



Seismic Resilient University of Washington

Briefing for the City of Seattle

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Seismic Resilient University of Washington



A Vibrant 24/7 Public Neighborhood

- ~300 buildings built over 120 years
- Better than average seismic resistance due to a 25-year mitigation investment program
- New EOC with emergency response and business continuity plans in place
- Response plans carefully coordinated with the City of Seattle OEM
- Now looking forward to recovery planning

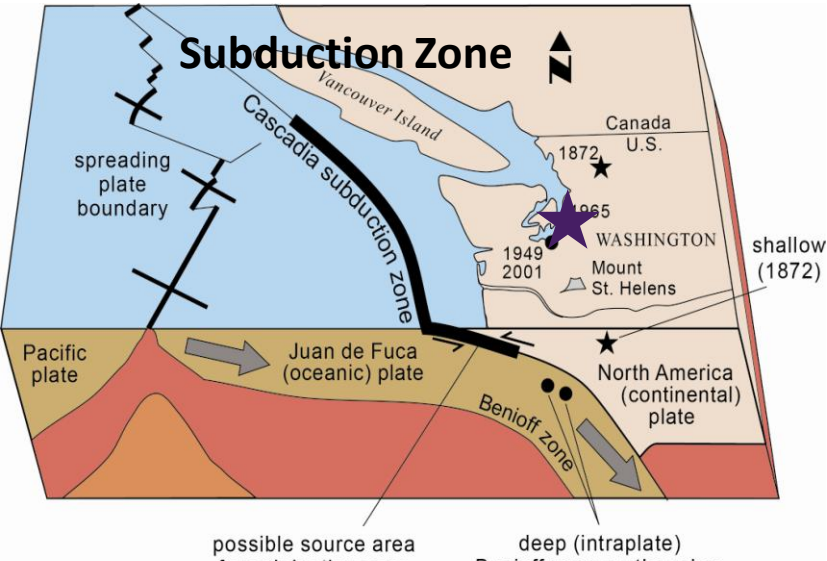
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Integrated and Comprehensive

- Existing and new resilient infrastructure and building systems to **respond to and recover** from expected seismic event
- Continued **prioritization of emergency response and recovery planning**
- Integration with UW **financial and environmental sustainability goals**
- Identification of capital **investment strategies** – state, federal, local sources
- Implementation based on key measures and **targeted UW resilience outcomes**

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Pacific Northwest Seismicity

Expected Event: 475 year event

Reasonably expected to occur once during the useful life of a structure or system

M 6.7 Deep Interplate Earthquake

M 6.5 Seattle Fault Earthquake



Extreme Event: 2500 year event

Largest expected to occur on a nearby fault

M 7.0 Seattle Fault Earthquake

M 9.0 Cascadia Subduction Zone Earthquake

UW Building “Clusters” for Resilient Planning Purposes

Research Laboratories

Research facilities that depend on a specially conditioned environment

Essential Facilities

EOC, police and fire stations, hospital, shelters, temporary admin quarters, and central plant

IT Facilities and Networks

Offices, data centers, distributed hubs, and infrastructure to support connectivity

Instructional Facilities

Classrooms, auditoriums, faculty offices, teaching laboratories, and sports facilities

Housing

Residential complexes that include dining facilities

Administrative Offices

Offices of the President, Provost, Vice Presidents, Vice provosts and related staff

UW “Expected” and “Extreme” Earthquake Goals

“Expected” Earthquake Goal

Major injuries and life loss is limited to incidental occurrences.

Recovery actions initiated within 3 weeks

University restored so that no more than one quarter of instruction lost.

- **Research** experiments are protected
- **Essential Facilities** remain fully operational
- **IT systems** are restored within 24 hours to full operational capability
- **Instruction** completes quarter using distance learning
- **Housing** can be repaired in time to reopen by the end of the lost quarter
- **Administrative Functions** supporting operations restart within one week

UW “Expected” and “Extreme” Earthquake Goals

“Extreme” Earthquake Goal

Major injuries and life loss is limited to incidental occurrences

Lifeline systems restored to support recovery efforts within two weeks

- Long term research experiments are protected
- Emergency response functions managed from remote-temporary locations
- Recovery planning depends on regional conditions, available financing, and involves a balance of temporary facilities and restoration as possible

Expected Performance Criteria – UW Buildings and Infrastructure

- **Performance goals** will be assigned for all buildings based on cluster
 - A Safe and Fully Operational
 - B Safe and usable during repairs
 - C Safe and usable within days
 - D Safe and usable within weeks
 - E Safe and usable within months
 - F Unsafe due to falling hazards and partial collapse
 - G Exceptionally High Risk, subject to collapse in a moderate earthquake
- **New facilities and utilities** will be designed and constructed to meet the appropriate performance goal
- **Existing facilities and utilities** that do not meet the appropriate performance goal will be rehabilitated under the following four distinct programs

Developing and Implementing Four Priorities

Program No. 1: Mitigate Exceptionally High Risk Buildings

URM, Non-ductile Concrete

Program No. 2: Non-Structural Retrofit Program

Egress Safety Program

Equipment Anchorage Program

Contents Bracing and Protection Program

Program No. 3: Structural Retrofit Program

Repurpose, retrofit, replace, or reclassify

Program No. 4: Lifeline Improvement Program

Develop contingency plans

Remove the impediments to restoration

Retrofitting existing facilities and systems

Add redundancies

Next Tasks

A University of Washington Workgroup to develop the UW-approved implementation plan over the next 12 months based on the following tasks:

