

SECTION 7

ENHANCED STATE

HAZARD MITIGATION PLANNING PROGRAM

Requirement 44 CFR §201.5, Enhanced State Mitigation Plans. (a) A State with a FEMA approved Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMGP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding. In order for the State to be eligible for the 20 percent HMGP funding, FEMA must have approved the plan within three years prior to the disaster declaration.

Requirement 44 CFR §201.5(b), Enhanced State Mitigation Plans. Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in §201.4, as well as document the following:

Integration with Other Planning Initiatives

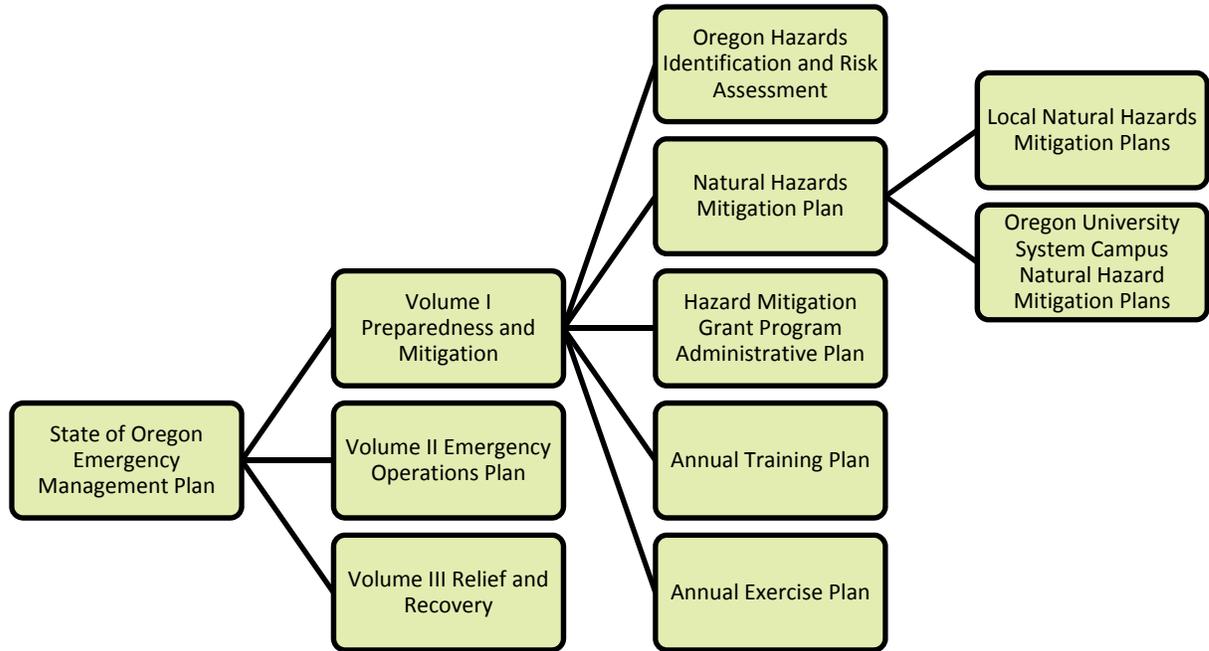
Requirement 44 CFR §201.5(b)(1), Demonstration that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to State and regional agencies.

The Oregon NHMP is integrated to the extent practicable with other state, regional, and FEMA initiatives that provide primary guidance for hazard mitigation-related activities. Demonstrated integration is described in Section 4: Mitigation Strategy: State Capability Assessment and Section 4: Mitigation Strategy: Funding Used to Implement Mitigation Actions. Primarily, the programs and capabilities listed in Appendix 4-D, Policies, Programs and Capabilities, describe how state and regional planning initiatives promote and/or incorporate mitigation as part of their authorities and responsibilities. In a few instances (e.g., statewide land use planning goals), the state has influenced the incorporation of hazard mitigation into existing programs, regulations, and activities as well.

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

Volume III, Relief and Recovery. Figure 7.1 below illustrates these organizational relationships.

Figure 7.1: Organizational Relationships of State Emergency Management Plan



Source: OPDR

Project Implementation Capability

Requirement 44 CFR §201.5(b)(2)(i-ii), Documentation of the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:

(i) Established eligibility criteria for multi-hazard mitigation measures.

(ii) A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, and to rank the measures according to the State's eligibility criteria.

Established Eligibility Criteria & Ranking Measures for Multi-Hazard Mitigation Measures

Proposed hazard mitigation projects, including those proposed under Section 404 of the Stafford Act, are evaluated on the basis of the following criteria:

1. Be consistent with, support, and help implement the goals and objectives of the state's natural hazards mitigation plan developed under Sections (standard plan) 201.4 or (enhanced plan) 201.5 of the Stafford Act;
2. Be consistent with, support, and help implement the goals and objectives of local hazard mitigation plans in place for the geographic area in question developed under Section 201.6 of the Stafford Act;
3. Have significant potential to reduce damages to public and/or private property to reduce the cost of recovering from future disasters;
4. Be the most practical, cost-effective, and environmentally sound alternative after a consideration of a range of alternatives;
5. For federally-funded projects, meet federal requirements for benefit-cost requirements by having a benefit-cost ratio > 1.0;
6. Address a repetitive loss problem, or one that has the potential to have a major impact on an area, reducing the potential for loss of life, loss of essential services or personal property, damage to critical facilities, economic loss, hardship, or suffering;
7. Solve a problem independently, or constitute a portion of a solution where there is a likelihood that the project as a whole will be completed;
8. Conform with 44 CFR Part 9, Floodplain Management and Protection of Wetlands, and not contribute to or encourage development in wetlands or in floodplains;
9. Conform with 44 CFR Part 10, Environmental Considerations;
10. Be based on a hazard vulnerability analysis of the geographic area in question;
11. Be feasible (both technically and within an approved scope-of-work and budget) and be ready to proceed when approved and funded;

12. Meet applicable permit requirements;
13. Not encourage new development in hazardous areas;
14. Contribute to a permanent or long-term solution to the problem, and have manageable maintenance and modification costs;
15. Whenever possible, be designed to accomplish multiple objectives, including damage reduction, environmental enhancement, and economic development or recovery; and
16. Whenever possible, utilize existing agencies or programs to implement the project.

