



# Seattle Fault Earthquake Scenario

Conference

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Earthquake Engineering  
Research Institute



# Business Impacts

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# Contributors

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- Mark Stewart
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# 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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