1. Define expected and extreme seismic events
2. Define human capital needed to support response and recovery
3. Update and rate current building and lifeline performance conditions
4. Determine critical vulnerabilities of infrastructure lifelines serving the campus
5. Review and confirm cluster definitions
6. Review and refine goals for expected and extreme earthquakes
7. Recognize potential needs and plan for people from Seattle neighborhoods seeking assistance
8. Finalize prioritized programs and integrate within UW financial plans
9. Collaborate with City of Seattle



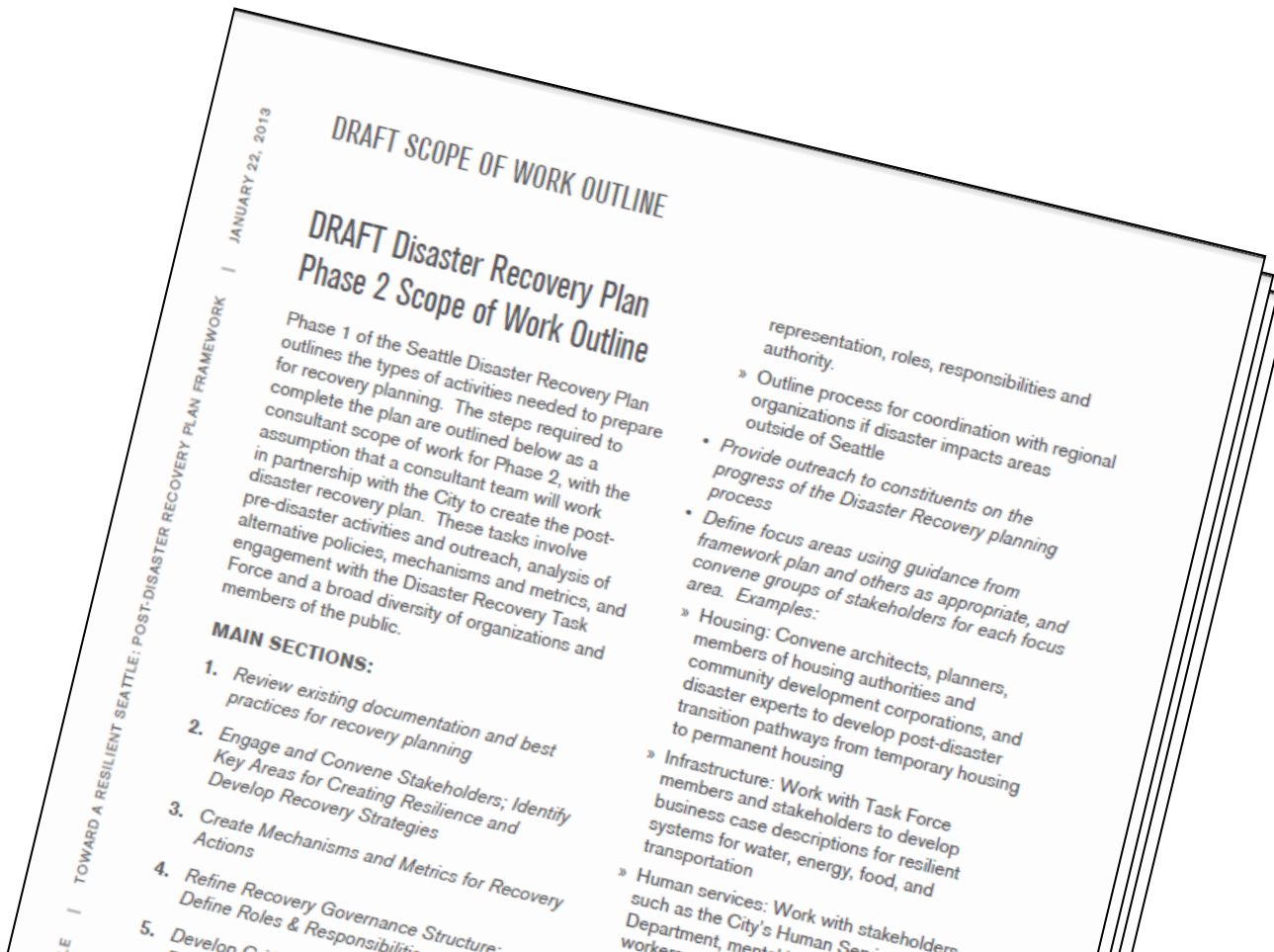
Opportunities for Collaboration: University of Washington and City of Seattle

Steve Moddemeyer
Principal
CollinsWoerman



Opportunities for Collaboration

Opportunities to collaborate in next phase of Seattle's Pre-Disaster Recovery Plan:



Opportunities for Collaboration

Opportunities to collaborate in next phase of Seattle's Pre-Disaster Recovery Plan:

1. Disaster Recovery Task Force
2. Messaging on pre-disaster recovery planning and post-disaster recovery
3. Strategy to ease transition from temporary to permanent housing
4. Defining and designing resilient infrastructure for water, energy, food and transportation
5. Strategies for vulnerable populations
6. Critical roles for school facilities and childcare
7. Innovative financing mechanisms for small business and others
8. Metrics and mechanisms for recovery
9. Recovery training curricula
10. Neighborhood planning and utility planning
11. City-wide capital planning for disaster recovery

Thank you!

