

Moving Beyond Response to Recovery

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Outline

- One possible Scenario – M 7.9 San Andreas and its consequences;
- Concept of resilience and recovery;
- A 90 day scenario;
- Planning for recovery; and
- Recommendations for ABAG members.

Earthquake Scenario

Magnitude 7.9 on San Andreas Fault

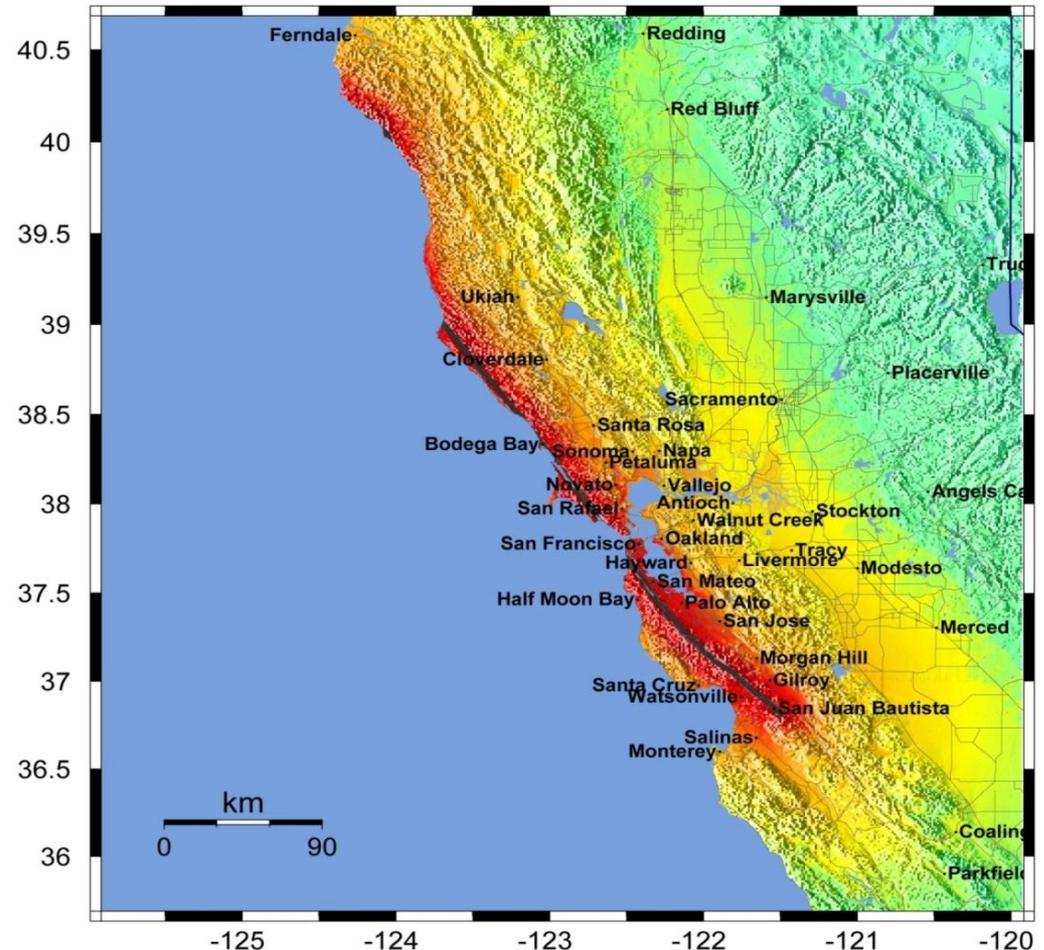
100's deaths

1000's injuries

70,000+ buildings unusable

200,000 displaced households

no utilities for weeks



ShakeMap, California Integrated Seismic Network

Earthquake Scenario

Magnitude 7.3 on Hayward Fault



ShakeMap, California Integrated Seismic Network

Consequences for Communities



Paso Robles 2003

Northridge 1994



Regional Consequences

- Transportation utility system damage
- Regional housing and job losses
- Relocating families to move jobs and commerce



Economic Impacts

- \$122B ± 50% for repairs
 - \$67B for residential damage
 - \$40B for non residential damage
- 500 to 600 fires will cause additional damage
- Infrastructure losses
- Local government losses
- Business interruption

