, eventually covering the entire state. As these studies are completed, DLCD will be working with local governments to incorporate the new information into their comprehensive plans, development regulations, and other programs to improve loss reduction. The City of Madras integrated its comprehensive plan and NHMP by update its comprehensive plan Goal 7 section and incorporating within it elements of its NHMP. The City of Medford fully integrated its NHMP into its comprehensive plan. Between 2016 and 2019, the following coastal jurisdictions adopted Tsunami Hazard Overlay Zones into their comprehensive plans: Coos County, Douglas County, Reedsport, Florence, North Bend, Rockaway Beach, Gearhart, Port Orford, and Tillamook County. Most of those jurisdictions have also completed Tsunami Evacuation Facilities Improvement Plans to identify evacuation routes and improvement projects. DLCD and ODF continue to encourage local governments to update Community Wildfire Protection Plans and integrate them with local NHMPs and comprehensive plans.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Zoning (ORS 215, ORS 227)	Zoning consists of a map and text that outlines where and how development is to occur within a jurisdiction. Definitions, general provisions, zoning district regulations, special development standards and administration and enforcement are typical elements of a zoning ordinance.	All cities and counties in Oregon must have a zoning ordinance that implements provisions of the comprehensive plan.	Zoning is used to specify the type and location of development within a jurisdiction. In this respect, zoning is a very effective tool to reduce hazard risk in a community. Hazard overlay zones can prohibit or restrict certain types of development within areas known to contain hazards. Hillside development, flood, tsunami and wildland-urban interface zones are some examples of zoning regulations that can be used to control development on lands subject to natural hazards. Flood zones, which can be found in all of Oregon's NFIP participating jurisdictions, are the most commonly used hazard zone. Other types of local hazard zones found in Oregon include geologic hazard (e.g., Marion County), landslide (e.g., City of Salem), tsunami inundation (e.g., Douglas County), and wildfire safety (e.g., Jackson County) overlay zones. Coos County adopted new and updated provisions to their Natural Hazard Overlay Zone, which addressed mitigation actions identified in their NHMP.
Land Division Ordinances (ORS 92)	Land division ordinances (including partitions and subdivisions) govern the division of land into two or more parcels. Land development ordinances include both standards and procedures that must be followed in order to legally divide land.	All cities and counties in Oregon must have a land division ordinance that implements provisions of the zoning ordinance and comprehensive plan.	Land division ordinances are used to ensure that land is made ready for development in an orderly manner. In addition, the land division process ensures that public improvements are available to serve the area when development occurs. For example, subdivision regulations ensure that emergency service personnel have adequate access and infrastructure in place in order to respond to hazard events or other emergencies. Land division ordinances also provide jurisdictions with the opportunity to require site specific evaluations of potentially hazardous areas to ensure the area is suitable and safe to build on. All jurisdictions in Oregon have adopted land division regulations.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Building Codes (ORS 445; OAR 918)	Oregon building codes establish uniform standards for all residential and commercial buildings in Oregon. The codes prohibit local governments from enacting conflicting regulations. The Oregon Building Codes Division (BCD) provides code development, administration, inspection, plan review, licensing, and permit services to ensure the safe and effective construction of structures in Oregon.	Building codes govern the construction, reconstruction, alteration, and repair of buildings and other structures throughout Oregon.	The mission of the Building Codes Division is to work with Oregonians to ensure safe building construction while promoting a positive business climate. This mission is accomplished through (a) adopting and administering uniform statewide building codes, (b) providing code and rule interpretation, (c) assisting local government building departments and facilitating dispute resolution, (d) enforcing license, code, and permit requirements, (e) certifying inspectors and licensing trade professionals, (f) facilitating economic development efforts around the state, and (g) conducting inspections where local entities do not. At the local level, all jurisdictions have building codes. This allows cities and counties in Oregon to ensure that new construction is built to minimum standards. Certain provisions of the building code apply to the design and construction of buildings located in areas prone to natural hazards. With the adoption of the 2019 Oregon Structural Specialty Code (OSSC) on October 1, 2019, building designs in Oregon must now comply with latest building and construction science available. This includes lateral force resisting elements to address; wind, earthquake, flood and where adopted locally, tsunami. It also captures the best science available for establishing ground snow loads. While HB 3309, 2019 session removed the prohibition of constructing essential facilities and other defined structures in the tsunami inundation zone, the state adopted an Appendix O in the 2019 Oregon Structural Specialty Code addressing tsunami loading which is available for local adoption. In addition, a new section, R327 Wildfire Hazard Mitigation was adopted as part of the Oregon Residential Specialty Code effective January 24, 2019. These amendments provide additional wildfire hazard mitigation provisions that are available for local adoption.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Tsunami Inundation Zone (ORS 455.446 and 455.447; OAR 632-005)	Senate Bill 379 restricted the construction of certain essential facilities, hazardous facilities, major structures, and special occupancy structures in the tsunami inundation zone. House Bill 3309 (2019) removed these restrictions, but provided alternative measures.	All incorporated and unincorporated land in Oregon westward of the statutorily identified building line.	While HB 3309 (2019) removed the prohibition of constructing essential facilities and other defined structures in the tsunami inundation zone, the state adopted an Appendix O in the 2019 Oregon Structural Specialty Code addressing tsunami loading which is available for local adoption. Provisions of the zone are enforced at the local level. Some coastal communities have proactively relocated critical facilities such as schools (e.g., City of Waldport) and fire stations (e.g., city of Cannon Beach) east of the statutory line.
Open Space Preservation (ORS 197; OAR 660-16, 660-023, OAR 660-017, OAR 660-020; OAR 660-034)	In Oregon, comprehensive planning is directed through 19 statewide land use planning goals. Goal 5 is entitled Natural Resources, Scenic and Historic Areas and Open Space. Its stated goal is "To protect natural resources and conserve scenic and historic areas and open spaces." Goal 5 requires local governments to adopt inventories, policies, and implementing measures to protect natural resources and conserve scenic, historic, and open space resources for present and future generations.	All cities and counties in Oregon must have a comprehensive plan acknowledged by the state as compliant.	Land use plans can be used to ensure communities have adequate supply of and access to resources that promote healthy and safe environments. Resource areas and open spaces offer natural mitigation opportunities by buffering development from or absorbing the impacts of natural hazards. For example, riparian buffers along streams serve multiple functions from flood control and storage to habitat preservation and stormwater filtration. Compliance with Goal 5 requires that communities (a) inventory local occurrences of resources listed in Goal 5 and decide which ones are important; (b) identify potential land uses on or near each resource site and any conflicts that might result; (c) analyze economic, social, environmental, and energy, (ESEE) consequences of such conflicts; (d) decide whether the resource should be fully or partially protected and justify the decision; and (e) adopt measures such as zoning to put that decision into effect. Resources inventoried under Goal 5 number more than a dozen resources, including threatened and endangered species, critical habitats, scenic and historic places and aggregate. Emphasis is placed on wetlands, riparian zones and wildlife habitats. Jurisdictions are required to update Goal 5 under Oregon Administrative Rule 660 during their next "periodic review" of the goal or "when they amend their current land-use plan or ordinances."

