



# Seattle Fault Earthquake Scenario

Conference

February 28, 2005



Earthquake Engineering  
Research Institute

# Community Impacts, Response and Recovery

Mark Stewart

Washington State Emergency  
Management Division



# Section Contributors

- Mark Stewart\*\*
  - Washington State Emergency Management
- Barb Graff
  - Bellevue Emergency Preparedness Division
- Inés Pearce
  - Seattle Office of Emergency Management and Cascadia Region Earthquake Workgroup
- Erika Lund
  - Seattle Office of Emergency Management

\*\* - Team Leader



# Scenario Earthquake Losses

- Property damage and economic loss – About \$33 billion.
- Deaths – More than 1,600.
- Injuries – More than 24,000.
- Buildings destroyed – About 9,700.
- Buildings severely damaged and unsafe to occupy – More than 29,000.
- Buildings moderately damaged whose use is restricted – About 154,500.
- Fires – About 130, damaging nearly a half-billion dollars in property.



# Property, Business Losses

Total loss: \$33 Billion.

- Building loss - \$22.3 Billion.
  - *Estimated costs to repair or replace damage to buildings, contents, inventories.*
- Income loss - \$3.8 Billion.
  - *Losses associated with inability to operate a business.*
- Transportation loss - \$5.5 Billion.
  - *Estimated repair costs, excluding specialty structures, i.e., AW Viaduct, floating bridges.*
- Utility System loss - \$1.4 Billion.
  - *Estimated repair costs for communication, gas, liquid fuel, potable and waste water systems.*



# Key Response Issues

- First responders will be overwhelmed in initial hours.
- Damage to transport systems makes movement of people, freight difficult for months.
- Demand for emergency shelter, food, water will strain community resources.
- Disruptions to transport, lifeline systems complicates community recovery.
  - *Key to recovery: Speed at which repairs are made to region's transportation systems.*



# Local First Response Issues

- Movement around region difficult.
- Communication systems jammed.
- Response will be prioritized.
- Emergency medical standard of care adjusted.
- Urban search and rescue.
- Lack of water inhibits firefighting.
- Hazardous materials, wastewater spills.



# Transportation impacts

- Port to Port study:
  - Segments closed months to years.
  - Commerce movement difficult.
- Transport damage & Business disruption
  - Northridge EQ, Great Midwest Flood – Transport disruption as costly as facility damage.
  - Kobe – Transport, port damage slowed economic recovery of region.



# Demand for shelter, food, water

- Shelter space difficult to come by.
  - Many schools, community facilities unavailable due to damage.
- Displaced householders.
  - More than 10,000 need emergency shelter.
- Stranded commuters.
  - 250,000 cross county lines daily.
- Vulnerable populations.
  - School children, disabled, senior citizens.
- Non-English speaking people.
  - Fault ruptures through International District.



# State Response

- Response targeted to help impacted local jurisdictions:
  - Inspect state highways, make repairs, establish detours.
  - Clean up hazardous materials spills.
  - Provide food, water, beds for shelters.
  - Assist with law enforcement, transportation.
  - Governor's Proclamation of Emergency.
  - Seek federal assistance, administer federal recovery programs.
  - Seek help from other states.
- Recovery & Restoration Task Force coordinates recovery, mitigation efforts.



# Individual Impacts

- Thousands displaced from homes.
- Post Disaster Stress:
  - Property losses.
  - Personal, financial losses.
  - Life disruptions.
  - Social disruptions.
- Economic assistance:
  - About 10 percent have EQ insurance.
  - Government disaster assistance limited.
- Those with fewer social, economic resources will have most difficulty.
  - Many may relocate outside the area.



# Community Challenges

- 85% of buildings at least moderately damaged are residential.
- Debris disposal - 9 million tons.
- Economic revitalization:
  - Rebuilding, redeveloping.
  - Maintaining business viability.
- Restoring damaged transportation systems.
- Restoring historic resources.
- Land-use – critical areas designations.





# Seattle Fault Earthquake Scenario

Conference

February 28, 2005



Earthquake Engineering  
Research Institute