ShakeOut Scenario 2.0

Dr. Lucy Jones

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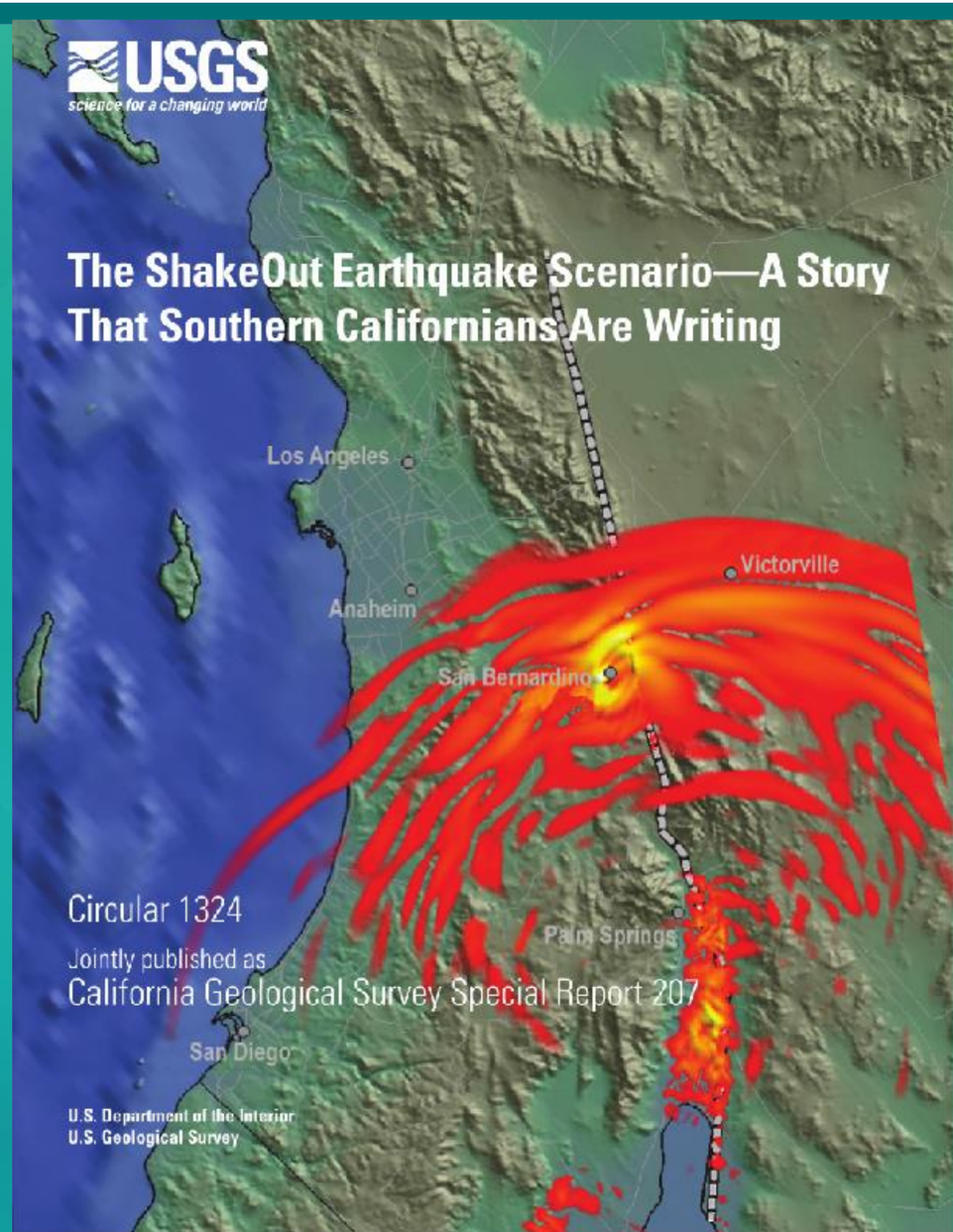
2008: ShakeOut Scenario

- Joint publication of the USGS and the California Geological Survey
- Over 300 contributors
- Creation of the ShakeOut drill



