



ORHUG - Geologic Hazards and Future Earthquake Damage and Loss Estimates

Full Mitigation Best Practice Story

Multiple Counties, Oregon

The State of Oregon - In an effort to become more resilient from natural hazards, communities in Oregon have begun a large-scale endeavor aimed at pre-disaster mitigation. Part of the success of this endeavor is due to the Partners for Disaster Resistance & Resilience: Oregon Showcase Initiative (or the Partnership). The Partnership provides a collaborative, cost-effective approach to bring together resources – both human and financial – to enhance disaster mitigation and preparedness statewide.



Oregon Department of Geology and Mineral Studies (DOGAMI) partnered with Oregon Emergency Management (OEM) and the Oregon Natural Hazards Workgroup (ONHW) at the University of Oregon to assist local communities with their Pre-Disaster Mitigation plans. As of April 2006, 18 of Oregon's 36 counties have FEMA-approved natural hazard mitigation plans.

The goal of the DOGAMI-ONHW-OEM partnership is to assist all remaining counties in the state to develop plans utilizing this approach by 2010. In order to assist these six counties in the development of their natural hazards mitigation plans, DOGAMI identified the primary geologic hazards, developed countywide earthquake and landslide hazard maps for each county, performed future earthquake damage and loss estimates, and performed overall project management.

The Community Service Center's Oregon Natural Hazards Workgroup (ONHW) at the University of Oregon facilitated the community plan development through hands-on trainings, applied research, and plan development support. The OEM managed the grant, performed general review of final plans, and was the lead communicator with FEMA.

The 2004-2005 Mid/Southern Willamette Valley project focused on enabling local communities to develop mitigation plans by increasing local capacity through a series of workshops, communication and outreach, and plan development and research support. The project communities included Yamhill, Marion, Polk, Benton, Linn, and

Lane Counties and the City of Albany (herein know as the "Mid/Southern Willamette Valley" communities).

DOGAMI took the lead on developing earthquake risk-assessment components for each of the participating ORHUG Geologic Hazards and Future Earthquake Damage Estimates communities. They utilized FEMA's HAZUS-MH loss estimation software to model two earthquake scenarios including local Crustal and Cascadia Subduction events.

With an improved HAZUS-MH study region, damage and loss estimates for two earthquake scenarios were modeled—resulting in expected total building damage on the order of \$11.7 billion for a Cascadia Subduction Zone event. The outputs of the scenarios were used by the communities to develop action items at reducing the risks posed by earthquakes.

DOGAMI has also spearheaded the development and passing of four new seismic bills in the State Legislature. The laws allow schools and communities to become better prepared for future earthquakes by providing long term, stable state funding to help the highest-risk schools and emergency facilities to conduct seismic rehabilitation.

The hazard maps and damage and loss estimates developed in this study can serve as a starting point for identifying problem areas that should be further evaluated through general highlight of areas of higher and lower concern. DOGAMI produced several products as part of this project, including:

1. GIS layers (maps) for each community, depicting:

- Liquefaction hazard areas
- Ground-shaking amplification hazards
- Earthquake-induced landslide hazards

- Identified landslide areas

2. Damage and loss estimates for each community for two

earthquake scenarios:

- A magnitude between 6.5-6.9 Crustal Fault earthquake
- A magnitude 9.0 Cascadia Subduction Zone earthquake

Grant funding was provided to DOGAMI by the Department of Homeland Security's FEMA Pre-Disaster Mitigation (PDM) competitive grant program, which provides funds to states, territories, Indian tribes, communities, colleges, and universities for pre-disaster mitigation planning and project efforts to raise the local level of resilience to natural hazards.

Activity/Project Location

Geographical Area: **Multiple Counties in a State**

FEMA Region: **Region X**

State: **Oregon**

County: **Benton County; Lane County; Linn County; Marion County; Polk County; Yamhill County**

Key Activity/Project Information

Sector: **Public**

Hazard Type: **Earthquake**

Activity/Project Type: **HAZUS-MH**

Activity/Project Start Date: **01/2004**

Activity/Project End Date: **Ongoing**

Funding Source: **State sources**

Activity/Project Economic Analysis

Cost: **Amount Not Available**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster? **Unknown**

Value Tested By Disaster? **Unknown**

Repetitive Loss Property? **Unknown**

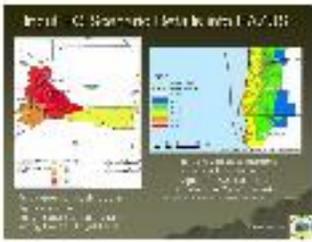
Reference URLs

Reference URL 1: <http://www.oregon.gov/OOHS/OEM/>

Reference URL 2: <http://www.oregonshowcase.org/onhw>

Main Points

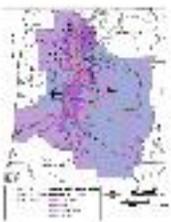
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A map of earthquake scenario details.



An example of a hazard map.



Another example of a hazard map.