Resilient Washington State (RWS) Initiative

Subcommittee Members:

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History and Inspiration

- San Francisco Planning and Urban Research Institute (SPUR) Resilient City Project.
- 2009 WA SSC formed the Resilient Washington State (RWS) Subcommittee.
- Common goal of achieving earthquake resilience in Washington State

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- Four Major Policy Sections - Defining Resilience, The Dilemma of Existing Buildings, Building it Right the First Time, and Lifelines.
- Resilience - Ability to recover – govern, lifelines to resume in short time frame, people stay in homes, resume normal living routine in weeks and return to new “normal” in few years.

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TABLE 1: RECOVERY OBJECTIVES BY TIMEFRAME

PHASE	TIMEFRAME	CONDITION OF THE BUILT ENVIRONMENT
1	1 to 7 days	Initial response and staging for reconstruction
	Immediate	Mayor proclaims a local emergency and the City activates its Emergency Operations Center. Hospitals, police stations, fire stations, and City department operations centers are operational.
	Within 4 hours	People who leave or return to the city in order to get home are able to do so. Lifeline systems that support critical response facilities are operational.
	Within 24 hours	Emergency response workers are able to activate and their operations are fully mobilized. Hotels designated to house emergency response workers are safe and usable. Shelters are open. All occupied households are inspected by their occupants, and less than 5 percent of all dwelling units are found unsafe to be occupied. Residents can shelter in place[1] in superficially damaged buildings even if utility services are not functioning.
	Within 72 hours	Ninety percent of the utility systems (power, water, wastewater, natural gas and communication systems) are operational and serving the facilities supporting emergency operations and neighborhoods. Ninety percent of the major transportation system routes, including Bay crossings and airports, are open at least for emergency response. The initial recovery and reconstruction efforts will be focused on repairing residences and schools to a usable condition, and providing the utilities they need to function. Essential City services are fully restored.
2	30 to 60 days	Housing restored — ongoing social needs met
	Within 30 days	All utility systems and transportation routes serving neighborhoods are restored to 95 percent of pre-event service levels, public transportation is running at 90 percent capacity, public schools are open and in session. Ninety percent of the neighborhood businesses are open and serving the workforce. Reconstruction efforts will be focused on repairing residences, schools and medical provider offices to a usable condition, and providing the utilities they need to function. Essential City services are fully restored and medical provider offices are usable..
	Within 60 days	Airports are open for general use, public transportation is running at 95 percent capacity, minor transportation routes are repaired and reopened.
3	Several years	Long-term reconstruction
	Within 4 months	Temporary shelters are closed, with all displaced households returned home or permanently relocated. Ninety-five percent of the community retail services are reopened. Fifty percent of the non-workforce support businesses are reopened.
	Within 3 years	All business operations, including all City services not related to emergency response or reconstruction, are restored to pre-earthquake levels.

Source: SPUR analysis

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TARGET STATES OF RECOVERY FOR SAN FRANCISCO'S BUILDINGS AND INFRASTRUCTURE

INFRASTRUCTURE CLUSTER FACILITIES	Event occurs	Phase 1 Hours			Phase 2 Days		Phase 3 Months		
		4	24	72	30	60	4	36	36+
CRITICAL RESPONSE FACILITIES AND SUPPORT SYSTEMS									
Hospitals								X	
Police and fire stations			X						
Emergency Operations Center									
Related utilities						X			
Roads and ports for emergency				X					
CalTrain for emergency traffic					X				
Airport for emergency traffic				X					
EMERGENCY HOUSING AND SUPPORT SYSTEMS									
95% residence shelter-in-place								X	
Emergency responder housing				X					
Public shelters							X		
90% related utilities								X	
90% roads, port facilities and public transit							X		
90% Muni and BART capacity						X			
HOUSING AND NEIGBORHOOD INFRASTRUCTURE									
Essential city service facilities							X		
Schools							X		
Medical provider offices								X	
90% neighborhood retail services									X
95% of all utilities								X	
90% roads and highways						X			
90% transit						X			
90% railroads							X		
Airport for commercial traffic					X				
95% transit							X		
COMMUNITY RECOVERY									
All residences repaired, replaced or relocated									X
95% neighboorhood retail businesses open								X	
50% offices and workplaces open									X
Non-emergency city service facilities								X	
All businesses open									X
100% utilities									X
100% roads and highways									X
100% travel									X

Source: SPUR analysis

TARGET STATES OF RECOVERY

Performance measure	Description of usability after expected event	BUILDINGS	LIFELINES
	Category A: Safe and operational		
	Category B: Safe and usable during repairs	100% restored in 4 hours	
	Category C: Safe and usable after moderate repairs	100% restored in 4 months	
X	Expected current status		

Note: Categories A–D are defined on page 10.

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TABLE 1: TARGET STATES OF POST-EARTHQUAKE RECOVERY FOR NEW AND EXISTING BUILDINGS, COMPARED TO THE CURRENT SITUATION

SERVICE	WHEN RESTORED								
	4 hrs	12 hrs	24 hrs	72 hrs	30 days	60 days	4 mos	36 mos	36+ mos
85% of residents back in their homes	N		E					X	
95% of residents back in their homes		N	O		E			X	
100% of residents back in their homes					N		O E		X
Medical provider offices		N			O	E		X	
Schools back in operation		N			O E		X		
90% of neighborhood retail services		N			O	E			X
50% of offices and workplaces back in operation	N						O	E	X
95% of neighborhood retail services		N					O E	X	
All businesses open						N		O E	X

Source: SPUR analysis

The overall seismic performance targets for buildings result from the combination of performance targets for new and existing buildings. In all cases, SPUR's overall performance targets require a substantial improvement in seismic performance compared to the current situation.

Targets and estimates of recovery are for the "expected" level of earthquake ground motion.

- O — Overall goal
- N — Goal for new buildings
- E — Goal for existing buildings
- X — Current situation

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RWS Definition of Resilient State

- A resilient state is one that maintains services and livelihoods after an earthquake. In the event that services and livelihoods are disrupted, recovery occurs rapidly with minimal social disruption and results in a new and better condition.

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RWS Values to Achieve Resilience

- Property Protection – Public and private property within the State of Washington should be built, retrofitted, or rebuilt to minimize earthquake-induced damage. This includes proper design and construction of both structural and non-structural elements.

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RWS Values to Achieve Resilience

- Economic Security – Residents and businesses within the State of Washington should have access to income opportunities to meet basic needs before and soon after an earthquake. This includes sufficient employment opportunities, market access, distribution capacity, and supplier access.

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RWS Values to Achieve Resilience

- Environmental Protection – The natural resources and ecosystems of Washington State should be managed in such a way as to minimize earthquake-induced damage. This includes the use of proper growth management, accident response capacity, and industrial safety measures.

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RWS Values to Achieve Resilience

- Life Safety and Human Health – Residents of the State of Washington should not suffer life-threatening injuries from earthquake-induced damage or develop serious illness from lack of emergency medical care after and earthquake. This includes enforcing and updating building codes, eliminating non-structural hazards, and ensuring continuity of emergency heath care.

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RWS Values to Achieve Resilience

- Community Continuity – All communities within the State of Washington should have the capacity to maintain their social networks and livelihoods after an earthquake disaster. This includes prevention of social-network disruption, social discrimination, and community bias.

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Goals and Long Term Outcomes

- Action and progress.
- 50 year time frame to achieve resilience.

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Future Opportunities to Contribute

- Continue with workgroups – will need leaders.
- Future workshop in Spring 2011.

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