

## **9.2 Mitigation Strategy**

### **9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions**

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

A. Priority

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																										
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<b>LEGISLATIVE/ POLICY</b>																										
LP-1*	Review and re-establish State IHMT membership and member responsibilities	When first established, the State IHMT membership consisted largely of agency directors or other high level agency staff. Over time, agency interaction with and oversight of State IHMT activities has been delegated. In some instances, this has resulted in better connection with the individuals that are actually responsible for mitigation activities in the respective agencies. In other cases, such delegation has resulted in the loss of an overall understanding of mitigation activities occurring throughout individual agencies. Given the lack of dedicated resources at the agency level for participation in the State IHMT, a review and re-establishment of the State IHMT membership and member responsibilities based on current resource constraints is needed.	2012-2018	Proposed	5,6	State IHMT Subcommittees OERM	Plan Update Facilitator for State IHMT	Existing (New Subcommittee)	X				Y	Y	Y	Y	Y			Y	Y	Y		OSSPAC OWEB	Y	
LP-2*	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 has identified greater interaction with the legislature as a top priority in the coming years. As a first step, the State IHMT recommends completing an assessment of the potential legislation needed to implement hazard mitigation policies. The assessment shall review existing and proposed policies and develop a list of potential legislative priorities.	2012-2013-2018	Proposed	5,6	State IHMT Subcommittees OERM	Plan Update Facilitator for State IHMT	Existing (New Subcommittee)	X				Y	Y	Y	Y	Y			Y	Y	Y			Y	

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LP-3*	Establish statutory authority for the State IHMT	Since its formation, the State IHMT has continued to play major roles 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 established in Oregon statute.	2013-2018	Ongoing	3, 5	OEM	State IHMT	1.0 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y		OSSPAC	Y	
NEW LP-5A	<del>Establish a system of special zones, procedures, restrictions, and conditions to limit development in tsunami inundation zones</del> Develop land use guidance and best practices for local governments for reducing risk within tsunami inundation zones. This would include model comprehensive plan and code amendments (policies, procedures, incentives, restrictions, conditions, and a tsunami overlay zone).	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 by developing land use guidance for tsunami risk reduction, providing it to the communities, then assisting communities with its implementation. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary.	2015			DLCD	DOGAMI	NOAA CZM Funds		75			Y	Y	Y	Y	Y		Y	Y	Y		OSSPAC	Y	
NEW LP-5B	Provide land use guidance and best practices for reducing risk within tsunami inundation zones to local governments.	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 by developing land use guidance for tsunami risk reduction, providing it to the communities, then assisting communities with its implementation. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary.	2015			DLCD	DOGAMI	NOAA CZM Funds	X				Y	Y	Y	Y	Y		Y	Y	Y		OSSPAC	Y	

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LP-8	Considered Developing procedures for escorting vehicular traffic through dust storms	ODOT and OSP both have procedures for escorting traffic under various circumstances. ODOT especially has much experience escorting traffic. It may be possible to develop and implement procedures for escorting traffic through dangerous dust storm conditions.	Ongoing 2018	Ongoing	1	ODOT	OSP	To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
REVISED LP-10	Continue seeking effective hazard mitigation opportunities compatible with habitat and fisheries protection via multi-objective mitigation efforts. Incorporate text addressing hazard mitigation into agency guidance and process documents focusing on environmental quality.	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.	Ongoing 2015	Ongoing	4	ODFW, DSL, OWEB	DEQ, DLCD and other state HMT agencies	0.5 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW LP-20	Participate in Oregon's Endangered Species Act (ESA) Working Group to ensure that hazard mitigation actions in floodplains do not harm listed species.	NOAA Fisheries is preparing a Biological Opinion that will change the regulatory environment for development in floodplains - including mitigation actions - to ensure no harm to listed species. In 2012, DLCD created the ESA Working Group, comprised of local government and state agency representatives, to work with NOAA Fisheries and FEMA on strategies for implementing the Biological Opinion.	2012-2018			DSL, ODFW	DLCD			20%			Y	Y	Y	Y	Y		Y	Y	Y			Y	

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REVISED LP-12	Address problem of structures requiring replacement but ineligible under SRGP. 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.	Ongoing 2015	Proposed	1,2	OSSPAC O EM	OEM Business Oregon	To be determined	X				Y	Y	Y	Y	Y			Y	Y	Y			Y	
NEW LP-21	Install real-time monitoring capabilities on state-operated stream gages	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.	2018			OWRD		TBD		78			Y	Y	Y	Y	Y		Y	Y	Y		Integrated Water Resource Strategy; Silver Jackets	Y		
NEW LP-22	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.	2014-2015			OWRD	ODOT	TBD	X			Likely to start in 2014, with one year to complete	Y	Y	Y	Y	Y		Y	Y	Y		Integrated Water Resource Strategy	Y		
LP-15	Develop incentive/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.	2012-2015-2018	Proposed	1	OSSPAC O EM	State IHMT	To be determined		25		Portland Retrofit Pilot Project	Y	Y	Y	Y	Y		Y	Y	Y		Clean Energy Works; Portland City Council; certified local	Y		

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LP-16	Develop incentives to increase the rate of replacement of privately-owned seismically deficient buildings	Develop tax incentives, permitting facilitation, other means to increase the natural rate of building turnover.	2012 - 2015	Proposed	1, 3	OSSPAC OEM	OEM	To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y		Portland City Council	Y	
REVISED LP-19A	Develop and implement flood protection standards for state-owned and -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. <del>There is a corresponding need to inventory existing state buildings located in flood-prone areas.</del>	2015 (subject to resource availability)	Proposed	2	DAS	DLCD	To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW LP-23	Request the legislature to fund the "State Disaster Relief Fund" immediately following a presidentially declared disaster or other disaster.					OEM																			
NEW LP-24	Request LCDDC to include Local Natural Hazard Mitigation Planning as a priority for Technical Assistance Grant awards.								X			Process to begin summer 2014.													
EDUCATION/ OUTREACH																									

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REVISED EO-1*A	Continue promoting the CRS program throughout the state Add at least one jurisdiction, with emphasis on coastal jurisdictions, to the Community Rating System (CRS) program during the life of each Oregon NHMP.	<p>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 (See previous CRS summary under Section 2 of Hazard Mitigation Successes). Participating in the CRS benefits the jurisdiction with extra flood protection and benefits property owners by lowering flood insurance rates. The state will continue its efforts to implement CRS in local communities. See the CRS Information Center at: <a href="http://training.fema.gov/EMIWeb/CRS/">http://training.fema.gov/EMIWeb/CRS/</a> for more information.</p> <p>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 and/or strengthen CRS ratings. DLCD will also create a "pathway to CRS" schedule for each jurisdiction for which it conducts a community assistance visit.</p>	2015-2018	Ongoing	1,2,3,4,7	DLCD	OEM	0.3 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y		NFIP	Y	
NEW EO-1B	Strengthen the existing CRS rating of at least one jurisdiction, with emphasis on coastal jurisdictions, during the life of each Oregon NHMP.	<p>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. 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.</p>	2015-2018		1,2,3,4,7	DLCD	OEM	0.3 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y		NFIP	Y	

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Revised EO-6A	Develop and distribute local hazard mitigation planning guidance; provide plan development support <u>Update Planning for Natural Hazards: Oregon Technical Resource Guide.</u>	<i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> was published in 2000 and needs to be updated.	Ongoing 2018	Ongoing	2,5,7	OEM OPDR	State HHMT agencies DLCD, OEM	2.0 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
EO-9	Assist local governments <u>Develop a legislative funding package for general funds or lottery funds to match federal funding for local hazard mitigation planning.</u>	Continue – and enhance where possible – state technical and planning grant assistance to coastal cities and counties for addressing issues associated with coastal erosion and related hazards.	Ongoing 2015	Ongoing	5,7	DLCD	DOGA MI, OPRD, OEM	Some existing funds (general fund and other), pursue additional external funds	X				Y	Y	Y	Y	Y		Y	Y	Y		Oregon Local Disaster Assistance Loan and Grant Account. This account addresses the need for local match for federal funding of projects, but not planning.	Y	
EO-10	Expand <u>Facilitate accessibility and use of the Coastal Atlas GIS resources.</u>	<del>Expand</del> <u>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 provide training on how to access and use them. in terms of data content and tools available for use. Continue to promote the use of the Coastal Atlas by local and state land use planners, permit reviewers and other practitioners</u>	Ongoing	Proposed	1,2,3,4,7	DLCD	OSU, DOGA MI	To be determined		??			N	M	M	Y	N							Y	

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EO-11	Produce Coastal Development Handbook	Produce a <i>Coastal Development Handbook</i> 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.	2012 and ongoing 2018	Proposed	1,2,3,4,7	DLCD	OSG, DOGA MI, OPRD	NOAA Coastal Zone Management Funds	X				Y	Y	Y	Y	Y			Y	Y	Y			Y	
REVISED EO-13	Determine the effectiveness of Use the Emergency Alert System (EAS) in dust prone areas at providing timeline information to the traveling public about dangerous blowing dust conditions and make improvements if needed.	One of several ideas proposed following the Sept. 1999 accidents on Interstate 84 near Echo was to "put word out quickly" utilizing the Emergency Alert System (EAS) via area radio stations about dust storm potential, and especially about actual conditions that are interfering with visibility. This idea was in addition to ODOT's Highway Advisory Radio and related resources noted as success stories on pages DS-5 to DS-7. With regard to the Mid-Columbia Region, it was noted that Tri-Cities radio stations need to be included because many people driving through that area are listening to stations based in Washington State. 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.	To be determined 2018	Proposed	1,7	OEM	OSP, ODOT	To be determined	X				Y	Y	Y	Y	Y			Y	Y	Y			Y	
REVISED EO-14A	Explore ways of Develop protocols for improving communication of hazardous blowing dust conditions between public safety answering points, ODOT, OSP, and local law enforcement agencies.	Community Solutions Team (CST) meetings in the Mid-Columbia Region of Oregon during the spring of 2000 identified that better communication between public safety answering points (PSAPs) about the existence and likely direction of travel of dust storms might have provided additional warning time for ODOT, OSP, and local law enforcement to stop travel on downwind highways likely to be affected. Protocols should be developed and training provided should be considered that would result in PSAPs relaying	To be determined 2015	Proposed	1,7	OEM	DPSST, ODOT, OSP	To be determined	X				Y	Y	Y	Y	Y			Y	Y	Y			Y	

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		information, as appropriate, to ODOT, OSP, local law enforcement, and the downwind neighboring PSAP regarding reports of dust storms headed in a particular direction. This may provide additional time for ODOT and law enforcement agencies to briefly close stretches of highways in the path of the storm and/or for reader boards and other advisory systems to be activated with information. There are a number of issues and factors that would need to be addressed in determining the feasibility of developing protocols and training on them:4 Staffing/Costs – Some PSAPs do not have more than one or two people per shift on duty; when events such as dust storms happen, personnel sometimes find it difficult to keep-up with existing, ongoing protocols.4 Feasibility – If the only information PSAPs have is based on what they are told by callers or mobile police/fire units via radio, will they know enough about the direction of travel of the dust storm to issue reliable information?4 Technology – Is new technology needed to accomplish the task contemplated?4 Liability – Would adding such protocols unnecessarily contribute to potential liability for PSAPs?Work with APCO/NENA – and especially local PSAPs in dust storm prone areas – to explore the possibility of developing and training on communication protocols for dust storms.																								
NEW EO-14B	Train public safety answering points, ODOT, OSP, and local law enforcement agencies' staff to use protocols for improving communication of hazardous blowing dust conditions.	Protocols should be developed and training provided that would result in PSAPs relaying information, as appropriate, to ODOT, OSP, local law enforcement, and the downwind neighboring PSAP regarding reports of dust storms headed in a particular direction.	2015						X				Y	Y	Y	Y	Y		Y	Y	Y				Y	

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EO-15	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, including working with the state agencies implementing State Support Function #3, Public Works and Engineering.	Ongoing (event dependent) 2018	Proposed	5,6,7	DOGAMI	OEM, ODOT	Existing		5%			Y	Y	Y	Y	Y		Y	Y	Y		Silver Jackets	Y	
REVISED EO-16A	Provide additional information to the traveling public about dust storm driving safety. Provide dust storm driving information in safety rest area kiosks.	Among the ideas generated by the Community Solutions Team meetings in the spring of 2000 was to provide additional public education outreach in dust storm prone areas of the state, especially Morrow and Umatilla counties. This is one action that could save lives and prevent damage in the event of a dust storm. Among the ideas were the following: 1) Provide dust storm driving information in safety rest area kiosks. 2) Develop, print, and distribute "table cards" to area restaurants and truck stops, providing information on driving when visibility is reduced (dust storms, fog, smoke, etc.), perhaps making similar information available at DMV offices. 3) Develop and distribute PSAs on the topic of driving in dust storm conditions to radio stations; stations would be encouraged to run these during peak periods when there is a strong possibility of high winds and blowing dust (Tri-Cities radio stations should be included). Determine the merit of these ideas and implement those that are likely to result in a better informed traveling public, thereby increasing safety on Oregon's highways.	To be determined	Proposed	1,7	ODOT	OEM	To be determined																	

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NEW EO-16C	Develop and distribute Public Service Announcements on the topic of driving in dust storm conditions to radio stations; stations would be encouraged to run these during peak periods when there is a strong possibility of high winds and blowing dust (Tri-Cities radio stations should be included).	Among the ideas generated by the Community Solutions Team meetings in the spring of 2000 was to provide additional public education outreach in dust storm prone areas of the state, especially Morrow and Umatilla counties. This is one action that could save lives and prevent damage in the event of a dust storm.																							
REVISED EO-19A	Encourage local jurisdictions to hold biennial volcano preparedness forums. Designate May to be Volcano Awareness Month by Governor's declaration.	<del>Preparedness forums should include talks from USGS, DOGAMI, and local emergency management specialists. Preparedness and response education materials should be distributed.</del> 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.	2012-2015	Proposed	2,7	OEM	DOGAMI	Existing	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW EO-19B	Host at least one workshop or other educational opportunity on a biennial basis in communities where a volcano Coordination Plan	The State of Oregon will actively work to increase the public's knowledge of the volcano hazard in Oregon.	2015-2018			OEM	DOGAMI		X				Y	Y	Y	Y	Y		Y	Y	Y			Y	

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	has been adopted.																								
<b>REVISED EO-20A</b>	Continue mandatory earthquake drills for state agencies, private employers with more than 250 employees. Designate the third Thursday of the month of October as the Great Oregon ShakeOut Day by declaration of the Governor.	"Drop, cover, and hold" or other protective action 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. OAR 104, Division 20 defines the responsibilities of state and local agencies, and private sector employers with 250 or more employees to hold annual drills instructing employees on earthquake emergency procedures. 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.	Ongoing 2015	Ongoing	1,2,5,7	OEM	OSSPAC, DAS, DOGAMI, OSFM, ODOT	Existing	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
<b>NEW EO-20B</b>	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.	2018			OEM			X				Y	Y	Y	Y	Y		Y	Y	Y			Y	

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EO-22	Encourage the purchase of earthquake insurance	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 and generally "packaged" as a rider to a standard homeowner or business property insurance policy. For some people, the question should not be whether or not to purchase earthquake insurance, but rather, how much to buy. For others, the decision requires a risk assessment: how likely is an earthquake?; how much damage would it inflict on ones property?; and how much can one afford to lose? Earthquake insurance rates are determined differently by each insurance company and can vary widely depending on several rating factors. Generally, older homes cost more to insure than new homes. Wood homes get better rates than brick ones because they tend to withstand earthquake stresses better. Because earthquake insurance is a type of catastrophic coverage, most policies carry a high deductible; usually anywhere from 5% to 15% of the value of a house. It is recommended that state agencies, local governments, and private sector insurance companies do a better job of promoting the purchase of earthquake insurance.	2012 and Ongoing	Ongoing	1,2,3,7	DCBS-ID	OEM, DAS-RM, OBDD	Existing																	

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EO-37	Creation of Create New LiDAR-Based Landslide Inventory and Susceptibility Maps, especially near population centers	DOGAMI will create these maps in cooperation with local municipalities. Specific methods and priority locations are still to be determined.	Ongoing	Proposed	7	DOGAMI	ODF, ODOT, DLCD	To be determined		20 %		This has been accomplished for the City of Astoria, a large portion of Clackamas County and its cities, and several smaller areas in and near Washington County. More areas will be mapped as resources become available.	Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW EO-37B	Develop maps of rapidly moving landslides					DOGAMI																			
NEW EO-37C	Produce new lidar-based flood hazard maps	Through FEMA or otherwise.	Ongoing			DOGAMI	DLCD, OEM																		