Hazard Mitigation Grant Review Board

The Hazard Mitigation Grant Review Board is an intergovernmental body which when convened reviews, discusses, ranks, and recommends project selections for funding under Section 404 of the Stafford Act (i.e., Hazard Mitigation Grant Program – HMGP). The Board uses the criteria listed above, as well as a jurisdiction’s natural hazard mitigation plan goals and objectives, and specific actions to evaluate proposed projects for funding.

With requirements for FEMA-compliant (201.6) local mitigation plans to be eligible for Section 404 grants, the need to convene the Hazard Mitigation Grant Review Board has been largely replaced by project actions and priorities identified in those local mitigation plans. In order to expedite the Section 404 grant offering early in the post-disaster recovery process, HMGP project funding is first prioritized to the disaster-declared counties (and all eligible applicant entities therein) on a pro rata share basis of their Public Assistance and/or Individual Assistance eligible costs as initially determined during the FEMA/State Preliminary Damage Assessment. The pro rata applicant share can be further refined at either the 12 month or 18-month HMGP lock-in. HMGP planning grant funding is available statewide from the onset of the program’s availability.

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

BOARD MEMBERSHIP:

1. Director of the Office of Emergency Management or designee (most usually the Section Director, Mitigation and Recovery Services who can also be State Coordinating Officer for major disaster declarations), who chairs the Board;
2. State Floodplain Program Coordinator (Natural Hazards Program Coordinator) of the Department of Land Conservation and Development or designee;
3. President of the Oregon Emergency Management Association (OEMA) or designee;
4. A representative of the Association of Oregon Counties (AOC) and/or the League of Oregon Cities (LOC); and
5. For flood disasters and related projects, a representative from the, U.S. Army Corps of Engineers (USACE).

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

Benefit - Cost Analysis of Natural Hazard Mitigation Projects

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

The Federal Emergency Management Agency (FEMA) Benefit-Cost Analysis (BCA) software program, first developed in the early 1990s and subsequently updated, is used to determine the cost effectiveness of proposed mitigation projects for FEMA's mitigation grant programs. The basis for BCA when federal funding is used to implement mitigation measures is founded in OMB Circular A-94: "The goal of Circular A-94 is to promote efficient resource allocation through well-informed decision-making by the Federal Government. It provides general guidance for conducting benefit-cost and cost-effectiveness analyses. It also provides specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time. The general guidance will serve as a checklist of whether an agency has considered and properly dealt with all the elements for sound benefit-cost and cost-effectiveness analyses." In 2008, FEMA collaborated with many Applicants and sub-applicants on enhancements to update calculations and methodologies in the software and to make it more efficient.

FEMA's current BCA tool (version 4.5.5) is explained in their BCA Reference Guide and is presented to provide BCA software users with an overview of the grant

programs, application development, benefits and costs, and the location of BCA guidance documents and helpful information.

FEMA's BCA program is a key mechanism for evaluating certain hazard mitigation projects to determine eligibility and assist in Federal funding decisions. The FEMA BCA program is comprised of methodologies and software for a range of major natural hazards. To be eligible for Federal funding assistance, a BCA should show that the project is cost effective and will reduce future damages and losses from natural disasters. Mitigation projects can include: construction projects, education programs, publications or videos, building code enhancements, and mitigation planning activities. A reduction in losses or prevention of future damages is the benefit of the project. For certain project categories, such as the post-disaster acquisition of substantially damaged homes in the floodplain, FEMA allows for exceptions to a rigorous benefit-cost analysis. This exception and others are explained on a case-by-case basis in the Unified Hazard Mitigation Assistance program guidance.

Cost, as it relates to mitigation, is the price to develop and maintain a mitigation project. The project cost estimate, as used in the FEMA mitigation grant guidance, includes all costs associated with the proposed mitigation project, and represents the best estimated costs for the activity. Estimates are required for the following cost item categories:

- Anticipated cash and in-kind Federal match
- Equipment
- Labor
- Materials
- Subcontract costs

Other costs are those that do not fall neatly into one of these categories, but must be delineated in the BCA if applicable to the project. The FEMA BCA tool utilizes a six-step cost-estimating methodology:

- Step 1: develop an estimate of pre-construction or non-construction costs
- Step 2: develop an estimate of construction costs
- Step 3: develop an estimate of ancillary costs
- Step 4: develop an estimate of annual maintenance costs
- Step 5: adjust the estimate to account for project timing and whether the data is current
- Step 6: review and confirm the cost estimate

FEMA has developed many tools and techniques to help sub-applicants to use the FEMA BCA tool and to develop thorough grant applications.

State Seismic Rehabilitation Grant Program: Oregon BCA Tool

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

The Oregon BCA Tool was developed to be used when applying for state-sponsored mitigation funding through OEM programs such as the Seismic Rehabilitation Grant Program (SRGP). The Oregon BCA Tool uses detailed, USGS data specific to Oregon. Applicants for the 2009 SRGP awards were permitted to use the FEMA BCA Tool instead of the Oregon BCA Tool if they preferred to do so. However, those policies changed and all future SRGP applicants must now use the Oregon BCA Tool developed by OEM.

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

- Building damages,
- Contents damages,
- Displacement costs for temporary quarters,
- Loss of public services, and
- Casualties (deaths and injuries).