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Local Natural Hazards Mitigation Plans	Many Oregon cities and counties have prepared local NHMPs, in great measure through the state's Pre-Disaster Mitigation (PDM) program. The primary aim of the program is to help communities develop or update local natural hazards mitigation plans. It systematically provides funding and technical assistance targeted annually to local governments in specific planning regions identified by OEM for the purpose of developing or updating existing local natural hazards mitigation plans. The PDM planning program was established by OPDR and OEM in 2004 and is carried out in partnership with DLCD, DOGAMI, FEMA Region X, and local governments with FEMA funding. FEMA is ending the PDM grant program and replacing it with a new program, *Building Resilient Communities and Infrastructure (BRIC)*. The state intends to continue its practice of direct technical assistance to local governments developing or updating NHMPs through the BRIC program.	Oregon cities and counties	Historically, OPDR has offered grant writing support, technical assistance, and human resource capacity to jurisdictions across the state. Recent administrative changes at the University of Oregon, where OPDR is housed, have made it more challenging for OPDR to maintain its current operational structure. As a result, OPDR has decreased the number of communities to which it offers this assistance in recent years. While OPDR has provided the majority of this assistance to local governments, private consulting firms have also assisted local communities. Some jurisdictions undertake development or updates of NHMPs on their own. DLCD has begun to provide direct technical assistance to local governments developing or updating NHMPs. Since 2016, DLCD has assisted 13 counties with multi-jurisdictional plan updates covering about 36 cities and a similar number of special districts, a city and a tribe. DLCD plans to assist five more counties and three cities in the next few years and to continue in this manner after the transition to the new BRIC program. Plans are tracked and inventoried at the county level (36 Oregon counties). **Table 3-13** shows the status of local NHMPs in Oregon. The table is current through December 2019. Since then, several of the expired plans have been updated and approved. Most have included cities and special districts that had not previously participated and therefore have developed plans for the first time. Oregon's efforts to ensure that local NHMPs are updated and to engage more cities and special districts in natural hazards mitigation planning are demonstrably successful.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
LCDC Technical Assistance Grants	The Technical Assistance Grant is a competitive grant with five priority categories. "Plan for resilience to natural hazards and climate change" is Prioity #3. Its purpose is: "Plan for resilience to natural hazards and climate change adaptation. This priority is for grants that provide assistance with: (a) creating local natural hazard mitigation plans; (b) other studies and activities supporting local resilience to natural hazards and climate adaptation; and (c) incorporating new hazards data, and the response to the data, into comprehensive plans and zoning regulations."	Local governments (cities, counties, special districts) and tribes	Natural hazards mitigation planning and integration of NHMPs into comprehensive plans and implementing codes was first included as a priority for Technical Assistance Grants for the 2015-17 biennium. A few project proposals were funded and successful. One was unable to be fully completed due to shifts in component timelines. In the 2017-19 biennium, hazards were proposed as elements of a few projects, and none of those projects were funded. In the 2019-21 biennium there are two funded projects that will, among other things, update the Goal 7 element of their comprehensive plans. A number of other proposals include elements that touch on hazards or climate change issues. As DLCD's, OEM's, OPDR's, and DOGAMI's other efforts are raising awareness that natural hazards and climate change adaptation are related to many of the statewide land use planning goals, we anticipate more applications will include these elements, directly or indirectly.
Capital Improvement Plans (ORS Chapter 223; OAR 660-011-0000, OAR 660 — 12-0000, OAR 660-013-0010)	Local jurisdictions maintain capital improvement plans and programs to ensure that infrastructure is developed and maintained at an adequate level to serve the needs of the community.	Oregon Cities, Counties and Special Districts	Many communities are directly or indirectly addressing hazard mitigation through their capital improvement plans. Such plans are generally maintained on a five to six-year basis. Capital Improvement Plans distribute the expense of major capital construction projects over time. Long-range infrastructure improvement projects are implemented annually through the jurisdictions standard budget process. In many cases, bonds are used to finance projects. In recent years, state and federal grants have been used to offset the costs of local infrastructure improvements. The primary opportunity to mitigate projects comes when old infrastructure is improved in ways that eliminate or reduce hazard impacts. For example, bridges can be retrofitted to address seismic impacts; culverts can be upsized to reduce localized flood impacts; electrical lines can be buried to avoid impacts associated with snow, ice, and wind storms. These efforts may not be seen by the community as mitigation, but bringing the infrastructure or facilities up to code reduces the vulnerability of those systems. For example, the Harney Electric Cooperative in south-central Oregon has planned or completed three power line undergrounding projects to offset impacts from winter storm events in that region.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Erosion Control Management Plans (ORS Chapter 568; OAR 340-041, OAR 603-095)	Erosion control aims to reduce soil loss from wind and water through a variety of control techniques including vegetative cover, buffer strips, contour plowing, riparian enhancements, and windbreaks.	Erosion control plans can apply to any lands where erosion is a concern. Wind erosion control is a requirement under the Federal Farm Bill for certain commodities such as wheat and corn, but depending on the rotation, may not be a requirement for other commodities such as potatoes or vegetables.	The Natural Resources Conservation Service (NRCS) and local soil and water conservation districts (SWCD) have long sought to reduce wind erosion of cropland. Specific requirements for erosion control plans apply to certain agricultural lands. Nationally, NRCS has developed quality criteria for wind erosion control practices and use a wind erosion equation model for predicting potential wind erosion under various farming systems. Since 1985, USDA-NRCS has been responsible for agriculture programs that require wind and water erosion control as a requirement under the Federal Farm Bill for certain commodities such as wheat and corn. Participating farmers develop and implement conservation plans for all farmland designated as highly erodible. Plans address practices such as residue management, tillage methods, and irrigation management. The Environmental Quality Incentive Program provides funds and technical assistance to agricultural producers and owners of non-industrial forest lands. Eligibility requires that applicants “be in compliance with the highly erodible land and wetland conservation requirements.” These programs have been so successful that dust storms are no longer a hazard in the Willamette Valley. That is one reason the IHMT chose not to address dust storms as a natural hazard in the 2020 Oregon NHMP update.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Floodplain Management (ORS Chapter 536, ORS Chapter 549)	Floodplain management aims to reduce losses associated with flood events and encourage restoration and protection of natural floodplain function.	Oregon has 258 cities and counties that are subject to flooding, and all participate in the National Flood Insurance Program (NFIP) thereby making flood insurance available to their residents and businesses.	The NFIP has three basic components: flood hazard mapping, floodplain insurance, and floodplain regulations. Does the combination of mapping, regulations, and insurance work to reduce flood damages? Yes! According to FEMA, flood insurance provides an alternative to publicly-funded disaster assistance that reduces the ever-escalating costs of repairing damage to buildings and their contents caused by floods. FEMA further reports that flood damages are reduced by nearly $1 billion a year nationally through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Newer buildings constructed in compliance with floodplain regulations suffer approximately 80% less damage annually than those not built to current standards. Oregonians make use of floodplains for a variety of purposes. Floodplain management involves recognition that our use of floodplains can negatively impact floodplain functions and that communities will be faced with making choices about land uses in the floodplain. Water quality and endangered species benefits also result from proactive floodplain management. Development within floodplains is generally not prohibited. Rather, floodplain management involves regulatory, construction, and public education measures designed to avoid and minimize potential risk to development from flood hazards. Floodplain management also entails implementation of specific actions intended to prevent future damages and threats to human life and public health. Local floodplain programs are built upon statewide requirements for land use planning and implementation of building codes. Local governments implement flood damage prevention ordinances through floodplain development permits, and the state building codes via local building permits. Many local governments in Oregon adopt higher regulatory standards into their flood damage prevention ordinances. For example, some jurisdictions require two or three feet of freeboard (e.g., City of Scio), regulate an area larger than the floodplain shown on FEMA FIRMs, require balanced cut and fill in the floodplain, etc. **Table 3-13** shows the status of local jurisdiction participation in the NFIP in Oregon.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Community Rating System (CRS)	The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.	All NFIP Communities in Oregon are eligible to participate.	The National Flood Insurance Program's (NFIP) Community Rating System (CRS) effectively addresses the flood hazard by discounting flood insurance premium rates. CRS participating communities (a) reduce flood damage to insurable property, (b) strengthen and support the insurance aspects of the NFIP, and (c) encourage a comprehensive approach to floodplain management. Local governments in Oregon are encouraged to join CRS. The CRS provides an important avenue for Oregon's NFIP communities to obtain recognition for their local floodplain programs. With recent NFIP reforms (i.e., Biggert Waters), many communities in Oregon are interested in joining or enhancing their current participation in the CRS program. As of May 2014, 21 cities and seven counties participated in the CRS program. The City of Portland had the highest rating in the state at 5; Eighteen other cities had ratings of 6 or 7 with the remainder falling at 8 or above. As of December 2019, 20 cities and five counties participated, a net loss of three jurisdictions. However, the Cities of Albany and Corvallis strengthened their ratings to 5, joining Portland with the highest ratings in the state. Thirteen are rated at 6 or 7, and the remaining nine at 8 or 9. The distribution approximates a bell curve, with three communities each having the highest and lowest ratings of 5 and 9; ten on the up- and down-slopes with four having a rating of 6 and six a rating of 8; and most communities at the peak with nine communities having a rating of 7. **Table 3-13** shows the status of local jurisdiction participation in the CRS program in Oregon.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
CRS Users Groups	In 2014, DLCD convened two new CRS Users Groups (northern and southern Oregon) to encourage greater participation in the CRS Program. Through CRS Users' Groups, participating CRS communities can obtain assistance in increasing their CRS classifications and new communities can find peer-to-peer support as they join the CRS program. Each CRS Users' Group meets a minimum of three times per year in person or virtually. An online forum allows both groups to share documents, discuss ideas and post projects between meetings.	The CRS Users Groups are open to communities already participating in the CRS program and to any other community interested in floodplain management best practices.	The CRS Users Groups were established in the latter half of 2014, but the effort had to be tabled for a time due to turnover, capacity, and NFIP funding priorities. It has since been supported primarily by FEMA's insurance specialist with DLCD providing advocacy and encouragement to local governments to join the program during every CAV and CAC. The program has not resulted in significant increases in CRS membership or ratings but is highly valued by participants for information sharing, networking, and support.
Mitigation of Repetitive Loss and Severe Repetitive Loss Properties through FEMA's Flood Mitigation Assistance (FMA) Program	FEMA's FMA program provides funds each year for projects to elevate, acquire, or relocate NFIP-insured structures. The State focuses on helping local governments and homeowners or businesses access these funds for mitigation of structures that have been repeatedly damaged by floods.	Local governments may apply for funding on behalf of homeowners or business owners.	While these projects are almost always cost-effective, and FEMA covers 75-100% of the cost, other issues make it very difficult to successfully complete an acquisition or relocation project. First, the FMA grants are reimbursement grants, so the local government or property owner must be willing and able to finance the project and wait for reimbursement from FEMA. The property owner must also be willing to absorb up to 25% of the project cost. Further the local government must have staff with both federal grant management and project management expertise to successfully execute the project.
Leveraging Mitigation of Repetitive Loss and Severe Repetitive Loss Properties through partnerships with Community Action Teams (CATs)	Community Action Teams are non-profit organizations that provide a range of services and resources to address the needs of the economically disadvantaged.	Eligibility varies by program and service.	One of the services that CATs provide is home weatherization. When a Repetitive Loss or Severe Repetitive Loss property will be weatherized, the State and local governments assist the property owner with leveraging this opportunity to also elevate the property above the base flood elevation to avoid future flood damage.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Community Wildfire Protection Planning (Related Statute: ORS 477; OAR 629-042, OAR 629-043; OAR 629-044; OAR 629-048)	A Community Wildfire Protection Plan (CWPP) is developed by a community in an area at-risk from wildfire. The CWPP establishes strategies aimed at reducing wildfire risk.	Primarily counties; plan boundaries may include sub-county regions (e.g., Fire Protection District, unincorporated communities, watersheds, etc.) as well as multi-jurisdictional plans. Certain types of federal funding require the adoption of a CWPP under the provision of the Healthy Forest Restoration Act.	The purpose of a CWPP is to establish a strategic vision (normally five-years in duration) for long-term wildfire risk reduction activities and public outreach. CWPPs outline wildfire mitigation goals, strategies, and activities and highlight other relevant plans and partnerships, including: land use, natural resource, capital improvement, and emergency operation plans. All 36 counties in Oregon have adopted a CWPP; the Oregon Department of Forestry identifies 28 additional sub-county CWPPs. The statutory definition of a CWPP appears in Title I of the Healthy Forest Restoration Act of 2003 (HFRA). The HRFA decrees that communities which have a CWPP in place will be a priority for receiving hazardous fuels reduction funding administrated by the U.S. Forest Service and Bureau of Land Management. Plans developed to address the requirements of the 2003 Healthy Forests Restoration Act (HFRA) must meet three minimum requirements: • Collaboration: Local and state government representatives, in consultation with federal agencies and other interested parties, must collaboratively develop a CWPP. • Prioritized Fuel Reduction: A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect at-risk communities and essential infrastructure. • Treatment of Structural Ignitability: A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures. The Healthy Forest Restoration Act (HFRA) requires that three decision-makers mutually agree to the final contents of the CWPP. The three are the local government (i.e., counties or cities), the local fire department(s) and the state entity responsible for forest management (ODF). These three are directed to consult with and involve local representatives of the USFS and BLM and other interested parties or persons in the development of the CWPP. ODF, OEM, OPDR, DLCD, and FEMA Region X collaborated on a draft methodology for integrating CWPPs with NHMPs. In particular, ODF, OPDR, and DLCD encourage local governments to pursue opportunities for updating CWPPs prior to or simultaneously with NHMP updates and to use the draft methodology for integrating the two plans. When a community updating its NHMP has an effective CWPP, its information is used in the NHMP.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Local Emergency Planning Committees (OAR 104-040; OAR 837-085, OAR 837-120)	Under the Emergency Planning and Community Right-to-Know Act (EPCRA), Local Emergency Planning Committees (LEPCs) must develop an emergency response plan, review the plan at least annually, and provide information about chemicals in the community to citizens.	All designated emergency planning districts established under 42 U.S.C. 116§11001(c).	In 1986, the federal government established the Emergency Planning and Community Right to Know Act (EPCRA). The intent of this law was to give citizens the right to know what types of hazardous materials were in their communities, so they could be prepared to respond if a release occurred. Part of this law provided states with the opportunity to create Local Emergency Planning Committees (LEPCs). LEPCs work to understand chemical hazards in the community, develop emergency plans in case of an accidental release, and look for ways to prevent chemical accidents. The Office of State Fire Marshal (OSFM) has created a State Emergency Response Commission Advisory Board, to help Oregon communities establish LEPCs and support them in their activities. OSFM currently recognizes 11 LEPCs in the state. In addition, OSFM is actively supporting Community Capability Assessments, a planning approach that "aids emergency responders in evaluating, coordinating and enhancing the cohesiveness of their emergency response plans" in communities with active LEPCs. LEPC members include people from emergency management, police, fire, emergency medical services, transportation, health, broadcast and print media, industry, community groups, colleges, and the public. Notably, many of these organizations are also typically involved in the development of local natural hazards mitigation plans.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Local Fire Prevention Cooperatives (ORS 447)	Fire prevention cooperatives are nonprofit interagency fire service groups engaged in fire prevention and public education within their communities. They promote an exchange of ideas, programs, and resources in both wildland and structural fire prevention and public education. They also promote, coordinate, and actively support interagency participation in fire prevention activities.	Any collective group of agencies interested and engaged in fire prevention and education can form an LFPC.	A wide range of community-based fire prevention efforts exist across Oregon. Many of these efforts are developed and implemented by local fire prevention cooperatives. Since the mid-1970s, fire prevention cooperatives have been highly successful at the creation and delivery of cost-effective fire prevention programs, developed to address specific local situations. Cooperatives multiply the effectiveness of community fire prevention efforts by identifying common needs among neighboring agencies, then developing a single, joint approach to addressing those needs. The cooperative concept recognizes that no single agency usually has the personnel, expertise, community recognition, or financial resources to develop, implement and deliver a comprehensive package of fire awareness, education and public safety needs for a local area. In addition to identifying, designing and implementing unique local programs, fire prevention cooperatives serve as highly effective distributors of materials and programs developed by others. One example is their increasing involvement in Wildfire Awareness Week programs. OSFM lists the following communities on the current LFPC roster (most recently updated 03/16/2018): • Baker County Interagency Fire Prevention Team • Central Oregon Fire Prevention Co-Op • Clackamas County Fire Prevention Cooperative • Douglas County Fire Prevention Cooperative • Grant-Harney Fire Prevention Cooperative • Klamath Fire Prevention Cooperative • Lane County Fire Prevention Cooperative • Mid-Columbia Fire Prevention Cooperative • Northwest Passage Fire Prevention Co-Op • Rogue Valley Fire Prevention Cooperative • Southwestern Oregon Public Safety Association • Wallowa County Fire Prevention Cooperative

