

**Technical Council on Lifeline Earthquake
Engineering
(TCLEE)**

by

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Goals of TCLEE

Elevate the state-of-the-art and practice of lifeline earthquake engineering through:

- Development of guidelines and pre-standards
- Encourage utilities, associated manufacturers, and professional to consider earthquakes and the impact on planning, design, and operation of their systems
- Serve as a primary resource for establishing a broad consensus on lifeline seismic issues
- Identify and prioritize research needs related to lifeline seismic planning, design, construction, and operation
- Support and conduct programs for education and technology transfer on lifeline seismic issues
- Extend the understanding of how earthquakes affect lifelines and their facilities

Structure of TCLEE

Technical Committees

- Earthquake Investigations
- Electric Power and Communications
- Gas and Liquid Fuels
- Ports
- Seismic Risk
- Transportation
- Water and Wastewater

Publications - Guidelines

- Guidelines for the Seismic Design of Oil and Gas Pipeline Systems
- Guide to Post-earthquake Investigation of Lifelines
- Guide to Improved Earthquake Performance of Electric Power Systems
- Seismic Design for Natural Gas Distributors
- Methods of Achieving Improved Seismic Performance of Communications Systems
- Guidelines for the Seismic Evaluation and Upgrade of Water Transmission Facilities
- Seismic Guide to Ports

Publications - National Meetings

Six Proceedings

Publications - Earthquake Investigations

Early reports are included in EERI reports

Later, large reports are published as part of ASCE monograph series (Total of about 30 reports)

Publications - Other Reports and Investigations

Earthquake Investigations Committee and Investigations

- Publication of Investigation guide
 - Training - Within the specialty
 - Training - Multi-disciplinary
- Access - secured facilities, liability-injury, liability-corporate
- Report preparation
- Geotechnical Issues
- Future publications and dissemination of EQ investigation reports

Guide to Post-Earthquake Investigations of Lifelines

Table of Contents

1. Introduction
2. Pre-Earthquake Preparations
3. Pre-Departure Tasks
4. Introduction to Earthquakes
5. General Investigation Procedures
6. Electric Power
7. Water
8. Sewer

Table of Contents (continued)

Transportation Systems

9. Airports
10. Harbors and Inland Water Ways
11. Highways
12. Railways
13. Transportation Management:
Overview and Coordination
14. Communications
15. Gas Systems
16. Liquid Fuel Systems

Table of Contents (continued)

- 17. Emergency Power Systems
- 18. Power-Generating Dams - Lifelines
- 19. Navigational Locks
- 20. Emergency Operation Centers
- 21. Hospitals
- 22. Fire Protection and Rescue
- 23. Tanks
- 24. Acknowledgments

Table of Contents (continued)

- 25. Appendices
 - A. Field Guide for Lifeline Earthquake Investigations
 - B. Report Format
 - C. Tips on Technical Writing
 - D. References to Reconnaissance Reports
- 26. List of Publications of the Technical Council on Lifeline Earthquake Engineering
- 27. List of Monographs of the Technical Council on Lifeline Earthquake Engineering
- 28. Listing of Modifications to the Guide

Training Sites Visited

(Partial Listing)

Moss Landing PP and switchyard	Port of LA
LAX control tower	Alameda Corridor
LAX emergency response center	Memphis Substation
Railroad Bridges Memphis	PG&E Substation (Tesla)
Light rail control center	OES EOC in Sacramento
Delta Salinity control gate	Bonneville Dam
Natural Gas Liquefaction plant	San Onofre NGS
OES building in Oakland	I 805- bridge retrofit
Pacific Bell Building Oakland	Liquid Fuel Pumping Station
Memphis L&G control/SCADA	Portland Sewage Treatment plan