Outcomes of ShakeOut Scenario

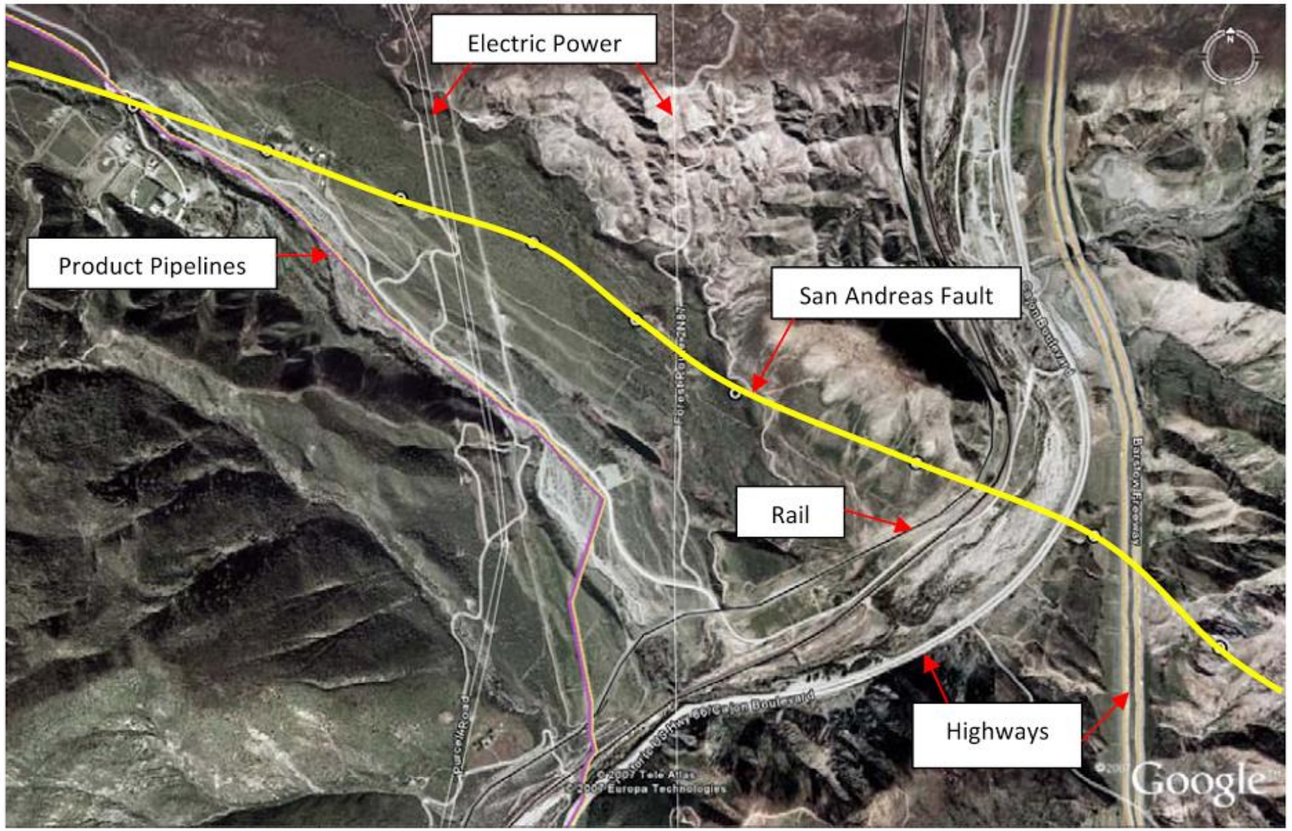


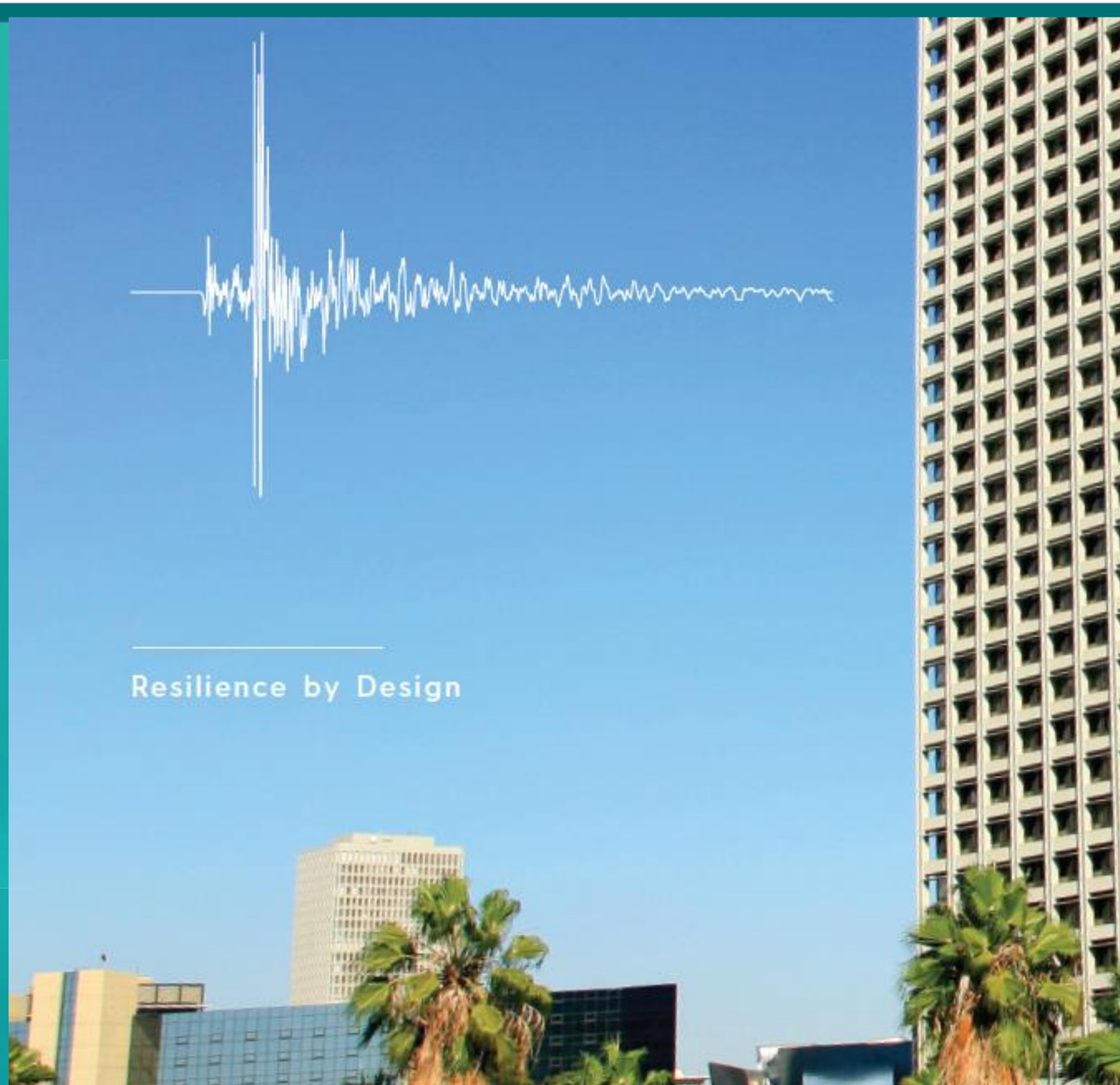
Figure 3. Oil, Electric Power, Highway, and Railway Lifelines in Relationship to the San Andreas Fault at Cajon Pass (Natural Gas Pipelines Not Shown).