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

- Level of seismic hazard at the building's location,
- Vulnerability of the building and contents to damage in future earthquakes,
- Values of the building and contents,
- Costs for temporary quarters if the building must be vacated for repair of future earthquake damage,
- Value and importance of the public services provided from the building, and
- Number of occupants in the building.

To compare future benefits with the present costs of seismic retrofits, the calculated future benefits of retrofitting are adjusted to what is known as net present value, taking into account the time value of money. These calculations are done automatically by the Oregon BCA Tool, based on standardized

assumptions about the useful lifetime of the project and the “discount rate” which reflects the time value of money.

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

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

Program Management Capability

Requirement 44 CFR §201.5(b)(2)(iii)(A-D), Demonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following:

- (A) Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation;
- (B) Preparing and submitting accurate environmental reviews and benefit-cost analyses;
- (C) Submitting complete and accurate quarterly progress and financial reports on time; and
- (D) Completing HMGP and other mitigation grant projects within established performance periods, including financial reconciliation.

FEMA has determined that Oregon does not currently meet this standard. The state is working with FEMA Region X to address identified deficiencies. OEM will develop a plan to meet the Enhanced Plan requirements.

Assessment of Mitigation Actions

Requirement 44 CFR §201.5(b)(2)(iv), A system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action.

The overall goal of mitigation planning is the implementation of mitigation measures that avoid or reduce future disaster losses. By carefully documenting project implementation costs as well as post-disaster cost-avoidance, it is possible to measure the effectiveness of mitigation throughout the state.

Calculating hazard event losses that were avoided as the result of a mitigation project requires pre- and post-disaster mitigation data. These data sets can be analyzed in detail using a process that is not unlike a benefit-cost analysis. As described within Table 7.1 below, the state is working with FEMA Region X mitigation staff to crosscheck the state’s historic database of mitigation projects (mainly flood-related property acquisitions and elevations, and facility retrofits) by completing project close-out assessments. When mitigation project costs are evaluated by post-disaster measures of success, the state is able to determine overall project effectiveness.

Table 7.1: Calculation of Hazard Event Losses

Project Close-Out Assessment Track	Post-Event Assessment Track
Financial records and certifications	Annual Emergency Performance
Performance and as-built reports	Management Grant reporting requirements
On-site final inspection	Local disaster events and reporting
Documentation retention	<ul style="list-style-type: none"> • IDA/PDA reporting process • NFIP loss data and private insurance claims • Consumer owned utility and special district reporting
<ul style="list-style-type: none"> • Per state and federal regulations • Local government financial requirements • NEMIS and e-grants requirements 	Calculating losses avoided
	Documenting post-event mitigation success stories

Source: OEM

Currently, the state does not have the staff or financial resources to quantitatively track potential losses avoided for each action taken. The state does, however, maintain documentation of “mitigation success stories” (see Section 4, Appendix 4C). These are completed actions that have shown to be successful by: 1) avoiding potential losses; and/or 2) demonstrating cost-effectiveness through benefit cost analysis and/or qualitative assessment. Likewise, actions that support mitigation efforts, like risk or vulnerability assessment studies, are included in Appendix 4C as well. Mitigation success stories are completed with input from the action’s coordinating agency.

In the future, the state will capitalize on opportunities to record the actual effectiveness (quantitative measurement) of successful mitigation actions and losses avoided. Much like the Benefit-Cost Analysis Toolkit developed and required by FEMA, there is significant interest in developing a similar toolkit to assist states and local governments in quantifying the success of mitigation projects. As of this writing, there is no prescribed methodology promulgated by FEMA to undertake this effort. The simplest approach, at least for the flood hazard, is to evaluate NFIP flood loss properties following successful mitigation treatments. In the simplest case, a damaging flood prior to mitigation should minimally have similar losses avoided following mitigation.

The state will take advantage of opportunities that arise in the future, especially when new hazard events occur and resources become available, especially during Joint Field Office (JFO) operations following Presidential disaster declarations. It is the state's intention to take advantage of Hazard Mitigation Technical Assistance Program resources during JFO operations to objectively quantify mitigation successes through loss avoidance studies. Of particular and specific interest for a detailed loss avoidance study are mitigated, repetitive flood loss properties in the City of Tillamook and around Tillamook County. Most of the previously mitigated properties have been "challenged" by record flooding or a number of different flood events with no or minimal property damage.

Objectively reporting on mitigation successes facilitates interest at all levels of government and within the community, and provides opportunities in partnering mitigation resources such as project funding and technical assistance. Furthermore, it can be expected that the accrued benefits from mitigation expenditures will continue to increase over the effective life of projects, as cumulative losses avoided grow with subsequent hazard events. Repetitive hazard loss properties become repetitive mitigation successes stories¹.

Tillamook Bay Repetitive Flood Loss Properties

As staff and funding resources allow, OEM conducts loss avoidance studies that quantitatively assess the effectiveness of hazard mitigation projects. The most recent loss avoidance study, completed in September 2009, was supported by FEMA's Hazard Mitigation Technical Assistance Program (HMTAP) under the auspices of DR-1824. The loss avoidance study was developed to evaluate the success of flood mitigation projects in Tillamook County which has experienced significant, repetitive flood losses beginning with Stafford Act assistance provided

¹ State of Oregon Hazard Mitigation Grant Program Administrative Plan:
http://csc.uoregon.edu/opdr/sites/csc.uoregon.edu.opdr/files/OR_SNHMP_404-admin-plan_dr-1510_final.pdf

under DR-853 (January 1990) through DR-1824 (a total of four major declarations and at least another four significant flood events that were not declared). Flood Mitigation Assistance (FMA) program funding was also used to acquire and elevate flood-prone properties.

