



Earthquake Early Warning System for the West Coast

I. Issue/Opportunity:

The establishment of an early warning system in the Pacific Northwest **could help reduce risks associated with earthquakes**, including a Cascadia Subduction Zone earthquake. These game-changing systems use earthquake science and the technology of monitoring systems to alert devices and people when shaking waves generated by an earthquake are expected to arrive at their location. The seconds to minutes of advance warning can allow people and systems to take actions to protect life and property from destructive shaking [See box at right for specific examples.].

Other countries with a propensity for earthquakes, such as Japan, Mexico, China, and Turkey, have long since had early earthquake warning systems. **Japan's system**, implemented in 2007 and considered the best in the world, gave Tokyo residents a full minute to prepare for the heavy shaking caused by the **Tohoku magnitude-9.0 quake** that struck off Japan's coast in 2011. Unfortunately, these systems are often deployed after, rather than before, a devastating earthquake and loss of life.

Since 2006, the U.S. Geological Survey (USGS) has been working in collaboration with a number of partners, including universities, on an **earthquake early warning system (EEWS)**, known as ShakeAlert, and successfully launched a test system to a select group of users in California in 2012. Many improvements to the system have been made since then, and now even the **White House** is promoting its full development.

The **ShakeAlert** system is designed to cover the West Coast States of California, Oregon, and Washington. Officials estimate that it **would cost \$38.3 million to complete the early warning system and another \$16.1 million a year to operate and maintain** it. So far, Congress has contributed more than \$13 million and the Gordon and Betty Moore Foundation \$6.5 million towards ShakeAlert implementation. Closer to home, Oregon appropriated \$700,000 in 2015 to acquire 15 seismic instruments. Despite these efforts, **a considerable funding gap remains.**

WHAT WOULD YOU DO IF YOU HAD A FEW SECONDS TO A FEW MINUTES' WARNING?

- Slow and stop trains and taxiing planes;
- Prevent cars from entering bridges and tunnels;
- Move employees away from dangerous machines or chemicals in work environments;
- Tell employees and students to take cover under a desk, or even evacuate them from the building to a safe site;
- Automatically shut down and isolate industrial systems.
- Open firehouse garage doors.

Taking such actions before shaking starts can reduce damage and casualties during an earthquake. It can also prevent cascading failures in the aftermath of an event. For example, isolating utilities before shaking starts can reduce the number of fire initiations.

Source:
<http://www.shakealert.org>

When fully operational, ShakeAlert will be able to distribute alerts through all available distribution channels, including FEMA’s Wireless Emergency Alerts (WEA) and Integrated Public Alert and Warning System (IPAWS), smartphone apps (e.g., American Red Cross Earthquake App.), social media providers, and other electronic alert technologies as they develop. **“A crucial component of Oregon’s effort is the integration of a robust public-education program giving businesses, schools, critical facilities, and the public actionable information on how to respond to earthquake alerts.”** [Source, click on link: White House press release.]

II. THE RDPO’S POSITION ON THE WEST COAST SHAKEALERT PROJECT

The Regional Disaster Preparedness Organization (RDPO) is a bi-state partnership of local and regional government agencies, non-governmental organizations, and private-sector stakeholders representing the Portland metropolitan region (PMR) collaborating to increase the region’s resiliency to disasters. Recognizing the value of ShakeAlert as a game-changing tool to help save lives, reduce injuries and mitigate some government and business disruptions, RDPO partners encourage full funding of the ShakeAlert system and stand committed to working collaboratively on the development and implementation of consistent messaging to educate the region’s 2.2 million population on protective and preventative actions that can be taken if warned of an imminent earthquake.

Adopted by the RDPO Policy Committee, September 30, 2016

The following jurisdictions voted in favor of the position:

Clark County	Clackamas County	Columbia County
Multnomah County	Washington County	City of Fairview
City of Gresham	City of Portland	City of Troutdale
City of Vancouver	Metro Regional Government	Port of Portland
TriMet		

Select RDPO Member Comments:

“Clark County, WA, supports the continuing development of the Earthquake Early Warning (EEW) System. In addition, Clark County, WA, notes that the EEW System is only part of our regular regional resilience and does not replace the need for continued development of comprehensive programs for advance planning, preparation, and the implementation of all-hazards resilience education, including earthquake preparedness in our communities.”

“The Community education component is a critical component of ShakeAlert.” – City of Gresham

III. Potential Supporters/Partners

- Governor Kate Brown and Mike Harryman, Oregon’s new Resilience Officer
- Oregon Senators Ron Wyden and Jeff Merkley
- Oregon Office of Emergency Management (OEM)
- League of Oregon Cities and Association of Oregon Counties
- **Intel Corporation (private sector/industry member of the RDPO Steering Committee):** “Intel views ShakeAlert as a key part of its Crisis Management program, and has pledged to lead efforts to bring the high-technology community to the table to support it.” – Tripp Robinson, Intel’s Emergency Manager
- **American Red Cross (NGO sector member of the RDPO Steering Committee):** “The Red Cross will have a critical role, leading both preparedness/education and responding to a West Coast and especially Cascadia Subduction Zone seismic event. The Red Cross is committed to integrating WCEEW into their widely adopted Earthquake app (IOS/Android) and public training.” – FEMA
- Cascadia Region Earthquake Work Group (CREW)
- U.S. Geological Survey [Note: the USGS will develop and operate the system, and issue public EEW system notifications under collaborative authorities with FEMA, as part of the National Earthquake Hazard Reduction Program, as enacted by the Earthquake Hazards Reduction Act of 1977, 42 U.S.C. §§ 7704 SEC. 2.]
- Oregon Department of Geology and Mineral Industries (DOGAMI)
- Oregon Department of Transportation (ODOT)
- **TriMet** (RDPO contributing member; representatives on Program, Steering and Policy Committees)
- Portland General Electric, Pacific Power and Northwest Natural (RDPO participants)
- Burlington Northern Santa Fe (BNSF)

IV. Potential Opponents

- None identified in relation to the EEW concept. Point of contention could be on costs both to bring system online and to maintain.

V. Proposed RDPO Policy Committee Advocacy and Other Actions

- **State-level Advocacy, Fall-Winter 2016:** include West Coast Earthquake Early Warning System in one-on-one with Oregon Governor Brown and Oregon Resilience Officer Harryman. Applaud Governor Brown on her commitment to increasing Oregon’s seismic readiness, including directing the new Resilience Officer to prominently feature earthquake early warning in the state resilience planning efforts as one of his first orders of business. Share RDPO partners’ commitment to collaborating with OEM on the development of a robust public-education program giving businesses, schools, critical facilities, and the public actionable information on how to respond to earthquake alerts.
- **Federal-level actions (Fall 2016):** Inform Oregon and Washington State Congressional Delegations of the RDPO’s EEWS position/commitment (letter and/or one-on-one).

- **Internal (RDPO) Strategic Planning, Fall 2016:** As part of RDPO strategic planning and program development processes, the RDPO Steering Committee will begin to consider the direction and level of support its current Regional Preparedness Messaging Task Force will need to operationalize a regional EEW public messaging program over the next five-year strategic period.

VI. To Learn More about EEW/ShakeAlert

- <http://earthquake.usgs.gov/research/earlywarning/>
- <http://www.shakealert.org/>
- <https://www.whitehouse.gov/the-press-office/2016/02/02/fact-sheet-obama-administration-announces-steps-increase-nations>