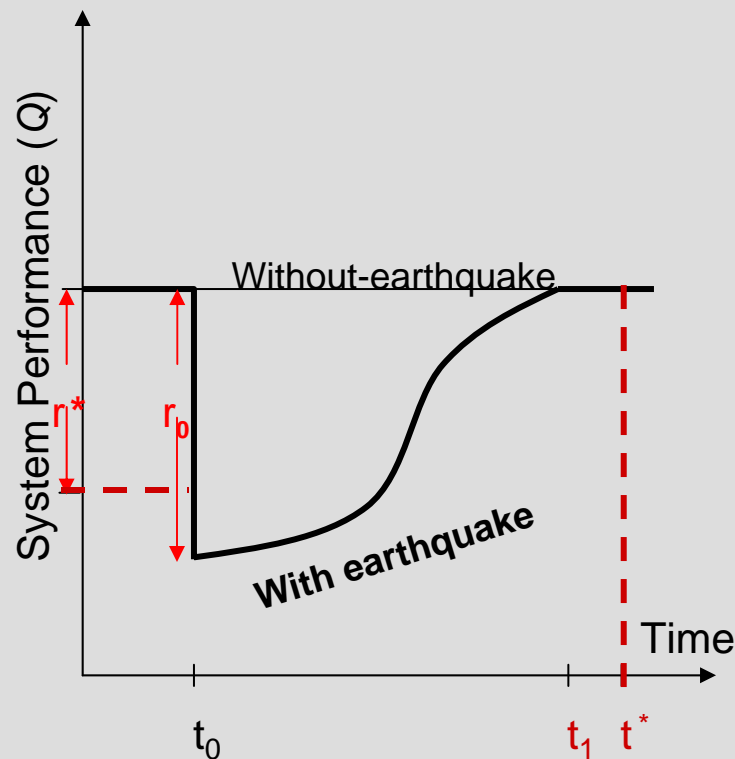


# Practitioner Feedback on Lifeline Performance Measures

Stephanie E. Chang and Sanjay Coehlo  
University of British Columbia

# Objective

- To obtain practitioner feedback on MCEER's resilience framework to lifeline mitigation (focus on performance objectives)



	Robustness objective ( $r^*$ )	Rapidity objective ( $t^*$ )
Technical	<2 major pump stations lose function	<1 wk until all p.s. and 99% pipes intact
Organizational	<5% of pop. loses water service	<1 wk until 99% pop has water service
Economic	<5% GRP lost	<1 wk until return to 99% GRP

# Approach

Building on June 2004 MCEER/LADWP workshop...

- 23 interviews (9 water, 7 power, 6 consultants)
- Questions related to:
  1. Interviewee background: experience with seismic mitigation decision-making for utilities
  2. Recent mitigation projects: if and how system performance objectives were developed and used
  3. Broad performance objectives reflecting lifeline service to community: benefits, drawbacks, and challenges
  4. Model of lifeline impacts on community: how might help technical managers, high-level decision-makers, and communications with public
  5. Performance metrics: what types most helpful for each group
  6. Stakeholder groups: what groups should be involved in developing seismic performance objectives for utilities

# Performance Objectives in Practice

## ■ Water utilities:

- Tend to use scenario earthquakes in design
- Range of objectives, inc. life safety, water quality, customer service, water for fire-fighting, supply to critical facilities
- Metrics typically level of service within specified timeframe
- Usage varies from qualitative/informal to quantitative/mandatory
- Community impacts and involvement mainly w.r.t. fire-fighting

## ■ Electric power utilities:

- Objectives almost exclusively duration and extent of outage
- Advances in system level assessment, inc. probabilistic
- Importance of industry standards (voluntary and regulatory)
- Utility-centric measures of performance

# Benefits and Potential Uses of Community Performance Objectives

- General support for CPO in decision analysis and communications
- Potential uses
  - Technical managers ... help prioritize projects, choose alternatives, justify projects or rate increases (assessment tool)
  - High-level decision-makers ... aid large-scale/long-term decision-making and policy direction, help evaluate costs/budgeting ...*also: set policies more beneficial to community, help overcome political pressure*
  - Communicating with public ... explaining/justifying projects and rate increases, preparedness (water), uphold utility image ...*also: shape expectations, focus for media*

# Challenges and Drawbacks

- Reservations about accuracy and effectiveness of model, esp. when incorporate social, economic, and community based parameters
  - Politicization of decision-making process, e.g. special interest influence on objectives
  - Lack of buy-in due to lack of faith in model and/or consensus about risk
  - Cost of mitigations associated with model results
  - Liability/loss of reputation if fail to meet objectives (electric power)
  - *Also: ... security concerns, results influenced by factors beyond utilities' control, policy disinterest outside CA*

# Conclusions

- Value of resilience model recognized
- Responses focused on technical and economic aspects of resilience (less on organizational and social)
- Water industry more amenable to community based approaches
- Can also improve community resilience by facilitating inter-organizational cooperation and coordination
- Responses insightful for framing issues, but did not help quantify performance objectives in model

## *NEXT:*

- Survey re specific examples
- Multi-stakeholder process: utility take technical lead and synthesize feedback from other stakeholder groups