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REVISED EO-39A	Encourage <del>Enroll</del> 3 coastal communities to enroll in the Tsunami Ready Program <u>each year</u> .	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. <del>There are currently six communities and three counties on the coast that are Tsunami Ready.</del> Under a proposed plan through the NTHMP, three communities per year will be added to the <del>roles</del> 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.	2018	Ongoing	1,2,5,7	OEM	DOGAMI, DLCD	Existing		80%			Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW EO-64	Update the 2000 Guidelines for conducting site-specific geohazard investigations.		2018			DOGAMI			X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW EO-65	Update the inventory of shoreline protective structures.	Update the inventory of existing and new coastal engineering (shore protection) structures on the Oregon Coast.	2015		DLCD, OPRD	DOGAMI			X		Starting Fall 2013		Y	Y	Y	Y	Y		Y	Y	Y			Y	
NEW EO-66	Refine coastal erosion risk mapping for Tillamook County and its cities to utilize a fully probabilistic approach.	Revise coastal erosion risk mapping and analysis for Tillamook County, and cities within the County, to utilize a fully probabilistic approach. Probabilistic modeling approaches will be used to better address uncertainty and allow local and state hazard managers to use the information to better manage uses based on the relative risks. This will assist DLCD/DOGAMI to increase assistance to local governments in developing inventories based on sound technological research and in incorporating this information into their coastal management programs.	2018			DOGAMI	DLCD		X				Y	Y	Y	Y	Y		Y	Y	Y		Statewide Planning Goal 7	Y	

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NEW EO-67	Establish Base Flood Elevation Determination Service	Establish state-approved service to provide Base Flood Elevations to surveyors for the purpose of completing Letters of Map Amendment under the National Flood Insurance Program. Base Flood Elevations are determined by DOGAMI by producing hydraulic models based on lidar topographic data. This is useful in areas where Base Flood Elevations have not been determined by FEMA, though Special Flood Hazard Areas have been mapped.	2015			DOGAMI, DLCD	Various State IHMT		X																
NEW EO-68	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.	2015			DOGAMI	DLCD		X																
NEW EO-69	Establish a web page where building owners can register their interest in participating in acquisition programs for flood-damaged buildings. The on-line page complements OEM and DLCD's on-going prospective outreach to owners of identified Repetitive Loss and Severe Repetitive Loss buildings.		2015-2018			OEM, DLCD	Various State IHMT agencies																		
NEW EO-70	Engage citizen scientists in providing rain gage data.																								
NEW EO-71	Prepare model coordination protocols for local Floodplain Managers and Building Officials.					DLCD																			
<b>CRITICAL INFRASTRUCTURE / ESSENTIAL PUBLIC FACILITIES</b>																									
<b>NEW HEADING</b>	<b>HAZARD IDENTIFICATION</b>																								

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Revised CI-1A	Earthquakes: Complete statewide hazard identification	Identify liquefaction susceptibility, lateral spreading susceptibility, co-seismic landslide susceptibility, soft soils and basins that amplify ground shaking, and active faults	2014	Proposed		DOGAMI		TBD																	
Revised CI-1B	Tsunamis: Complete statewide hazard identification	Identify local and distant tsunami inundation zones	2013	completed		DOGAMI																			
Revised CI-1C	Volcano: Complete statewide hazard identification	Identify the volcanic hazards including in terms of probabilities	2015	Proposed		DOGAMI		TBD																	
Revised CI-1D	Flooding: Complete statewide hazard identification	Identify the flooding hazards including in terms of probabilities	2015	Proposed		DOGAMI		TBD																	
Revised CI-1E	Landslides: Complete statewide hazard identification	Identify the landslide hazards, including rate and amount of movement, in terms of probabilities	2015	Proposed		DOGAMI		TBD																	
Revised CI-1F	Coastal Hazards: Complete coastal hazard identification	Identify the coastal hazards, including rate and amount of movement, in terms of probabilities	2015	Proposed		DOGAMI		TBD																	
Revised CI-1G	Wildfire: Complete statewide hazard identification	Identify the wildfire hazards including in terms of probabilities																							
Revised CI-1H	Drought: Complete statewide hazard identification	Identify the drought hazards including in terms of probabilities																							
Revised CI-1I	Dust Storms: Complete statewide hazard identification	Identify the dust storm hazards including in terms of probabilities																							
Revised CI-1J	Wind Storms: Complete statewide hazard identification	Identify the wind storm hazards including in terms of probabilities																							
Revised CI-1K	Winter Storms: Complete statewide hazard identification	Identify the winter storm hazards including in terms of probabilities																							
<b>NEW HEADING</b>	<b>RISK ASSESSMENT</b>																								

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<b>Revised CI-1L</b>	Complete statewide risk assessment: <ul style="list-style-type: none"> <li>• Earthquakes</li> <li>• Tsunamis</li> <li>• Volcanoes</li> <li>• Flooding</li> <li>• Landslides</li> <li>• Coastal Hazards</li> <li>• Wildfire</li> <li>• Drought</li> <li>• Dust Storms</li> <li>• Wind Storms</li> <li>• Winter Storms</li> </ul>	Assess the exposure, their vulnerabilities and estimate damage and losses. Exposure could include schools, emergency facilities, water and waste water, dams and levees, transportation, telecommunications and the energy sector.	2017	Proposed		DOGAMI	TBD																		
<b>NEW HEADING</b>	<b>RISK PRIORITIZATION</b>																								
<b>Revised CI-1M</b>	Complete statewide risk prioritization: <ul style="list-style-type: none"> <li>• Earthquakes</li> <li>• Tsunamis</li> <li>• Volcanoes</li> <li>• Flooding</li> <li>• Landslides</li> <li>• Coastal Hazards</li> <li>• Wildfire</li> <li>• Drought</li> <li>• Dust Storms</li> <li>• Wind Storms</li> <li>• Winter Storms</li> </ul>	Identify and then prioritize the highest risk issues.	2017	Proposed		DOGAMI	TBD																		
<b>NEW HEADING</b>	<b>RESILIENCE INITIATIVES</b>																								

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Revised CI-1N	Complete statewide resilience initiatives: <ul style="list-style-type: none"> <li>• Earthquakes</li> <li>• Tsunamis</li> <li>• Volcanoes</li> <li>• Flooding</li> <li>• Landslides</li> <li>• Coastal Hazards</li> <li>• Wildfire</li> <li>• Drought</li> <li>• Dust Storms</li> <li>• Wind Storms</li> <li>• Winter Storms</li> </ul>	Implement measures to improve the reliability of critical services	2018	Proposed		DOGAMI		TBD																		
CI-4*	Inventory and evaluate state owned and occupied buildings for seismic risk	Determine 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. Prioritized results shall be factored into effective, routine decision processes for building occupancy, maintenance, use and potential mitigation treatments. Properly used, this information over time can provide for strategic and responsible voluntary seismic upgrade in areas of greatest need for reasonable cost as a part of broader facilities management.	Ongoing	Pilot Project	1,2,3,5	Governor's Office, DAS, OUS	BCD, DOGAMI, ODE	1.0 FTE, general fund revenue for state agencies to contract inventories and evaluation																		

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CI-7	Geo-survey the state's rights of way (ROW) to determine where seismic, landslide, and flood prone areas exist.	With this information, the state can develop a statewide right of way tenant plan that requires the construction of suitable utility supporting structures. This will improve utilities' resilience in seismic, flood, and landslide events. Cost subsidy for the studies could be an integral element in the utility permit fees, annual franchise fees or an additional tax levied against the utility's continuing property record. A Geo-Survey and Geologic Vulnerability Assessments (VAs) of the State's public rights of way (ROW) will enable the state to develop a statewide right-of-way tenant plan that requires the construction of suitable facility support structures and suitable configurations to meet the potential vulnerabilities that have been identified by VAs. This methodology can improve an Operator's facility resilience constructed in seismic, flood, and landslide sensitive areas. A potential cost subsidy for VAs can be offset via State ROW permit fee schedule.	2012 - 2015 18	Proposed	1,2,3,5	PUC, ODOT	ODOE, DOGA, MI	To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y		OSSPAC	Y	
REVISED CI-14A	Develop plans for rapid mobilization of inspectors for post disaster facility inspection.	Create rapid communication networks to effectively alert necessary inspectors when disasters occur. 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 governments regarding the circumstances and process for initiating BCD and state involvement.	2018			BCD	OEM		X				Y	Y	Y	Y	Y		Y	Y	Y			Y	

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REVISED CI-18	Work to improve policies, procedures, develop legislative concepts that stipulate statute and administrative rules applicable to all overhead facility operators, and relevant to the construction and maintenance of overhead lines in infrastructure.	<p>Experience with previous incidents and events has demonstrated that overhead utility systems are vulnerable to severe storms. The systems impacted by such an event create safety issues and outages that can cause serious problems for customers, communities, and the public in general as a result of the increasing dependency upon those systems and networks. As such, individuals, local government, communities and commercial enterprises should be encouraged to engage in preparedness efforts in support of service outage mitigation, including the installation of emergency electrical energy generation units. This effort is especially warranted at other critical infrastructure lifeline facilities, where additional health and environmental impacts are witnessed by the loss of commercial power (water and waste water treatment facilities).</p> <p>The PUC, in collaboration with industry stakeholders, strives to improve the safety and reliability of overhead lines (ORS:758-210-270) through improved design, construction, maintenance and rights-of-way management. Additional consideration can be given to initial constructs, utilizing underground or buried techniques, as opposed to conversion of overhead lines. The latter, when unassociated to HMGP funding, has an extensive list of considerations, over and above the recurring and initial costs to the utility and the service delivery end user, respectively. Including, but not limited to: maintenance, fault isolation and repair, capacity augmentation, facility rehabilitation and replacement. The latter activities entail expenses associated with excavation or trenching, select backfill, compaction, property restoration, all of these items are inclusive with the prudent decision to pursue deployments in the underground or buried configurations.</p>	2012 and ongoing-2018	Ongoing	2	PUC	State IHMT agencies	Existing	X				Y	Y	Y	Y	Y		Y	Y	Y			Y	

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		<p>This action item involves ongoing development of relevant and concise policies and procedures relative to overhead line maintenance, inspection, engineering, and joint use cooperation to ensure and improve the long-term safety and reliability of overhead line systems. Previous incidents and events demonstrate that overhead facilities are vulnerable to severe storms. The impact of such an event creates safety issues and system outages which, can cause serious concerns to customers, communities, and the public in general as a result of the increasing dependency upon service delivery systems and networks. As such, individuals, local government, communities and commercial enterprises should be encouraged to engage in preparedness efforts in support of service outage mitigation, including the installation of emergency electrical energy generation units. This effort is especially warranted at other critical infrastructure lifeline facilities, where additional health and environmental impacts are witnessed by the loss of commercial power (i.e.: medical facilities and water-waste water treatment facilities). The PUC, in collaboration with industry stakeholders, strives to improve the safety and reliability of overhead lines (ORS:758-010-035) through improved design, construction, maintenance and rights-of-way management. Additional consideration should be given to initial constructs, utilizing underground or buried techniques, as opposed to conversion of overhead lines as a reactionary solution, keeping in mind that underground and buried constructs are vulnerable to geologic and flooding events that may cause the same result, and impact that the conversion of the same facilities was intended to resolve.</p>																							

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CI-19	Develop evacuation plans for ports and harbors	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.	2013-2015	Proposed	1,3	OEM	DOGAMI, OSMB, DLCD	Existing, DOGAMI National Tsunami Hazard Mitigation Program		2%														Y		
NEW CI-22	Fund and provide technical assistance for local governments to engage in evacuation route planning and project implementation.					DLCD, DOGAMI	OEM, ODOT			25%			Y	Y	Y	Y	Y			Y	Y	Y		OSSPAC, Statewide Planning Goal 7, ORS 4.55	Y	
REVISED CI-21	Identify and implement tsunami mitigation projects to improve life safety by creating 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	2012 - 2015 2018	Proposed	1,7	OEM, DOGAMI	ODOT, DLCD	Existing		5%			Y	Y	Y	Y	Y			Y	Y	Y			X	

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

A. Priority

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																									
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Action Item									Progress				S.M.A.R.T.					Statutory Criteria			Integrated	Recommendation			
2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Consider including in 2015 Plan	Remove from 2015 Plan.
		new facilities that rise above the level of tsunami inundation and can serve as safe haven refuges.																							
NEW CI-23	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.	Ongoing			DOGAMI, DLCD, OEM	Various State HMT agencies																		
NEW CI-24	Implement a comprehensive vulnerability assessment of the State's various transportation modes.	ODOT 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.			1,2,3	ODOT	OSSPAC, DOGAMI, PUC	Funding for system and facility assessments, community infrastructure assessments	X														Oregon Highway Plan (OHP); The Oregon Resilience Plan	Y	

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<b>NEW CI-25</b>	Prioritize mitigation and retrofit projects on seismic lifelines.	ODOT Seismic Lifelines Evaluation, Vulnerability Synthesis and Identification Report provide recommended priority corridors but do not provide sufficient detail to actually prioritize retrofit investment packages. Engineering evaluations and cost estimation will inform that prioritization process.			1, 2,3	ODOT	DOGA MI	Funding for Engineering staff time and/or consultants for field assessments		50 %													Oregon Highway Plan (OHP); The Oregon Resilience Plan	Y		
<b>NEW CI-26</b>	Enhance ODOT's lifeline mitigation investment policy.	Expand upon ODOT's mitigation investment policy by: (1) Developing a mitigation policy and retrofit plan for lifeline assets and service facilities; (2) Enhancing design and maintenance standards and requirements for bridges and unstable slopes, transit, rail, ports, and priority lifeline airfields; (3) Developing a temporary bridge installation policy and standards; (4) Supporting research on retrofit methods and strategies for Cascadia subduction zone earthquake loads and tsunamis.			1, 2,3	ODOT	DOGA MI, OEM, Emergency Responders	Staff time in ODOT Planning, Bridge Unit, Maintenance and others	X														Oregon Highway Plan (OHP); The Oregon Resilience Plan	Y		
<b>LAND USE/ DEVELOPMENT</b>																										
<b>LU-1*</b>	Develop model risk reduction techniques and ordinances for landslide-prone communities	Techniques can involve requiring geological or geotechnical studies for new development, storm water control for neighborhoods on hillslopes, strict land use ordinances for active landslides, working with infrastructure operators to increase reliability of services after storms, and more.	Ongoing	Ongoing	1,2,3, 7,8	DOGAMI, DLCD	State IHMT Agencies	To be determined	X			Model code being developed starting Fall 2013	Y	Y	Y	Y	Y			Y	Y	Y		Statewide Planning Goal 7	Y	

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LU-2*	Develop a process for implementing revised elements of Goal 7	Goal 7 currently includes a process for notification to local governments of new hazard information. It also requires that local governments review any new hazard information brought to their attention and determine if a local land use response is needed. (LCDC adopted the revised goal in 2001. The revised Goal 7 became effective in June 2002.) Since the Goal's revision, several studies and reports on natural hazards have been published and disseminated. The process for determining which information should trigger local land use evaluations, however, remains untested. <del>The State IHMT currently serves as an informal review board to examine new information on natural hazards and evaluate if or how to address this information via the Goal 7 planning process. DLCD, with the assistance of DOGAMI, and OEM, will determine the process by which 'new hazard information' designations will occur. DLCD will implement the process, review the results, and determine whether any changes are necessary.</del> This action is necessary to ensure that local governments evaluate and respond to information regarding natural hazards within their communities.	2012 - 2015 2018	Proposed	1,2,3	DLCD	DOGAMI, OEM	2.0 FTE	X			Pilot Fall 2013	Y	Y	Y	Y	Y		Y	Y	Y		Statewide Planning Goal 7	Y	
REVISED LU-3*	Enhance coordination of hazard mitigation planning with local comprehensive planning. Provide technical assistance to local governments to help integrate hazard mitigation plans with local comprehensive plans.	Explore how to better connect hazard mitigation plans with local comprehensive/land use plans. Should hazard mitigation plans be incorporated into comprehensive/land use plans? How can comprehensive and land use plans become better vehicles for implementing hazard mitigation? Are changes needed in statute, rule, or goal to better incorporate hazard mitigation plans into comprehensive/land use plans?	2012 - 2015 2018	Proposed	1,2,3, 4	DLCD, OPDR, OEM	State IHMT Agencies & OEM	Existing	X				Y	Y	Y	Y	Y		Y	Y	Y		Statewide Planning Goal 7	Y	

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LU-5	Develop guidance on determination of mudslides/mudflow triggers and relation to rain/flood events	Work with FEMA Region 10, DOGAMI, and other interested parties to develop scientifically and legally-based guidance on when mudflows/mudslides are to be considered part of a rain/flood event pursuant to the NFIP. Address the definition of mudflow/mudslide, regulatory factors, scientific understanding of mudslides, and implications for flood insurance.	Ongoing-2018	Pilot Project	1,2,5	DLCD, DOGAMI	OEM, DCBS-ID	0.25 FTE	X				Y	Y	Y	Y	Y		Y	Y	Y		NFIP	X	
REVISED LU-8	Identify buildings and cultural resources that would benefit from hazard mitigation by supporting buildable lands inventories that identify constrained lands. Revise buildable lands inventory to address hazard areas.	Identify funding in order to make grants to local governments for inventories of buildable lands, where lands impacted by hazards would be identified as non-buildable or at least highly constrained. Through this process, also work with local governments to identify buildings and other cultural resources that would benefit from flood proofing or other hazard mitigation activities. These inventories should include an identification of land uses, lifelines, critical and essential facilities, cleanup sites in the floodway or floodplain, hazardous and solid waste generators, etc. DEQ and EPA may be able to assist in providing some of this data.  Individual flood disasters have revealed the need for a comprehensive inventory of at-risk structures in all flood-prone areas that could be subject to damage. This data could be the foundation for improved hazard mitigation programs that are based on priorities rather than addressing damaged properties after specific events.	2012 - 2015/2018	Ongoing	2,3	State HMT agencies, DLCD	OEM, DLCD, DEQ	To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y		Statewide Planning Goals		

