

**PEER**

# Earthquake Performance Needs of Utility Systems

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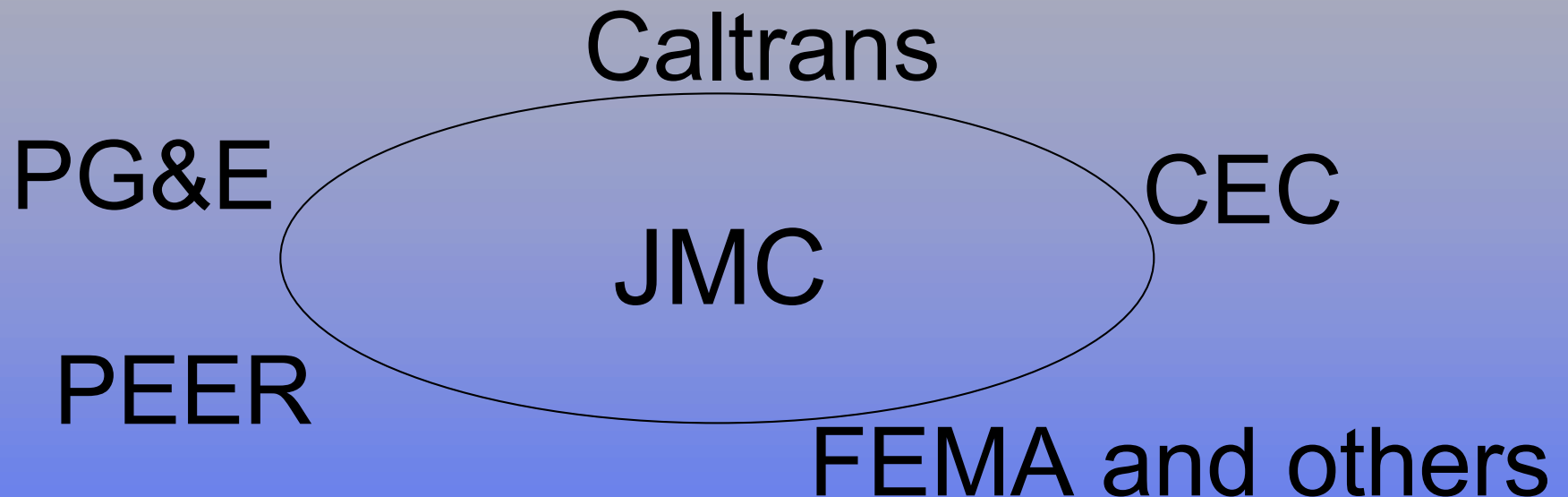
# Earthquake Performance Measures

- Personnel injured or killed
- Restoration time for transmission system
- Number of customers out of service vs. time
- Insured versus uninsured losses
- Financial conditions (cash reserves, credit, billing)

# Seismic Risk Models for Utilities

- Must be based on utility performance measures
- Must serve decision makers
- Must address utility as a system

# PEER Lifelines Program Is User-Driven



- All vote YES or project is NO go.
- Quarterly Coordination Workshops maintain focus on needs

# Risk Management Priorities

M7.5 on Hayward  
Fault



\$0.2 Billion potential  
losses

Unrecovered  
Wholesale Power  
Costs



\$7 Billion and rising  
at \$1 Million/hour

# Coordination with Core Program

- Optimize productivity of separate projects
- Co-fund projects that meet each Program's goals

# Academic research that is “not useful” is not necessarily “useless”

- Develops basic science and technology
- Provides student training and experience
- Pays salaries and overhead
- Provides intellectual adventure

# Peer Lifelines Program

## Research Topics

- Ground motions
- Site response
- Ground Deformation
- Substation Equipment
- Building Vulnerability
- Network system seismic risk
- Emergency response