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Local Fire Departments and Fire Protection Districts (ORS 476)	City fire departments, rural fire protection districts, county special service districts, and commercial subscription based entities provide both structural and non-structural fire protection.	Authority to establish and maintain LFDs and FPDs is granted in ORS 476.060.	Most structural fire protection in Oregon is provided by city fire departments, rural fire protection districts, county special service districts, and commercial subscription based entities. Specialized agencies also provide structural protection, such as the Portland Airport Fire Department and the National Park Service. A variety of volunteer organizations also exist. In some locations, such as the area immediately west of Portland, structural fire agencies have complete responsibility for the prevention and suppression of all fires, both wildland and structural. Across much of the state, structural fire agencies and the ODF share jurisdiction in Wildland-Urban Interface areas. In some parts of Oregon, property owners may be subject to the protection, assessment and taxation of both a local structural fire agency and ODF. In such areas, the structural fire department and ODF jointly protect properties, with the fire departments focused on protecting improvements and ODF focused on protecting the forest resources. To facilitate this joint responsibility, mutual aid agreements signed by both the structural district or department and ODF typically provide up to 24 hours of non-reimbursed firefighting assistance for fires that threaten each other's protected property and resources. The Oregon State Fire Marshal's office currently lists 301 distinct local fire departments in Oregon.
Rangeland Fire Protection Associations (ORS 477)	Formed under ORS 477.315, RFPAs are nonprofit, locally governed and operated landowner associations organized to provide fire protection on rangeland areas of eastern Oregon which lack both structural and wildland fire protection.	RFPA membership is voluntary.	State law provides for the formation of these RFPAs under the authority of the Oregon Board of Forestry, with assistance from ODF. There are currently 14 RFPAs that collectively protect over 3.2 million acres of private land in Eastern Oregon. The RFPA's also protect approximately a half-million acres of State lands. These lands are primarily Department of State Lands, with lesser amounts of Department of Fish & Wildlife, and Parks & Recreation Department. In 2005, the state established a Rangeland Fire Protection Coordinator position. Since that time, federal grants have supported state program administration. In addition, ODF contributes approximately $30,000 per biennium to support associations and reimburse, primarily to reimburse insurance and administration costs. ORS 477.317(2) limits state funding support for the program to "50 percent of the total of budgeted operating costs and the cash equivalent of in-kind supplies and services of the association in any fiscal year." RFPAs also rely on a variety of additional federal grants for funding support.

Local Policies, Programs, Capabilities and Their Effectiveness			
Policy/Program/Capability	**General Description**	**Applicability**	**Effectiveness**
Dam Safety (ORS 540.443 - 540.491)	Dams may be owned by federal, state, or local governments, or by private parties. Local governments that own dams have primary responsibility for the safety of those dams and for emergency response.	The statute primarily applies to the state, but does address briefly some responsibilities of local governments.	Local governments that own dams have the primary responsibility for safety actions on those dams. They also have the primary role in emergency response and may have a limited dam safety role with some authority determine a dam may be a nuisance. In general, most local governments have the following capabilities: 1. Knowledge of high hazard dam locations 2. Maintenance and understanding of the Emergency Action Plans for the dams within their jurisdiction 3. Understanding and participation in Emergency Action Plan exercises 4. Efficient utilization of limited personnel for emergency response 5. Identification and communication of potential emergency conditions Local government decisions might be improved with the following information: 1. Information on inundation areas and on condition of dams, in some cases for land use decisions 2. Understanding of their authorities to declare some dams a nuisance, which might require an owner to remove a dam at the owners' expense OWRD coordinates with local emergency managers on Emergency Action Plans, and has recently cooperated on exercises of Emergency Action Plans. OWRD engages in extensive coordination with communities that own dams.

3.4.2.2 Local Hazard Mitigation Planning

Table 3-13. Local Jurisdiction NHMP, NFIP, and CRS Participation Status through December 2019