Cajon Pass Working Group 2009

Outcomes of ShakeOut Scenario

Los Angeles seismic safety plan

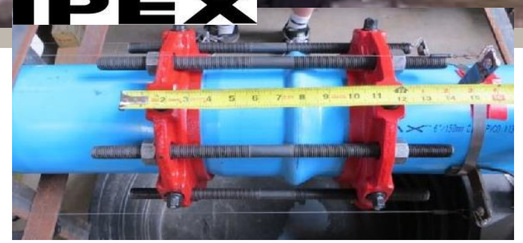
2014



LADWP committed to a seismic resistant water system

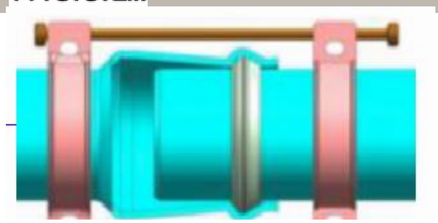
AMERICAN CAST IRON PIPE COMPANY

IPEX



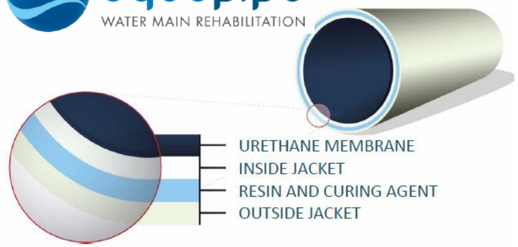
Kubota

PPI SYSTEM



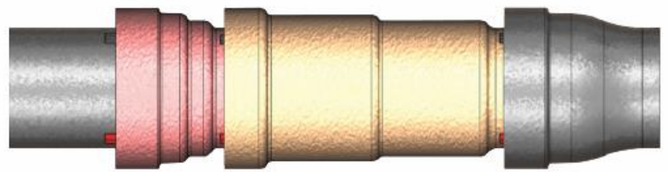
JFE

aquapipe
WATER MAIN REHABILITATION



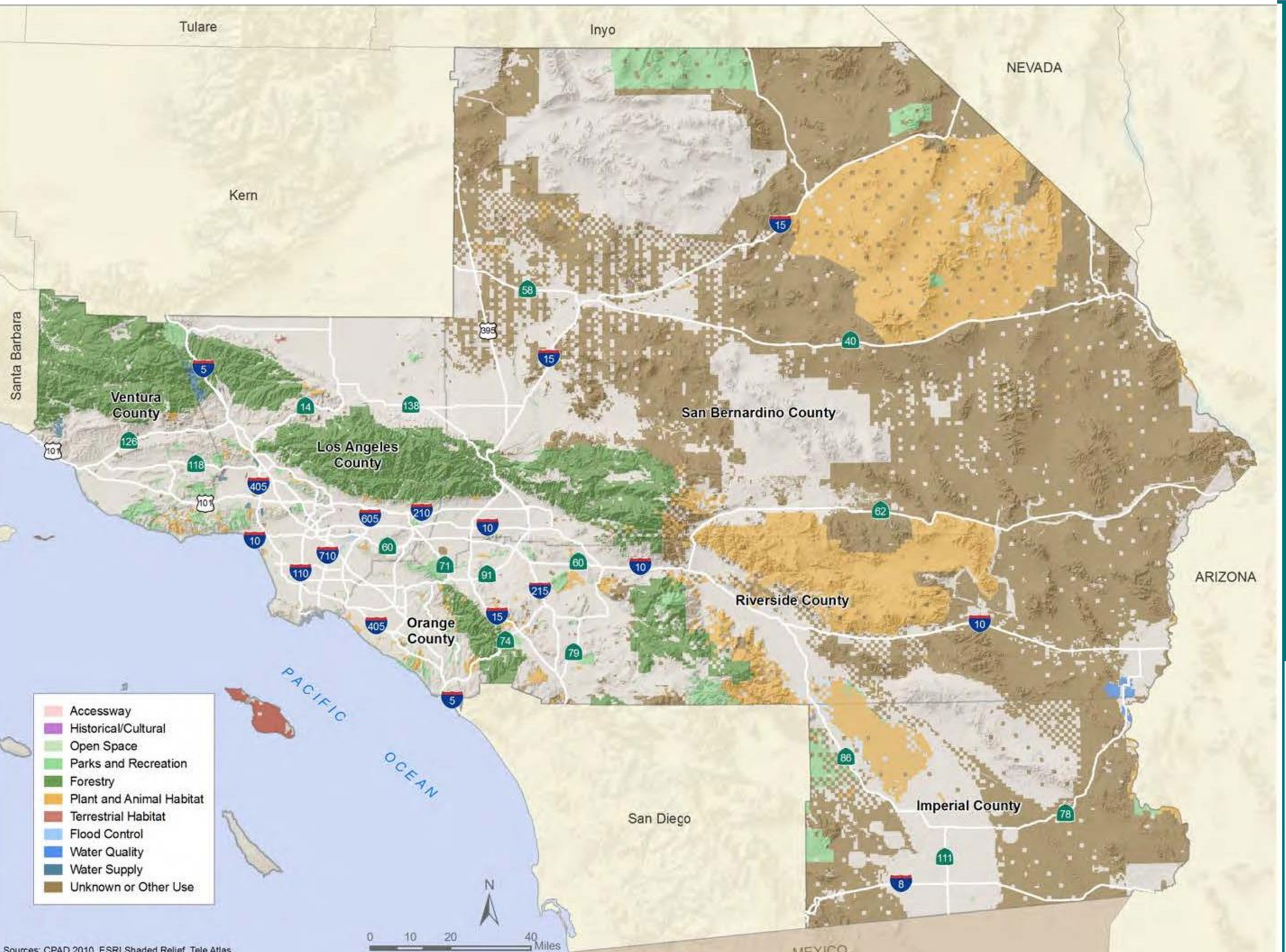
US PIPE

MD
McWANE DUCTILE
IRON STRONG



15,000+ dangerous buildings have been retrofitted

- Strengthen Our Buildings
  - Mandatory retrofit of soft-first story buildings
  - Mandatory retrofit of concrete buildings
  - “Back to Business” inspection program
  - Excessive Damage ordinance



Spreading to 191 other cities

SCAG™
INNOVATING FOR A BETTER TOMORROW

Outcomes of ShakeOut Scenario 2017-2024

Mandatory soft-first story retrofits in

- Santa Monica
- West Hollywood
- Pasadena
- Burbank
- Beverly Hills
- Torrance

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Outcomes of ShakeOut Scenario 2015-2026

- Southern California Edison
  - Seismic Resiliency Program
  - Retrofit of the grid backbone and all structures

- Southern California Gas Company
  - Shutoff valves on transmission lines on each side of the San Andreas fault

SOUTHERN CALIFORNIA EDISON®

SoCalGas™

Glad to be of service®

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Mitigation that didn’t happen