Low-lying areas between the Coast Range and the Pacific Ocean in southwestern Oregon are particularly vulnerable to severe flooding. The City of Tillamook, which is located in this region, has repeatedly experienced severe floods, most recently on January 8, 2009 (post DR-1824). In response to these repetitive events, the City and County of Tillamook implemented a number of non-structural flood mitigation projects to reduce damages from future flooding. The projects consisted of the acquisition, elevation, and relocation of flood-prone buildings. The local governments completed the projects with assistance from FEMA, the State of Oregon, other public agencies, and private entities.

Multiple flood events have occurred since the completion of the mitigation projects; the floods could have damaged the buildings if the projects had not been completed. To evaluate losses avoided by the projects, FEMA offered HMTAP assistance to Oregon to support a study to evaluate losses avoided by nine of the projects, the elevation of three commercial buildings and the acquisition/demolition of six commercial buildings along U.S. Highway 101 in the City of Tillamook.

FEMA calculated the value of the losses avoided and compared the value to the cost of mitigation. The aggregate losses avoided were valued at \$3.1 million, and the aggregate project cost was valued at approximately \$4.7 million (both values in 2009 dollars), resulting in a return on investment of 66%. FEMA estimates that elevation projects are estimated to have an average useful life of 30 years, and that acquisition projects have a useful life of 100 years. The Loss Avoidance Study: Oregon, Property Acquisition and Structure Elevation majority of the projects were implemented after 2003, which is only 6 years into the useful life. It is anticipated that the value of the losses avoided, and therefore the Return on Investment, will increase in the future as other flood events occur.

To view the complete *Loss Avoidance Study* follow the link provided below:

<http://csc.uoregon.edu/opdr/node/318>

Effective Use of Available Mitigation Funding

Requirement 44 CFR §201.5(b)(3), Demonstration that the State effectively uses existing mitigation programs to achieve its mitigation goals.

Current and Potential Funding

Funding to implement mitigation measures (including repetitive loss properties) can come from a number of sources; these include government (local, state and federal), private sector, foundations, and from citizens themselves. The funding can be in the form of grants that may or may not require matching funding as well as loans of different types. Prior to a disaster, grants and loans can be made available on a scheduled or special announcement basis. Following disasters, post-disaster grants and loans come from a number of sources when opportunities for mitigation are oftentimes best coupled with the recovery effort. Citizens themselves make significant contributions to mitigation projects including, oftentimes, matching funds or providing the full amount of funding from their own resources.

Funding used to Implement Mitigation Actions

Flood hazard mitigation became a top priority in Oregon in the later 1990's. Four areas that experienced repetitive flooding in 1996 and 1997 received the bulk of the project funding: lower Johnson Creek in Portland, Tillamook County and City, the Lower Siletz area in Lincoln County, and the unincorporated area of Mapleton in Lane County. Many dozens of flood-loss properties have been elevated, relocated or acquired in these areas that have been subsequently flooded with no or very minimal damages to the mitigated properties. In addition to these local governments, many other local governments in Oregon have developed and successfully implemented strategies to address repetitive hazard losses. By proactively planning for and implementing mitigation measures, local governments are developing policies, and thereby building local capability to reduce disaster losses.

HAZARD MITIGATION ASSISTANCE – POST-DISASTER ASSISTANCE

Hazard Mitigation Grant Program (HMGP): All past disaster HMGP sub-grant activities prior to 2006 and including DR-1632 (declared in March 2006) have been completed. All sub-grant project work related to DR-1672 has been essentially completed except for funding reconciliation on the two remaining sub-grants prior to close-out. All sub-grant activities related to DR-1683 (declared in February 2007) are completed except for final subgrantee administrative cost reconciliation. At the time of this 2012 plan update, there are four actively open disasters: DR-1733, DR-1824, DR-1956, and DR-1964. DR-1733 has a number of sub-grants open (project work largely remains on schedule) while other projects

are being completed, inspected and closed-out. As of December 2011, DR-1733 has 40 sub-applications in NEMIS, of which 17 have been funded, five completed and 18 sub-applications removed from further consideration. One sub-application in particular, 1733.0002, is being funded in phases and includes a number of residential property elevations and acquisitions in Columbia County and the City of Vernonia which we hard-hit by this flooding disaster. For DR-1824, there are 14 sub-applications in NEMIS, of which 7 have been funded, three completed and three sub-applications removed from further consideration. Being the state's two newest disasters, DR-1956 and DR-1964 are still "open" for sub-application development. One project sub-grant from DR-1964 has been funded with mitigation construction work underway at the Port of Brookings-Harbor in Curry County.

With DR-1733, grantee and subgrantee administrative costs are no longer provided by FEMA and have been replaced by a state management cost (SMC) calculation. The state, as the grantee, can choose to allocate SMC funding to subgrantees to offset their costs for applying (for) and administering Federal sub-grant funding. For small disaster declarations, OEM has chosen not to extend HMGP state management funding to sub-grantees but rather use those resources, in part, to provide direct technical assistance, including benefit-cost analysis support, in developing "approvable" sub-applications for FEMA's consideration. OEM relies greatly on local jurisdiction mitigation plans to identify priority HMGP project activities that can be implemented quickly in the post-disaster environment.