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
1	**Baker**	**Baker County**	NE Oregon - Region 7 HMP	Jun-19	Baker County MJ HMP update underway (DLCD).	**Yes**	**—**	
2	Baker	Baker City	NE Oregon - Region 7 HMP	Jun-19	Baker County MJ HMP update underway (DLCD).	**Yes**	**—**	
3	Baker	Greenhorn			Developing plan. Party in Baker County MJ HMP update (DLCD).	**No**	**—**	Never mapped
4	Baker	Haines			Developing plan. Party in Baker County MJ HMP update (DLCD).	**Yes**	**—**	
5	Baker	Halfway	NE Oregon - Region 7 HMP	Jun-19	Baker County MJ HMP update underway (DLCD).	**Yes**	**—**	
6	Baker	Huntington			Developing plan. Party in Baker County MJ HMP update (DLCD).	**Yes**	**—**	
7	Baker	Richland			Developing plan. Party in Baker County MJ HMP update (DLCD).	**No**	**—**	Never mapped
8	Baker	Sumpter			Developing plan. Party in Baker County MJ HMP update (DLCD).	**Yes**	**—**	
9	Baker	Unity			No Plan	**No**	**—**	Never mapped
10	**Benton**	**Benton County**	Benton County MJ Hazard Mitigation Plan	Aug-21		Yes	**7**	
11	Benton	Adair Village	APA- Benton County MJ Hazard Mitigation Plan	Aug-21		No	**—**	Has FIRM
12	Benton	Corvallis	Benton County MJ Hazard Mitigation Plan	Aug-21		**Yes**	**5**	
13	Benton	Monroe	APA - Benton County MJ Hazard Mitigation Plan	Aug-21		**Yes**	**—**	
14	Benton	Philomath	APA - Benton County MJ Hazard Mitigation Plan	Aug-21		**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
15	**Clackamas**	**Clackamas County**	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
16	Clackamas	Barlow			No Plan	**Yes**	**—**	
17	Clackamas	Canby	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
18	Clackamas	Damascus	Clackamas County HMP	Apr-18		**Yes**	**—**	
19	Clackamas	Estacada	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
20	Clackamas	Gladstone	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
21	Clackamas	Happy Valley	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
22	Clackamas	Johnson City	Clackamas County MJHMP	Apr-24		**No**	**—**	All X zone
23	Clackamas	Lake Oswego	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
24	Clackamas	Milwaukie	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
25	Clackamas	Molalla	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
26	Clackamas	Oregon City	Clackamas County MJHMP	Apr-24		**Yes**	**8**	
27	Clackamas	Rivergrove			No Plan	**Yes**	**—**	
28	Clackamas	Sandy	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
29	Clackamas	West Linn	Clackamas County MJHMP	Apr-24		**Yes**	**—**	
30	Clackamas	Wilsonville	Clackamas County MJHMP	Apr-24		**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
31	**Clatsop**	**Clatsop County**	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
32	Clatsop	Astoria	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
33	Clatsop	Cannon Beach	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
34	Clatsop	Gearhart	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
35	Clatsop	Seaside	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
36	Clatsop	Warrenton	Clatsop County MJHMP	Jul-20	Clatsop County MJHMP update in progress (DLCD).	**Yes**	**—**	
37	**Columbia**	**Columbia County**	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
38	Columbia	Clatskanie	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
39	Columbia	Columbia City	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
40	Columbia	Prescott	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
41	Columbia	Rainier	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
42	Columbia	Scappoose	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**8**	
43	Columbia	St Helens	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
44	Columbia	Vernonia	Columbia County HMP	Oct-19	Columbia County plan update in progress (County).	**Yes**	**—**	
45	**Coos**	**Coos County**	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	**—**	
46	Coos	Bandon	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	**—**	
47	Coos	Coos Bay	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	**—**	
48	Coos	Coquille	Coos County 2005 HM Plan	Jul-10	Curry County plan MJHMP update in progress (DLCD).	**Yes**	**—**	
49	Coos	Lakeside	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
50	Coos	Myrtle Point	Coos County Multi-Jurisdictional NHMP 2010	Aug-15	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
51	Coos	North Bend	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
52	Coos	Powers	Coos County Multi-Jurisdictional HMP	Sept-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
53	**Crook**	**Crook County**	Crook County NHMP	May-23		Yes	—	
54	Crook	Prineville	Crook County NHMP	May-23		**Yes**	—	
55	**Curry**	**Curry County**	Curry County Multi-jurisdictional HMP	May-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
56	Curry	Brookings	Curry County Multi-jurisdictional HMP	May-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
57	Curry	Gold Beach	APA - Curry County Multi-jurisdictional HMP	May-21	Current plan Approvable Pending Adoption; Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
58	Curry	Port Orford	Curry County Multi-jurisdictional HMP	May-21	Curry County plan MJHMP update in progress (DLCD).	**Yes**	—	
59	**Deschutes**	**Deschutes County**	Deschutes County NHMP	Jul-20		**Yes**	—	
60	Deschutes	Bend	Deschutes County NHMP	Jul-20		**Yes**	—	
61	Deschutes	La Pine	Deschutes County NHMP	Jul-20		**Yes**	—	
62	Deschutes	Redmond	Deschutes County NHMP	Jul-20		**Yes**	—	
63	Deschutes	Sisters	Deschutes County NHMP	Jul-20		**Yes**	—	
64	**Douglas**	**Douglas County**	Douglas County MJ HMP	Sep-22		**Yes**	—	
65	Douglas	Canyonville	Douglas County MJ HMP	Sep-22		**Yes**	—	
66	Douglas	Drain	Douglas County MJ HMP	Sep-22		**Yes**	—	
67	Douglas	Elkton	Douglas County MJ HMP	Sep-22		**Yes**	—	
68	Douglas	Glendale	Douglas County MJ HMP	Sep-22		**Yes**	—	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
69	Douglas	Myrtle Creek	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
70	Douglas	Oakland	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
71	Douglas	Reedsport	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
72	Douglas	Riddle	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
73	Douglas	Roseburg	Douglas County MJ HMP	Sep-22		**Yes**	**7**	
74	Douglas	Sutherlin	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
75	Douglas	Winston	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
76	Douglas	Yoncalla	Douglas County MJ HMP	Sep-22		**Yes**	**—**	
77	**Gilliam**	**Gilliam County**	Gilliam County MJ HMP	Jan-24		**Yes**	**—**	
78	Gilliam	Arlington	Gilliam County MJ HMP	Jan-24		**Yes**	**—**	
79	Gilliam	Condon	Gilliam County MJ HMP	Jan-24		**Yes**	**—**	
80	Gilliam	Lonerock	Gilliam County MJ HMP	Jan-24		**No**	**—**	Never mapped
81	**Grant**	**Grant County**	NE Oregon - Region 7 HMP	Jun-19	Grant County MJ HMP underway	**Yes**	**—**	
82	Grant	Canyon City			No Plan	**Yes**	**—**	
83	Grant	Dayville			No Plan	**Yes**	**—**	
84	Grant	Granite			No Plan	**No**	**—**	Never mapped
85	Grant	John Day	NE Oregon - Region 7 HMP	Jun-19	Grant County MJ HMP underway	**Yes**	**—**	
86	Grant	Long Creek			No Plan	**Yes**	**—**	
87	Grant	Monument			No Plan	**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
88	Grant	Mt Vernon			No Plan	**Yes**	**—**	
89	Grant	Prairie City			No Plan	**Yes**	**—**	
90	Grant	Seneca			No Plan	**Yes**	**—**	
91	**Harney**	**Harney County**	Harney County HMP	Jun-18	Harney County MJ HMP in progress	**Yes**	**—**	
92	Harney	Burns	Harney County HMP	Jun-18	Harney County MJ HMP in progress	**Yes**	**—**	
93	Harney	Hines	Harney County HMP	Jun-18	Harney County MJ HMP in progress	**Yes**	**—**	
94	**Hood River**	**Hood River County**	Hood River County MJ Plan	Nov-23		**Yes**	**—**	
95	Hood River	Cascade Locks	Hood River County MJ Plan	Nov-23		**Yes**	**—**	
96	Hood River	Hood River (City)	Hood River County MJ Plan	Nov-23		**Yes**	**—**	
97	Hood River	Port of Cascade Locks	Hood River County MJ Plan	Nov-23				
98	Hood River	Port of Hood River	Hood River County MJ Plan	Nov-23				
99	**Jackson**	**Jackson County**	Jackson County HMP	Jul-23		**Yes**	**7**	
100	Jackson	Ashland	Jackson County HMP	Jul-23		**Yes**	**8**	
101	Jackson	Butte Falls	Jackson County HMP	Jul-23		**Yes**	**—**	
102	Jackson	Central Point	Central Point HMP	Dec-16	Stand-alone City NHMP	**Yes**	**6**	
103	Jackson	Eagle Point	Jackson County HMP	Jul-23		**Yes**	**—**	
104	Jackson	Gold Hill			No Plan	**Yes**	**—**	
105	Jackson	Jacksonville	Jackson County HMP	Jul-23		**Yes**	**—**	
106	Jackson	Medford	Medford City HMP	Sep-22	Stand-alone City NHMP	**Yes**	**6**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
107	Jackson	Phoenix	Jackson County HMP	Jul-23		**Yes**	**—**	
108	Jackson	Rogue River	Jackson County HMP	Jul-23		**Yes**	**7**	
109	Jackson	Shady Cove	Jackson County HMP	Jul-23		**Yes**	**—**	
110	Jackson	Talent	Jackson County HMP	Jul-23		**Yes**	**8**	
111	**Jefferson**	**Jefferson County**	Jefferson County HMP	Feb-19		**Yes**	**—**	
112	Jefferson	Culver	Jefferson County HMP	Feb-19		**Yes**	**—**	
113	Jefferson	Madras	Jefferson County HMP	Feb-19		**Yes**	**—**	
114	Jefferson	Metolius	Jefferson County HMP	Feb-19		**No**	**—**	Never applied
115	**Josephine**	**Josephine County**	Josephine County HMP	Jul-22		**Yes**	**—**	
116	Josephine	Cave Junction		Oct-09	After partial participation in the 2011-12 process, decided not to finish.	**Yes**	**—**	
117	Josephine	Grants Pass	Josephine County HMP	Jul-22		**Yes**	**8**	
118	**Klamath**	**Klamath County**	Klamath County HMP	Jun-23		**Yes**	**—**	
119	Klamath	Bonanza			No Plan	**Yes**	**—**	
120	Klamath	Chiloquin			No Plan	**Yes**	**—**	
121	Klamath	Klamath Falls	Klamath County HMP	Jun-23		**Yes**	**—**	
122	Klamath	Malin			No Plan	**No**	**—**	No FIRM
123	Klamath	Merrill			No Plan	**No**	**—**	No FIRM
124	Klamath	*Oregon Tech Special District*	Oregon Tech	Mar-18	Stand-alone Special District Plan	N/A	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
125	**Lake**	**Lake County**	Lake County HMP	Sep-18	Lake County MJ HMP update in progress.	**Yes**	**—**	
126	Lake	Lakeview	Lake County HMP	Sep-18	Lake County MJ HMP update in progress.	**Yes**	**—**	
127	Lake	Paisley	Lake County HMP	Sep-18	Lake County MJ HMP update in progress.	**Yes**	**—**	
128	**Lane**	**Lane County**	Lane County MJ HMP	Oct-23		**Yes**	**7**	
129	Lane	Coburg	Lane County MJ HMP	Oct-23		**Yes**	**—**	
130	Lane	Cottage Grove	Cottage Grove HMP	Apr-22	Stand-alone City NHMP	**Yes**	**7**	
131	Lane	Creswell	Lane County MJ HMP	Oct-23		**Yes**	**—**	
132	Lane	Dunes City	Lane County MJ HMP	Oct-23		**Yes**	**—**	
133	Lane	Eugene	Eugene-Springfield Multi-Jurisdictional NHMP	Feb-20	Stand-alone joint City NHMP - Eugene-Springfield NHMP update under review with FEMA.	**Yes**	**7**	
134	Lane	Florence	Lane County MJ HMP	Oct-23		**Yes**	—	
135	Lane	Junction City			No Plan	**Yes**	—	
136	Lane	Lowell			No Plan	**Yes**	—	
137	Lane	Oakridge	Lane County MJ HMP	Oct-23		**Yes**	—	
138	Lane	Springfield	Eugene-Springfield Multi-Jurisdictional NHMP	Feb-20	Stand-alone joint City NHMP - Eugene-Springfield NHMP update under review with FEMA.	**Yes**	—	
139	Lane	*University of Oregon Special District*	University of Oregon HMP	Sep-22	Stand-alone Special District Plan	**N/A**	—	
140	Lane	Veneta	Lane County MJ HMP	Oct-23		**Yes**	—	
141	Lane	Westfir	Lane County MJ HMP	Oct-23		**Yes**	—	
142	**Lincoln**	**Lincoln County**	Lincoln County MJ HMP	Sep-20	Lincoln County MJ HMP under way.	**Yes**	—	
143	Lincoln	Depoe Bay	Lincoln County MJ HMP	Sep-20		**Yes**	—	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
144	Lincoln	Lincoln City	Lincoln County MJ HMP	Sep-20		**Yes**	—	
145	Lincoln	Newport	Lincoln County MJ HMP	Sep-20		**Yes**	—	
146	Lincoln	Siletz	Lincoln County MJ HMP	Sep-20		**Yes**	—	
147	Lincoln	Toledo	Lincoln County MJ HMP	Sep-20		**Yes**	—	
148	Lincoln	Waldport	Lincoln County MJ HMP	Sep-20		**Yes**	—	
149	Lincoln	Yachats	Lincoln County MJ HMP	Sep-20		**Yes**	—	
150	**Linn**	**Linn County**	Linn County MJ HMP	May-23		**Yes**		
151	Linn	Albany	Albany HMP	Oct-21	Stand-alone City NHMP	**Yes**	**5**	
152	Linn	Brownsville	Linn County MJ HMP	May-23		**Yes**	—	
153	Linn	Halsey	Linn County MJ HMP	May-23		**Yes**	—	
154	Linn	Harrisburg	Linn County MJ HMP	May-23		**Yes**	—	
155	Linn	Lebanon	Linn County May-21 MJ HMP	May-23		**Yes**	—	
156	Linn	*Linn-Benton Community College Special District*	Linn-Benton Community College	May-18	Stand-alone Special District Plan	**N/A**	—	
157	Linn	Lyons	Linn County MJ HMP	Dec-15		**Yes**	—	
158	Linn	Millersburg			No Plan	**Yes**	—	
159	Linn	Scio	Linn County MJ HMP	May-23		**Yes**	—	
160	Linn	Sodaville	Linn County MJ HMP	May-23		**No**	—	Has FIRM
161	Linn	Sweet Home	Sweet Home HMP	Oct-20	Stand-alone City - Update in progress (DLCD).	**Yes**	—	
162	Linn	Tangent	Linn County MJ HMP	May-23		**Yes**	—	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
163	Linn	Waterloo	Linn County MJ HMP	May-23		**Yes**	**—**	
164	**Malheur**	**Malheur County**	Malheur County HMP	Jul-24		**Yes**	**—**	
165	Malheur	Adrian	Malheur County HMP	Sep-13	Did not participate in update	**Yes**	**—**	
166	Malheur	Jordan Valley	Malheur County HMP	Sep-13	Did not participate in update	**Yes**	**—**	
167	Malheur	Nyssa	Malheur County HMP	Jul-24		**Yes**	**—**	
168	Malheur	Ontario	Malheur County HMP	Jul-24		**Yes**	**—**	
169	Malheur	Vale	Malheur County HMP	Jul-24		**Yes**	**—**	
170	**Marion**	**Marion County**	Marion County HMP	Aug-22		**Yes**	**6**	
171	Marion	Aumsville	Marion County HMP	Aug-22		**Yes**	**—**	
172	Marion	Aurora	Marion County HMP	Aug-22		**Yes**	**—**	
173	Marion	Detroit	Marion County HMP	Aug-22		**Yes**	**—**	
174	Marion	Donald			No Plan	**No**	**—**	All X zone
175	Marion	Gates	Marion County HMP	Aug-22		**Yes**	**—**	
176	Marion	Gervais			No Plan	**Yes**	**—**	
177	Marion	Hubbard			No Plan	**Yes**	**—**	
178	Marion	Idanha	Marion County HMP	Aug-22		**Yes**	**—**	
179	Marion	Jefferson (City)			No Plan	**Yes**	**—**	
180	Marion	Keizer	Marion County HMP	Aug-22		**Yes**	**—**	
181	Marion	Mill City	Marion County HMP	Aug-22				