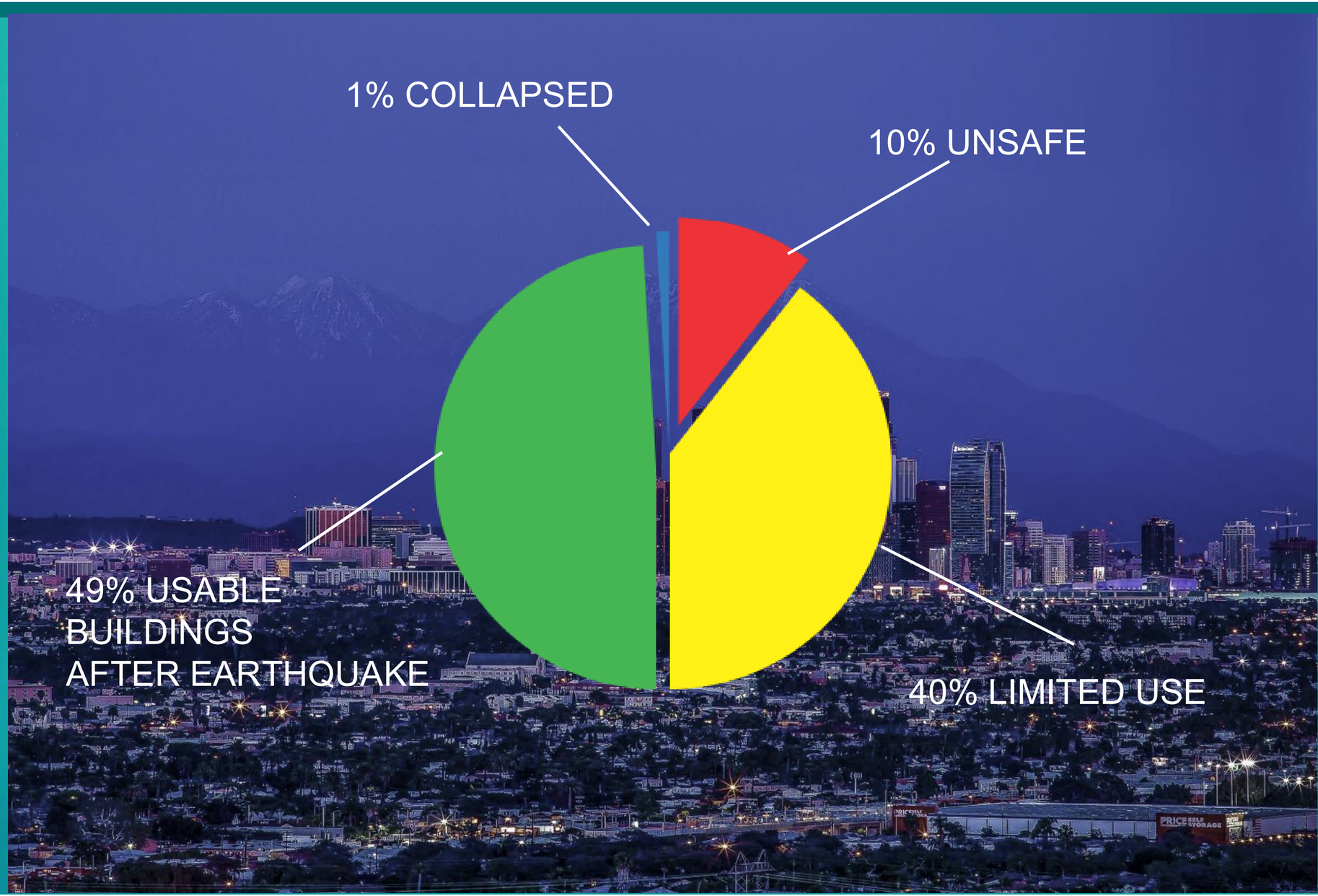
Los Angeles Aqueduct

All imported water crosses the San Andreas fault without safeguards

Petroleum product pipelines cross the fault without shutoff valves

The ShakeOut earthquake in Downtown Los Angeles

- <10% of collapsing in 1 in 500 year event



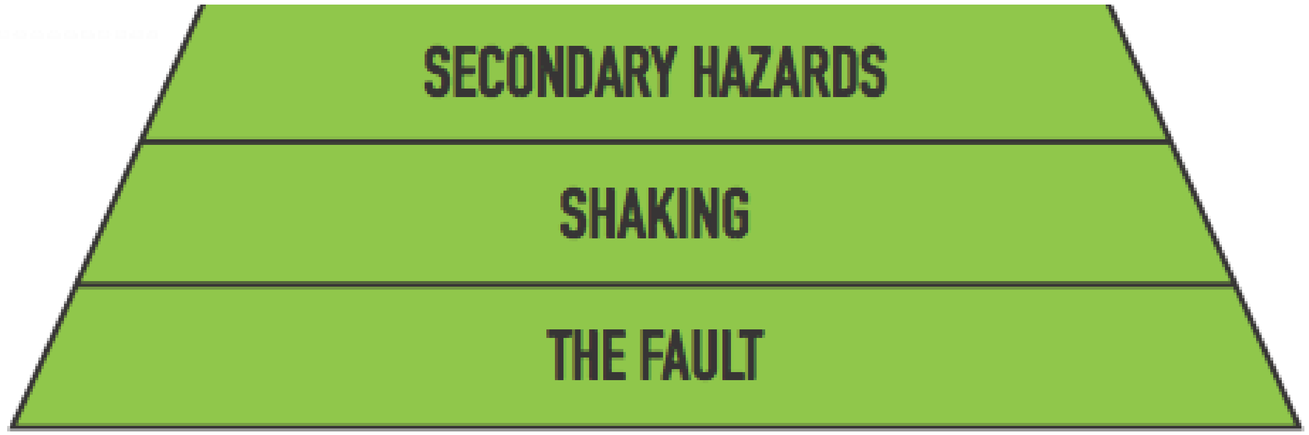
ShakeOut 2.0

- Changed nature of work
- Mitigation accomplishments
- Shifting demographics
- New data
- Better models
- Telecommuting
- Buildings
- Utilities
- Development near the San Andreas
- 2020 pandemic
- 2023 Türkiye earthquake
- 2025 Los Angeles wildfires