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LU-11	Strongly encourage the adoption of State Building Code standards (or other incentives) for retrofitting, upgrading, protecting, essential facilities, hazardous facilities, and special occupancy structures in coastal communities that are vulnerable to tsun	A large tsunami (and associated earthquake) would likely destroy many buildings in coastal communities that are located in the tsunami inundation zone. The damage would be from the combined effects of the forces from the tsunami surges, currents and debris, as well as the earthquake hazards. The State of Hawaii has adopted construction standards for buildings in tsunami zones. The National Tsunami Hazard Mitigation Program recently completed the document Designing for Tsunamis that outlines some of these issues. These documents could be evaluated and used as a starting point in developing standards. Although not under the jurisdiction of Building Code Standards, port and harbor facilities can benefit from lessons learned from DR-1964 and damages (distant generated tsunami impacts) at facilities in Brookings-Harbor, Depoe Bay and Bandon. Such mitigation measure include strengthen pilings for floating docks, improved dock supports that facilitate unrestricted up-down movement during wave surges, and strengthened bulkhead walls that reduce scour from wave surges.	2012-2015	Ongoing	1,2,7	BCD	OEM, DOGAMI	To be determined																		
LU-16	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. Training has not been provided to local building officials since the original adoption of SB 379 (1995 Oregon Legislative Session), codified as ORS 455.446 - .447. As personnel change and time passes, additional training and information for officials will be provided.	2012 - 2015	Ongoing	2,7	BCD, DLCD	DOGAMI, OEM	Existing					Y	Y	Y	Y	N		Y	Y	Y					

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<b>REVISED LU-17A</b>	Integrate the GIS database of tsunami safe zones, evacuation routes, and evacuation sites into local government databases.	A GIS database of tsunami safe zones, evacuation routes, and evacuation sites is presently under construction (see short term action item #1). Once completed, it is important to integrate the data into county databases. The workshop would not only assist counties not only with how to integrate the data, but also how the data can be used for tsunami evacuation planning.	2015			DOGAMI	DLCD		X				Y	Y	Y	Y	Y		Y	Y	Y		OSSPAC	Y	
<b>NEW LU-19</b>	Develop a system for prioritizing and ranking state-owned critical facilities for mitigation.		2018						X				Y	Y	Y	Y	Y		Y	Y	Y			Y	
<b>MAINTENANCE / PLANNING</b>																									
<b>MP-5</b>	Assure full implementation of NFIP Map Modernization program in Oregon	Work cooperatively with FEMA to ensure that the NFIP map modernization program is fully implemented in Oregon, giving high priority to remapping of coastal areas due to age of existing FIRM maps and potential severity of flooding and related erosion hazards.	2012 and ongoing	Ongoing	1,2,3, 4,5	DOGAMI, DLCD	State IHMT Agencies	Pursue FEMA flood mapping funds		90 %		Some areas in Map Mod; some in RiskMAP. Expect to complete in 2015.	Y	Y	Y	Y	Y		Y	Y	Y		NFIP		
<b>NEW MP-5B</b>	Through FEMA's Risk MAP program, update 1,000 miles of streams with lidar-based flood mapping	FEMA's Risk MAP program funds revisions for 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). The State should continue to pursue Risk MAP funds primarily for this purpose.	2015-2018			DOGAMI, DLCD	OEM																		

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<b>NEW MP-10A</b>	Create a "Clearinghouse" for natural hazards data	Emergency responders and community planners alike need to know where to find the best and most current natural hazards data that is available. This project: - Establishes a single point of online access to reliable data and information about natural hazards; - Develops, in conjunction with DAS GEO, a "portal" to distribute this data; - Provides an ongoing inventory and assessment of existing natural hazards data; and - Creates a central library for natural hazard risk assessments.								5 %		Started October 2013; Projected completion 2018.	Y	Y	Y	Y	Y		Y	Y	Y		Risk MAP; Risk Plan; Framework Implementation Teams; OEM's Master Dataset; LHMPs; Governor's interagency collaboration initiative; Goal 7 implementation; NFIP; DEQ's IRIS database; etc.	Y	
<b>NEW MP-10B</b>	Develop a multi-agency State of Oregon flood hazard website	Create one-stop data, information, and map clearinghouse for flood hazards. Website will be cooperative effort between authoritative data sources -- DLCD, DOGAMI, OEM, OWRD, and federal partners (FEMA, USACE, NWS, USGS).	2015-2018			DLCD, DOGAMI, OEM, OWRD	Various State IHMT agencies																		
<b>MP-14</b>	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.	2012 - <del>2015</del> 2018	Proposed	7	DOGAMI	DLCD, ODOT, OEM	NOAA, FEMA	X																

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NEW MP-15A	Implement the Rapid Assessment of Flooding Tool	The RAFT (Rapid Assessment of Flooding Tool) has been funded by 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 tools, such as the RAPTOR. The tool is in very early development, and the scope and schedule are under development. For the remainder of the year, the RAFT team will focus on developing the scope and schedule, identifying data needs, and tasking members to track down data. The development of the RAFT will pick up more steam in FY 14, when more labor resources are available from the Corps.								30 %			Y	Y	Y	Y	Y		Y	Y	Y		Silver Jackets	Y	
NEW MP-15B	Add flood inundation forecast points to the National Weather Service Inundation Mapping website	The National Weather Service Advanced Hydrologic Prediction Service (AHPS) has developed inundation mapping sites for various stream gage locations nationwide. Currently Oregon does not have any sites with inundation mapping. This is a useful emergency management tool for understanding potential inundation areas based on NWS forecasts. [http://water.weather.gov/ahps/inundation.php]	2015-2018			DOGAMI		DLCD, OEM, OWRD																	
MP-23	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	2012 - 2013	Proposed	7	DOGAMI	ODOT	Existing																	

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REVISED MP-25	Warning system Install a multi-function lahar warning system in areas of high vulnerability	A warning system should be developed for volcano and weather-induced hazards like flood, channel migration, and landslides.	2012 - 2015	Proposed	1,7	DOGAMI	OEM, ODOT, DLCD	FEMA, USGS		??		A warning system is in place for floods, landslides, XXX. Still need to develop warning systems for YYY.														
REVISED MP-28	Update Special Paper 29	<del>Update Special Paper 29, Earthquake Damage In Oregon: Preliminary Estimates of Future Earthquake Losses, a statewide damage and loss estimation study. This update should include preparing tsunami damage and loss estimates, and possibly better accounting for unreinforced masonry construction.</del> Update 1999 Special Paper 29, Earthquake Damage In Oregon: Preliminary Estimates of Future Earthquake Losses, a statewide damage and loss estimation study. 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.	Ongoing 2016	Ongoing Proposed	1,2	DOGAMI	ODOT, OEM, DLCD	Existing To be determined	X				Y	Y	Y	Y	Y		Y	Y	Y		Oregon Resilience Plan	Y		
NEW MP-31	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 (SB33, 2013).		2014			OEM				33%			Y	Y	Y	Y	Y		Y	Y	Y			Y		

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NEW MP-32	Implement sea level rise modeling					DOGAMI																			

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B. Ongoing

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<b>LEGISLATIVE/ POLICY</b>																									
<b>NEW LP-5C</b>	Assist local governments in implementing the land use guidance and best practices for reducing risk within tsunami inundation zones.	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 by developing land use guidance for tsunami risk reduction, providing it to the communities, then assisting communities with its implementation. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary.	2015			DLCD		NOAA CZM Funds	X			<b>ONGOING - Start Date 2015</b>													
<b>NEW LP-5D</b>	Monitor the effectiveness of the land use guidance and best practices for reducing risk within tsunami inundation zones provided to local governments 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. The State of Oregon can assist affected communities by developing land use guidance for tsunami risk reduction, providing it to the communities, then assisting communities with its implementation. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary.	2015			DLCD		NOAA CZM Funds	X			<b>ONGOING - Start Date 2015</b>													

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REVISED LP-13A	Seek <u>stable</u> funding for the installation, <u>and operation, and maintenance</u> of additional 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. Stream gaging data also provide basic hydrologic information for floodplain mapping and watershed management by communities throughout the state. Numerous agencies of the federal government need data from stream gages for effective management of projects and resources; therefore the installation and maintenance of stream gages has traditionally been a responsibility of the federal government. State agencies plan to work with their federal counterparts to ensure adequate funding and support for existing gages and for the installation of new gaging sites where required. 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.	Ongoing	Ongoing	1,2,5	WRD	DSL	0.25 FTE, <del>plus funds for equipment</del> <u>In the 2013 Oregon Legislature provided \$750,000 for two hydrologic technicians, one information services position, and 16 stream gages.</u>				<u>ONGOING</u> <u>OWRD will always seek to install more gages throughout the state, and operation and maintenance are inherently ongoing activities.</u>													

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B. Ongoing

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LP-17	<u>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.</u>	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 <i>Oregon Forestland-Urban Interface Fire Protection Act</i> . 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.	Through 2015	Ongoing	1,2,4	ODF	OSFM Local Fire Protection Agencies	ODF				ONGOING													
REVISED LP-19B	<del>Develop and implement flood protection standards for state-owned buildings. Continue to improve inventory of state-owned and -leased buildings in all hazard areas.</del>	<del>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. There is a corresponding need to inventory existing state buildings located in flood-prone areas. Using DAS's data, DOGAMI developed an inventory of state-owned and -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 to facilitate DOGAMI's inventory updates in future plan cycles.</del>	2015 (subject to resource availability)	Proposed	2	DAS	DLCD DOGAMI	To be determined				ONGOING													
EDUCATION/ OUTREACH																									

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

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NEW EO-63	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, floodproofing, demolition, or relocation of homes and businesses when required due to "substantial damage" to the structure.	2015			DLCD	DCBS-ID	TBD	X			ONGOING													
NEW EO-6B	Provide the updated <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> to local governments.	To encourage communities to use <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> it must be provided to them.				OPDR	DLCD, OEM		X			ONGOING													
NEW EO-6C	Assist local governments in using the updated <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> to update their comprehensive plans and development regulations.	The original purpose of <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> 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.				OPDR	DLCD, OEM		X			ONGOING													
NEW EO-6D	Monitor the success of the updated <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> provided to local governments by evaluating its effectiveness or uptake rate.	Monitoring success of <i>Planning for Natural Hazards: Oregon Technical Resource Guide</i> will allow the State to adjust its approach and update the guidance as necessary.				OPDR	DLCD, OEM		X			ONGOING													

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<b>NEW EO-6E</b>	Provide support for development 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 that it distributes to OPDR and others to assist the state and local governments with NHMP development and update tasks and processes.										<b>ONGOING</b>													
<b>EO-7</b>	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.	Ongoing	Ongoing	2,3, 4,7	OEM	State IHMT Agencies	1.0 FTE				<b>ONGOING</b>													

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EO-12	Better coordinate, fund, and publicize programs to reduce the abundance of Juniper trees in arid landscapes across Oregon	Juniper trees are not native to Oregon. They 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.	2012 and ongoing	Ongoing	1,2, 4,7	ODF	ODA DEQ ODFW DSL	2 FTE across five agencies				ONGOING											Western Juniper Utilization Group, an Oregon Solutions project		

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EO-17	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	Models to display chimney reinforcing techniques, attaching homes to foundations and non-structural measures for building contents have been developed by FEMA following the Nisqually earthquake disaster. Oregon will request models from FEMA Region 10 and/or other sources; develop and deploy a training program for seismic retrofits to be conducted regionally throughout the state. Work with various "Showcase State" partners, as well as 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 structural and non-structural seismic mitigation measures. 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: <ul style="list-style-type: none"> <li>• Increase the number of educational opportunities by working with FEMA to offer courses from the National Earthquake Technical Assistance Program.</li> <li>• 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.</li> </ul>	Ongoing	Ongoing	1,2,3,6,7	OEM	BCD	Existing				ONGOING													

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EO-21	Provide information to local governments regarding adoption of programs and model ordinances for mitigation of existing, hazardous, unsecured buildings elements, such as parapets	Some common building features subject to earthquake damage and corresponding safety hazards include parapets, awnings, signs, decorative features, and masonry moldings. BCD has adopted the International Building Code (IEBC) as an alternate method, which was amended to support Portland's local ordinances on seismic design requirements for existing buildings. Local governments that wish to adopt hazard mitigation standards for existing buildings as permitted by ORS 455.020(4) should follow the City of Portland's local ordinance (Chapter 24.85 Seismic Design Requirements for Existing Buildings).	2012 and Ongoing	Ongoing	1,2,3,7	BCD	OEM, DLCD	Existing				ONGOING													
EO-25	Facilitate additional training on seismic design of structures and requirements of the State Building Code relating to hazard mitigation	Facilitate the development of training courses for individuals involved in earthquake hazard mitigation and building design, construction, and inspection. Focus on audiences that include architects, engineers, contractors and code enforcement personnel. The workshops will also provide a forum for instruction on construction and retrofitting techniques to increase the seismic resistance of existing buildings.	2012	Ongoing	7	BCD	DOGAMI OEM	BCD is 1% training funds				ONGOING													

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EO-27	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: 1) collaborate with agencies and organizations to promote consistency in the development and application of fire prevention standards; 2) work to make individuals aware of their personal accountability and responsibility for wildfire safety; 3) determine local resources and capacity; and 4) define needs and solutions required to increase capacity. Please see Section 3 of the SNHMP for descriptions of current statewide educational programs.	Annually	Ongoing	1,2,3,4,7	ODF	OSFM BCD DCBS-ID DLCD	ODF, OSFM, local fire departments, local fire prevention cooperatives, federal grant programs				ONGOING											Pacific Northwest Coordinating Group (PNCG)		
EO-28	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 utilized 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.	Through 2015	Ongoing	1,2,3,4,5,7	<del>DLCD</del> ODF, BCD	OSFM ODF, BCD	OSFM, ODF, county governing bodies, and local fire departments				ONGOING													

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EO-29	Increase the number of counties and communities that have current Community Wildfire Protection Plans.	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 <i>Community Wildfire Protection Plan</i> (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.	Through 2015	Ongoing	1,2,3,4,5,7	ODF	OSFM, Local fire defense boards, local forest protection districts	ODF, county and city governing bodies, local fire depts., community action groups				ONGOING													
EO-33	Promote the use of monies for fire prevention and wildfire mitigation projects by counties received pursuant to Title III, Section 302(5) of Public Law 106-393, or other similar federal legislation	Under the federal <i>Secure Rural Schools and Community Self-Determination Act of 2000</i> , 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. Under this action item, counties will be encouraged to apply for these monies and guidance will be offered on how the monies can best be applied.	Dependent upon budget coordination	Proposed	1,2,3,4,7	ODF	OSFM	ODF, OSFM, county governing bodies				ONGOING													

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EO-34	Promote "flood fight" plans and protocols	Several State IHMT 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, WRD, and the National Guard, 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.	Ongoing	Ongoing	2,3,7	OEM	State IHMT agencies and OMD	0.25 FTE				ONGOING													
REVISED EO-35A	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 ( <a href="http://www.oregon.gov/LCD/HAZ/index.shtml">http://www.oregon.gov/LCD/HAZ/index.shtml</a> ) 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.										ONGOING													

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<b>REVISED EO-35B</b>	Continue the State's active Floodplain Management Training Program	DLCD and other State IHMT participants also conduct or sponsor training sessions and meetings throughout the year focused on up-to-date floodplain management practices and projects. DLCDC 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.										ONGOING													
<b>REVISED EO-35C</b>	Prepare text for local broadcast of one Public Service Announcement (PSA) each year on a seasonal topic.	PSAs are an effective method for disseminating pertinent seasonal information about hazard preparedness and mitigation.				DLCD						ONGOING													
<b>NEW EO-39B</b>	Continue to renew enrollment of coastal communities already enrolled 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, 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.										ONGOING													
<b>NEW EO-40A</b>	Increase the number of schools participating in annual tsunami evacuation drills.	Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	2018			OEM, DOGAMI	DLCD, ODOT		X			ONGOING													

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<b>NEW EO-40B</b>	Increase the number of local agency and local non-profits, such as CERT, to participating in educational efforts such as door-to-door campaigns to educate those living or working in the inundation zone on how to response to an earthquake and tsunami.	Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	2018			OEM, DOGAMI	DLCD ODOT		X			ONGOING											
<b>NEW EO-40C</b>	Increase the number of 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.	2018			OEM, DOGAMI	DLCD ODOT		X			ONGOING											
<b>EO-43</b>	Encourage local jurisdictions to disseminate volcano preparedness educational materials	Preparedness materials should include what to do in the event of an eruption, evacuation maps, and volcano specific items to include in first aid kits (e.g., breathing masks and goggles). The USGS and FEMA have existing educational materials.	2012 - 2015	Proposed	1,7	OEM	DOGAMI	Existing				ONGOING											
<b>EO-46</b>	<del>Encourage development of</del> 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.	2012 - 2015	Ongoing	1,7	OEM	ODOT DOGAMI	Existing, USGS and FEMA				ONGOING											