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
182	Marion	Mt Angel			No Plan	**Yes**	**—**	
183	Marion	Salem	Salem HMP	Jan-23	Stand-alone City NHMP	**Yes**	**5**	
184	Marion	Scotts Mills			No Plan	**Yes**	**—**	
185	Marion	Silverton	Marion County HMP	Aug-22		**Yes**	**—**	
186	Marion	St Paul			No Plan	**Yes**	**—**	
187	Marion	Stayton	Marion County HMP	Aug-22		**Yes**	**—**	
188	Marion	Sublimity			No Plan	**Yes**	**—**	
189	Marion	Turner	Marion County HMP	Aug-22		**Yes**	**—**	
190	Marion	Woodburn	Marion County HMP	Aug-22		**Yes**	**—**	
191	**Morrow**	**Morrow County**	Morrow County HMP	Feb-22		**Yes**	**—**	
192	Morrow	Boardman	Morrow County HMP	Feb-22		**Yes**	**—**	
193	Morrow	Heppner	Morrow County HMP	Feb-22		**Yes**	**9**	
194	Morrow	Ione	Morrow County HMP	Feb-22		**Yes**	**—**	
195	Morrow	Irrigon	Morrow County HMP	Feb-22		**Yes**	**—**	
196	Morrow	Lexington	Morrow County HMP	Feb-22		**Yes**	**—**	
197	**Multnomah**	**Multnomah County**	Multnomah County HMP	Nov-22		**Yes**	**—**	
198	Multnomah	Fairview	Multnomah County HMP	Nov-22		**Yes**	**—**	
199	Multnomah	Gresham	Multnomah County HMP	Nov-22		**Yes**	**—**	
200	Multnomah	Maywood Park			No Plan	**N/A**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
201	Clackamas, Multnomah, Washington	Metro Region			Not Applicable	**N/A**	—	
202	Clackamas, Multnomah, Washington	Metro Region			Not Applicable	**N/A**	—	
203	Multnomah	Portland	Portland Hazard Mitigation Plan	Nov-21	Stand-alone City NHMP	**Yes**	**6**	
204	Multnomah	Troutdale	Multnomah County HMP	Nov-22		**Yes**	**7**	
205	Multnomah	Wood Village	Multnomah County HMP	Nov-22		**Yes**	—	
206	**Polk**	**Polk County**	Polk County HMP	Feb-23		**Yes**	**8**	
207	Polk	Dallas	Polk County HMP	Feb-23		**Yes**	—	
208	Polk	Falls City	Polk County HMP	Feb-23		**Yes**	—	
209	Polk	Independence	Polk County HMP	Feb-23		**Yes**	—	
210	Polk	Monmouth	Polk County HMP	Feb-23		**Yes**	—	
211	**Sherman**	**Sherman County**	Sherman County HMP	Aug-24		**Yes**	—	
212	Sherman	Grass valley	Sherman County HMP	Aug-24		**Yes**	—	
213	Sherman	Moro	Sherman County HMP	Aug-24		**No**	—	Never mapped
214	Sherman	Rufus	Sherman County HMP	Aug-24		**Yes**	—	
215	Sherman	Wasco (City)	Sherman County HMP	Aug-24		**Yes**	—	
216	**Tillamook**	**Tillamook County**	Tillamook County HMP	Sep-22		**Yes**	—	
217	Tillamook	Bay City	Tillamook County HMP	Sep-22		**Yes**	—	
218	Tillamook	Garibaldi	Tillamook County HMP	Sep-22		**Yes**	—	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
219	Tillamook	Manzanita	Tillamook County HMP	Sep-22		**Yes**	**—**	
220	Tillamook	Nehalem	Tillamook County HMP	Sep-22		**Yes**	**7**	
221	Tillamook	Port of Garibaldi	Tillamook County HMP	Sep-22				
222	Tillamook	Port of Tillamook Bay	Tillamook County HMP	Sep-22				
223	Tillamook	Rockaway Beach	Tillamook County HMP	Sep-22		**Yes**	**—**	
224	Tillamook	Tillamook (City)	Tillamook County HMP	Sep-22		**Yes**	**9**	
225	Tillamook	Wheeler (City)	Tillamook County HMP	Sep-22		**Yes**	**—**	
226	**Umatilla**	**Umatilla County**	Umatilla County HMP	May-19		**Yes**	**—**	
227	Umatilla	Adams	Umatilla County HMP	Jul-14		**Yes**	**—**	
228	Umatilla	Athena	Athena Addendum to Umatilla County Plan	Jul-14		**Yes**	**—**	
229	Umatilla	Echo			No Plan	**Yes**	**—**	
230	Umatilla	Helix			No Plan	**Yes**	**—**	
231	Umatilla	Hermiston			No Plan	**Yes**	**—**	
232	Umatilla	Milton-Freewater			No Plan	**Yes**	**—**	
233	Umatilla	Pendleton			No Plan	**Yes**	**—**	
234	Umatilla	Pilot Rock	Umatilla County HMP	Jul-14		**Yes**	**—**	
235	Umatilla	Stanfield			No Plan	**Yes**	**—**	
236	Umatilla	Ukiah			No Plan	**Yes**	**—**	
237	Umatilla	Umatilla (City)	Umatilla County HMP	Jul-14		**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
238	Umatilla	Weston	Weston Addendum to Umatilla County Plan	Jul-14		**Yes**	**—**	
239	**Union**	**Union County**	NE Oregon - Region 7 HMP	Jun-19		**Yes**	**—**	
240	Union	Cove			No Plan	**No**	**—**	Never mapped
241	Union	*Eastern Oregon University Special District*	Eastern Oregon University	May-18	Stand-alone Special District Plan	**N/A**	**—**	
242	Union	Elgin			No Plan	**Yes**	**—**	
243	Union	Imbler			No Plan	**No**	**—**	
244	Union	Island City			No Plan	**Yes**	**—**	
245	Union	La Grande	NE Oregon - Region 7 HMP	Jun-19		**Yes**	**—**	
246	Union	North Powder			No Plan	**Yes**	**—**	
247	Union	Summerville			No Plan	**Yes**	**—**	
248	Union	Union (City)			No Plan	**Yes**	**—**	
249	**Wallowa**	**Wallowa County**	NE Oregon - Region 7 HMP	Jun-19	Wallowa County MJHMP update in progress (DLCD).	**Yes**	**—**	
250	Wallowa	Enterprise	NE Oregon - Region 7 HMP	Jun-19	Wallowa County MJHMP update in progress (DLCD).	**Yes**	**—**	
251	Wallowa	Joseph			Wallowa County MJHMP update in progress (DLCD).	**Yes**	**—**	
252	Wallowa	Lostine			Wallowa County MJHMP update in progress (DLCD).	**Yes**	**—**	
253	Wallowa	Wallowa (City)			Wallowa County MJHMP update in progress (DLCD).	**Yes**	**—**	
254	**Wasco**	**Wasco County**	Wasco County MJ HMP	May-24		**Yes**	**—**	
255	Wasco	Antelope			No Plan	**No**	**—**	Never mapped
256	Wasco	Dufur			No Plan	**Yes**	**—**	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
257	Wasco	Maupin			No Plan	**Yes**	—	
258	Wasco	Mosier			No Plan	**Yes**	—	
259	Wasco	Shaniko			No Plan	**No**	—	Never mapped
260	Wasco	The Dalles	Wasco County MJ HMP	May-24		**Yes**	—	
261	**Washington**	**Washington County**	Washington County MJ HMP	Feb-22		**Yes**	—	
262	Washington	Banks			No Plan	**No**	—	Never mapped
263	Washington	Beaverton	Beaverton HMP	Mar-16	Stand-alone City NHMP	**Yes**	—	
264	Washington	Cornelius	Washington County Hazard Mitigation Plan	Feb-16		**Yes**	—	
265	Washington	Durham			No Plan	**Yes**	—	
266	Washington	Forest Grove	Washington County Hazard Mitigation Plan	Feb-16		**Yes**	—	
267	Washington	Gaston			No Plan	**Yes**	—	
268	Washington	Hillsboro	Washington County MJ HMP	Feb-22		**Yes**	—	
269	Washington	King City			No Plan	**Yes**	—	
270	Washington	North Plains			No Plan	**Yes**	—	
271	Washington	Sherwood			No Plan	**Yes**	—	
272	Washington	Tigard	Washington County MJ HMP	Feb-22		**Yes**	—	
273	Washington	Tualatin			No Plan	**Yes**	—	
274	**Wheeler**	**Wheeler County**	Wheeler County HMP	Dec-24		**Yes**	—	
275	Wheeler	Fossil	Wheeler County HMP	Dec-24		**No**	—	

Local Jurisdiction NHMP, NFIP, And CRS Status through December 2019								
#	**County**	**Jurisdiction**	**Plan Title**	**Expiration Date**	**LNHMP Comments**	**NFIP?**	**CRS Level**	**NFIP Comments**
276	Wheeler	Mitchell	Wheeler County HMP	Dec-24		**Yes**	**—**	
277	Wheeler	Spray	Wheeler County HMP	Dec-24		**No**	**—**	
278	**Yamhill**	**Yamhill County**	Yamhill County HMP	Nov-19		**Yes**	**—**	
279	Yamhill	Amity	Yamhill County HMP	Nov-19		**Yes**	**—**	
280	Yamhill	Carlton	Yamhill County HMP	Nov-19		**Yes**	**—**	
281	Yamhill	Dayton	Yamhill County HMP	Nov-19		**Yes**	**—**	
282	Yamhill	Dundee	Yamhill County HMP	Nov-19		**Yes**	**—**	
283	Yamhill	Lafayette	Yamhill County HMP	Nov-19		**Yes**	**—**	
284	Yamhill	McMinnville			No Plan	**Yes**	**—**	
285	Yamhill	Newberg	Yamhill County HMP	Nov-19		**Yes**	**—**	
286	Yamhill	Sheridan	Yamhill County HMP	Nov-19		**Yes**	**9**	
287	Yamhill	Willamina	Yamhill County HMP	Nov-19		**Yes**	**—**	
288	Yamhill	Yamhill (City)	Yamhill County HMP	Nov-19		**Yes**	**—**	

3.5 Coordinating State and Local Mitigation Planning

(4) A section on the Coordination of Local Mitigation Planning that includes the following:

(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

(ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.

(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

3.5.1 Funding and Technical Assistance

3.5.1.1 Funding and Technical Assistance Provided

Direct State technical planning assistance for local NHMPs is provided primarily by OEM, DLCD, and DOGAMI. This assistance is funded by full or partial State support of FTE positions whose duties include providing technical assistance in mitigation planning and project implementation to local communities. Technical assistance is also provided indirectly, in the form of access to products and information.

At OEM, the State Hazard Mitigation Officer (SHMO) assists with mitigation project development, execution, and grant compliance. Others provide oversight of mitigation plans; assistance with mitigation for natural, cultural, and historic resources; public information and outreach, particularly for earthquake and tsunami hazards; and tsunami evacuation planning.

DLCD staff provide local governments assistance in complying with Statewide Planning Goal 7 which requires planning for hazard mitigation; integrating local NHMPs with comprehensive plans and implementing programs and regulations; implementing the NFIP and participating in the NFIP's CRS Program; developing and providing access to hazard data through the Risk MAP Program; and beginning in 2014, with updating and developing local NHMPs.

Together, OEM and DLCD provide technical assistance to property owners and local governments for mitigating repetitive loss (RL) and severe repetitive loss (SRL) properties. DLCD and OEM provide notification and information regarding mitigation grant options and opportunities to local communities. OEM provides assistance, to the degree possible, to communities to help them prepare grant subapplications. The state and communities must have an information sharing agreement with FEMA to obtain RL and SRL data. Since the state is no longer allowed to share RL and SRL data with local communities, DLCD advises communities to request the data from FEMA and execute the data sharing agreement. Once the local communities have obtained the data, DLCD will work with them to identify mitigation options and prioritize mitigation projects for RL and SRL properties.

In addition to the Risk MAP Program's products, specific hazard information, risk, and vulnerability assessment products are provided by DOGAMI on a funding-contingent basis. When State funding is

involved, it may come through DOGAMI itself or from other State agencies. One example is DOGAMI's initial study of statewide channel migration zone susceptibility which was fully supported with State funds. This is an important step forward in understanding the state's flood risk, and is expected to pave the way for further state and federal funding to support detailed channel migration zone delineations. Ultimately, these products will help save lives and reduce property damage from flooding. Another example is DOGAMI's recently launched flood hazard webpage, http://www.oregongeology.org/flood/default.htm.

Numerous other agencies — federal (e.g., FEMA, U.S. Geological Survey, U.S. Army Corps, etc.), State (e.g., ODF, ODOT, OHA, etc.) and local (counties, cities, councils of governments, special districts, etc.) — also contribute valuable technical information and support to local mitigation planning efforts.

A critical source of technical hazard mitigation planning assistance in Oregon, the Oregon Partnership for Disaster Resilience at the University of Oregon assists local jurisdictions with grant writing, local plan development, plan update, process facilitation, stakeholder engagement, public outreach, and hazard research services and serves as a liaison between local communities and state, federal and NGO partners during the mitigation planning process. OPDR strives to ensure that local communities: (a) receive the tools and resources to successfully facilitate and document plan development or plan update processes (b) establish regional partnerships to discuss collaborative projects and implementation strategies, and (c) engage with a variety of state and local agencies and organizations that can assist with local risk reduction strategies.

In June 2013, the agencies most actively involved in local mitigation planning and technical assistance (OEM, DLCD, DOGAMI, and OPDR) began meeting between the regularly scheduled State IHMT meetings to foster closer coordination and collaboration on mitigation activities, leverage existing resources, and develop additional resources to support state and local mitigation planning and projects. Topics discussed at these meetings included local mitigation planning project updates and priorities, funding coordination, and agency-level alignment of natural hazard legislation and policy recommendations. The discussions have been successful in improving coordination of (a) funding and technical assistance proposals for supporting local natural hazards mitigation planning and (b) agency legislative and budget proposals, resulting in enhanced funding and technical assistance for local jurisdictions. Over time the frequency of these meetings has decreased, but the relationships and collaboration built through them have lasted. These agencies still meet as necessary and work closely together to achieve the same goals.

Funding for the State's Pre-Disaster Mitigation Planning Program comes primarily from FEMA's PDM and HMGP grants, supplemented by state and local general funds, University of Oregon in-kind match, and other in-kind matching sources (e.g., local stakeholder match).