ShakeOut Scenario 2.0

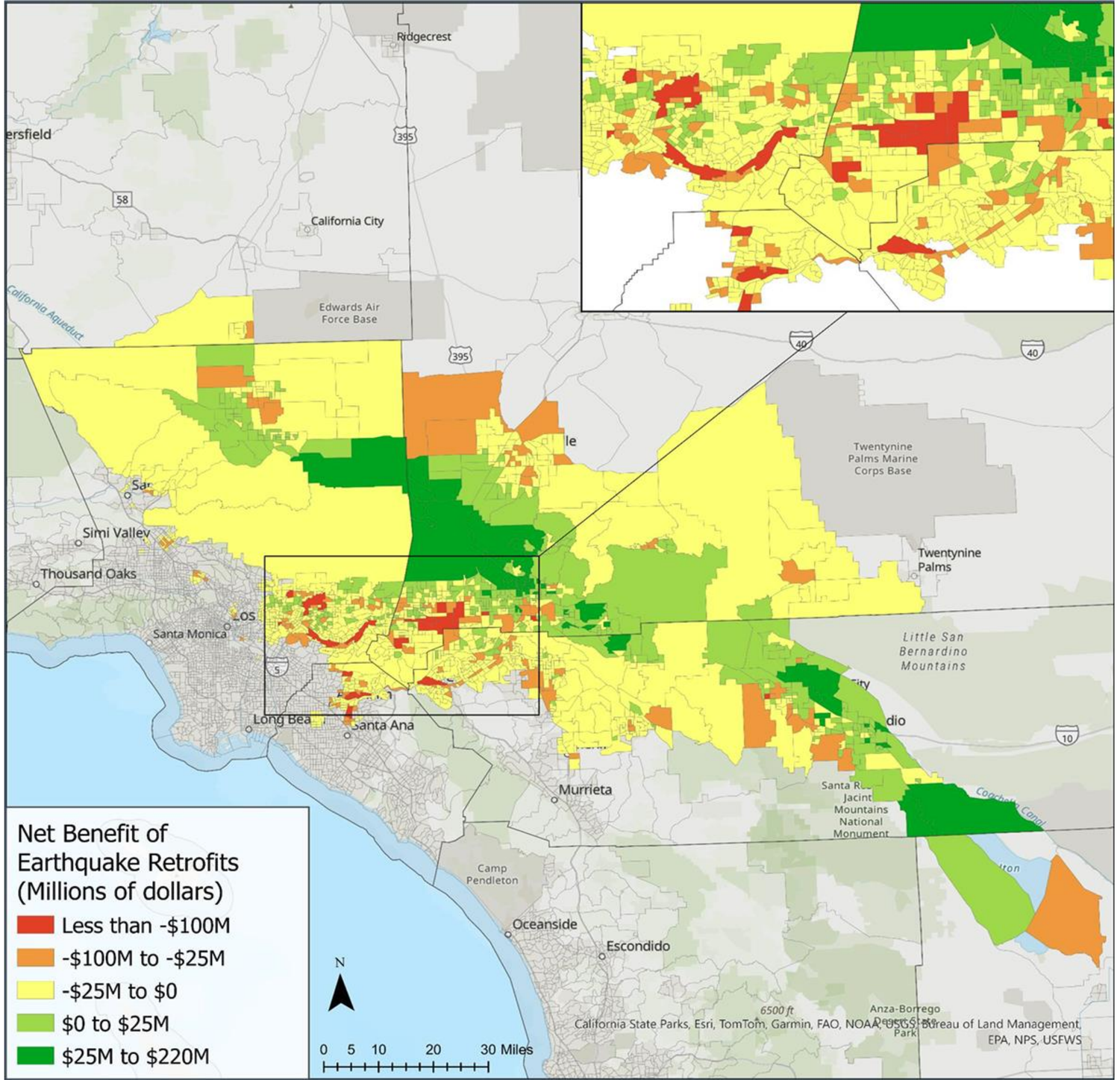
Structures: Analysis
- Value of retrofits
- Cost of dithering
- Include fire and fi

