Case Study:
Pacific Gas & Electric Company

San Francisco Lifelines Council

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Today’s Presentation from PG&E

Coordinate with the Lifelines Council to:

• Lifelines Partnership Opportunities
• Design System Standards
• Emergency Planning and Response Activities
PG&E’s Coordination Goals with the Lifelines Council

Coordinate with the Lifelines Council to:
• Establish response and recovery priorities
• Facilitate Mutual Logistics Support
• Enhance Effective Communication

Formal acknowledgement that PG&E is a first responder organization

Identify restoration priorities regarding non-PG&E facilities for immediate electric/gas service
System Map and Customers Served

PG&E Facts Regarding Customers Served in California

- 70,000 Square Miles
- 15 Million People Served
- 4.2 Million Gas Customers
- 5.1 Million Electric Customers
- 3,400 Buildings
Earthquake Risk Management Program
“Each utility shall withstand earthquakes to provide protection of life, limit damage to property, and provide for resumption of utility service in a reasonable and timely manner.”  California Seismic Safety Commission/CPUC Safety Branch
Federal and State Standards

- Federal Energy Regulatory Commission (FERC)
- Nuclear Regulator Commission (NRC)
- CPUC General Orders
Design Standards (Examples)

- Department of Transportation (DOT)
- 2007 California Building Code
- Existing Building Retrofit Standards and Compliance
Seismic Risk Management Approach

- Evaluate Facilities and Operations
- Prioritize Selected Facilities for Mitigation
- Implement Mitigation
- Minimize Level of Earthquake Risk
245 Market Street
Moss Landing 500kV Switchyard Damage to Live Tank Circuit Breakers 1989 Loma Prieta Earthquake
Improving PG&E’s System Performance

Seismic Tests on Replacement Breakers

Gas Pipeline Replacement Program (GPRP)
PG&E Seismic Investments (1985 to Present)

Facilities

• Buildings
• Electric Substations
• Dams and Related Hydro Facilities
• Power Plants
• Gas T&D
• Loma Prieta Repairs

TOTAL BUDGET $2.54 Billion (estimate)
Improving PG&E’s System Performance

Vacaville Grid Control Center

Iso-Base
Post-Earthquake Emergency Response and Restoration Management and Coordination
Post-Earthquake Response Scenarios “Expected” and “Extreme” Earthquakes
Post-Earthquake Assessment

- Strong Motion Instrument Program
- Post-Earthquake Building Inspection
- Gas and Electric Emergency Response Programs
- GIS
- USGS Shake Maps
- Dam Information Automated Seismic Hazard Assessment
PG&E’s Emergency Planning and Response Activities

- Primary and Alternate Emergency Operations Centers
- ICS/NIMS Incident Management
- Formalized Business Continuity Program – alternate headquarters, “tech down” plans, disaster recovery and resource recovery plans
- Integrated Training and Exercises with Federal, State, and Regional Agencies Including CCSF SFFD and Department of Emergency Management (DEM)
- California Utility Emergency Association (CUEA)
Emergency Operations Center (EOC)
Lifelines Comparison—Dependencies

What are PG&E’s Dependencies?
- Communications
- Transportation
- Public Safety
- Emergency Medical Services

Who’s Dependent on PG&E?
- All other utilities
- All 18 Emergency Support Functions (includes most city and county services)
- Businesses
- Residences
Service Area Overview

• PG&E's gas and electric network is interconnected throughout our service area.

• Restoration of lifelines in the San Francisco Bay Area will be impacted by the condition and capacity of the larger network after a major event.
So What Can Residents Expect?

• Minimum of 72 hours electric service interruption in red and orange areas of the Shake maps.
• Longer electric service restoration times where underground utilities are subject to liquefaction.
• Potentially weeks and months of gas service interruption in red and orange areas of the shake maps.
Questions and Answers
Thank You