Technical Assistance Grants

The Land Conservation and Development Commission oversees a grant program through which each biennium local governments are awarded general funds for purposes that support the statewide land use planning program. One of the grants in the program is the Techncial Assistance Grant or TA Grant. It is a competitive grant that had the following five priorities, in order: (1) promote economic development; (2) advance regulatory streamlining; (3) provide infrastructure financing plans for urbanizing areas; and (4) update comprehensive plans and implementing codes in response to changes in state law; and (5) provide coordinated county-wide population projections.

Starting with the 2015-17 biennium, the fifth priority was established as a separate grant and "Natural hazards planning" was added as Priority #3 to assist local governments "with creating local natural hazard mitigation plans and for incorporating new hazards data, and the response to the data, into comprehensive plans and zoning regulations."

This was a very exciting change. Over the next few years it became clear, though, that the scope was too narrow. Beyond supporting mitigation planning and integration with comprehensive plans, there was a need to support mitigation-related efforts for which other funding was not available. DLCD was also beginning to incorporate climate change information into NHMPs and the effort to update the 2010 Climate Change Adaptation Framework was getting started so there was a need to include related climate change adaptation activities.

In the 2019-21 biennium, the descriptive language for Priority #3 was revised to acknowledge these needs: "Plan for resilience to natural hazards and climate change adaptation. This priority is for grants that provide assistance with: (a) creating local natural hazard mitigation plans; (b) other studies and activities supporting local resilience to natural hazards and climate adaptation; and (c) incorporating new hazards data, and the response to the data, into comprehensive plans and zoning regulations.

The amount of funding allocated to this program has continued to be significantly reduced in recent years. DLCD has repeatedly requested at least increasing if not restoring previous funding levels. It appears this funding will be affected by the budget cuts being contemplated by the legislature in Summer 2020 as a result of the deep revenue losses resulting from the novel coronavirus pandemic.

New State Agency Positions

DLCD and OEM have continued to request new funding to support hazard mitigation-related staff positions in their respective agencies. New positions would increase state's capacity to develop data useful for local hazard mitigation planning; provide access for local jurisdictions to that data; provide technical assistance to local jurisdictions for mitigation planning, projects, and integrating local NHMPs with comprehensive plans, implementing programs and regulations.

DLCD added a new natural hazards planner in 2016 and two in 2018. In the February 2020 short legislative session, OEM received funding approval for five regional mitigation positions was approved. It appears that none of these positions will be affected by the

For additional information on funding sources used to support local mitigation planning, please refer to the **Funding Sources** section.

3.5.1.2 Funding and Technical Assistance Process

The State of Oregon continues to build local capacity in developing and implementing risk reduction strategies through plan development support, professional assistance, resource sharing, and technical assistance. Local mitigation planning continues to be accomplished in great measure through the state's Pre-Disaster Mitigation Planning Program, established in 2004 by the Oregon Office of Emergency Management (OEM) in partnership with the Oregon Partnership for Disaster Resilience (OPDR). The program systematically provides funding and technical assistance to local governments for the purpose of developing or updating existing local natural hazards mitigation plans with the goal of ensuring that each county and municipality in the State of Oregon maintains a FEMA-approved natural hazards mitigation plan.

Because local mitigation plans expire after 5 years, the State's strategy is to assist local jurisdictions with plan updates and new plan development on a 5-year rotational basis. OEM has divided the state into eight hazard mitigation regions for mitigation planning and emergency response purposes (**Figure 3-3**). **Table 3-14** presents the model mitigation planning schedule as it rotates through the mitigation planning regions from 2012 through 2020. Note that while some local jurisdictions elect not to participate in the regional planning cycle as scheduled, all 36 counties in Oregon currently participate in the five-year local plan update process.

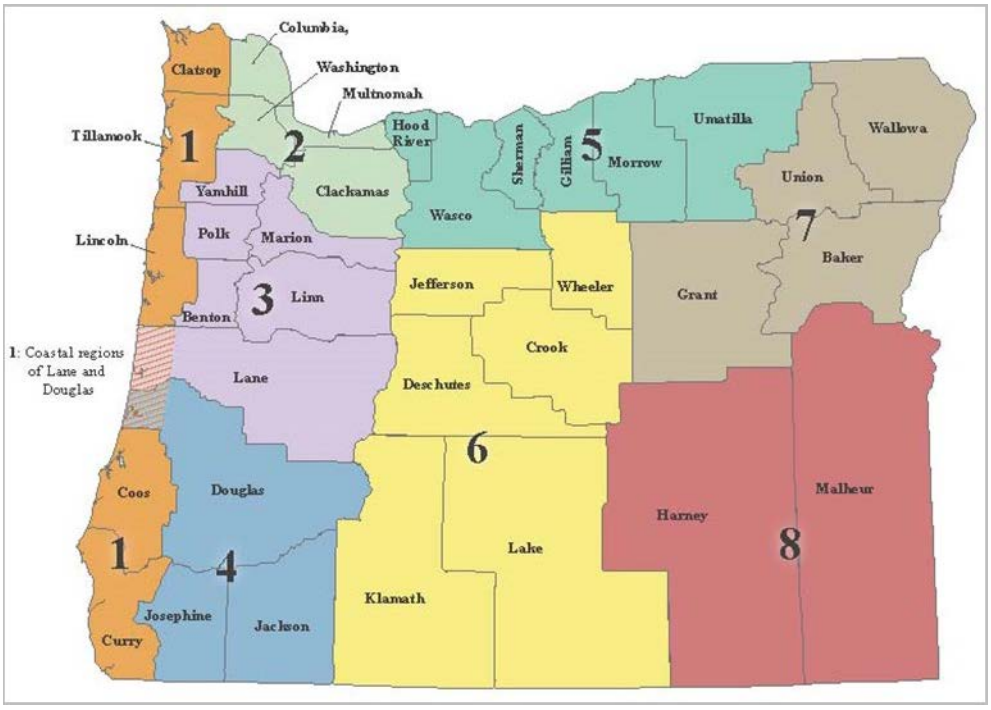
In 2014, OEM and OPDR developed a "pre-application" process to screen local communities interested in participating in regional FEMA PDM grant applications. The process consisted of (a) personal communication between the State Hazard Mitigation Officer and local NHMP leads in jurisdictions with plans coming due, (b) an invitation to participate in the pre-application process, and (c) a questionnaire designed to solicit local interest in participating and determine the jurisdiction's capability to participate. The first time through the pre-application process, OEM and OPDR received six completed pre-applications. Because it was so successful, the state intended to continue using the pre-application process.

Now in 2020, with six years of experience, turnover in key staff, the advent of multi-hazard risk assessments and the initiative to coordinate them with NHMP updates, and changes in priorities at federal and local levels, we recognize both the successes and obstacles we have faced with implementing this program. The pre-application process is not as formal as it was at its inception. We track (with the assistance of FEMA's weekly plan status updates and communication among the assisting partners) which jurisidctions to target for assistance to keep the model schedule moving forward and contact them with an offer to assist. Normally we find ourselves ahead of the jurisdictions, preparing to apply for grant funding earlier than they expect because of the grant processing and risk assessment timelines. After discussion, those interested are asked to provide a letter of interest with all the information necessary to support the grant application. This is similar to the purpose of the original pre-application.

We have found that even as we have been successful in continuing to assist jurisdictions with maintaining approved NHMPs, the model plan update cycle has broken down. One of the issues we find is that even the larger jurisdictions have capacity and priority-balancing issues. They cannot ask the same stakeholders to be involved in multiple planning projects simultaneously so must decide which to delay. Others simply don't foresee that they would ever need to apply for mitigation grants and prefer to put their limited capacity to use in other ways. Differences in Risk MAP priorities can put some jurisdictions in a different place in the queue as well.

As PDM ends and BRIC begins, we anticipate continuing with this successful funding and technical assistance model.

Figure 3-3. Oregon NHMP Natural Hazards Regions



Source: OEM

Table 3-14. Model 5-Year Rotational Mitigation Planning Schedule, 2012–2020

Planning Year	OEM Planning Region
2011-12	Region 5
2012-13	Regions 7 and 8
2013-14	Region 6
2014-15	Regions 1 and 3
2015-16	Region 2
2016-17	Region 5
2017-18	Regions 7 and 8
2018-19	Region 6
2019-20	Regions 1 and 3

Source: OPDR

3.5.2 Prioritizing Local Jurisdictions for Mitigation Funding

3.5.2.1 Eligibility Criteria for Planning Grants

Grant proposals for developing initial local natural hazards mitigation plans or updating existing plans are evaluated on the basis of the following prioritized criteria:

1. The jurisdiction's plan status:
    - First Priority: Jurisdictions that have never developed a plan;
    - Second Priority: Jurisdictions that have expired plans;
    - Third Priority: Jurisdictions whose plans will expire within 18 months; and
    - Fourth Priority: Jurisdictions whose plans will not expire within 18 months.
2. Jurisdictions located in declared county(ies).
3. Jurisdictions with the required 25% cost-share.
4. Jurisdictions with the highest risks.
5. Jurisdictions with repetitive loss or severe repetitive loss properties.
6. Jurisdictions with the most intense development pressures.
7. Jurisdictions that:
    - Have a local champion to ensure the process moves forward and the plan is completed, and
    - Can spend the grant funds quickly.
8. Jurisdictions located outside the declared county(ies) and geographically diverse with respect to the Oregon NHMP Natural Hazard Regions (**Figure 3-3**).

3.5.2.2 Eligibility Criteria and Ranking System for Project Grants

Proposed hazard mitigation projects, including those proposed under Section 404 of the Stafford Act, are evaluated for FEMA funding eligibility on the basis of the following federal and State criteria:

1. Be consistent with, support, and help implement the goals and objectives of the state's natural hazards mitigation plan developed under Sections (standard plan) 201.4 or (enhanced plan) 201.5 of the Stafford Act;
2. Be consistent with, support, and help implement the goals, objectives, and mitigation actions of local hazard mitigation plans in place for the geographic area in question developed under Section 201.6 of the Stafford Act;
3. Have significant potential to reduce damages to public and/or private property to reduce the cost of recovering from future disasters;
4. Be the most practical, cost-effective, and environmentally sound alternative after a consideration of a range of alternatives;
5. For federally-funded projects, meet federal requirements for benefit-cost requirements by having a benefit-cost ratio ≥ 1.0;
6. Address a repetitive loss or substantial damage problem, or one that has the potential to have a major impact on an area, by reducing the potential for loss of life, loss of essential services or personal property, damage to critical facilities, economic loss, hardship, or suffering;
7. Solve a problem independently, or constitute a portion of a solution where there is a likelihood that the project as a whole will be completed;
8. Conform with 44 CFR Part 9, Floodplain Management and Protection of Wetlands, and not contribute to or encourage development in wetlands or in floodplains;
9. Conform with 44 CFR Part 10, Environmental Considerations;
10. Be based on a hazard vulnerability analysis of the geographic area in question;
11. Be feasible (both technically and within an approved scope of work and budget) and be ready to proceed when approved and funded;
12. Meet applicable permit requirements;
13. Not encourage new development in hazardous areas;
14. Contribute to a permanent or long-term solution to the problem, and have manageable maintenance and modification costs;
15. Whenever possible, be designed to accomplish multiple objectives, including damage reduction, environmental enhancement, and economic development or recovery;
16. Whenever possible, use existing agencies or programs to implement the project;
17. Have the support of local community officials; and
18. The community has adequate local grant management capacity.

Mitigation of repetitive loss properties (those with an NFIP insurance history of flood losses) have been identified by FEMA as a top priority for mitigation by elevation, relocation, or acquisition. FEMA preferentially supports these properties for mitigation funding through the NFIP-ICC claims process, benefit-cost waiver for substantial damage by flooding, and by baseline cost-effectiveness determinations that expedite project identification, selection, and approval. NFIP loss data report that one third of all NFIP flood loss claims can be attributed to repetitive loss properties.