Chemical spills and



Benefit of retrofits

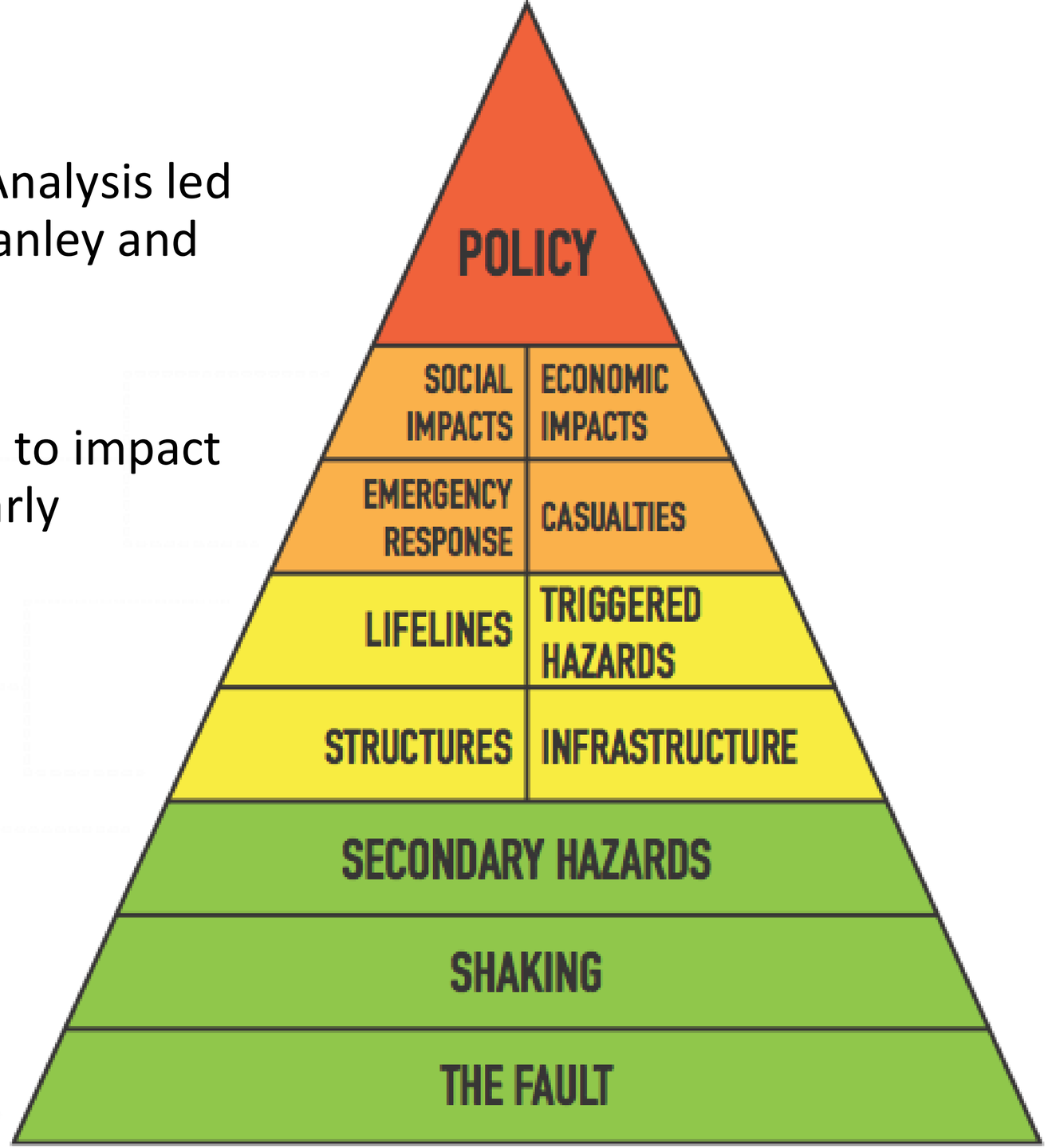
- 2008 shaking model



ShakeOut Scenario 2.0

Social Science: Analysis led by Samantha Stanley and Sara McBride

Special attention to impact of Earthquake Early Warning



ShakeOut 2.0 - not just 2008 redux

- SCEC redoing earth science models adding a large aftershock on the Hollywood-Raymond fault
- Engineering consortium analyzing
  - losses prevented by retrofitting programs
  - cost of dithering on upgrades
- With EPA, adding air contamination and evacuation modeling
- Still scoping the project = what do you think are the urgent questions?
- Creating a new story for release in early 2028

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A story map for the public release

Describe the consequences for different people

Divide by age

ShakeOut 2.0 Timeline

- Partners (so far):
  - SCEC
  - Jones Center at Caltech
  - California Geological Survey
  - USGS
  - CSSC
  - US EPA

- Timeline
  - Work began April 2026
  - Shaking model: August 2026
  - Aftershock model: December 2026
  - Preliminary engineering assessment: February 2027
  - Preliminary social science assessment: September 2027
  - Preliminary public document: January 2028
  - Full release: March 2028

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2028 in Los Angeles

- 20 years since the release of ShakeOut
- 100 years since the San Francisquito Dam failure, the single deadliest day in the history of southern California
- The Olympics return to Los Angeles

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