Hazard Mitigation Assistance – Non-Disaster Assistance

Flood Mitigation Assistance (FMA) Program: All grants prior to and including FY 2007 are completed and closed. There are active, open sub-grants for FY's 2008, 2009, and 2010. Of particular interest is the FY 2009 offering of the FMA grant program that included a supplemental allocation offered to the states on a first-come basis. Oregon seized this opportunity and received significant FMA funding (as reported in Federal share, EMS-2009-FM-E001) for these projects:

Table 7.2: Flood Mitigation Assistance Projects and Funding (2009)

Project	FMA Funding
City of Lexington (Fire Station/ City Hall Flood Acquisition)	\$103,281.00
City of Vernonia Home Elevations	\$ 532,366.50
Vernonia School District Floodplain Acquisition	\$11,287,267.39
West Oregon Electric Co-op Headquarters Acquisition	\$813,774.75
City of Madras Police Station/City Hall Floodway Acquisition	\$412,497.75
Lake Oswego Dam Spillway Retrofit Project	\$957,702.75

Source: OEM as reported in Federal share, EMS-2009-FM-E001

The Vernonia School District Acquisition project is a showcase flood hazard mitigation project for the City of Vernonia that would not have been possible without the unwavering support from FEMA Region X staff. This project essentially relocates the Vernonia K-12 school campus function from the Special Flood Hazard Area to a new site totally out of flood harm’s way. The current school campus has a long history or repetitive flood losses particularly those occurring in 1996 (DR-1099) and 2007 (DR-1733). The Lake Oswego Dam (retrofit) Project is complete while all of the other project activities are funded and underway. Of the HMA grant programs, FMA has more rigorous project eligibility criteria and only addresses projects that mitigate the flood hazard. Experience has shown this program requires significantly more grant management oversight by OEM to ensure projects are completed in a timely manner.

Pre-Disaster Mitigation –Competitive- (PDM) Grant Program: All FY 2005 and previous year sub-grants were completed during this state plan update cycle. Sub-grants from FY 2006 and later years are on-going (or awaiting close-out) with a number of projects completed. The following shows the history of FY 2006 and later sub-grants:

Table 7.3: PDM Competitive Grant Applications (FY06 - FY11)

Project	Status
FY06 PDM Competitive Grant Application	
Seismic Retrofit for Vine Street Water Treatment Plant	Completed
Oregon Coast & Northeast Oregon Mitigation Planning	Completed
FY07 PDM Competitive Grant Application	
City of Salem, Fire Station Seismic Retrofits	Completed
2007 Deschutes & Crook Counties Wildland Fire Mitigation	Ongoing
Gladstone Fire Seismic Upgrade 2007	Completed
Development of City Mitigation Plans for Region 1 and 3	Completed
FY08 PDM Competitive Grant Application	
2008 Deschutes & Crook Counties Wildfire Mitigation Project	Ongoing
FY09 PDM Competitive Grant Application	
State of Oregon Local Plan Updates Regions: 3/4/6	Ongoing
Seismic Retrofit for Two Fire Stations, Gresham, Oregon	Completed
City Hall Seismic Retrofit (SOW/budget modification state approved)	Completed
FY10 PDM Competitive Grant Application	
Deschutes/Crook/Klamath Counties WUI Project	Pending EHP
Harney Electric (utility undergrounding)	Pending EHP
FY11 PDM Competitive Grant Application	
OPDR Mitigation Planning Region 5 / Clackamas County	Ongoing
City of Canby - Canby Utility: Water Tank Seismic Retrofit	Ongoing

Source: OEM

Table 7.4 presents a concise self-assessment of Oregon's overall capability to effectively manage HMGP, FMA and PDM grant program activities from application to close-out.

Table 7.4: Grant Performance, Process and Implementation Success Stories

Grant Program	Applications		EHP/BCA Information		Timely Reporting		Close-out	
	to State	to FEMA	Status	Eligibility	Grantee	Subgrantee	Performance	Financial
HMGP								
DR-853	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-985	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1004	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1061	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1099	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1107	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1149	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1160	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1221	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1405	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1510	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
DR-1632	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closing
DR-1672	Closed	Complete	Closed	Complete	Yes	Yes	Closing	Mar-2012
DR-1683	Closed	Complete	Closed	Complete	Yes	Yes	Closing	Mar-2012
DR-1733	Updates	Updates	Ongoing	Ongoing	Yes	Yes	On-target	Mar-2014
DR-1824	Updates	Updates	Ongoing	Ongoing	Yes	Yes	On-target	Mar-2014
DR-1956	Open	Open	Underway	Underway	phasing in	phasing in	On-target	
DR-1964	Open	Open	Underway	Underway	phasing in	phasing in	On-target	
FMA								
FY97	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY98	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY99	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY00	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY01	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY02	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY03	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY04	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY05	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY06	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY07	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY08	Closed	Complete	Closed	Complete	Yes	Yes	On-target	Fall-2012
FY09	Closed	Complete	Closed	Complete	Yes	Yes	On-target	Dec-2013
FY10	Closed	Complete	Closed	Complete	Yes	Yes	On-target	Jun-2012
FY11	Closed	Complete	Closed	Complete	-	-	no sub-grants awarded	
FY12	Closed	Complete	Pending	Pending	-	-	-	-
PDM								
FY02-E	Closed	Complete	Closed	Complete	Yes	Grantee	Closed	Closed
FY03-E	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY03-C	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closed
FY05-C	Closed	Complete	Closed	Complete	Yes	Yes	Closed	Closing
FY06-C	Closed	Complete	Closed	Complete	Yes	Yes	Closing	Closing
FY07-C	Closed	Complete	EHP	Ongoing	Yes	Yes	Closed	Closed
FY08-C	Closed	Complete	EHP	Ongoing	Yes	Yes	Ongoing	Ongoing
FY09-C	Closed	Complete	Closed	Complete	Yes	Yes	Closing	Closing
FY10-C	Closed	Closed	EHP	Ongoing	Pending	Pending	Pending	Pending
FY11-C	Closed	Complete	Closed	Complete	Yes	Yes	On-target	On-target
FY12-C	Closed	Closed	Pending	Pending	-	-	-	-

Source: OEM

The State of Oregon provides timely, complete and accurate performance and financial quarterly reports on the FEMA-funded mitigation grants. To meet the consistent reporting deadlines to FEMA Region X, subgrantees are required to submit their individual performance quarterly reports to OEM by the 15th of the month following the end of the traditional calendar quarter. The subgrantee reports are reviewed and discussed with the sub-grantee (where required), synthesized, and submitted to FEMA Region X by the end of the next month

following the end of the calendar quarter. Financial reports are provided in a similar fashion. Scheduled subgrantee reporting to the state fulfills grants' monitoring requirements supplemented by on-site inspections (performance and financial) as required.