Oregon is just beginning to explore the options for prioritizing funding for dams based on risk and other factors. As we get results from the risk assessment work done for the first year of the HHPD grant we will explore use of this information with dam owners and with state and federal grant programs.

At the present time, state funding has been provided for additional analysis and repair work for at least 3 dams: Wallowa dam (OR00465), Big Creek # 1 dam (OR00225) and Big Creek # 2 dam (OR00473). Funding was provided based on bills passed in 2019 Session of the Oregon legislature and signed by the Governor

Based on the work that will be conducted for the FEMA High Hazard Potential Dam grant, Oregon will be considering how it might prioritize funding based on:

- Results of the formal risk assessment protocol and the risk assessment on the 16 dams.
- Review of the two floodplain management plans developed using HHPD FY 19 grant funds.
- Possible results from a legislatively directed dam safety task force proposed to deal with funding for dam safety actions.

The quantification of dam risks and affected people, property and infrastructure will be essential for prioritization of funding. The scheduled completion date for this work is April 1, 2022. This information will be available for future updates of the State and the local natural hazards mitigation plans, as will progress on funding opportunities and prioritization of dams for that funding have progressed. More work is needed to address funding for rehabilitation of state regulated dams in Oregon. The dam safety program will support this work consistent with its staffing and its legally mandated duties.

3.5.2.3 Ranking System

Oregon implements a pre-application process through which information used to determine eligibility is collected. Eligible projects are ranked based on the policy framework developed by the State Interagency Hazard Mitigation Team (IHMT) to ensure that post-disaster implementation strategies accomplish those projects that address repetitive losses, are the most cost-effective, and have the potential to quickly demonstrate success by reducing future disaster losses. In addition, communities with FEMA-approved, current 44 CFR Section 201.6 natural hazards mitigation plans will take precedence over those communities who do not have a FEMA-approved NHMP. For flood losses, structures that sustain substantial damage (whether insured through the NFIP or not) as well any structures damaged in any Presidentially-declared disaster or in any wet winter in Oregon present high priority mitigation opportunities.

When convened (generally only for larger disaster declarations), the **Hazard Mitigation Grant Review Board** reviews, ranks, and determines which project applications are selected for FEMA's funding consideration.

For flood hazard mitigation proposals when the Hazard Mitigation Grant Review Board is not convened, the State Hazard Mitigation Officer and the State NFIP Coordinator (along with other relevant parties) work together to review and rank proposals using aforementioned eligibility criteria, and prioritization policy framework.

After state ranking and selection for FEMA consideration, FEMA reviews, considers, and approves (or disapproves) all FEMA-funded mitigation projects submitted by the state. Projects are first reviewed to

determine if they meet all of the criteria (or could with minimal additional effort). Any projects that do not meet the eligibility criteria are set aside and not considered for funding. Eligible projects are then ranked based on priorities identified through the disaster-specific FEMA-State Hazard Mitigation Strategy report, State, and local hazard mitigation plans, and policy direction from the State IHMT. If there are more projects than dollars, the Board will select the most highly ranked projects up to 90% of the limit of the Federal Hazard Mitigation Grant Program (HMGP) lock-in. In addition, the Board may also consider the level of interest and commitment shown by sub-applicant to hazard mitigation activities and programs. Past success in mitigation does carry weight when evaluating equal projects.

3.5.3 Benefit-Cost Analysis of Natural Hazard Mitigation Projects

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs which would otherwise be incurred. Other mitigation benefits include those of an economic nature such as maintaining utility services (for example electricity and water) when there is a loss of function as a result of the disaster. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. An objective benefit-cost analysis is a tool used to determine mitigation project eligibility when Federal funds come into play.

Benefit-Cost Analysis (BCA) is the method by which the future benefits of a hazard mitigation project are determined and compared to its costs. The end result is a Benefit-Cost Ratio (BCR), which is calculated by a project's total benefits divided by its total costs. The BCR is a numerical expression of the "cost-effectiveness" of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs.

FEMA requires a BCA to validate cost effectiveness of proposed hazard mitigation projects prior to funding. There are two drivers behind this requirement: (1) the Office of Management and Budget's (OMB) Circular A-94 Revised, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" and (2) the Stafford Act.

The goal of Circular A-94 is to promote efficient resource allocation through well-informed decision-making by the Federal Government. FEMA's BCA Toolkit has been developed to meet the guidelines published in Circular A-94.

Applicants and subapplicants must use FEMA-approved methodologies and tools to demonstrate the cost-effectiveness of their projects. FEMA has developed the BCA Toolkit to facilitate the process of preparing a BCA. Using the BCA Toolkit will ensure that the calculations are prepared in accordance with OMB Circular A-94 and FEMA's standardized methodologies. It is imperative to conduct a BCA early in the project development process to ensure the likelihood of meeting the cost-effectiveness eligibility requirement.

The BCA Toolkit consists of modules for a range of major natural hazards and project types including:

- Flood
- Tornado Safe Room
- Hurricane Wind
- Hurricane Safe Room

- Earthquake
- Wildfire
- Drought
- Landslide

On July 23, 2019, FEMA released the BCA Toolkit Version 6.0. Version 6.0 replaces previous versions of the BCA Toolkit with the exception of the seismic building retrofit BCAs (see note below).
Some major features of Version 6.0 include:

- Excel-based platform
- Compatible with both Windows and Macintosh operating systems
- Streamlined user interface and improved user experience
- Reduction in the number of manual-input data fields
- Improved help content
- Improved report formatting

A non-FEMA BCA methodology may only be used when it addresses a non-correctable flaw in the FEMA-approved BCA methodology or it proposes a new approach that is unavailable using the FEMA BCA Toolkit. The non-FEMA methodology must be approved by FEMA in writing prior to submission of the project application to FEMA.

The Greatest Savings to the Fund (GSTF) approach is no longer allowed to determine cost-effectiveness for Severe Repetitive Loss (SRL) properties.

3.5.3.1 Oregon Seismic Rehabilitation Grant Program: Oregon BCA Tool

Because Federal funding is not incorporated into the state-funded seismic retrofit program, the state is not obligated to use either the FEMA-prescribed BCA software or explicitly meet the requirements of OMB Circular A-94. However, standard methodologies and refinements to the FEMA BCA software provided a basis for the development of the Oregon BCA Tool.

The Oregon Office of Emergency Management created the Oregon BCA Tool for use by local jurisdictions when applying for state-sponsored mitigation funding through OEM programs such as the Seismic Rehabilitation Grant Program (SRGP). The Oregon BCA Tool uses detailed, USGS data specific to Oregon. The SRGP-based BCA tool was developed using methodologies from the FEMA BCA Tool at the time but with an emphasis on being tailored for Oregon projects (seismology, soil conditions, and building types) and an improved user interface. DOGAMI completed a Statewide Seismic Needs Assessment in June 2007, a key component in developing the Oregon SRGP BCA Tool. This assessment of school buildings and public safety facilities included a rapid visual screening (RVS) of such buildings and a ranking of these screenings based on need and risk. With the legislative authority to develop and implement the Oregon SRGP in 2009, BCA's were required to be performed as prescribed by OEM. A draft Oregon BCA Tool was completed in October 2009 and a finalized public version released in June 2010, which was the first year the applications were solicited and funded. Seismic benefits calculated by FEMA's most current BCA tool (4.8 and now 5.0) still seem to be undervalued, making it difficult for most seismic mitigation projects to meet the Federal BCA eligibility test. The SRGP will continue to use the Oregon-specific BCA tool for seismic projects.

For the Oregon Seismic Rehabilitation Grant Program, the following categories of damages and losses are considered:

- building damages,
- contents damages,
- displacement costs for temporary quarters,
- loss of public services, and
- casualties (deaths and injuries).

Benefit-cost analysis requires several types of input data, which requires quantitative assessments of the following factors:

- level of seismic hazard at the building's location,
- vulnerability of the building and contents to damage in future earthquakes,
- values of the building and contents,
- costs for temporary quarters if the building must be vacated for repair of future earthquake damage,
- value and importance of the public services provided from the building, and
- number of occupants in the building.

To compare future benefits with the present costs of seismic retrofits, the calculated future benefits of retrofitting are adjusted to net present value, taking into account the time-value of money. These calculations are done automatically by the Oregon BCA Tool, based on standardized assumptions about the useful lifetime of the project and the "discount rate" which reflects the time-value of money.

For benefit-cost analyses of seismic mitigation projects for the Oregon Seismic Rehabilitation Grant Program, a standard useful lifetime of 50-years and a discount rate of 2% are built into the Oregon BCA Tool. The Oregon BCA Tool does all of the many complicated calculations necessary for benefit-cost analysis automatically. The user must only enter the specified building-specific information in the designated cells in the spreadsheet.

For the Oregon Seismic Rehabilitation Grant Program, benefit-cost results are an important part of the evaluation and ranking process, but are not the sole determinant of whether or not a given project will be selected for funding. In some cases where other non-BCA factors are more important in final project selection, projects with benefit-cost ratios below 1.0 may be considered for funding.

3.5.4 Local Plan Integration

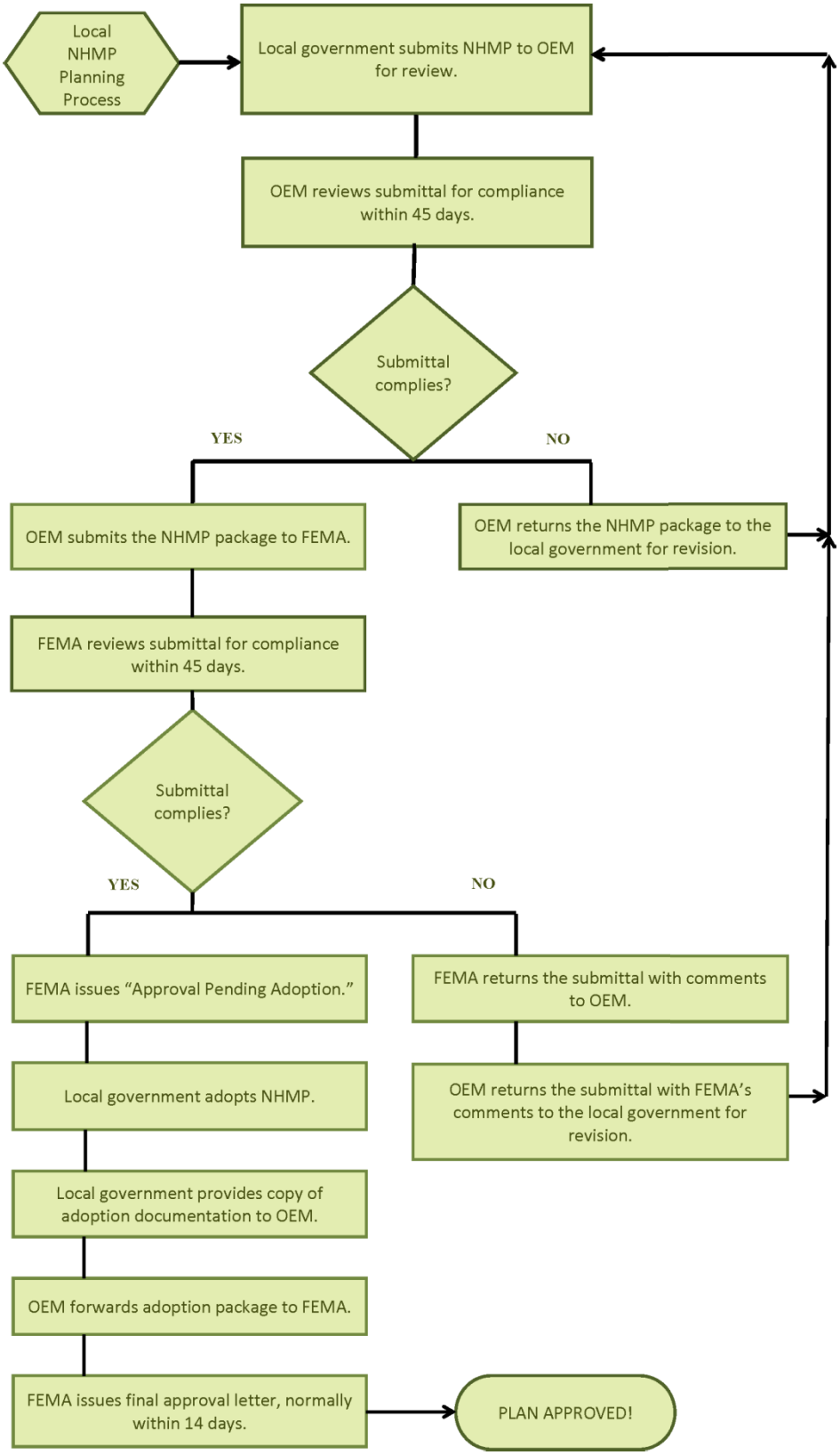
3.5.4.1 State Review of Local Mitigation Plans

Oregon is responsible for reviewing local jurisdictions' NHMPs prior to submittal to FEMA for review and approval (**Figure 3-4**). Once a local jurisdiction has completed a draft plan, it submits the plan to the OEM for review. If OEM finds that the draft plan does not meet all FEMA requirements, it returns the draft to the local jurisdiction for revision. Once OEM is satisfied that the draft plan is approvable, it forwards the draft to FEMA for review. Because of OPDR's extensive experience assisting local jurisdictions with developing NHMPs, the State delegates its review function to OPDR for those plans with which it assisted, and OPDR forwards approvable plans directly to FEMA for review.