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EO-48	Educate communities, workers, and the public about the role of proper tree pruning and care in preventing damage during windstorms	<p>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.</p> <p>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. State and local cooperators should:</p> <ul style="list-style-type: none"> <li>• Provide training to crews working on powerlines in worker safety and the identification of trees to prune or remove;</li> <li>• Review regulations and standards for easement and right of way maintenance, and provide training to foresters and logging crews; and</li> <li>• Instruct homeowners in pruning of vegetation, tree care safety, and proper tree care for trees bordering utility corridors and public rights of way.</li> </ul>	Ongoing	Ongoing	1,2,4,7	ODF	State HMT agencies, especially PUC, and ODOT, OEM	Existing				ONGOING													

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EO-49	Educate 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. During the December 2003 closure of the Siskiyou Pass on Interstate 5, ODOT and Oregon State Police freed many drivers only to have them spin out and get stuck again. If drivers would have had tire chains, and installed them when conditions warranted, clearing the pass would have been completed hours earlier. Many drivers were not prepared for a long wait in their car. Each year ODOT finds stranded motorists who either do not have or do not know how to install chains.	Ongoing	Ongoing	1,7	ODOT	OSP	Existing				ONGOING													
EO-50	Encourage citizens to prepare and maintain 72-hour kits	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 72 hours.	Ongoing	Ongoing	1,7	OEM	OERS agencies	Existing				ONGOING													
EO-51	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, and high wind warning.	Ongoing	Ongoing	1,7	OEM	ODOT OSP	Existing				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																									
OREGON NHMP VISION: NATURAL HAZARD EVENTS RESULT IN NO LOSS OF LIFE, MINIMAL PROPERTY DAMAGE, AND LIMITED LONG-TERM IMPACTS TO THE ECONOMY.																									
Action Item									Progress				S.M.A.R.T.					Statutory Criteria			Integrated	Recommendation			
2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Consider including in 2015 Plan	Remove from 2015 Plan.
EO-52	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 it's work with local fire departments through the Life Safety Team ( <a href="http://www.oregon.gov/OSP/SFM/CommEd_OLS_T.shtml">http://www.oregon.gov/OSP/SFM/CommEd_OLS_T.shtml</a> ) 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 HB3450a 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, woodburning 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.	Ongoing	Ongoing	1,7	OSFM	OEM OPH BCD Oregon Real Estate Industry	Existing				ONGOING													
EO-53	Educate citizens about ways to weatherize their homes	Weatherization measures can help keep the cold out during winter. Energy audits, cash rebates, and tax credits are available to help homeowners.	Ongoing	Ongoing	1,7	ODE	BCD	Existing				ONGOING													
EO-54	Educate citizens about the dangers of hypothermia, other winter health conditions	State agencies should work with the American Red Cross and local health authorities to educate citizens about the dangers of winter health conditions, including hypothermia, exhaustion, and heart attacks caused by overexertion.	Ongoing	Ongoing	1,7	OPH	OEM	Existing				ONGOING													

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B. Ongoing

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EO-55	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.	Ongoing	Ongoing	2,7	ODF	PUC, OSU Extension Service, ODA	Existing				ONGOING													
EO-58	Maintain <del>an</del> the inventory of shoreline protection structures	Maintain <del>an</del> the inventory of existing and new coastal engineering (shore protection) structures on the Oregon Coast.	Ongoing	Ongoing	1,2,3,7	DLCD	OPRD DOGAMI	Existing				ONGOING													
EO-60	Better understand beach processes by developing a coastal geomorphic database.	<u>Develop a coastal geomorphic database that describes the various morphological parameters of beaches, dunes, and bluffs present along the central to northern Oregon coast, specifically in Clatsop and Tillamook Counties.</u>  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. <u>This effort is phase 1 of a needed future multi-phase effort.</u> <del>In addition to the state agencies below, NOAA and USACE will play a role in advancing this action.</del>	Ongoing	Ongoing	1,2,5,7	DOGAMI OSU	DLCD	Pursue additional external funds				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

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REVISED EO-62A	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 Highway 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.										ONGOING													
NEW EO-62B	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 Highway 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.										ONGOING													
NEW EO-62C	Work with Oregon Parks & Recreation Department and Oregon Travel Experience to increase the number of interpretive educational installations along Highway 101.	Existing tsunami hazard zones signs are considered inadequate for placement along stretches of Highway 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.										ONGOING													

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2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound		Technically Feasible	Comments
CI-2*	Continue to conduct and improve risk assessments for state owned properties	<p>FEMA requires the state’s plan to: 1) describe the types of state owned or operated critical facilities located in the identified hazard areas; and 2) present an estimate of the potential dollar losses to state owned or operated buildings, infrastructure, and critical facilities in the identified hazard areas. In addition, FEMA also requires that the state develop a comprehensive multi-year plan to mitigate the risks posed to existing buildings that have been identified as necessary for post-disaster response and recovery. Part of this risk assessment for state owned property should be to identify: 1) which facilities would be necessary for response and recovery efforts and 2) mitigation strategies for those priority facilities.</p> <p>Currently, the State Plan’s assessment of state owned properties consists of a ‘low,’ ‘moderate,’ or ‘high’ vulnerability ranking. Rankings are derived from county-wide hazard analysis scores that do not account for local variations in vulnerability. Likewise, the structural integrity and physical condition of the critical facilities are not yet considered. As such, the State IHMT will encourage the state to invest resources in performing more detailed vulnerability assessments for state-owned properties. The assessments may result in mitigation opportunities that reduce the state’s vulnerability to natural hazards.</p>	2012 - 2015 2018	Ongoing	2,7	DAS DOG AMI, OPDR, DLCD	OEM, DO GAM, OPDR	2.0 FTE															

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2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Consider including in 2015 Plan	Remove from 2015 Plan.
CI-3*	Promote the reduction of non-structural hazards in K-12 schools. 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	Ongoing	Ongoing	1,2,7	OEM	OSSPAC, BCD, OSFM, ODE	Existing				ONGOING													

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B. Ongoing

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2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound		Technically Feasible	Comments
CI-5*	Strongly encourage voluntary relocation of <u>existing</u> essential facilities, hazardous facilities, and special occupancy structures that are in the tsunami inundation zone.	A large tsunami (preceded by a locally devastating earthquake) would likely destroy many buildings in coastal communities that are located in the tsunami inundation zone. The damage would be from the combined effects of the forces from the tsunami surges, currents and debris as well as the earthquake hazards. Essential facilities and special occupancy structures, such as fire stations/hospitals and schools, and hazardous facilities are often located in the tsunami inundation zone. Because of the critical need of essential facilities during a disaster, the added danger from hazardous materials, and the importance of protecting children, these facilities and structures need to be relocated out of the inundation zone through some type of incentive program. A voluntary program can be implemented without statutory change; however, a mandatory program would require legislative support. After a tsunami disaster, the top priority would be to reconstruct essential facilities, special occupancy structures, and hazardous facilities out of the tsunami inundation zone as defined in the maps produced for ORS 455.466 and 455.467. Finally, when these facilities come up for replacement, they should be encouraged to build out of the tsunami inundation zone.	2012 - 2015 2018	Ongoing	2,8	OEM, DOGAMI, DLCD	BCD	To be determined	??		ONGOING												
<b>NEW HEADING</b>	<b>SEISMIC REHABILITATION GRANT PROGRAM ACTIVITIES</b>																						

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B. Ongoing

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2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Consider including in 2015 Plan	Remove from 2015 Plan.
CI-6	Continue seismic rehabilitation of hospital, fire, and police facilities under the Seismic Rehabilitation Grant Program administered by <u>OEM Business Oregon</u> .	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. SJR 21 and 22 are bond measures (November 2002 election) which would provide funding to implement this proposed action. Senate Bills 2 to 5 (2005) provided the mechanism to accomplish some of these legislatively mandated tasks. Under SB2, Oregon Department of Geology and Mineral Industries developed a seismic needs assessment database of emergency response facilities buildings. These data are being used the SRGP to administer a grant program which provides for seismic rehabilitation of eligible buildings (SB 3). Senate Bill 5 allows the State Treasury to sell Government Obligation Bonds to fund the program.	Ongoing	Pilot Project	1,2,5	<u>OEM Business Oregon</u>	OSSPAC, DOGAMI, BCD, OSFM (SB3). OEM, OHD	\$30 - \$50 million per biennium				ONGOING													

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CI-8	Promote improved reliability and resiliency of critical infrastructure to operators by adopting industry-specific best practices, guidelines, and standards.	Lifeline services, such as electricity, gas, telecommunications, water, and transportation, can be critical to a community's wellbeing. However, much of Oregon's infrastructure has not been designed to tolerate extreme conditions, such as severe storms, major earthquakes, or large landslides. Certain lifeline services should have reliable performance to ensure that the region can withstand future damage without crippling consequences. These items of critical infrastructure require vulnerability studies in order to understand potential damages and consequences. Lifeline Service Delivery Systems (aka: Critical Infrastructure(CI)), including electric supply, natural gas, telecommunications, water/wastewater, 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 (CI) should have reliable and measurable performance objectives, which insure the region's CI can withstand future damage without crippling consequences.	Ongoing	Ongoing	2,7	PUC, DOGAMI	State IHMT Agencies	1.0 FTE				ONGOING													

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CI-9	Continue seismic rehabilitation of public schools buildings under the Seismic Rehabilitation Grant Program administered by <u>OEM Business Oregon</u> .	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 SB2, 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.	Ongoing	Pilot Project	1,2,5	<u>OEM Business Oregon</u>	OSSPAC, DOGAMI, BCD, ODE (SB3)	\$30-\$100M annually				ONGOING													

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CI-13	Encourage local governments to inter-tie water systems. Evaluate the need and opportunities for inter-tie projects in Local Natural Hazard 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. Oftentimes 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 back-up for another.	2012 and ongoing	Ongoing	2,7	OBDD Oregon Business	WRD, ODF W, PUC	Existing				ONGOING													
CI-14	Maintain a roster of qualified post-earthquake, flood, and wind inspectors. Solicit those with ATC-45 flood & wind inspection training. Develop plans for rapid mobilization of inspectors for post disaster facility inspection.	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. Create rapid communication networks to effectively alert necessary inspectors when disasters occur. 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 governments regarding the circumstances and process for initiating BCD and state involvement.	Ongoing	Ongoing	1,2,3	BCD	OEM, ODOT	Existing				ONGOING													

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CI-20	<del>Encourage windstorm mitigation techniques that reduce losses to electric utilities through existing state programs</del> Use industry best practices to reduce losses to overhead line operators.	Implement outreach efforts through existing safety-related programs managed by the PUC in coordination with private and public utilities	Ongoing	Ongoing	2,7	PUC	State IHMT agencies, especially ODF, ODOT, OR-OSHA, and the OUNS	Existing				ONGOING													
LU-6	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.	Through 2015	Ongoing	1,2,3,4,5	ODF	OSFM	ODF, county governing bodies, local fire departments, property insurance industry, federal grant programs				ONGOING													

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LU-7	Update the Model Ordinance for Flood Damage Prevention	<p>FEMA Region 10 has approved for use in Oregon a model ordinance for flood damage prevention. This model ordinance incorporates the NFIP minimum standards plus some elements of Oregon's state building codes. DLCD reviewed and updated the model ordinance in 2006 and again in 2008. 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.</p> <p>Model code language was developed in 2008 to guide habitat restoration projects in the floodway. Model code is based on FEMA Region X, "Policy on Fish Enhancement Structures in the Floodway" dated June 1999, and Portland District of the Army Corps of Engineers and the Oregon Department of State Lands jointly developed Regional General Permit (RGP) for Stream Habitat Restoration (ref NWP 2007 1023). The model code language was reviewed by FEMA and incorporated into Oregon Flood Hazard Reduction model ordinance.</p> <p>In 2010 the model ordinance was rewritten to incorporate Oregon Building Codes by reference and to include suggested administrative and permitting procedures. The model code language was reviewed by FEMA and published in 2011. DLCD will continue to modify the model ordinance in response to changing FEMA guidance, building code revisions and sound floodplain management experience.</p>	Ongoing	Proposed	2,3,5	DLCD	OEM, BCD	0.25 FTE				ONGOING													

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LU-12	Establish and maintain a priority ranking system for properties for flood mitigation	<p>The State's strategy for selecting properties for flood hazard mitigation projects is four-fold. It prioritizes projects that 1) are geographically balanced 2) are in communities with a FEMA-approved local hazard mitigation plan, 3) address properties with sustained substantial damages or repetitive losses, 4) provide communities with information and/or tools to evaluate properties suitable for mitigation, and to develop mitigation projects.</p> <p>Repetitive flood loss properties (those which have experienced multiple flood insurance claims) have been identified as high priority hazard mitigation projects by the NFIP. Nationwide, 40% of all flood insurance claims are paid on just 2% of insured properties. In Oregon, repetitive loss (RL) properties represent about 1% of all insured properties, and account for about 14% of all claims paid (19% of the dollar amount paid). Most (80%) of Oregon's repetitive loss properties pre-date the FIRMs. These properties are referred to as "pre-FIRM"; they were built in floodplains before FEMA FIRMs became available. Because of this, the property owners do not pay the true, actuarial cost of flood insurance. The RL lists provided by FEMA can have value for hazard mitigation planning because their locations may be indicative of persistent flood or drainage problems that may or may not be reflected on a FIRM.</p> <p>The state, working with local jurisdictions, will verify the FEMA-provided repetitive flood loss information at least once during this plan's term and establish a priority ranking for properties that would benefit most from hazard mitigation by means of acquisition, relocation, elevation, or demolition. The state will maintain and review this list annually as a basis for selecting and funding hazard mitigation projects that directly benefit</p>	Ongoing	Ongoing	2,3,5	DLCD	OEM	Existing				ONGOING													

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		<p>homeowners and businesses. The review of the repetitive lost list is tied to the FMA Program guidance that is updated annually with the state grant allocations. Following a major disaster declaration, these properties could be pre-approved by FEMA for hazard mitigation to include post-disaster mitigation funding from the Hazard Mitigation Grant Program that can oftentimes be expedited.</p> <p>Once the repetitive loss list is verified, DLCDC and OEM will analyze and summarize the information in a geographical information system to discover spatial patterns associated with repetitive losses. Results will be shared with jurisdictions in which repetitive loss structures are located, with the recommendation that the loss areas be addressed in local hazard mitigation plans as potential mitigation action items (in concept but not by specific property address). DLCDC will provide NFIP communities with RL properties the information necessary for them to identify and pre-qualify potential mitigation project opportunities that are cost-effective, environmentally sound and technically feasible. OEM will work with these communities in turning qualified potential projects into sub-grant applications.</p> <p>The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP). As of May 2011, there are nine identified SRL properties in Oregon, eight of which are insured with the NFIP. The State has been working closely with the property owner of the property with the highest number of losses (7) to mitigate against future loss. This mitigation</p>																								

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																									
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		project is projected to come to completion in 2011 using SRL grant funds (pending FEMA approval). DLCD and OEM will develop a plan for addressing the remaining SRL properties based upon experience with the 2011 mitigation project. Cost effectiveness of mitigation must be proven for SRL properties and unfortunately the dollar losses suffered by the remaining SRL properties in Oregon may not allow mitigation to be funded using the SRL grant program (or Federal mitigation grant programs). FEMA's Greatest-Savings-to-the-Fund (GSTF) calculation does not provide sufficient benefits to mitigate any of Oregon's SRL properties. Mitigation costs will likely exceed the GSTF calculation in all cases. Consequently, DLCD and OEM will evaluate the remaining SRL properties, including conducting screening benefit-cost analysis, to determine whether the remaining SRL properties qualify for priority ranking for mitigation action. Results will be shared with FEMA and local jurisdictions. Any decision to move forward will be made in consultation with local jurisdictions and property owners.																							
LU-13	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.	Ongoing	Ongoing	4	ODFW	ODR	Existing				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

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LU-15	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.	Ongoing and as opportunities (funding and project needs) arise	Proposed	1,2,3	OEM	DOGAMI, ODF, DLCD	Federal funding (PDM and/or HMGP) is needed, but can be managed by existing staff				ONGOING													
LU-18	Assist local communities in securing funding to implement measures to mitigate damage to buildings exposed to or having experienced repetitive flood losses, properties or those substantially damaged by flooding.	The state maintains an inventory of high priority repetitively damaged buildings located in floodplains (also see short-term action #7). As funding opportunities arise, continue to acquire, elevate, or otherwise mitigate damage to buildings exposed to or having experienced unacceptable flood damages.  The flood event of December 2007 heavily impacted the City of Vernonia and the unincorporated Nehalem Valley. As a result of this flood, significant changes were made to flood hazard maps in the area, causing scores of buildings to be placed in the regulated flood hazard zone. DLCD and OEM have worked closely with these communities to secure funding to mitigate buildings now located in the flood hazard zone and to buyout properties now located in the floodway and will continue to provide such expertise statewide where needed.	Ongoing	Ongoing	2,8	OEM, DLCD	State IHMT agencies	0.25 FTE				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

