The Oregon Experience: Changing Awareness, Policy & Legislation

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Oregon’s Hazards & Risk
- Cascadia Subduction Zone Fault
- >20 pre-historic quakes
- January 26, 1700 (~Magnitude 9)
- 1993 seismic provisions in code
- Significant Risk in W. Oregon
- 1,000 high risk school buildings

Factors in Oregon’s Successes
- 1998 Cascadia M8.5 Statewide Scenario
- In 1999, State Geologist Don Hull
  - User friendly report (SP29)
  - Media tour & Legislative awareness
- 1999 Senator Peter Courtney
  - State Policy Commission member (OSSPAC)
  - Focus safe schools & emergency facilities, incl. ballot measures, & private sector drills

Oregon’s First Scenario 1998
- Landmark Statewide Scenario (HAZUS97)
  - Heightened Awareness, Policy & Legislation
  - Est. Damage from M8.5 & probabilistic hazards

Conclusion: Smarter Scenarios
- Run Local Scenarios after major world disasters
  - Tool to Heighten Awareness, Policy & Legislation
  - E.g., School scenario after China’s 5/12/08 quake with 10,000 student fatalities. Oregon Scenario

Credit: K. Miyamoto
Oregon's Pre-Scenarios Days
- 1989 Loma Prieta Quake: wake up call
- Cascadia Subduction Zone
- 1990 State Policy Commission (EO)
- 1991 school drills
- DOGAMI Earthquake Hazard Maps:
  Soil Amplification, Liquefaction, EQ-
  Landslide, Tsunami
- 1996 OSSC Western Oregon UBC Zone 3
- 1993 Spring Break Quake (damage to Capitol)
- 1993 Klamath Falls Quakes
- 1995 Legislation
  Tsunami drills in schools
  Statewide Coastal Tsunami Maps
  Certain new buildings outside tsunami zone
- 1997 Failed Legislation (HB2139)
- State Geologist Don Hull
  “Most important work by DOGAMI ever”
  *driven by “well positioned” champion*
  Institutionalized/DOGAMI support
  Damage & loss numbers shocking- human side
  Focused Media Tour
  Highlighted to Legislature

Oregon's First Scenario 1998
- Heightened Awareness, Policy & Legislation
- Sen. Peter Courtney, Champion
  OSSPAC State Policy Commission
  aka “Earthquake Kid”, “Number 9”
- Paved way for 2001 Legislation
  School safety by 2032 (Law: ORS 455.400)
  Emergency facility safety by 2022
  Earthquake Drills by large employers
  2002 Ballot Measures to allow $2 Bil. state bonds

2005 Senate Bills 2, 3, 4 and 5 (Sen. Prez. Peter Courtney)
- SB 2 (2005): STATEWIDE SEISMIC NEEDS ASSESSMENT
  July 2005-June 2007
- SB 3 (2005): SEISMIC REHABILITATION GRANT PROGRAMS
  July 2007-
- SB 4 (2005):
  SEISMIC REHABILITATION Article X-M Bonds Public Education
  Buildings July 2007 – Jan 2032
  State Treasurer/DAS
- SB 5 (2005):
  SEISMIC REHABILITATION Article X-N Bonds Emergency Services
  Buildings July 2007 - Jan 2022
  State Treasurer/DAS

NOTE: SB4 INCLUDES UNIVERSITY SYSTEM BUILDINGS
Oregon’s First Scenario

- Led to Risk Reduction
- By 2005, Universities institutionalized risk management program
- 2007 DOGAMI statewide report (3,300 bldings)
- 2009 “Courtney” grant program for schools & emergency facilities

From -1.5 to -1
From -0.9 to -0.5
From -0.4 to 0
From 0.1 to 0.5
From 0.6 to 1.0
From 1.1 to 1.5
From 1.6 to 2.0
From 2.1 to 2.5
From 2.6 to 3.0
From 3.1 to 3.5
From 3.6 to 4.0
From 4.1 to 4.5
From 4.6 to 5.0
From 5.1 to 5.5
From 5.6 to 6.0
From 6.1 to 6.8

FEMA 154 (RVS) Score Ranges

RVS scores for Schools

Oregon’s Regional Scenarios

- Regional scenarios (city, counties, multiple counties) (HAZUS99/MH)
- >50% of counties completed
- Local empowerment with mixed success
  - Mid Willamette Valley (2008) w/Partners for 6 counties

Do Homework Before Run Scenario

- Define audience & purpose
- Consider scale & complexity
- Examples:
  - Policy or Education– keep simple & clear
  - City or University- good data & involve GIS staff

Univ. of Oregon Example

- building vulnerability due to Cascadia quake

End Goal: Risk Reduction

- $$$, competing priorities, low public demand
- Laws with timelines & funds
- Institutionalized mitigation programs
- Government or non-profit as responsible party
- Factors: “well positioned” champions, media, scenarios (or not)
- Current disasters attract media

Risk = probability of hazard + vulnerability + consequence

Source: UO plan 2006

Source: DOGAMI O-07-02

Source: DOGAMI #O-05-05

Source: DOGAMI O-07-02
2007 Winter Storm
Shaking Damage vs Rain area

Smarter Scenarios...
- Leverage media from quake disasters
- Run local scenario of 5/12/08 Sichuan quake on schools

Photo Credit: K. Miyamoto

Yuan Wentin, 26, first grade teacher
Saved many students, then building collapsed on her

"Duck, Cover & Hold" does not work if building collapses

2185 school buildings surveyed (2007)
- 745 High
- 591 Moderate
- 69 Low