Objective

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

<table>
<thead>
<tr>
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<th>Robustness objective ($r^*$)</th>
<th>Rapidity objective ($t^*$)</th>
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<tbody>
<tr>
<td>Technical</td>
<td>&lt;2 major pump stations lose function</td>
<td>&lt;1 wk until all p.s. and 99% pipes intact</td>
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<tr>
<td>Organizational</td>
<td>&lt;5% of pop. loses water service</td>
<td>&lt;1 wk until 99% pop has water service</td>
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<tr>
<td>Economic</td>
<td>&lt;5% GRP lost</td>
<td>&lt;1 wk until return to 99% GRP</td>
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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