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<b>NEW MP5A</b>	Continue implementation of FEMA's RiskMAP 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.										<b>ONGOING</b>													
<b>MP-9</b>	<del>Encourage</del> 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.	Ongoing	Proposed	5	DLCD, DAS-GEO	DOGAMI	Various sources				<b>ONGOING</b>													
<b>MP-11</b>	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.	2012 and ongoing	Ongoing	2,4	DOGAMI	OSU, DLCD, OPRD	State and federal funds				<b>ONGOING:</b> 30% of coast actively monitored; 60% monitored to a lesser degree.													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

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MP-12	Analyze wildfire ignition probability statistics to better target prevention efforts at the leading causes of fires	<p>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 State 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.</p> <p><u>Under this action item, until a common database is developed, a process will be developed to identify the most common wildfire ignition causes, compile and analyze a list of those causes and trends, and distribute this information to agencies and organizations that can help to prevent such wildfires. Having data on the leading causes of ignitions, organized by county, will help establish a course of action for prevention programs. 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. We need to express this "collaboration" message in this item. "Keep Oregon Green," a statewide non-profit fire prevention association could potentially play a significant role in the process.</u></p>	2012 - 2015	Ongoing	1,2, 3,4	ODF	OSFM	ODF OSFM				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

B. Ongoing

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NEW MP-13A	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.																						
MP-20	Acquire high-resolution lidar data and map hazards. Acquire statewide lidar coverage for the purpose of improving natural hazard mapping and infrastructure inventories.	If not yet available, high-resolution lidar topographic data should be collected on all potentially active volcanoes in Oregon and all the way down the major drainages of each volcano. Lidar data should be used to improve volcano, landslide, flood, and earthquake hazard data. For an example, see the DOGAMI Multi-Hazard and Risk Study for the Mount Hood Region (Burns et al., 2011). Lidar is currently the best source of regional topographic data and allows for highly precise and accurate natural hazard mapping (landslide, flooding, volcanics, 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.		Proposed	7	DOGAMI	OEM, ODOT, <del>DLCD</del> Various State IHMT agencies	Oregon Lidar Consortium															
NEW MP-29	Use LiDAR for statewide analysis of all natural hazards																						

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

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NEW MP-30	Continue to encourage the development of Emergency Action Plans for all remaining high hazard dams in Oregon.	In Oregon, money from FEMA grants 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 evacuations in situations that could result in dam failure. There is an Oregon-specific EAP template available, designed for owners of remote dams that have limited personnel. Approximately 75 percent of state-regulated high hazard dams have, or are currently developing EAP's. The State is encouraging the development of emergency action plans (EAP) for all remaining high hazard dams in Oregon.				OWRD		Existing				ONGOING													

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

C. Removed

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<b>LEGISLATIVE/ POLICY</b>																						
LP-4*	Promote a state disaster and hazard mitigation fund to assist local governments' mitigation and response efforts	The availability of funding to meet immediate emergency needs, including hazard mitigation activities, is a major concern. Federal assistance programs require various matching fund contributions from state and local applicants and are not guaranteed to exist in the future. Legislation has been considered to create such a fund, common to many states, so that financial commitments can be made quickly to support hazard mitigation. The federal Disaster Mitigation Act of 2000 (DMA2K) addresses hazard mitigation planning and projects. This legislation reinforces the importance of mitigation planning, and emphasizes implementing local actions to reduce risk before disasters occur. DMA2K established a federal Pre-Disaster Mitigation (PDM) Program and new requirements for the post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of DMA2K specifically addresses hazard mitigation planning at the state and local government levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, "enhanced" mitigation plan prior to a disaster. States and local governments must have approved hazard mitigation plans in place in order to qualify to receive post-disaster HMGP funds. Mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for risk and capabilities. Establishing a state fund to assist local governments with hazard mitigation and response efforts would go a long way towards securing and leveraging federal funds.	2012-2013	Proposed	5	OEM	State IHMT Agencies	0.25 FTE			X	ORS 401.536, Oregon Local Disaster Assistance Loan and Grant Account								X - DONE		

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LP-5*	Establish a system of special zones, procedures, restrictions, and conditions to limit development in tsunami inundation zones	<p>Decisions on land use planning, siting of improvements, or capital expenditure for public and private infrastructure, critical lifeline facilities and residential, commercial, industrial and other development do not explicitly factor in potential tsunami-related hazards. Some method for factoring in tsunami hazard information is desirable. One possibility among many is implementation of a system of special zones, etc. that would include the means to determine the appropriate level of allowable activities.</p> <p>A thorough discussion of the policy implications of any proposed land use restrictions would need to precede any decisions. Such discussions would need to factor in the probabilities and areas potentially exposed to distant versus local tsunamis, economic and social costs of any restrictions, and the potential benefits in terms of life and property saved. Any land use restrictions would need to be based on relatively sophisticated information and mapping that would include a determination of hazardous areas for both distant and local tsunami sources, an evaluation of the hazard, an evaluation of the severity, and the level of allowable risk.</p> <p>Detailed mapping for local Cascadia Subduction Zone tsunamis has been completed for six areas (Warrenton/Astoria, Seaside/Gearhart, Lincoln City, Newport, Coos Bay, and Gold Beach). Mapping for a worst case distant tsunami has been completed for Seaside/Gearhart. The adoption might involve amendment of DLCD's Goal 7.</p>	2012 - 2015	Ongoing	2,3,8	DLCD	OEM, DOGA MI	To be determined												X - REPLACED BY: LP-5A, LP-5B, LP-5C, and LP-5D		

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LP-6*	Integrate hazard data into planning and regulations	Integrate new high-resolution hazard data into local planning and regulations. Special regulations should be established for proposed new critical facilities and/or infrastructure.	2012-2015	Proposed	1,2,4,7	DLCD	OEM, ODOT, DOGAMI	Existing												X - Covered by LU-2		
LP-7	Improve ocean shore and related permit process	Enhance where possible the involvement of key state agencies in the ocean shore permit and related permit processes (local government, U.S. Army Corps of Engineers, etc.).	Ongoing	Proposed	5	OPRD	DLCD, DOGAMI	Pursue additional external funds												X - Not a mitigation action		
LP-9	Obtain a secure source of funding for wildfire related use of the Emergency Conflagration Act	Currently, when the Conflagration Act is used to respond to wildfire related events, the funds expended by the Office of State Marshal must either be subsequently appropriated by the Oregon Legislature or be taken from an account available to the Office of State Fire Marshal. In the latter case, the result is that monies are used for a purpose for which it was not intended and other valuable programs and projects are negatively impacted. Under this action item, the Office of State Fire Marshal will work with the Oregon Legislature to identify and fund a secure source of funding that will pay the expenses incurred in the use of the Emergency Conflagration Act. Currently, within the budget process, the OSFM has identified the need to have funds held aside for responses.	2012-2015	Proposed	5	OSFM	ODF	OSFM, local fire departments, and county governing bodies												X - Not a mitigation action		

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LP-11	Work towards the floodplain management goals outlined in the Willamette River Legacy Program	The Governor's office has established a Willamette River initiative that lays out various goals for repairing water quality, restoring habitats, and supporting recreational opportunities. Several proposed actions would support sound floodplain management in the river basin. This includes a proposed action to protect existing functioning floodplains and reconnect historic floodplains, with a target of reconnecting 200 acres per year, 1,000 acres by 2010 focusing on tributary confluence areas between Eugene and Salem. Projected benefits of this action include reduced stream temperature, less severe flooding downstream, improved water quality, improved habitat, and increased natural storage of water. The Governor's office has identified potential funding sources as OWEB grants, CREP enrollments, 319 Grants (watershed restoration), Restoration and Enhancement Grants, Wetlands Reserve Program (WRP) and WREP, TNC utility customer salmon habitat grants, and BPA habitat compensation funds.	Ongoing	Proposed	4	OWEB, OPRD, DSL, ODFW	DEQ, DLCD, DOGA MI, OEM, DSL	2 FTE			X									X - DONE		

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LP-13	Seek funding for the installation and operation of additional stream gages	The availability of timely and accurate telemetered data from stream gauges is essential for flood forecasting, for prediction of imminent flood hazards, and for response to flood emergencies. Stream gauging data also provide basic hydrologic information for floodplain mapping and watershed management by communities throughout the state. Numerous agencies of the federal government need data from stream gauges for effective management of projects and resources; therefore the installation and maintenance of stream gauges has traditionally been a responsibility of the federal government. State agencies plan to work with their federal counterparts to ensure adequate funding and support for existing gauges and for the installation of new gauging sites where required. 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 gauges around the state.	Ongoing	Ongoing	1,2,5	WRD	DSL	0.25 FTE, plus funds for equipment	X		2013 Legislature provided funding for 1.75 FTE and 16 additional stream gages.							Oregon's Integrated Water Resources Strategy also has a recommended action for additional streamflow monitoring (Action 16)	X - DONE			
LP-14	Seek funding to enhance capacity of state floodplain management program to better support implementation of the NFIP and higher regulatory standards	DLCD and OEM provide various services to FEMA Region 10, local governments, other governmental agencies, and the general public in support of implementation of the NFIP in Oregon. While coordination and cooperation and pursuit of various federal funding opportunities have allowed the state to temporarily enhance the services provided in some areas, neither DLCD nor OEM have been able to secure funding to permanently enhance the work capacity of the two agencies. FEMA funding is supporting a <del>limited duration</del> permanent position focused on RiskMAP. The agencies could more fully serve the needs of local floodplain management programs and the citizens of Oregon if additional resources could be secured.	Ongoing	Proposed	1,2,3,5	DLCD	OEM, other state IHMT agencies	1.5 FTE	X									NFIP	X - Not a mitigation action			

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LP-18	Establish a method for verifying the adequacy of geotechnical site reports on an as-needed basis	Independent peer review by qualified and registered geotechnical professionals is one of the best methods of ensuring that site reports done for local governments, property owners, developers, and others are of an acceptable quality and adequately address landslide issues. It is recommended that peer review processes throughout the state be strengthened so landslide hazards are minimized.	2012 - 2015	Proposed	2,5	State IHMT Subcommittee	To be determined	To be determined													X - Done at the local level	
<b>EDUCATION/ OUTREACH</b>																						
EO-2*	Develop a statewide strategy to encourage the purchase of flood insurance	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, floodproofing, demolition, or relocation of homes and businesses when required due to "substantial damage" to the structure.  State agencies, local governments, and private sector insurance companies need to promote the purchase of flood insurance. Efforts could be linked with NFIP efforts such as the floodsmart.gov website and associated advertising campaigns.	Ongoing	Ongoing	2,3,5,6,7	DCBS-ID	DLCD, OEM	To be determined			X										X - DONE	
EO-3*	Assist communities to adopt risk reduction techniques and ordinances	Techniques can involve requiring geological or geotechnical studies for new development, storm water control for neighborhoods on hillslopes, strict land use ordinances for active landslides, working with infrastructure operators to increase reliability of services after storms, and more.	Ongoing and as opportunities	Ongoing	1,2,3,7	DOGAMI	State IHMT Agencies	1.0 FTE													X - Not SMART	

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			needs) arise																			
EO-4*	Encourage Oregon coastal communities to enroll in the NFIP's Community Rating System (CRS) which includes tsunami standards.	The CRS, included in the National Flood Insurance Program, is a FEMA program that provides incentives to communities to mitigate flood disasters. By enrolling in the CRS, communities, through specific actions, receive points that go toward a reduction in insurance rates. Tsunami actions are included in the CRS and have recently been revised by FEMA in conjunction with the Insurance Services Office (ISO). Contact DLCD, OEM, or FEMA for information about the CRS tsunami program.	Ongoing	Ongoing	2,3,5,7	DLCD	OEM, DOGA MI	Existing													X - Covered by EO-1	
EO-5	Improve hazard mitigation technical assistance for local governments and infrastructure operators	<p>A DLCD-led review of the implementation of statewide planning Goal 7 resulted in the identification of several needs to strengthen local hazard mitigation efforts. These included providing current hazard information and technical assistance to local governments, improving communications between local governments and state agencies with respect to natural hazards, and providing hazard mitigation training.</p> <p>An ongoing need to provide technical assistance to local governments exists, and the State IHMT continues to look for ways to bridge the gaps between local planning, building, and emergency management programs, and between the local and state levels.</p> <p>Despite this recognition, implementation of such activities is difficult to fund and institutionalize. Through the Oregon Partnership for Disaster Resilience (OPDR) these issues have been addressed since 1999. OPDR has offered measurable outcomes on how increased communication, coordination, and collaboration between diverse partners (public and private) can</p>	Ongoing	Ongoing	5,7	DLCD	State IHMT Agencies	2.0 FTE													X - Not SMART	

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

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Action Item			Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Progress				S.M.A.R.T.					Statutory Criteria			Integrated	Recommendation
2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound		
		<p>assist the state and communities in reducing their risk and exposure to natural hazards.</p> <p>Various State IHMT partners will continue to look for opportunities to provide technical assistance in a manner that encourages coordination among various local programs and informs communities of assistance available. The State IHMT also continues to seek stable non-federal funding for OPDR..</p> <p>The State IHMT will endeavor to ensure that technical assistance materials provided by DLCD, OEM, DOGAMI, BCD, OPDR, PUC and other agencies support local officials' and infrastructure operator's understanding and use of hazard and risk information.</p>																				
EO-6	Develop and distribute local hazard mitigation planning guidance; provide plan development support	<p>The Oregon Partnership for Disaster Resilience (OPDR) assists communities in developing and implementing local risk reduction plans and projects. Funding for planning-related activities comes from the Pre-Disaster Mitigation Grant Program, and 2012 marks the ninth year of regional planning efforts aimed at developing multi-jurisdictional natural hazards mitigation plans. As a direct result of OPDR activities, the majority of Oregon's counties maintain FEMA-approved natural hazard mitigation plans. On October 1, 2012, new FEMA local plan review procedures will be fully phased-in, and this will require outreach and training on a state-wide basis.</p> <p>In conjunction with PDM plan development assistance, OPDR develops and implements training programs that benefit communities, agencies, and partners in natural hazards risk reduction. For communities developing hazard mitigation plans, OPDR develops and facilitates a</p>	Ongoing	Ongoing	2,5,7	OEM	State IHMT agencies	2.0 FTE												<p><b>X - REMOVED:</b> Replaced by Revised EO-6A, and new EO-6B, C, D, and E. Parts B, C, D, and E are located in the "Ongoing" spreadsheet.</p>		

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		<p>series of quarterly plan development workshops. The series includes workshops on developing planning processes; involving stakeholders and conducting public outreach; mapping community assets and assessing local risks and vulnerabilities; developing goals and action items; and developing strategies for plan implementation and maintenance. OPDR also hosts a two-part plan update training series and business continuity trainings.</p> <p>In addition to the trainings, OPDR provides communities with support, tools, and resources necessary to develop and/or update their natural hazards mitigation plans. Communities developing natural hazard mitigation plans receive a Pre-Disaster Mitigation Community Training Manual. The Training Manual offers technical information and resources to assist communities in the development of local mitigation plans, and is used in conjunction with OPDR's four-part work session series. Both the work sessions and manual synthesize the approaches developed by OPDR for Disaster Resilience, state and federal agencies, and other organizations to assist communities in developing natural hazard mitigation plans. OPDR has also created an addendum to the Training Manual to assist communities in the plan update process.</p> <p>OPDR plays an instrumental role in the packaging and distribution of scientific and technical knowledge. Based on information provided by State IHMT and OPDR members/agencies, OPDR develops and distributes regional profiles and risk assessments to local communities. The regional reports are part of the State's Enhanced Natural Hazard Mitigation Plan, and they also serve as regional resources for local planning initiatives.</p>																							

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		<p>The regional profiles and risk assessments are maintained and updated in accordance with the State's Plan implementation and maintenance schedule. As such, the reports include and disseminate the most recent scientific and technical knowledge available at the time. Likewise, communities are encouraged to update the regional profiles and risk assessments with local data, as available.</p> <p>Additionally, OPDR's website hosts a number of useful resources for communities developing and/or updating natural hazards mitigation plans, including the searchable natural hazard mitigation action item database. The database includes action items from plans developed as part of the Pre-Disaster Mitigation Planning Grants covering the Mid/Southern Willamette Valley, Mid-Columbia, Southeast Oregon, Northeast Oregon, and Oregon Coast regional planning initiatives. Eventually, this database will host the action items from all local plans. Additional online resources include the state's enhanced natural hazard mitigation plan, links to regional planning initiatives, technical memos, links to state agencies' websites, and hazard-specific resources.</p>																				
EO-8	Develop tsunami hazard and evacuation maps	Tsunami run-up areas and evacuation maps continue to be developed in conjunction with local governments. Tsunamis can dramatically affect coastal erosion and must be taken into account in planning activities.	Ongoing	Ongoing	1,7	DOGAMI	OEM	NOAA Tsunami Funds			X									X - DONE		