Oregon's experience with the Severe Repetitive Flood Loss (SRL) program has not been as successful as the other non-disaster grants as previously reported. The state initially undertook the effort to evaluate potential SRL project properties (as identified in FEMA severe repetitive flood loss list) for mitigation. The top candidate was a home in Lincoln City that could benefit from elevation. After numerous attempts to secure FY 2011 SRL funding, but without success, the state resubmitted the Lincoln City project property to the FY 2012 offering of the SRL grant program.

Commitment to a Comprehensive Mitigation Program

Requirement 44 CFR §201.5(b)(4)(i-vi), Demonstration that the State effectively uses existing mitigation programs to achieve its mitigation goals.

The State is committed to a comprehensive mitigation program to achieve its mitigation goals. Programs and methods that demonstrate this commitment are detailed throughout this plan. While not exhaustive of the measures that are provided in this plan below are brief citations on where to find relevant programs:

44 CFR §201.5(b)(4)(i), A commitment to support local mitigation planning by providing workshops and training, state planning grants, or coordinated capability development of local officials, including Emergency Management and Floodplain Management certifications.

As described in more detail within Section 5, *Coordination of Local Mitigation Planning*, the State of Oregon aims to build local capacity in developing and implementing risk reduction strategies through plan development support, professional assistance, resource sharing, and technical assistance. Local planning and mitigation requirements are accomplished in great measure through the state's Pre-Disaster Mitigation program. Oregon Emergency Management (OEM), in partnership with the Oregon Partnership for Disaster Resilience (OPDR), established the Oregon Pre-Disaster Mitigation program in 2004 to foster partnerships among agencies, communities, academia, and organizations to determine needs, identify issues and resources, and develop strategies for risk reduction. Since that time, the program has systematically provided funding opportunities (primarily through FEMA's PDM and HMGP grants) and direct technical assistance to local governments for the purpose of developing or updating existing local natural hazards mitigation plans while establishing a course of action to secure funding for project implementation.

All 36 counties in Oregon have participated in a Natural Hazards Mitigation Planning process and have an existing, or expired, FEMA approved plan. As plans mature the State of Oregon is committed to working with local jurisdictions in updating and enhancing the existing plans in order to maintain their relevance with existing FEMA guidance.

44 CFR §201.5(b)(4)(ii), A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private partnerships, and/or other executive actions that promote hazard mitigation.

The State of Oregon has two key mitigation councils, the State Interagency Hazard Mitigation Team (State IHMT) and the Oregon Seismic Safety Policy Advisory Commission (OSSPAC). The former was formed by Governor Kitzhaber in 1997. It, the State IHMT, typically meets quarterly to understand losses arising from hazards; to recommend strategies to mitigate loss of life, property, and natural resources; and to develop, update, and maintain this plan.

OSSPAC was formed by the Oregon Legislature via Senate Bill 96 in 1991. Its mission is to reduce exposure to earthquake hazards in Oregon by developing and influencing policy at the federal, state and local levels; facilitating improved public understanding and encouraging identification of risk; supporting research and special studies; supporting appropriate mitigation; supporting response and recovery; and supporting and assisting in the coordination of a grant program for the disbursement of funds for seismic rehabilitation of schools and emergency facilities.

The state also has formed and maintained a public/private partnership known as the Oregon Partnership for Disaster Resilience (OPDR). OPDR is a non-state supported coalition of public, private, and professional organizations working collectively toward the mission of creating a disaster resilient and sustainable state. Developed and coordinated by the Community Service Center (CSC) at the University of Oregon, OPDR employs a service learning model to increase community capacity and enhance disaster safety statewide. OPDR activities are organized on three levels: statewide, regional, and local (including university campuses). Each level of activity builds off of the other, and contributes to a more coordinated and collaborative statewide program.

44 CFR §201.5(b)(4)(iii), The state provides a portion of the non-federal match for HMGP and/or other mitigation projects.

The State of Oregon provides the non-federal match for projects for which a state agency is the subgrantee, and provides considerable direct technical assistance to local subgrantees, especially in the development of benefit-cost analyses that are

required for mitigation projects proposed for funding under HMGP or other mitigation grants to move forward in the application and review process.

44 CFR §201.5(b)(4)(iv), To the extent allowed by state law, the state requires or encourages local governments to use a current version of a nationally applicable model building code or standard that addresses natural hazards as a basis for design and construction of state sponsored mitigation projects.

The information covered with this subsection is primarily described within Appendix 4-D, *Policies, Programs and Capabilities* and within Section 3, *Hazard Chapters*.

The adoption and effective enforcement of building codes are among the most important hazard mitigation tools related to the design and construction of structures for human occupancy. The state building code is composed of several specialty codes (e.g.: plumbing, structural, mechanical, elevator, electrical, boiler and pressure vessel). All buildings in Oregon must conform to the state's codes, which influences the way buildings are constructed with respect to seismic risk, wind, snow, wildfire, and flood hazards.

