



Seattle Fault Earthquake Scenario

Conference

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Earthquake Engineering
Research Institute



Business Impacts

Jack Meszaros, PhD

University of Washington, Bothell
and the National Science
Foundation

Contributors

- Dr. Jacqueline Meszaros, Ph.D.**
 - U.W., Bothell and National Science Foundation
- Dr. Stephanie Chang, Ph.D.
 - University of British Columbia
- Bob Freitag
 - Cascadia Region Earthquake Workgroup
- Mark Pierepiekarz, P.E., S.E.
 - MRP Engineering and Structural Engineers Association of Washington
- Mark Stewart
 - Washington State Emergency Management Division

** - Team Leader



Intent of Chapter

- Overall business/economy effects:
Lessons from other quakes
- Preparing: Vivid scenarios for some highly vulnerable spots
- Preparing: Business' priority concerns



Lessons from Past EQs: Nisqually

1949 Olympia

M 6.8, 33 mi deep

\$0.2 billion

2001 Nisqually

M 6.8, 36 mi deep

\$2-4 billion

??? Seattle Fault

M 6.7, Shallow

\$33 billion

Nisqually most damaged businesses:

- Poor soil
- Older, unretrofit buildings

Nisqually's most vulnerable businesses:

- Marginal or leveraged
- Long traffic disruptions



Lessons from Past EQs: Northridge

2001 Nisqually
M 6.8, 36 mi deep \$2-4 billion

1994 Northridge
M 6.7, 10 mi deep \$40 billion

??? Seattle Fault
M 6.7, Shallow \$33 billion

Insured losses \$12.5 b = \$1300/person in LA County

Northridge's most vulnerable businesses:
small businesses in areas with lots of damage,
particularly lifeline damage



Lessons from Past Disasters: Kobe

1994 Northridge

M 6.7, 10 mi deep

\$ 40 billion

1995 Kobe

M 6.9, 8.7 mi deep

\$100 billion

??? Seattle Fault

M 6.7, Shallow

\$ 33 billion

Business disruption widespread due to lifeline failure and overall destruction/debris

Business disruption losses \$100 billion

Port of Kobe never recovered competitiveness



3 Specimen Neighborhoods Issaquah, Renton, Pioneer Sq.

- Ist-order challenges
 - People
 - Building
 - Contents
 - Lifelines
- 2nd-order challenges
 - Employee disruption
 - Downstream disruption
 - Upstream disruption
 - Neighbors



3 Specimen Neighborhoods

Issaquah, 1970s era shopping center

1st-order

- Buildings stand but damaged; roads OK
- Phones and traffic lights out
- Employees/customers want to leave
- Closed for days for inspection, lifelines

2nd-order

- Slow repair, competitive disadvantage
- Small businesses most vulnerable



3 Specimen Neighborhoods

Old Downtown Renton

1st-order

- Collapse of old, unretrofit buildings
- Lives lost; many buildings seriously damaged

2nd-order

- Debris and damage persist
- Few merchants have funds to recover/rebuild
- Historic downtown in danger



3 Specimen Neighborhoods

Seattle, Pioneer Square

1st-order

- Some collapse but most retrofit buildings will stand
- Terrifying shake and building noise
- Tons of contents damage
- Alaska Way viaduct partial collapses

2nd-order

- 2/3 buildings and roads closed for months for repair
- Far more expensive to restore than to rebuild
- Historic and cultural qualities will not be recovered



Priority Business Concerns

- People.
- Loss of power.
- Surface transportation.
- Communication with customers.
- Physical loss.
- Just-in-time inventories.
- Permanent loss of business.



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