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EO-16	Provide additional information to the traveling public about dust storm driving safety	Among the ideas generated by the Community Solutions Team meetings in the spring of 2000 was to provide additional public education outreach in dust storm prone areas of the state, especially Morrow and Umatilla counties. Among the ideas were the following: 1) Provide dust storm driving information in safety rest area kiosks. 2) Develop, print, and distribute "table cards" to area restaurants and truck stops, providing information on driving when visibility is reduced (dust storms, fog, smoke, etc.), perhaps making similar information available at DMV offices. 3) Develop and distribute PSAs on the topic of driving in dust storm conditions to radio stations; stations would be encouraged to run these during peak periods when there is a strong possibility of high winds and blowing dust (Tri-Cities radio stations should be included). Determine the merit of these ideas and implement those that are likely to result in a better-informed traveling public, thereby increasing safety on Oregon's highways.	To be determined	Proposed	1,7	ODOT	OEM	To be determined													X - Replaced by Revised EO-16A, and new EO-16B and C.	
EO-18	Promote agricultural practices that are known to reduce erosion of soil by wind, thereby reducing the frequency and magnitude of dust storms	It is clear that certain agricultural practices reduce the frequency and amount of blowing dust, as well as reduce wind-caused soil erosion. Oregon Department of Agriculture should continue to work with farmers, agricultural associations, and soil and water conservation districts to further promote and implement: 1) Residue management, including no-till or direct seed farming. 2) Cover crops and other BMPs (see below). 3) Field strip cropping systems. 4) Landscape buffers/windbreaks. The most commonly used practice for both wind and water erosion control is residue management. This involves leaving some or all of the residue from the previous crop on the soil surface to provide cover and surface roughness to provide protection against erosion. Residue management	Ongoing	Ongoing	4	ODA	DEQ, ODFW	To be determined													X - This is not a stand-alone action, but in practice is done in the course of other Soil & Water Conservation District (SWCD) activities. ODA provides administrative and financial support to the Soil & Water Conservation Commission and the more than 40 SWCD programs;	

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		involves tillage practices that do not turn the soil over thus burying the residue. Reduced tillage, minimum tillage, no-till, mulch till, and conservation tillage are all terms used to describe the various methods used to accomplish residue management. Other "best management practices" (BMPs) used in wind erosion prone areas include cover crops, annual or continuous cropping, and crop rotations. On irrigated land, a common practice is to irrigate soon after tillage to form a crust on the soil that reduces the potential for wind erosion. Field strip cropping systems can reduce exposed surface area by up to 50% on each field. Landscape buffers/windbreaks are likely the most expensive alternative because a series of properly spaced tree and shrub windbreaks requires the purchase of trees/shrubs, and since it would likely need irrigation, requires some infrastructure development and maintenance costs. Additionally, to be effective, it needs to be done as a system, involving multiple ownerships. The Coordinated Resource Management System approach might be used to obtain cooperation and achieve coordinated implementation. The Columbia Plateau Wind Erosion/Air Quality Project, also known as the Columbia Plateau PM10 Project, has conducted years of research and has produced many fine publications. The latest report, <i>Farming with the Wind II</i> (Special Report XB1042) was released in Feb. 2004. For more information, see: <a href="http://pnw-winderosion.wsu.edu">http://pnw-winderosion.wsu.edu</a>																	however, ODA has no authority over their activities. Therefore, there is no state agency to champion this action item.			

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EO-23	Identify an Oregon institution to host the Advanced National Seismic System (ANSS) Interpretive Center in Oregon	The August 2001 implementation plan for the ANSS Pacific Northwest Region identifies a need for an institution in Oregon to interpret ANSS Oregon earthquake data and information products for users ranging from emergency managers and news media to research scientists. This project is, in part, a USGS effort mandated by Congress, which involves the purchase, installation, monitoring, and maintenance of strong motion seismographs.	2012	Proposed	5,7	DOGAMI, OUS	OEM, OSSPAC, ODOT	To be determined												X - No longer being pursued.		

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EO-24	Continue to improve the communication of historical information on stream flows during past El Niño and La Niña years to water managers throughout Oregon; historical data provides the earliest clue on where flooding may occur or where there could be water shortages.	Stream flow data from past El Niño and La Niña years can provide clues as to where the state is more likely than during an “average” year to experience water shortages or flooding. This information should be better communicated to water managers, floodplain managers, emergency managers, and others with an interest in stream flows. The apparent association of ENSO signals and streamflows shows up only in some basins and some years and thus cannot be relied on with certainty... A forecast based only on ENSO signals may be overly simplified, or in some cases, misleading. (For example) the SOI variable is significant in both the Wilson and Trask rivers but the La Niña variable is not significant in these two basins. Neither variable is significant in the Siletz (which has 60-plus years of record). Although (there is) a potential role for ENSO signals in flood planning, relevance will depend in part on the physical characteristics of individual watersheds and on the particular flow metrics of interest to floodplain managers. An apparently strong ENSO signal in a particular region may be of little use for some individual catchments in the region other factors can play major roles in whether a high flow results in a flood event. Along Oregon’s coast, for example, floods in some smaller rivers that empty into bays often are caused by storm surges and high tides in concert with heavy precipitation. These surges and tides pile-up bay water and decrease the rate at which streamflows can be discharged to the open sea.	Ongoing	Ongoing	1,2,7	WRD	ODA, ODFW, -PUC	Existing												X - Not a mitigation action.		
EO-26	Draft model intergovernmental agreements to establish clear definitions of assistance and authority across jurisdictional lines or when state or federal	Create a model mutual aid agreement to be used by state and local governments when providing assistance across jurisdiction lines. Establish additional clear guidelines when local jurisdictions need additional state, federal, or special resources.	Ongoing	Proposed	1,2	OEM	BCD, OSFM	To be determined												X - Not a mitigation action.		

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2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound		
	resources are needed.																					
EO-30	Expand the Firewise Communities/NFPA program in Oregon	The national Firewise Communities/USA recognition program promotes a self-help approach by which local communities can improve their level of protection from wildfires. Within a community, the program is started when a fire service professional provides information about how the community can successfully coexist with wildfires, explains basic fire mitigation measures, and helps to complete a community assessment of their situation. The community then uses this information to develop and carry out a mitigation plan which is tailored to its unique location and situation. Currently, several of Oregon's communities have participated in the program. More will be encouraged to do so.	Annually through 2015	Ongoing	1,2,3,4,7	ODF	OSFM	ODF, local fire departments, neighborhood homeowners' associations												X - Covered by EO-27		

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EO-31	Encourage increased commercial utilization of biomass materials from wildland-urban interface areas	For a variety of reasons, vegetative fuels in and adjacent to wildland-urban interface (WUI) areas are accumulating at historically high rates. The ability to properly, cost effectively, or ecologically dispose of such fuels, as a part of a comprehensive mitigation strategy, is often limited and may even be nonexistent in some locales. One way to address this problem is to encourage increased commercial utilization of biomass materials which are created by mitigation activities in WUI areas, such as by burning to create steam and electricity (co-generation). The development of the infrastructure to support such utilization requires significant marketing and investment. Under this action item, the desirability of entering such markets will be promoted to potential developers and investors.	Through 2015	Ongoing	4,7	ODF	ODE, PUC, OBDD, UO, Tribes	ODF, federal grant programs												X - Not a mitigation action.		
EO-32	<del>Expand</del> Continue Oregon's annual Wildfire Awareness Week campaign	Creating public awareness of the need to consider and to apply wildfire mitigation actions, such as hazardous fuels removal, on privately owned lands is one of the keys to the successful implementation of a comprehensive wildfire awareness program. In recent years, the states of Oregon and Washington have jointly conducted an annual wildfire awareness campaign, early in the spring. <del>To date, these campaigns have been relatively low key and have had only moderate success in improving the public's awareness.</del> Under this action item, Oregon will devote more time, energy, and money to designing and conducting an annual wildfire awareness week campaign. The goal will be to make residents more aware of the wildfire risks they face and how they can help to reduce that risk.	Annually through 2015	Ongoing	1,2,3, 4,7	ODF	OSFM	ODF, OSFM, local fire departments, Keep Oregon Green, Inc., and local fire prevention cooperatives												X - Covered by EO-27		

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EO-35	Floodplain Management Outreach	<p>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 (<a href="http://www.oregon.gov/LCD/HAZ/index.shtml">http://www.oregon.gov/LCD/HAZ/index.shtml</a>) 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.</p> <p>DLCD and other State IHMT participants also 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.</p> <p>In addition to the on-going activities mentioned, DLCD will add the following to its outreach program.                      DLCD will prepare text for local broadcast two Public Service Announcements (PSAs) each year on a seasonal topic.                      DLCD will also complete and disseminate the</p>	Ongoing	Ongoing	1,2,3,5,6,7	DLCD	OEM, various State IHMT agencies	0.25 FTE												X - Replaced by EO-35A, B, C, and D		

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		Floodplain Management Administrative Procedures Guidebook to all 270 OR communities participating in the NFIP. This guidebook clarifies roles, responsibilities and actions to be taken by local communities. It will also be used during NFIP trainings given to local officials.																			Remove from 2015 Plan.	
<b>REVISED EO-35D</b>	DLCD will also disseminate the Floodplain Management Administrative Procedures Guidebook to all 270 OR communities participating in the NFIP.	This guidebook clarifies roles, responsibilities and actions to be taken by local communities. It will also be used during NFIP trainings given to local officials.																			<b>X - DONE</b>	

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EO-36	Develop effective means and information to minimize erosion of soils and streambanks during flood events of varying magnitude	<p>Several State IHMT Reports call attention to the need to systematically develop means and information to help minimize the effects of erosion from farmlands, stream embankments, slide areas, farm roads, and other locales. There is a need to promote effective erosion control techniques, including bioengineering of streambanks and planting of riparian vegetation, to help preserve soils, riparian zones, and habitats. Evaluate and use post-disaster funding opportunities (such as the Hazard Mitigation Grant Program) to study the efficacy of natural, bioengineering streambank protection strategies. Potential projects could be the outcome of these studies and proposed treatments that demonstrate cost-effective solutions.</p> <p>DSL is the state agency responsible for issuing the required permits for instream work, and those required to build or repair a levee. DEQ is also involved in the permitting process with help from ODFW, USACE, and the NRCS. DEQ often requires bioengineering in conjunction with the issuance of a permit. DEQ is also responsible for setting water quality standards. ODFW is involved with riparian planting and restoration projects. Various state agencies have opportunities to participate in riparian protection or erosion prevention programs, and those efforts, when taken collectively, should help the state make progress with this action.</p>	Ongoing	Pilot Project	4,7	DSL, ODFW	DEQ, ODA, WRD, ODOT, OSU Extension Service	Limited, widely dispersed, underfunded and sometimes disjointed											X - DONE			

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EO-38	Complete an evacuation mapping GIS database	With funding from the National Tsunami Hazard Mitigation Program all existing evacuation maps are being entered into a GIS database. Data collected for future maps will also be entered into the database. This will provide not only a centralized location for all the evacuation maps but the ability to make maps and permanent signs with a similar format for all coastal areas. The long-term objective is to empower users to make their own evacuation maps through an interactive web site that allows placement of the evacuation zone on a variety of base maps at any scale desired.	2012-2015	Proposed	1,7	DOGAMI	OEM, DLCD, ODOT	Existing												X - DONE		
EO-40	Public information and education about tsunami preparedness and mitigation	Each year more people visit or move to the coast. There is thus a constant need for public education: what are the tsunami hazards, what to do in the event of a tsunami, and how to mitigate tsunami hazards. This is especially important in light of the problems some coastal counties had during the Nisqually Earthquake in Washington that was felt on the Oregon Coast and the Peru earthquake and tsunami where the Oregon Coast was twice in a tsunami watch.  A systematic study of what educational strategies work the best was accomplished in a NTHMP-supported pilot study of Seaside, Oregon (see DOGAMI Open File Report O-05-10). According to polls conducted for this study, door-to-door outreach and evacuation drills were the most effective techniques.  As demonstrated in the Seaside study, tsunami evacuation drills help people respond quickly and efficiently to a tsunami warning and generate local media attention to the issue. This is particularly important if a major earthquake is expected to trigger a near-source-generated tsunami. Tsunami surges may arrive within just a	Ongoing	Ongoing	1,2,3, 5,7	OEM, DOGAMI	DLCD, ODOT	Existing												X - Replaced by new EO-40A, B, and C on the "Ongoing" spreadsheet		

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Action Item									Progress				S.M.A.R.T.				Statutory Criteria			Integrated	Recommendation				
2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Remove from 2015 Plan.	
		<p>few minutes, so it is imperative for people to instinctively know where to evacuate to immediately after the shaking stops. Community Emergency Response Teams (CERT) are an effective means of doing door-to-door outreach and organizing evacuation drills. The long-term objective is to implement CERT in every coastal community.</p> <p>The Seaside format was used in Lincoln City to great success, showing the usefulness of the methods. Leveraging the various volunteers, such as CERT and Neighborhood Watch, is one of the most effective uses of scarce resources. As a result of post-disaster mitigation funding (HMGP) from DR-1964, there will be potential project opportunities to evaluate and demonstrate effective mitigation techniques that identify natural, high ground locations outside of the tsunami inundation zone as safe havens for evacuation.</p>																							

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

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EO-41	Coordinate an Oregon-specific distant tsunami warning workshop	<p>The Oregon Distant Tsunami Working Group (ODTWG) is a partnership between Federal, State and Local agency representatives; local business partners and community members designed to reduce the impact of distant tsunamis on coastal Oregon communities. Led by Oregon Emergency Management (OEM), the ODTWG is Oregon's community-focused program to improve tsunami mitigation and preparedness of at-risk areas within Oregon. One goal of the Working Group will be to look at how response to a distant tsunami could be applied in the case of a local tsunami.</p> <p>The ODTWG includes Counties, Cities, Oregon Emergency Management, the National Weather Service, the Federal Management Agency, the Oregon Department of Geology and Mineral Industries, Media representatives and community members. This strong and active partnership enables all levels of government to work toward the common goal of saving lives of all people at risk for a tsunami at our state's coastline, and reducing damage to property and the economy.</p>	2012 - 2015	Ongoing	7	OEM	DOGA MI	Existing												X - DONE		
EO-42	Develop tsunami evacuation maps for all affected communities with established assembly areas	<p>The key to effective tsunami mitigation is to insure that people know what to do and where to go in the event of a tsunami. Evacuation maps that are consistent and easy to read and that identify the safe areas, best evacuation routes and destination sites are critical. With the development of the GIS database the maps can be easily disseminated</p>	Ongoing	Proposed	1,7	OEM, DOGAMI	ODOT, DLCD	Some Existing, others to be determined												X - DONE		

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EO-44	Install tsunami signs in all affected coastal communities	Signs reinforce the evacuation maps and tsunami educational materials and are a very visible reminder of the tsunami hazard, where the hazard zone is and where the best evacuation routes are. A few communities have already installed hazard zone and evacuation route signs. Many counties have signs, but are waiting either for the time and/or money or development of evacuation maps before installing them. Robust signage that delineates evacuation routes leading to natural, high ground outside of the tsunami inundation zone is a low-cost, top mitigation priority.	Ongoing	Ongoing	1	OEM	ODOT, DOGA MI, DLCD	Some Existing, others to be determined												X - Replaced by EO-62A, B, and C - Ongoing		
EO-45	Encourage local emergency managers with potential volcanic hazards to include volcanoes in their response and natural hazard mitigation plans	State and local emergency managers plan responses for a variety of hazards, including volcanoes. Clackamas County, which includes the southwest portion of Mount Hood, was the first jurisdiction in the nation to complete a FEMA-approved natural hazards mitigation plan, which includes short and long-term proposed actions to mitigate the effects of volcanic eruptions. Local response plan chapters (annexes) developed for volcanic hazards should include pre-eruption through post-eruption sections.	2012 - 2015	Ongoing	5,7	OEM	DOGA MI	Existing and FEMA												X - NHMP requirement for affected local governments		
EO-47	Encourage communities to include volcano hazards, if appropriate, in their multi-hazard mitigation planning process	How a community might respond to volcano hazards depends on a number of things including proximity of the community to the volcano, the nature of the volcano hazards, local volcano history, what is at risk/vulnerable to volcano hazards, and the probability of when or if an event might occur.  The difficulty in predicting how catastrophic volcano-associated hazards might be and how often they might occur creates a problem for land use planning solutions. Except for a few Oregon communities on or very near a volcano (e.g., Government Camp on Mount Hood), stringent	Ongoing	Ongoing	1,2,5,7	DLCD, OEM	DOGA MI, OPDR	Existing and Oregon Lidar Consortium												X - NHMP requirement for affected local governments		