1. **NFIP and Codes:** All Oregon communities that have a mapped flood risk participate in the National Flood Insurance Program (NFIP), which sets minimum requirements for new buildings or substantially improved buildings in the communities' floodplains. NFIP standards are minimums, and do not always protect properties. The state building code requires dwellings to be built one foot above the base flood elevation unless a more restrictive local standard exists. Many Oregon communities do require a higher performance standard when building new or elevating existing structures in the floodplain. In Tillamook County, for example, all new and substantially damaged/improved structures must have their first floor at least three feet above the mapped 100-year base flood elevation.
2. **Manufactured Dwelling Installation Regulations:** Manufactured dwellings are particularly susceptible to damage because they are lighter and less resistant to natural forces. Their lower costs also mean that it takes less damage to establish a total economic loss. The state building code requires that manufactured dwellings be tied down in all designated flood areas and braced for wind in high wind areas, but there are no mandatory tie-down or bracing requirements for earthquakes. Nevertheless, there are standards for commercial seismic bracing systems that are sold for voluntary installation.
3. The state's building code requires that commercial buildings be seismically designed in accordance with the American Society of Civil Engineer's Standard 7-05. ASCE 7-05 was developed using FEMA's NEHRP "recommended provisions" which led to more comprehensive seismic design guidelines. One and two family dwellings and townhouses may

follow a prescriptive path for construction which accounts for regional seismic differences.

4. Local jurisdictions may adopt provisions addressing wildfire hazard mitigation in conjunction with criteria established by the Oregon Department of Forestry. The provisions address issues such as combustibility of roofing and premises identification.

Retrofitting/Rehabilitation

Depending on the nature of the risk and the expected performance of the buildings and systems under defined hazard conditions - especially where the risk may not be severe - it may or may not be cost effective to retrofit or rehabilitate buildings or infrastructure elements.

Property Maintenance and Incremental Retrofitting: The incremental approach to hazard mitigation can be effective over the long-term by using maintenance and capital funds to reduce vulnerabilities while other work is being done to maintain structures. Such measures may be done voluntarily or may be contained in codes or regulations governing remodeling or sales of properties.

Removing Buildings from Harm's Way

Especially with respect to the flood hazard, although not exclusively so, rather than attempting to "control the hazard," there is now an emphasis on moving structures - especially homes - out of harm's way by elevating them well above flood danger, relocating, or even acquiring (purchasing) and demolishing the improvements so only open space remains in perpetuity. Oregon is able to use hazard mitigation funding from a number of federal programs, and from local governments and the private sector to accomplish this work with respect to the flood hazard; these elevation, relocation, or acquisition efforts are especially appropriate for homes that were built in floodplains prior to the establishment of the National Flood Insurance Program, which have sustained repetitive flood losses over the years.

Oregon has also embraced the concept of moving buildings out of harm's way following disasters. For example, instead of only making repairs to flood damaged buildings, opportunities to elevate, relocate, or acquire buildings are pursued soon after the flood waters recede to break the cycle of rebuilding and flooding again and again. When flood prone homes are acquired or relocated, the once developed land is returned to open space uses in perpetuity by means of deed restrictions. This removes the possibility of future disaster losses to buildings at that location. Since December 2007 (DR-1733) there have been a total of 32 elevations and 40 acquisition projects completed using FEMA mitigation grant funding and NFIP funds in the City of Vernonia alone!.

In some cases, acquisition or relocation of a building might be pursued for other hazards, such as streambank or coastal erosion, or its location in an area especially vulnerable to debris flows.

Structural Projects

Measures which are intended to "control the hazard" so that it does not reach or damage developed areas are often called "structural." These measures are structural because they involve the construction of facilities. However, many structural projects are expensive to construct and maintain, and they may have other shortcomings such as environmental impacts and recurring maintenance costs. On the other hand, structural projects are occasionally the most cost effective way to protect an area, especially a densely developed area, and can sometimes serve several objectives. Statewide there are numerous structural projects that have been constructed over the course of the past century. Some are for flood control and some are multi-purpose, such as Detroit Dam on the Santiam River, which was built for flood control and power generation purposes as well as irrigation water and recreational purposes during the summer months

44 CFR §201.5(b)(4)(v), A comprehensive, multi-year plan to mitigate the risks posed to the existing buildings that have been identified as necessary for post-disaster response and recovery operations.

The 2009 NHMP identified an action to 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. This has been partially completed through the statewide seismic needs assessment that assessed the earthquake risk to K-12 schools and critical facilities at the local level. And the resultant Seismic Rehabilitation Grant Program (see Appendix 4-D for more information).

44 CFR §201.5(b)(4)(vi), A comprehensive description of how the state integrates mitigation into its post-disaster recovery operations.

The information covered with this subsection is primarily described within Appendix 4-D, *Policies, Programs, Capabilities and Funding*, and within Section 3, *Hazard Chapters*.

The State and local communities integrate mitigation into post-disaster recovery operations by taking advantage of Hazard Mitigation Grant Program (HMGP) dollars that become available after presidentially declared disasters. See the "Funding" piece of Section 4, *Mitigation Strategy*, for a summary of HMGP project status.

State post-disaster mitigation planning and project activities following disasters are an integral component of OEM's mission. OEM's Financial and Recovery Services Section provides oversight and administration of financial services and related funding that is passed through to local governments. Additionally, the Financial and Recovery Services Section manages disaster recovery activities for state and local governments in the event of a devastating emergency or disaster. Specifically, the Section Director, SHMO, Alternate SHMO, Facilities Engineer (Public Assistance Officer), Seismic Grants Coordinator, and financial support staff work together closely post-disaster mitigation grant programs and project activities. Although OEM has limited staff support available for post-disaster mitigation planning and project implementation activities, the state is able to effectively secure and manage FEMA's HMGP grants. HMGP activities from recent disasters DR-1672 (2006) and DR-1683 (2007) are either closed or on schedule to close, respectively, within prescribed performance periods. All HMGP activities from prior disasters (pre-DR-1632) have been closed, with documentation of measurable mitigation benefits as they occur.

