Can REDARS be Adapted to a Multi-Hazard Network Assessment Tool?

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REDARS: Risks from Earthquake Damage to Roadway Systems

- Evaluate ability of highway system to transport traffic after EQ
- Estimate losses from damage to highway system
  - Economic
  - Increased travel times to/from key locations
  - Emergency response/recovery impacts
- Can be used to assess different risk reduction/mitigation/retrofitting options
Applications

- Pre-event planning, prioritization for retrofitting/hardening
- Post-event response/recovery
Input Data – 1 of 3

Network Topography and Attributes
Input Data – 2 of 3

Bridge Locations and Attributes
NEHRP Site Classifications
Input Data – 3 of 3

O-D Zones and Pre-EQ Trip Tables (for Auto, Freight, etc.)
System State

[Map showing system state with color codes for percent capacity]
Results

- Estimate system-wide travel times and traffic flows
- Estimate losses (direct and indirect)
Features

• Multidisciplinary – geosciences; engineering; system analysis; risk analysis
• Probabilistic and deterministic analysis capability
• Modular – readily accepts new or updated models
• Output can be tailored to meet user needs
Multi-hazard Applications

- Can be applied to any hazard
- Input data and models used in analysis will be hazard dependent
  - Hazard estimation
  - Component performance/fragility models
  - Component repair costs
  - Component traffic states and recovery times