West Coast Earthquake Early Warning: Time to Act

Washington Emergency Management Council
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Bill Steele, University of Washington
Director of Communication and Outreach
The Pacific Northwest Seismic Network

wsteele@uw.edu
USGS Support Increases to help bridge the gap

**ShakeAlert Phase 6 Completed:**
- 67 station upgrades
  - (52 in Washington)
- 30 New Stations - 10 in Washington
  - (OR DOGAMI Funding)

**Phase 7:**
- 104 New Stations in WA
- 44 in Oregon

**Plus Research and Outreach**

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*USGS Support for PNSN UW ShakeAlert 2012-2021*

USGS funding to the UW for the ShakeAlert earthquake early warning system has grown from tens of thousands per year in 2012 to the newly announced two-year, $7.3 million agreement starting in 2019.

*Credit: University of Washington/Pacific Northwest Seismic Network*
Washington State Funding for ShakeAlert

Support for new FTE for ShakeAlert Education and Training at Washington Emergency Management Division

500k per year for 2 years for seismic network build out
ShakeAlert 2.0 released last year

Now includes Ground Motion Prediction Maps

New User Display

Public alerting in LA County

Public Alerting in all CA beginning In October based on MyShake App UC Berkeley.
Sample PNW ShakeAlert Testers

Private Sector:
- Alaska Airlines
- The Boeing Company
- Intel Corporation
- Microsoft
- PACCAR Inc
- British Petroleum
- Puget Sound Energy
- Beta Tester for OSH
- Providence Health & Services

Local Government:
- Portland Bureau of Emergency Management
- City of Seattle Office of Emergency Management
- Seattle Public Utilities (Water, Sewer, Garbage, Networks)
- Seattle City Light
- Port of Seattle
- Sound Transit
- OSPI for development in Public School Districts

State and Provincial Government
- Emergency Management of British Columbia
- Oregon DOGAMI
- Oregon DOT
- UW, UO, CWU UUW (Inc. Medical Centers, Trauma Center)
- Washington DNR, EMD
- Washington DOT

Federal Government:
- Bonneville Power Administration
- FEMA Region X
- Ocean Networks Canada
- Natural Resources Canada
- NOAA/PMEL
- Naval Air Station Whidbey Island
- USGS

Utilities
- 15 Water and Sewer Districts
- Puget Sound Energy
- Eugene Water Electric Board

NGOs:
- North West Healthcare Response Network
- Cascadia Region Earthquake Workgroup

Our research partners:
- Hawaiian Volcano Observatory
- Central Washington University
- Caltech
- University of Oregon
- Berkeley Seismology Laboratory
- USGS
- Early Warning Labs
2018 ShakeAlert Pilot Projects

Pilot Project Criteria

- No public alerting
- Users must be trained
- Actions only within pilot organization
- Must be tolerant of errors
- No potential for injury, damage or loss
- Must be testable
- Must commit organizational resources to complete and sustain the project
- Should have potential for broader application

Pilot Process

1. Develop pilot idea
2. Identify pilot user
3. Identify pilot partners
4. Discuss with local ShakeAlert POC
5. Fill out pilot application
6. Get project approval
7. Sign license agreements or TAA
8. Do the implementation
9. Evaluate success
What Factors Contribute to School Safety?

• The Plan: Planning and Training Faculty, Staff, & Students
• The Building: Structural Retrofits or modern code standards
• The Classroom and contents: Non-Structural Hazard Mitigation – Annual Effort
• Education and Practice: Training Students and exercising personal protection actions

New opportunity with ShakeAlert:
• Communication of impending hazard
• Others’ loss reduction actions?

2019-2020 School Pilot Projects
Training produces correct responses
Cedars-Sinai Hospital

Phase 1: Audible alerts:
Radio Notification - Security and facilities
ShakeAlert provided to hospital and nursing stations.
Future implementations will include:

**Mechanical:**
- Elevator Recall
- Hazardous chemical isolation
- Radiation therapy machines – put into safe mode
- Vehicle gates
- Door locks

Operating room notifications - Visual
Lab Technician Notifications – Visual
Other Medical Pilots in the works:
Pilot Project Priorities

Schools
Utilities
Emergency Management
Hospitals
Large Private Sector Firms

Commercial Dev. Partners

Public Alerting Capability