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		<p>standards solely based on the prospect of volcanic activity are not realistic.</p> <p>The best approach may be multi-hazards instead of treating volcano-associated hazards separately. A multi-hazard approach would take all natural hazards into consideration during a community's planning process. For example, prohibiting development in the 100-year (1%) floodplain ensures some degree of safety from flood, lahars, earthquake damage (e.g., liquefiable soils), and so on, while preserving the floodplain for natural and beneficial uses. In addition, siting standards for infrastructure and/or critical facilities would include volcano-associated hazards among other hazards to be avoided. DOGAMI published two special papers to help communities look at multi-hazard mitigation: Special Paper 31, Mitigating Geologic Hazards in Oregon: a Technical Reference Manual (Beaulieu and Olmstead, 1999a) and Special Paper 32, Geologic Hazards: Reducing Oregon's Losses (Beaulieu and Olmstead, 1999b). These publications have been widely distributed to local governments.</p> <p>Secondary effects also need to be incorporated into the multi-hazard framework. These effects include degradation or loss of habitat for endangered species (or species that may become endangered after a major eruption), the economic loss if timber resources are destroyed or made inaccessible, and the loss of surface water as a source of drinking water, irrigation, or for industrial needs. Each of these can have a long-lasting economic effect on Oregonians as well as create physical changes in the landscape made by an eruption.</p>																				

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EO-56	Educate motorists who plan to travel over mountain passes in winter about the need to be prepared	During the December 2003 closure of the Siskiyou Pass on Interstate 5, ODOT and Oregon State Police freed many drivers only to have them spin out and get stuck again. If drivers would have had tire chains, and installed them when conditions warranted, clearing the pass would have been completed hours earlier. Many drivers were not prepared for a long wait in their car. Each year ODOT finds stranded motorists who either do not have or do not know how to install chains.	Ongoing	Ongoing	1,7	ODOT	OSP	Existing												X - Covered by EO-49		
EO-57	Improve geotechnical report standards for the coast.	Numerous local jurisdictions have upgraded the geotechnical report standards for assessing the risk and mitigation measures for development proposed in hazardous coastal hazard areas, and continue to encourage local governments to improve these standards.	Ongoing	Proposed	2,7	DLCD	DOGA MI	Existing												X - DONE		

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EO-59	Improve coastal erosion hazard mapping and inventories	<p>Coastal hazard mapping is a long-term program for four reasons. One is budgetary. It is expensive to research and map information for such a dynamic system. Another reason is the dynamic nature of the Oregon coast. Beaches, dunes, and headlands change over relatively short (and longer) time spans. As headlands recede, for example, new maps with new shorelines and erosion rates need to be developed. New technology is the third reason. For example, the tsunami maps issued by DOGAMI are created with the help of sophisticated computer models and high resolution digital elevation models that were not available until a few years ago. Finally, different uses require maps of different scales. Mapping is one element needed in an inventory. Progress is being made by DOGAMI and DLCD to increase assistance to local governments in developing inventories based on sound technological research (Figure CE-6). While this process takes significant time to complete, there are a variety of strategies local governments and state agencies can use:</p> <ul style="list-style-type: none"> <li>• Inventory and catalog existing coastal natural hazards, studies, maps, digital data, and other information available from city, county, state, federal, university, private, and other resources.</li> <li>• Establish criteria and standards for collecting, reporting, and mapping information about chronic and catastrophic coastal natural hazards.</li> <li>• Develop standardized, detailed coastal hazard maps for priority areas along the Oregon Coast.</li> </ul>	Ongoing	Ongoing	1,2,5,7	DOGAMI, DLCD	ODOT, OPRD	Pursue additional external funds											X - DONE. Detailed coastal hazard mapping has been done for Tillamook, Lincoln, and Clatsop Counties, and Gold Beach.			

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EO-61	Mandate review for site-specific seismic hazard reports	Independent peer review by qualified and registered geotechnical and engineering geologic professionals is one of the best methods of ensuring that site reports done for local governments, property owners, developers, and others are of an acceptable quality and adequately address site issues associated with earthquake faults and earthquake-caused ground failures. A mandatory review requirement and funding/cost recovery mechanism are needed..	Ongoing	Proposed	2,5,7	DOGAMI	OSBGE OSBEE LS	To be determined												X - Done at the local level		
EO-62	Install new Entering and Leaving Tsunami Hazard Zone signs in selected areas in the inundation zone along Highway 101.	Existing tsunami hazard zones signs are considered inadequate for placement along stretches of Highway 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. Highway 101 often stays within the inundation zone for miles. Therefore ODOT, in collaboration with OEM, DOGAMI, and the coastal county emergency managers, designed the template for Entering and Leaving Tsunami Hazard Zone signs and placed the signs to identify the hazard zones. Resources for this project were limited, so signs are not present in every hazardous part of the coast highway system. A long-term goal is to complete this project and to reposition signs where new inundation mapping indicates a need. 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. Additional/improved signage is proposed to reflect changes in maps by 2015.	2015	Ongoing	1	ODOT	OEM, DOGAMI	Existing and others to be determined												X - Replaced by EO-62A, B, and C - Ongoing		

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CI-1*	Complete a statewide evaluation of the condition of levees, dikes, and dams built for flood control purposes	<p>Several reports indicate a broad need to assess the capabilities, conditions, and maintenance of levees statewide to assess performance under flood conditions. As part of the FIRM modernization program, FEMA identified 12 levees in Oregon that are mapped as providing protection against flood waters, but may in fact be deficient. FEMA asked affected communities to complete an accreditation process to prove the levees are capable of controlling the 1% annual flood before they can be shown as providing protection against the 1% annual flood on the FIRM. Five communities managed to complete the accreditation. The levees identified by FEMA by no means reflect the full inventory of levees in the state that provide flood protection, but which may be insufficiently or improperly maintained. Many of these levees are privately owned.</p> <p>One of the challenges identified during FEMA accreditation process was confusion over what kind of vegetation is appropriate to allow on levees and how it should be maintained. This is not a new concern. DEQ, ODFW, USACE, and other agencies have been discussing development of a guidance document on preferred levee types and appropriate use of vegetation. At a minimum, the federal agencies NRCS and USACE should be involved with the state agencies noted below in implementing this action item.</p> <p>Dams present another challenge. Regardless of whether a particular dam was designed and built for flood control, the presence of any large dam will serve to reduce the peak flow in the downstream river channel to some degree. Typically, the larger the structure, the greater the corresponding effects of reservoir flood routing and the greater the perceived reduction in short-</p>	2013	Proposed	1,2,3	WRD	ODA, DEQ, ODFW	To be determined												X - Combined with CI-16 and covered by REVISED CI-1A-N		

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		<p>term or periodic flooding. In Oregon, there are many examples of areas below such dams where development has encroached upon riparian areas that formerly were subject to periodic flooding. However, it is important to realize that long-term reduction in downstream flooding does not exist below most such dams. Runoff from large storms may need to be passed downstream to avoid the potential for dam failure. This sudden release of water may prove very damaging to downstream life and property.</p> <p>All dams and reservoirs which would likely result in direct loss of life in the event of failure and the associated sudden release of water are defined as "high hazard" structures. Maps illustrating the zone of downstream inundation area are required to be produced for these structures. The inundation zone shows the physical boundaries, water depths, and arrival times associated with the projected flood wave. Existing "high hazard" dams that have inundation maps will be inventoried and copies of these maps provided to local emergency managers for incorporation into local mitigation plans. High priority must be given to inundation mapping for existing "high hazard" dams that do not currently have inundation maps.</p>																				
CI-10	Promote vulnerability studies of critical infrastructure	Promote vulnerability studies of critical infrastructure (lifelines) to operators. Lifeline services, such as electricity, gas, and telecommunications, can be critical to a community's well being. However, much of Oregon's infrastructure has not been designed to tolerate extreme conditions, such as severe storms, major earthquakes, or large landslides. Certain lifeline services should have reliable performance to ensure that the region can withstand future damage without crippling consequences. Critical infrastructure including	Ongoing	Partially completed	2,7	PUC, DOGAMI, DLCD	State IHMT Agencies	1.0 FTE													X - Covered by CI-7 and CI-8	

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		energy and telecom utilities infrastructure require vulnerability studies in order to understand potential damages and consequences. Transportation, water, wastewater and other important services are also important.																				
CI-11	Determine where additional aquifer studies might lead to greater water supplies and how to fund these studies	There are many areas in the state where the dynamics of the aquifers are not well understood. Studying these aquifers may reveal under-utilized water resources and other information useful to water managers. Determine which aquifers would benefit by detailed studies and how these studies can be funded.	2012	Proposed	4	WRD, OHA	ODA, DEQ, ODFW, OBDD, DOGA MI, DLC, DSL	1.0 FTE at WRD, additional FTE across the support agencies													Integrated Water Resource Strategy (Action 1a)	X - Not a mitigation action. Not SMART. Investigations are an ongoing program under the Integrated Water System Plan.
CI-12	Increase storage of water, especially off stream storage	The need to store water is very apparent to irrigators in Eastern Oregon who find creeks going dry during summer and early autumn. One way to avoid that common occurrence is by encouraging storage facilities where they are needed and where they are feasible to construct. In an initial study of potential reservoir locations, storage sites were identified that are very high in drainage basins so that the impact to anadromous fish would be minimal. High elevation, small stream type structures may be considered environmentally acceptable. ODA has also looked at diverting water away from streams through pipelines or canals into off-channel basins. These types of structures are more costly but don't have the impact on fish passage that are oftentimes associated with instream structures. Other ideas include development of aquifer storage and recovery projects. Surface water from streams is diverted during times of abundance and injected into underground aquifers for storage. WRD has developed an inventory of above ground and below ground storage opportunities: <a href="http://apps2.wrd.state.or.us/apps/planning/owsci/sw_project_search.aspx">http://apps2.wrd.state.or.us/apps/planning/owsci/sw_project_search.aspx</a>	2012 and ongoing	Ongoing	1,2,4	ODA, WRD	DSL, ODFW, DEQ	1.0 FTE at ODA, additional FTE across the other four agencies													Integrated Water Resource Strategy (Actions 10b and 11a)	X - Not a state-level mitigation action. State offers funding and technical assistance to local governments and other entities to build structural water storage facilities.

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		<p><a href="http://apps2.wrd.state.or.us/apps/planning/owsci/gw_project_search.aspx">http://apps2.wrd.state.or.us/apps/planning/owsci/gw_project_search.aspx</a>. These are also available from the following link, which includes introductory information:  <a href="http://www.wrd.state.or.us/OWRD/LAW/owsci_info.shtml#Potential_Water_Storage_Sites">http://www.wrd.state.or.us/OWRD/LAW/owsci_info.shtml#Potential_Water_Storage_Sites</a>.                      Land management practices that slow down or prevent runoff are also being employed by landowners such as creation of wetlands, catchment depressions, diversion dikes, or terraces. The idea is to simply retain water in the watershed. For additional information, see the following Oregon Department of Agriculture web site and the WRD web site:</p> <p><a href="http://www.oregon.gov/ODA/NRD/water_quality_front.shtml">http://www.oregon.gov/ODA/NRD/water_quality_front.shtml</a>  <a href="http://www.oregon.gov/WRD">www.oregon.gov/WRD</a>                      ODA should work with private landowners and special districts to implement projects such as those described above.</p>																				

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CI-15	Require fish passage at all new and replaced structures	ODFW statutes require fish passage at all artificial barriers to fish migration. New structures, such as dams and culverts, are currently required to provide fish passage. Old structures that are replaced need to provide fish passage as well. DLCD, ODFW and OEM will continue to integrate FEMA's 1999 "Policy on Fish Enhancement Structures in the Floodway" policy memorandum into fish passage projects and design guidelines. ODFW will continue to ensure that projects meet fish-passage standards and are also designed with consideration of the need to pass wood and sediment. Standards that provide for fish passage should also provide better passage for floodwaters and organic materials. Efforts to replace structures proactively to ensure passage of fish and floodwaters/debris will be supported as feasible.	Ongoing	Proposed	4	ODFW	OEM, DEQ, DSL, DLCD	Existing			X									X - DONE		

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CI-16	Evaluate expected earthquake damage and system interruptions to existing lifelines and hydraulic structures, including dams	<p>Lifelines include all essential transportation facilities and the associated bridges, tunnels, locks, and ferries, including airports and railways, petroleum and natural gas pipelines, electric transmission lines, water and sewage systems, "emergency operations and telecommunications infrastructure.</p> <p>The evaluation proposed would study the vulnerability of existing lifeline systems and hydraulic structures to a major seismic event, and estimate the expected damage and losses. Estimating the expected losses will include determining those systems that likely would experience a total loss of operation immediately following a major event, although the actual physical damage to the system may not be total or extensive.</p> <p>In order to implement this action, the State of Oregon will need to work with several federal agencies which are involved in ownership, authority, or responsibility for some of the structures and facilities cited.</p> <p>Detailed benefit-cost analyses (to include hazard damages to facilities, downstream impacts and economic loss of service) can be used to identify and prioritize potential mitigation projects (retrofits, intake relocations, or even new construction).</p>	Ongoing	Ongoing	1,2	DOGAMI, ODOT, WRD, PUC	OEM, DSL, DEQ	To be determined during future biennia											X - Combined with CI-1 and cover by REVISED CI-1A-N			

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CI-17	Encourage/require public entities adopt and follow ANSI National Tree Care Standards	<p>This action requires additional scoping to determine how best to encourage and require state and local agencies to adopt and routinely implement ANSI A300, Tree Care Operations Standards. These national standards were developed by a diverse committee of tree care professionals from the private and public sectors and cover proper tree pruning, fertilization, and tree support systems. These standards set forth the requirements and recommendations for satisfactory tree care maintenance. Public entities and tree care companies who perform work according to ANSI A300 standards are following accepted industry practices for proper tree care maintenance operations, resulting in healthier trees with reduced tree hazards.</p> <p>For more information, see: <a href="http://www.ansi.org/news_publications/media_tips/tree_care.aspx?menuid=7">http://www.ansi.org/news_publications/media_tips/tree_care.aspx?menuid=7</a></p> <p>This action may result in a legislative concept for a future session of the Oregon Legislature, and may include an incentive such as limited liability when the standards are implemented. Currently, the state has not adopted the ANSI A300 standards, though several state agencies follow them voluntarily. As a first step, the lead and support agencies noted below will better publicize the standards and persuade additional agencies to voluntarily adopt them.</p>	2012 and ongoing	Proposed	1,2,4	ODF	OEM, PUC, ODOT	Existing											X - DONE			

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

C. Removed

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																						
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2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound		
LU-4*	Complete a model "Substantial Improvement/Substantial Damage" program to support local government regulation of floodplain development	DLCD and OEM are in the process of creating a Substantial Improvement/Substantial Damage (SI/SD) manual. The SI/SD Manual will include local ordinance language and companion guidance on administrative processes that can be used by local jurisdictions for cumulative tracking of substantial improvements..It will also address common implementation difficulties encountered at the local level, and suggest approaches that could be used by local governments to overcome those difficulties. The SI/SD Manual will be completed and integrated into Model Code and ongoing NFIP training. (See FL-22 for definitions of substantial improvement and substantial damage.)	Ongoing	Proposed	2,5,7	DLCD	OEM, Various State IHMT agencies	0.25 FTE												X - DONE		
LU-9	Change state land use laws to better connect use of land with water supply	Occasionally land is developed in Oregon utilizing well water without regard to other nearby existing uses. Land developments can reduce recharging of the aquifer that is under them due to sending runoff largely away from the development. Farmers have lost well water or been forced to develop deeper wells due to loss of aquifer water to the newly developed land in the vicinity. Oregon land use law needs to require that new developments not create water hardships on existing land uses and other beneficial uses of water.	2013 - 2015	Proposed	4,5	DLCD, WRD	ODA, DEQ, <del>DFW</del>	1.0 FTE across four agencies												X - Not a mitigation action		

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LU-10	Work with the insurance industry to develop and apply a common standard of interface mitigation measures adjacent to dwellings	The Oregon Forestland-Urban Interface Fire Protection Act recognizes that individual property owners are in the best position to take mitigation actions which will have a direct relationship to whether or not their structures survive a wildfire. To that end, the Act required the development of standards that owners are to apply on their property. At the same time, some insurance companies have developed or adopted different standards which their customers must apply on their property in order to obtain or retain insurance coverage. Such a situation of "competing" standards is confusing to property owners and can hamper the application of effective mitigation measures. Under this action item, insurance companies will be encouraged to adopt the Act's standards or, rather than apply a different set of standards, that they will encourage their customers to comply with the Act.	2012 - 2015	Ongoing	1,2,4	ODF	OSFM, DCB-ID	ODF, local fire departments, insurance industry													X - Unnecessary. Insurers generally use NFPA 1144 Standards.	
LU-14	Develop additional littoral cell plans	The state intends to pursue development of plans for additional sections of coastline, based on need and the level of risk to development.	Ongoing	Proposed	2,4	DLCD, DOGAMI	OPRD, ODOT	Existing, but the state may pursue additional funds.													X - Will not be done during the life of this Plan	
LU-17	Organize a GIS tsunami database workshop	A GIS database of tsunami safe zones, evacuation routes, and evacuation sites is presently under construction (see short term action item #1). Once completed, it is important to integrate the data into county databases. The workshop would not only assist counties with how to integrate the data, but also how the data can be used for tsunami evacuation planning.	2012 - 2015	Proposed	5	OEM, DOGAMI	DLCD	To be determined			X										X - Database is done and workshop has been held.	

