Case Study:
San Francisco Public Utilities Commission
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Lifelines Council
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SFPUC Lifelines

- **Water**
  - Fire suppression
  - Businesses and 800,000 residents in San Francisco
  - 1.6 million customers outside of San Francisco

- **Wastewater**
  - Wastewater collection and treatment in San Francisco

- **Power to Municipal Agencies**
  - Muni and SFO
  - Street and Traffic Lights
  - City Buildings
Example Seismic Planning Scenario
San Andreas Earthquake
Lifeline Interdependencies

- Power
- Water
- Transportation
- Communications
Improvements to Water Lifeline

- Water System Improvement Program (WSIP)
- 40 Projects in Local Program
  - Reservoirs and Tanks
  - Pump stations
  - Pipelines
Water System
Service Goals

• Program-level service goals:
  – Scenario: Major Bay Area earthquake
    (San Andreas, Hayward or Calaveras)
  – Maintain basic service capability after earthquake
  – Perform temporary repairs to restore average delivery after 30 days.

• Restoration priorities:
  – Firefighting
  – Other lifelines (power, communications, transportation)
  – Critical facilities (e.g. hospitals)
  – Mass care facilities and schools
  – Residences and businesses
SFPUC Seismic Design Standards

- Defined seismic design standards to achieve service goals
- Applicable to new facilities and retrofits
- Based on industry guidelines and standards
- Additional reliability provided for critical facilities
- Structural performance depends on facility criticality:
  I. Standard
  II. Important
  III. Critical
SFPUC Assumptions Regarding Other Lifelines

• Assume temporary interruption of other lifelines

• Implement contingencies and short-term backups until lifelines are restored:
  – Back up generators at critical facilities
  – Material stockpiles in strategic locations
  – Redundant communications
  – Operations contingencies
  – Staffing contingencies
Coordination Through Lifelines Council

- Understand interdependencies of lifelines
- Understand performance of other lifelines and how to adjust recovery plans accordingly
- Work jointly to focus on restoration of high-priority services