If FEMA finds deficiencies, it returns the draft to OEM or OPDR which in turn returns it to the jurisdiction for revision. Once OEM or OPDR and FEMA are satisfied that the draft is approvable, FEMA issues *Approved Pending Adoption* (APA) status by letter to the highest elected official of the local jurisdiction. At this point, the local jurisdiction adopts its NHMP, usually by resolution, and sends a copy of the resolution and adopted NHMP to OEM or OPDR. OEM or OPDR verifies that the NHMP has not changed substantively since APA status was conferred, and forwards the adopted NHMP and resolution to FEMA. Upon receipt and verification that the NHMP has not changed substantively, FEMA issues final approval, again by letter to the highest elected official of the local jurisdiction.

In many cases, two or more local jurisdictions collaborate to develop a multi-jurisdictional NHMP. Most often this collaboration is among a county and some or all of its cities. In these cases, the county plan is primary, and the cities' plans are addenda to the county plan. The same process is followed, but the county adopts and receives final approval from FEMA first, then the cities follow suit. All jurisdictions that are parties to the plan receive the same effective date as the county.

Figure 3-4. State Process for Reviewing Local Mitigation Plans



3.5.4.2 Linking State and Local Plans

Mitigation Action Tracker

Prior to 2012, OPDR hosted a searchable action item database on its website. The purpose of the database was to provide a central, searchable, online location for mitigation actions found within Oregon's local natural hazards mitigation plans. OPDR supported the development, maintenance, and update of the database through FEMA Hazard Mitigation Grant Program funding that supported update of the Oregon Natural Hazards Mitigation Plan.

At the local level, communities used the database to gather ideas for actions, or to identify areas for potential intergovernmental partnerships. State agencies used the database to gain a better understanding of local mitigation needs and implement more effective mitigation actions on a statewide level.

In early 2012, FEMA developed and released a new *Mitigation Action Tracker* in conjunction with the FEMA Risk MAP program. The FEMA tool offers a web-based interface, custom reports and technical support from FEMA through a contractor. Also in 2012, the Oregon Department of Land Conservation and Development agreed to assume responsibility and the requisite grant funding needed to update the Oregon NHMP. The availability of FEMA's *Mitigation Action Tracker* and loss of grant funding led OPDR to discontinue support for the native database in late 2012.

Following conversations with FEMA Region X and state mitigation representatives, OPDR agreed to beta-test FEMA's *Mitigation Action Tracker* in the summer of 2012. OPDR uploaded one city and two county NHMP action sets into FEMA's *Mitigation Action Tracker* and provided FEMA Region X with recommendations for how to improve the tool. In its memo to FEMA Region X, OPDR concluded that *data entry will be more efficient and less subject to varying interpretations of data* using the FEMA database. The memo went on to state, *With the ability to edit and run reports in the FEMA database the database will be more user-friendly and more effective as a data storage and data reporting tool*.

FEMA's Mitigation Action Tracker became functional and provided the benefit of states being connected directly to FEMA with access to mitigation actions from communities across the nation. However, because it was designed for FEMA regions to track and report only on Risk MAP progress at the regional level, its utility for coordinating state and local natural hazards mitigation planning was limited. Most importantly, it was not accessible to local governments. Oregon intended to investigate the efficacy of borrowing another state's natural hazards mitigation tracker software or developing a tracker of our own. Developing our own tracker would provide the opportunity to broaden the scope to include related programs and projects. It could be accessible to local governments, state agencies, and other partners. Using a tracker would ensure that both local and state mitigation planning partners would have a central place to gather ideas for mitigation actions and coordinate local and state mitigation priorities.

Recently FEMA's mitigation tracker was decommissioned. Oregon's financial situation is shifting, and even with the deep budget cuts being contemplated due to drastically reduced revenues resulting from the novel coronavirus pandemic, the state may be able to pursue this project.

State and Local Natural Hazards Mitigation Plan Goals

In 2014, State and local NHMP goals were reviewed and the 2015 Oregon NHMP goals revised to improve the linkage between state and local NHMPs.

Oregon's 36 county-level NHMPs were reviewed to:

- Discern, if possible, whether the state NHMP goals were considered in developing local NHMP goals;
- Determine to what extent local and state NHMP goals are correlated; and
- Identify county-level goals that are not reflected in the Oregon NHMP.

At the local level, counties review the state's goals to inform their local goal identification. If a state goal is determined to be applicable it may be adopted into the local NHMP (often the wording of a goal is changed to account for local circumstances and needs). However, county NHMPs do not consistently reference their review of the state goals in an explicit manner. **Table 3-15** shows which local NHMPs contain a direct textual reference to the state goals. Only 10 of 36 or 28% do make a direct reference.

Table 3-15 also shows the linkage between state and local goals for all 36 counties. In some circumstances state goals are combined into a single goal at the local level (e.g., State Goals 1 and 2 are often combined at the local level.) When that is the case, both goals are shown in **Table 3-15** as appearing in the local plan.

Goal 1 appears in all 36 county NHMPs; Goal 2 appears in 35 (97%) and Goal 7 in 34 (94%). Goal 4 appears in 83% and Goal 3 in 56%. Goals 5, 6, and 8 appear in very few local NHMPs. Goal 5 has to do with the capability of the jurisdiction to carry out its Plan, Goal 6 concerns documenting and evaluating progress in achieving natural hazard mitigation, and Goal 8 promotes eliminating development in hazard areas where risk cannot be mitigated. A goal similar to Goal 8 was found in only one local NHMP.

There are several goals that appear in local NHMPs that were not reflected in the 2012 Oregon NHMP. The most relevant statewide are those with themes of protecting and mitigating risk to cultural and historic resources; enhancing partnerships and coordination among agencies at all levels of government; and integrating NHMPs with other plans. In its April 2014 meeting, the State IHMT decided to include three new goals addressing these themes to better coordinate state and local NHMPs (**Section 3.2.1**).

Since engaging in this exercise and in DLCD's case beginning to work with local governments on NHMP updates, we have made it a point to review not only the Oregon NHMP's goals, but also mitigation actions and other information for incorporation into local plans.

Table 3-15. Correlation of State and County NHMP Goals

Local Goals			State Goals								Local & State Goals
County	Plan Approved	# Goals	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8	Goals Explicitly Linked?
			Protect life and reduce injuries resulting from natural hazards.	Minimize public and private property damages and the disruption of essential infrastructure and services from natural hazards.	Increase the resilience of local, regional, and statewide economies.	Minimize the impact of natural hazards while protecting and restoring the environment.	Enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy.	Document and evaluate Oregon's progress in achieving hazard mitigation.	Motivate the public, private sector, and government agencies to mitigate against the effects of natural hazards through information and education.	Eliminate development within mapped hazardous areas where the risks to people and property cannot be mitigated.	Are the local NHMP goals specifically linked with the Oregon NHMP goals?
Baker (NE Oregon)	2014	4	X	X	X	X			X		N
Benton	2011[b]	5	X	X	X				X		Y
Clackamas	2013	5	X	X		X			X		N
Clatsop	2015[a]	7	X	X	X	X			X		N
Columbia	2014	4	X	X	X	X			X		N
Coos	2010[b]	6	X	X	X	X			X		Y
Crook	2011	5	X	X		X			X		N
Curry	2010[b]	6	X	X	X	X			X		Y
Deschutes	2010[b]	5	X	X		X			X		N
Douglas	2010[b]	8	X	X			X		X		N
Gilliam	2013	3	X	X					X		N
Grant (NE Oregon)	2014	4	X	X	X	X			X		N
Harney	2013	6	X	X	X	X			X		N
Hood River	2012	7	X	X	X	X	X		X		N
Jackson	2013	7	X	X		X			X		N
Jefferson	2014	6	X	X		X			X		N
Josephine	2012	6	X	X	X	X			X		Y
Klamath[c]	2011	6	X	X	X	X	X	X			N
Lake	2013	4	X	X	X	X	X		X		N
Lane	2012	6	X	X	X	X			X		N
Lincoln	2009[b]	5	X			X			X		N
Linn	2010[b]	3	X	X		X			X		N
Malheur	2014	5	X	X	X	X			X		N
Marion	2011[b]	7	X	X	X	X			X		Y
Morrow	2006	7	X	X		X			X	X	Y
Multnomah	2012[b]	5	X	X		X	X		X		Y

(table continued on next page)

Table 3-18. Correlation of State and County NHMP Goals *(continued)*

Local Goals			State Goals								Local & State Goals
County	Plan Approved	# Goals	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8	Goals Explicitly Linked?
			Protect life and reduce injuries resulting from natural hazards.	Minimize public and private property damages and the disruption of essential infrastructure and services from natural hazards.	Increase the resilience of local, regional, and statewide economies.	Minimize the impact of natural hazards while protecting and restoring the environment.	Enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy.	Document and evaluate Oregon's progress in achieving hazard mitigation.	Motivate the public, private sector, and government agencies to mitigate against the effects of natural hazards through information and education.	Eliminate development within mapped hazardous areas where the risks to people and property cannot be mitigated.	Are the local NHMP goals specifically linked with the Oregon NHMP goals?
Polk	2009[a]	6	X	X		X			X		N
Sherman	2014	4	X	X					X		Y
Tillamook	2012[a]	4	X	X	X	X			X		N
Umatilla	2014	6	X	X		X			X		N
Union (NE Oregon)	2014	4	X	X	X	X			X		N
Wallowa (NE Oregon)	2014	4	X	X	X	X			X		N
Wasco	2013	7	X	X	X	X			X		N
Washington	2011[a]	3	X	X	X	X	X				Y
Wheeler	2014	3	X	X					X		N
Yamhill	2014	6	X	X		X		X	X		Y
Percent Includ	-	-	**100%**	**97%**	**56%**	**86%**	**17%**	**6%**	**94%**	**3%**	**28%**

Notes:
[a]Clatsop County's plan is in the process of being updated. It is expected to be adopted and approved before the 2015 Oregon NHMP is approved.
[b]These plans are funded for updates during the period 2014-2017.
[c]Klamath County is the only county in the state that directly imports Goals 1 - 6 of the 2012 Oregon NHMP into its Plan.