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MP-1*	State IHMT Agency Action Item Progress Reports	<p>Prior to the April State IHMT meetings of each year, State IHMT priority functional category leads will submit progress briefs on all mitigation activities to OEM for review. Briefs will include a progress update on primary action item responsibilities, identification of agency success stories, suggestions for potential new action items and identification of any new or updated information that will be germane to the update of the state NHMP chapters or appendices. Leads will complete success stories for any completed actions at that time. Priority functional categories for the 2012 – 2015 planning period include:</p> <ul style="list-style-type: none"> <li>• Legislative / Policy</li> <li>• Education / Outreach and</li> <li>• Critical Infrastructure / Essential Public Facilities</li> </ul>	2012 - 2015	Proposed	6	State IHMT Subcommittees	Plan update facilitator	Existing	X											X - Not a mitigation action.		

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2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments
MP-2*	Develop post-disaster strategic reconstruction plans based on damage projections from a Cascadia Subduction Zone earthquake and tsunami.	<p>A large Cascadia Subduction Zone earthquake/tsunami may destroy a significant percentage of the buildings in coastal communities, as well as much of the public and private infrastructure that ties them together. Reconstruction of buildings and associated infrastructure will be a massive, long-term undertaking, requiring a great deal of financial aid, planning, technical assistance and cooperation among agencies and the public. Although tragic, such a disaster will also present communities with an opportunity to physically redesign and reshape themselves, creating safer places for people to live and work.</p> <p>A state post disaster planning and recovery task force would be established to plan for reconstruction and to oversee post disaster reconstruction. The Cascadia Region Earthquake Workgroup has recently developed a detailed damage scenario for a CSZ event using HAZUS (Hazards U.S. loss estimation software program) and other information to supplement the HAZUS data. For example, HAZUS does not take into account tsunami damage. This scenario could be used as the basis for developing reconstruction plans.</p>	2013 - 2015	Ongoing	2,3,4, 5	OEM, DLCD	DOGA MI, ODOT, OSFM, BCD OSSPA C, OPDR	To be determined										Oregon Resilience Plan	X - DONE			

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2012 #	Statement	Description	Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments	Other Initiative	Remove from 2015 Plan.
MP-3*	Monitor hazard mitigation implementation	<p>It is recommended that OEM establish and maintain a formal process to ensure that actions in this plan are being properly implemented. By monitoring implementation of successful mitigation projects, important data can be obtained to support loss avoidance studies that quantify the benefits of mitigation. Monitoring of floodplain and landslide property acquisitions (funded by FEMA mitigation grants) is required and must be reported to FEMA every three years. Although not a federal requirement, monitoring of floodplain property elevations will ensure compliance with meeting NFIP flood insurance requirements.</p> <p>Hazard mitigation implementation may also be reviewed and this plan revised following any Presidential emergency or major disaster declaration. At one time this was a requirement of federal law, but it now is simply a good idea, especially if interest in the event has provided both resources and opportunity for mitigation.</p>	Ongoing	Ongoing	5, 6	OEM	State IHMT Agencies	0.25 FTE																X - Not a mitigation action.

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MP-4	Maintain a statewide action item database	<p>OPDR hosts a searchable action item database on its website that identifies the actions from existing local natural hazard mitigation plans. During the 2009 Oregon NHMP update, revisions were made to the action item database to allow for local actions to be categorized underneath the state plan goals. This will allow the state or FEMA to quickly sort local actions by the various state plan goals. This function will allow for easier reporting on the State of Oregon's progress towards reducing risk and can be organized under the six Oregon NHMP goals. OPDR is working to add the state plan goal references to actions that are currently listed and is also working to add the actions of new plans as they are developed. Maintaining this database is time and resource intensive; therefore, all local actions may not be categorized during this plan update. This will be an ongoing task for OPDR and OEM staff.</p> <p>Action Item Database:  <a href="http://csc.uoregon.edu/opdr/actionitems/">http://csc.uoregon.edu/opdr/actionitems/</a></p>	Ongoing	Ongoing	1,2,3,4,5	OPDR	OEM, State IHMT agencies	0.10 FTE Annually				Local mitigation actions have been entered into FEMA's database. FEMA's database is not yet accepting state-level mitigation actions.													X - Not a mitigation action.

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MP-6	Establish a Silver Jackets Program	<p>The State IHMT should consider establishing a joint state-federal flood mitigation subcommittee, which is tied to a national USACE initiative called "Silver Jackets" (Oregon is not required to adopt this name for the subcommittee). It would provide a forum where DLCD, DOGAMI, OEM, USACE, FEMA, USGS, and additional federal, state and sometimes local and Tribal agencies can come together to collaboratively plan and implement flood mitigation, optimizing multi-agency utilization of federal assistance by leveraging state/local/Tribal resources, including data/information, talent and funding, and preventing duplication among agencies. Objectives of this subcommittee might include:</p> <ul style="list-style-type: none"> <li>• Facilitate strategic life-cycle flood risk reduction,</li> <li>• Create or supplement a continuous mechanism to collaboratively solve state-prioritized issues and implement or recommend those solutions,</li> <li>• Improve processes, identifying and resolving gaps and counteractive programs,</li> <li>• Leverage and optimize resources,</li> <li>• Improve and increase flood risk communication and present a unified interagency message, and</li> <li>• Establish close relationships to facilitate integrated post-disaster recovery solutions.</li> </ul> <p>The State of Oregon will establish a "Silver Jackets", as a subcommittee to the IHMT, with the primary intents of strengthening interagency relationships and cooperation, optimizing resources, and improving risk communication and messaging.</p>	2013 and ongoing	Proposed	2,3,4, 5,7	DLCD	ID, DOGAMI, OEM, WRD, OPDR, ODFW, DSL	0.25 FTE			X									X - DONE		

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MP-7	Revise OEM Hazard Analysis Methodology	Each county in Oregon is required to conduct a hazard analysis within their communities. As part of the hazard analysis, each county develops risk scores for the natural hazards that affect their communities. These scores range from 24 (low) to 240 (high), and reflect the county's perceived risk for each particular hazard. The hazard analysis methodology was first developed by the Federal Emergency Management Agency (FEMA) circa 1983, and gradually refined by Oregon Emergency Management (OEM) over the years. The current methodology could be improved upon to allow for the integration of more detailed risk assessment information. Currently, communities are tasked with determining whether hazards have a 'high,' 'moderate,' or 'low' probability of occurrence; likewise, communities are asked to determine whether their community has a 'high,' 'moderate,' or 'low' vulnerability to each hazard. When better probability or vulnerability data is available, communities should be able to reflect this data in their hazard analyses. Additionally, OEM will work with OPDR to integrate the hazard analysis methodology with the three-phase risk assessment used and taught by OPDR with respect to the development of local natural hazards mitigation plans. In the development of local mitigation plans, the county's hazard analysis scores are typically referenced. If, however, the planning steering committee believes the scores should be different, the scores are simply changed, and the perceived validity of the OEM hazard analysis methodology is weakened. The integration of the analysis with the three-phase risk assessment should therefore be refined.	2012	Proposed	5	OEM	OPDR, DOGAMI	2.0 FTE												X - Not a mitigation action.		

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MP-8	Track key performance measures toward a disaster resistant state.	State "benchmarks" for mitigation have been superseded by Key Performance Measures (KPMs), and are comprised of the following: DLCD KPM #9, "Percent of urban areas that have updated buildable land inventories to account for natural resource and hazard areas"; DOGAMI KPM #1, "Percent of communities and other stakeholders with hazard maps and risk studies for earthquake and landslide hazards"; DOGAMI KPM #2, "Percent target communities with official, reviewed evacuation map brochures"; DOGAMI KPM #3, "Percent target communities with standardized, 4-risk zone erosion hazard maps"; DOGAMI KPM #4, "Public awareness of geologic hazards and mitigation efforts"; DOGAMI KPM #9, "Percent of coastal communities provided with detailed tsunami inundation maps for local emergency planning"; OMD-OEM KPM #10, "Percent of Oregon coastal counties with complete evacuation plans"; and OMD-OEM KPM #12, "Percent of jurisdictions with approved hazard mitigation plans." In combination, these KPMs are moving Oregon toward the goal of developing a disaster resistant state, which institutionalizes hazard mitigation, including: the characterization of natural hazards; the presence of ordinances or standards at the local government level to mitigate natural hazards; and ongoing education on natural hazard mitigation.	2012 and ongoing	Proposed	6	DOGAMI, OEM, DLCD	State IHMT Agencies	0.1 FTE												X - Not a mitigation action.		

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MP-10	Improve statewide earthquake hazard datasets, develop more accurate and detailed risk datasets, make hazard and risk information widely and easily available	In order to assess the likely impact of future earthquakes, improved shaking models are needed, along with more accurate and detailed mapping of the distribution of soils that might amplify shaking or liquefy, and mapping of areas susceptible to coseismic landslides. This data should be combined with improved asset information to do risk studies using HAZUS and exploring the use of GIS-based exposure analysis. Detailed hazard and risk mapping and modeling provides local and state governments with essential planning tools. Hazard and risk information should be made widely and easily available to planners, decision makers, and most importantly the general public. Easy to use interactive web tools with comprehensive earthquake and multi-hazard information should be deployed statewide.	Ongoing	Ongoing	5	DOGAMI	State IHMT Agencies	Existing												X - Covered by new MP10A, (Clearinghouse)		
MP-13	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	2015	Proposed	2,7	NCC	OSFM, ODF	OSFM, ODF												X - DONE		

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		solution.																				
MP-15	Work to improve forecasting for warning and hazard mitigation	State agencies plan to continue to work with the State Climatologist and the National Weather Service to better understand the nature and frequency of windstorms, and to improve communication of long and short range forecasts in order to allow for improved warnings and lead time for local governments to take effective hazard mitigation actions.	Ongoing	Ongoing	1	OEM	State IHMT agencies	Existing													X - Replaced by New MP-15A and MP-15B	
MP-16	Seek funding for the installation and operation of additional precipitation gauges	The availability of timely and accurate telemetered data from rain (precipitation) gauges is essential for flash flood and debris flow forecasting. State agencies plan to work with their federal counterparts to ensure adequate funding and support for existing gauges and for the installation of new gauging sites where required. It is recommended that state agencies leverage federal funding with state resources and local matching commitments to achieve a reliable network of rain gauges in those areas that are susceptible to flash flooding and rapidly moving landslides (debris flows).	Ongoing	Ongoing	1,2,5	ODF	DSL, OEM	0.25 FTE, plus funds for equipment													X - Covered by NEW action following LP-12	
MP-17	Develop statewide resiliency plan consistent with intent of HR3	Set realistic and achievable, graduated resiliency goals. Evaluate existing weaknesses in structures, infrastructure, systems and institutions to identify critical vulnerabilities that will severely hinder response and recovery from a future megathrust earthquake. Develop prioritized and graduated levels of mitigation activity with estimates of costs and benefits. Identify needed mandates, regulations, codes, incentives and educational and cultural changes needed to reach resiliency goals. Prepare written plan and report for 2013-2015 legislature.	2012 - 2013	Proposed	1,2,3,5	OSSPAC	OEM, ODOT, DOGAMI, ODOE, OUC, DLCD, OWRD, BCD, OSFM	Existing													X - DONE	

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MP-18	Support the completion of updated, digital floodplain mapping projects initiated through the FEMA Map Modernization Program (previously short-term action #1) and transition to FEMA's current Risk MAP program.	<p>The state continues to participate in FEMA's national effort to update flood hazard maps, and through the 2004-2009 Map Modernization Program (Map Mod) the majority of flood maps for Oregon have now been issued in a new digital, countywide format. The state will continue to provide support to help manage the Map Mod projects that remain to be completed (Coos, Lane, Tillamook, and Washington Counties), and DLCD will continue to implement the map modernization management support strategy and activities by:</p> <ol style="list-style-type: none"> <li>1. Establishing and maintaining a premier data collection and delivery system,</li> <li>2. Achieving effective long-term management of flood hazard maps,</li> <li>3. Building and maintaining mutually beneficial partnerships to accomplish mapping work, and</li> <li>4. Expanding and better informing the flood map user community.</li> </ol> <p>Risk MAP (Mapping, Assessment, and Planning) is FEMA's new multi-year mapping program. The program builds on flood hazard data and maps produced through Map Mod while including the vision of building effective community strategies for reducing risk. In partnership with DOGAMI, FEMA contractors, and other state and local agencies, the objectives in Oregon's Risk MAP business plan include:</p> <ol style="list-style-type: none"> <li>1. Addressing gaps in flood hazard data, identifying areas of dated and/or inconsistent mapping and updating high-priority areas with new mapping (Coos (remap), Curry, Lincoln, Tillamook, Clatsop, and Klamath Counties, as well as the Silvies Watershed and the Lower Columbia-Sandy Watershed – most projects contracted with DOGAMI);</li> </ol>	2012 - 2015	Proposed	1,2,3,5	DLCD	DAS, DOGAMI, OPDR, various State IHMT agencies	2.5 FTE (for state support activities only, not including map production costs)												X - Covered by MP-5		

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		2. Acquire new lidar topographic data for precise flood hazard mapping; 3. Measurably increase the public's awareness of flood and other natural hazards through a combination of regulatory and non-regulatory products, tools, community outreach, and innovative natural hazard mapping techniques (such as those developed by DOGAMI) that lead to actions that reduce risk to life and property; 4. Lead effective engagement in flood mitigation planning through partnerships and shared datasets; 5. Provide a coordinated multi-agency digital platform that includes data, links to data, applications, strategies, a digital library of flood hazard maps, and a web map depicting the most recent statewide Special Flood Hazard Area layer; 6. Coordinate events, project status, and actions; and 7. Align risk analysis programs and develop synergies.																				
MP-19	New maps of precipitation intensity	A basic study of precipitation intensity will be done, including twenty-four hour isopluvials (two, five, ten, fifty, and 100-year maps), as well as development of probable maximum precipitation coverages for Oregon.	2013	Proposed	2,5	OCS	WRD, ODOT	\$75,000 funding from the support agencies above												X - Not being done.		
MP-21	Develop a post-disaster tsunami scientific data recovery plan	After a damaging tsunami, response and short-term recovery efforts may destroy any scientific evidence of the tsunami, such as surge heights and inundation distances. This data is critical in understanding the tsunami and helping to better prepare for future ones. Once lost it can never be retrieved. Therefore, it is imperative that data gathering be a part of the overall response and recovery plan. This effort should be coordinated with the scientific and technical clearinghouse discussed in the earthquake chapter (short-term #3) and emergency management response and	2012 - 2015	Proposed	1,2,3	DOGAMI, OEM	ODOT	Existing												X - Covered by EO-15		

9.2.1 Mitigation Actions: Progress and Initial Evaluation of 2012 Mitigation Actions

C. Removed

OREGON NHMP MISSION: TO CREATE A DISASTER RESILIENT STATE OF OREGON																						
OREGON NHMP VISION: NATURAL HAZARD EVENTS RESULT IN NO LOSS OF LIFE, MINIMAL PROPERTY DAMAGE, AND LIMITED LONG-TERM IMPACTS TO THE ECONOMY.																						
Action Item			Timeline	Status	Plan Goals Addressed	Lead(s)	Support(s)	Resources	Progress				S.M.A.R.T.					Statutory Criteria			Integrated	Recommendation
2012 #	Statement	Description							Not Started	% Complete (1-99)	DONE (100%)	Comments	Specific	Measurable	Achievable	Realistic	Time-Oriented	Comments	Cost-Effective	Environmentally Sound	Technically Feasible	Comments
		recovery efforts.																				
<b>MP-22</b>	Reconvene the committee that oversees the Mount Hood Coordination Plan	The committee including: Oregon Emergency Management, USDA Forest Service, U.S. Geological Survey, Oregon Department of Geology and Mineral Industries, Clackamas County, Multnomah County, Hood River County, Wasco County, the Confederated Tribes of the Warm Springs, Clark County, Skamania County, Washington Emergency Management Division, and the Federal Emergency Management Agency (Region X) should reconvene and incorporate new data from the recent DOGAMI Multi-Hazard and Risk Study for the Mount Hood Region (Burns and others, 2011).	2012	Ongoing	7	OEM	DOGAMI	Existing committee and USGS, FEMA												<b>X - DONE</b>		
<b>MP-24</b>	Perform multi-hazard risk analysis at all potentially active volcanoes in Oregon	Multi-hazard and risk analysis should be performed at all potentially active volcanoes in Oregon. For an example see the DOGAMI Multi-Hazard and Risk Study for the Mount Hood Region (Burns et al., 2011).	2012 - 2015	Proposed	7	DOGAMI	OEM-ODOT, DLCD	USGS, FEMA												<b>X - Covered by new combination of CI-1 and CI-16</b>		
<b>MP-26</b>	Develop coordination plans for other volcanoes in Oregon	This action has been completed for Mount Hood. Some similar documents have been completed for other volcanoes in Oregon.	2012 - 2015	Ongoing	7	OEM	DOGAMI	USGS, FEMA												<b>X - not mitigation</b>		
<b>MP-27</b>	Evaluation of Landslide Risk	DOGAMI will complete this evaluation in cooperation with local municipalities. Specific methods and priority locations are still to be determined.	Ongoing	Proposed	7	DOGAMI	ODF, ODOT, DLCD	To be determined												<b>X - Covered by new combination of CI-1 and CI-16</b>		