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

DR-1683 – West Oregon Electric Cooperation / Timber-Elsie Transmission Line Undergrounding

As a result of the severe winter storms during the DR-1683 disaster incident period, West Oregon Electric Cooperative (WOEC) sustained major damages to approximately a 15 mile long section of the Timber-Elsie 35 kV main electric service transmission line. WOEC relies upon a network of high-voltage transmission lines to deliver electricity to its substations, which distributes that

energy to lower-voltage lines serving WOEC member users. The Timber-Elsie transmission line extends from the small community of Timber, about 50 miles from Portland, approximately 16 miles west to Elsie. This 34 kV line is a vital link in the electrical system, serving as a primary source of energy to WOEC members in Clatsop, Columbia, and Washington counties.

This 35 kV line, which supplies Elsie Substation, generally parallels Oregon State Highway 26. The line is routed through forestland where the trees are typically 100 to 120 feet tall. For about 0.5 miles, the line is adjacent to the highway. For most of the route, it is at least 100 feet from the road but not more than 1500 feet from the road. For beautification or scenic purposes, the state of Oregon requires buffer between the road and the power line. In general, it is not possible to see the line because of the buffer between the road and line.

This section of transmission line was damaged in Clatsop, Columbia, Tillamook and Washington Counties by falling trees uprooted from water saturated soils and high winds. Trees fell on power lines breaking down lines and damaging the system components such as poles, wires, cross arms, insulators, guy wires and anchors. The Public Assistance Program Project Worksheet was written to restore and or replace damaged poles, downed wires, cross arms and associated hardware to restore the power.

This section of line has had continuous problems with a history of repetitive losses. Between high winds and root rot in the Douglas firs, and the fact that many of the trees are over 100 feet tall on both sides of the transmission line with only a 40 foot right of way, WOEC had to go out and repair the line over a dozen times each year, costing well over \$50,000 each year. There are no roads to most of the line, which is further complicated by weather conditions, so that cost of repairs and time are significantly increased. This project provided the perfect opportunity to link the Hazard Mitigation Grant Program (Stafford Act Section 404) program with FEMA's Public Assistance program (Stafford Act Section 406) to leverage mitigation benefits from both programs.

WOEC proposed the burying of 16.15 mile of transmission line, 7.24 was eligible for "406" mitigation. The State's primary HMGP strategy for DR-1683 established a priority emphasis for electric utility mitigation. The mitigation benefits of burying the critical transmission line were established by the State's priorities and enhanced mitigation plan (where electric utility conversion to underground is identified). The Public Assistance Program approved "406" mitigation to underground 7.24 miles of the storm damaged electrical transmission line system. But, this would not be a "complete" solution for the entire transmission circuit leaving a large part vulnerable to continuing losses. A more permanent solution was to underground the entire line. This would eliminate the annual repair costs,

increase the reliability of service, and save the Cooperative members from continuing to fund future service losses.

Determined to be cost effective (based on a detailed benefit-cost analysis report) and for a complete solution HMGP was approved for burying the remaining 8.91 miles of the transmission line. Conversion of overhead power lines to underground has proven to be a highly cost-effective, long-term solution to repetitive losses caused by winter wind and ice storms. All work activities related to this project was completed in 2010.

DR-1733 – Oregon Parks – Cape Lookout Drainfield Relocation

Cape Lookout State Park is located on the North side of Cape Lookout and southwest of Tillamook on the south west portion of Netarts Bay. Cape Lookout State Park was established in 1938 and is considered a state “Legacy Park” with a long history that provides significant economic value to the local and state tourist industry. The Park is located on the north side of Cape Lookout and southwest of Tillamook on the Oregon coast, southwest of Netarts Bay. The Park has effluent drain fields (required to support the park function) located on the forested sand spit between the Pacific Ocean and Netarts Bay that were impacted by chronic coast erosion that was exacerbated by high winds and wave erosion associated with the December 2007 (DR-1733) disaster declaration.

As a result of the disaster, two of the three drainfields were destroyed with the third field impacted and only partially functional. Repairing the damaged drainfields in-place was considered to only be a temporary solution where as relocating the function of the drain fields to high ground would provide for a long-term cost effective treatment to the problem.

Once again, there was an opportunity to link FEMA’s 404 and 406 mitigation programs to decommission the existing drainfield function in its entirety and relocate to high ground, far removed from the potential for continued coastal erosion losses. Completion of the project, in November 2010, eliminated the imminent shut down of the park due to the failure of the on-site wastewater treatment system.

DR-1964 – Port of Brookings-Harbor – Harbor Piling/Dock Mitigation

The Great Tohoku (Japan) Earthquake and Tsunami with heartbreaking loss of life and damages in Japan generated a Pacific-wide tsunami that caused localized tsunami wave surge damages along the Oregon Coast. The Port of Brookings-Harbor sustained the most significant damages of those facilities impacted by the tsunami along the Oregon Coast. FEMA disaster DR-1964 was declared largely because of the tsunami wave surge damages in Curry County.

The Port of Brookings Harbor is located in the City of Brookings (Curry County) in southern Oregon at the mouth of the Chetco River. The Port of Brookings was created in 1956 and the Port began operations in 1959. Today, the Port of Brookings contains slips for 671 boats and also has two transient boat docks. The Port of Brookings is an important commercial fishing harbor with over 5,000 annual visits by commercial fishing boats. The Port is also the busiest recreational port on the Oregon coast, with over 31,000 annual visits by recreational boats.

Much like the two previous projects that tied together FEMA's 404 and 406 mitigation programs to implement a complete mitigation solution for a damaged public facility, the Port of Brookings-Harbor incorporated this strategy to mitigate their facility from further distant tsunami and coastal storm wave surges. Although the project is just getting underway at the time of this state plan update, the mitigated facility will include a robust installation of new, stronger pilings and floating docks. A detailed benefit-cost analysis was performed, which is required by Federal rule for all physical projects, to validate that long-term, cost effective mitigation treatment for this facility.