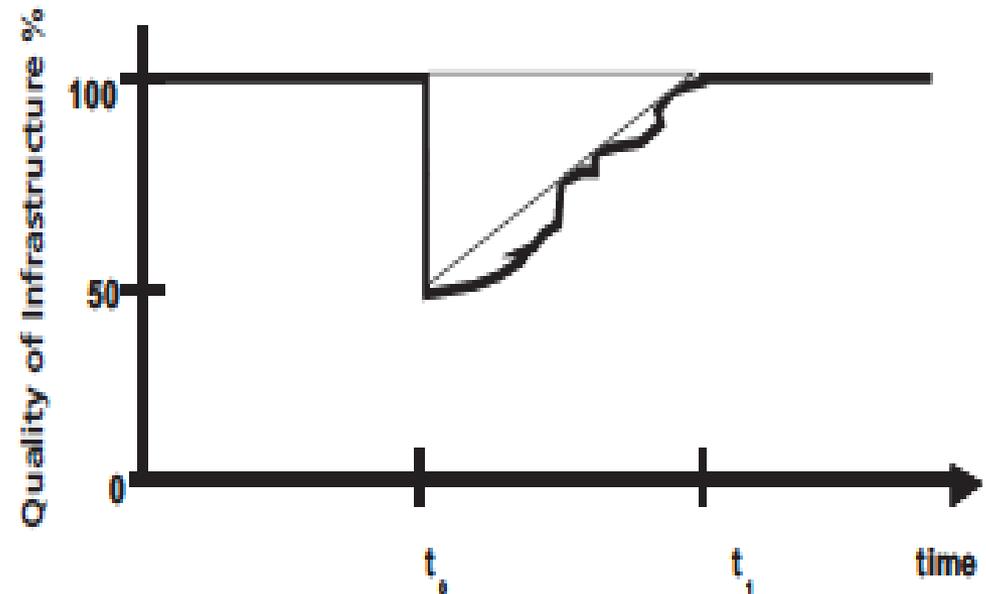


Resilience Framework

Provides an Holistic Approach

- Physical and human resilience
- Governance and financial resources

FIGURE 1 The Resilience Triangle



Target States of Recovery for San Francisco's Building & Infrastructure

Phase III

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+
COMMUNITY RECOVERY									
All residences repaired, replaced or relocated									X
95% neighborhood 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
	Category D: Safe and usable after major repairs	100% restored in 3 years
	Expected current status	

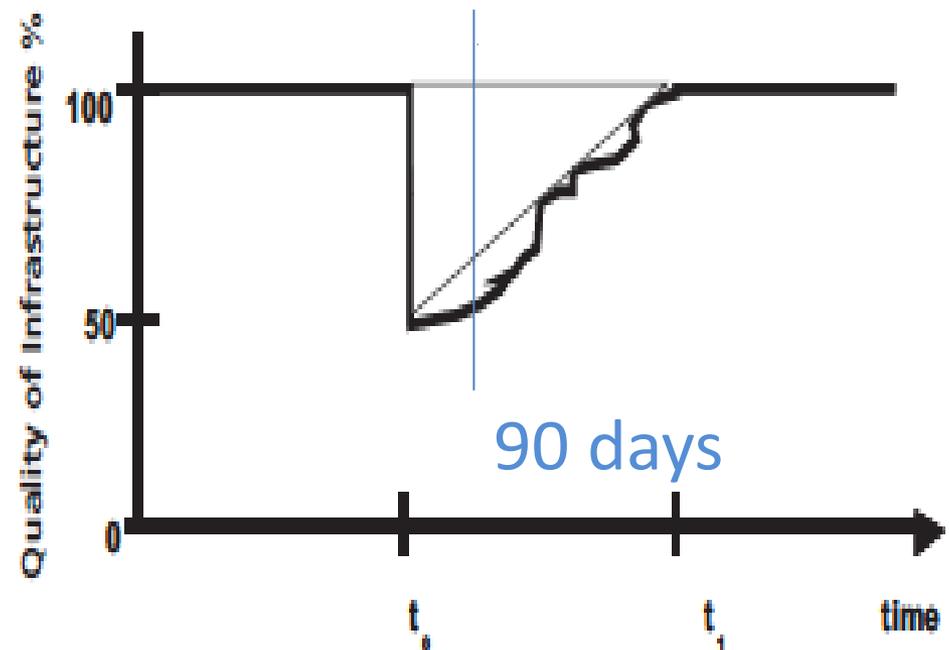
Note: Categories A–D are defined on page 10.

Planning for Resilience

Situation at 90 days

- Physical Resilience
- Lifelines restored
- Safety tagging done
- Unsafe areas fenced
- Detailed evaluations and design of repairs beginning
- Repair, retrofit, and replacement decisions required
- Historic building issues
- Aftershocks continue

FIGURE 1 The Resilience Triangle



Planning for Recovery

- Leadership and planning
- Jobs and commerce
 - Small business
 - Knowledge-based industries
- Housing
 - Single unit buildings
 - Multi unit buildings
- Inter-jurisdictional issues



Leading Recovery

1. Ensure your general plans are up to date;
2. Have a recovery process in place;
3. Develop financial tools for recovery;
4. Clarify your repair/retrofit code provisions; and
5. Begin inter jurisdictional cooperation.

Thank you.
