



Hospital Building Safety Board
Ad Hoc Educational Opportunities to Advance Structural Health
Monitoring by Hospitals Subcommittee

AGENDA

March 26, 2026

10:00 a.m. – 12:00 p.m.

The Subcommittee may not discuss or act on any matter raised during the public comment section that is not included on this agenda, except to place the matter on a future meeting agenda. (Government Code §§ 11125, 11125.7, subd. (a).)

Note: All Subcommittee members will attend this meeting virtually.

Locations:

[2020 West El Camino Ave, Conference Room 930, Sacramento, CA 95833](#)

[355 South Grand Avenue, Conference Room 1901, Los Angeles, CA 90071](#)

[Teams Meeting Access](#); Meeting ID: 273 510 165 700 18; Passcode: Df6SH27i

Call in: (916) 535-0978; Phone Conference ID: 518 157 262#

- Item #1 Call to Order and Welcome
Facilitator: Courtney Johnson, PG, CEG, Principal Geologist, Slate Geotechnical Consultants; Subcommittee Vice-Chair (or designee)
- Item #2 Roll Call and Meeting Advisories/Expectations
Facilitator: Veronica Yuke, HCAI; HBSB Executive Director (or designee)
- Item #3 [Review and approve the draft January 29, 2026, meeting report/minutes](#)
 - Discussion and public input*Facilitator: Courtney Johnson (or designee)*
- Item #4 Guidance for Implementing Seismic Instrumentation Programs for Post-Earthquake Response
 - Discussion and public input*Facilitator: Evan Reis, SE, Executive Vice President and Director of Science and Analytics, Safehub, Inc. (or designee)*

Item #1

Call to Order and Welcome

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Item #2 Roll Call and Meeting Advisories/Expectations
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Item #3 Review and approve the draft January 29, 2026 meeting report/minutes

- Discussion and public input

Facilitator: Courtney Johnson (or designee)

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- Discussion and public input
- Facilitators: Evan Reis, SE, Executive Vice President and Director of Science and Analytics, Safehub, Inc. (or designees)*



Implementing Structural Health Monitoring Programs for Post-Earthquake Response

Evan Reis, EVP & Director of Science

Challenges with traditional post earthquake response

Observations: First 15 Minutes

- **Decisions to evacuate hospitals were often made quickly** in the first 15 minutes.
- **Fear** played an unexpected role in these decisions (i.e., cracks in partitions made patients and staff afraid to stay or return) and led to some evacuations.
- These decisions are **difficult to reverse** once they are made.



Challenges with traditional post earthquake response

Relying solely on visual inspections (even by structural engineers)

- Structural damage is often hidden
- Based on engineering judgement



Northridge, 1994



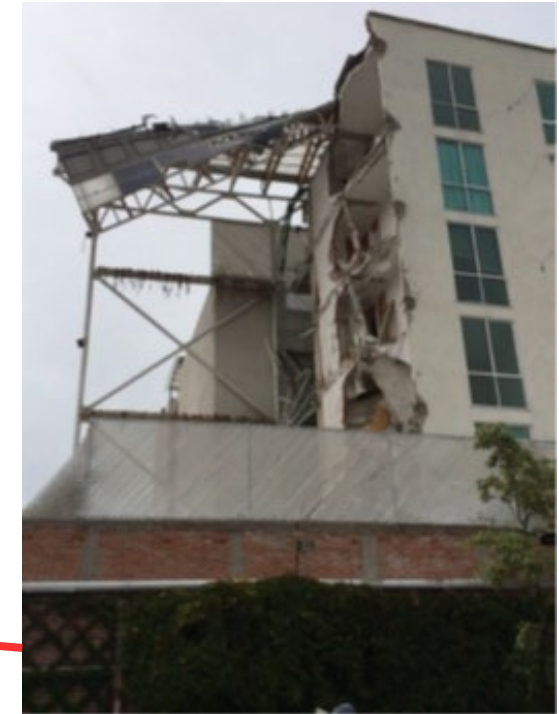
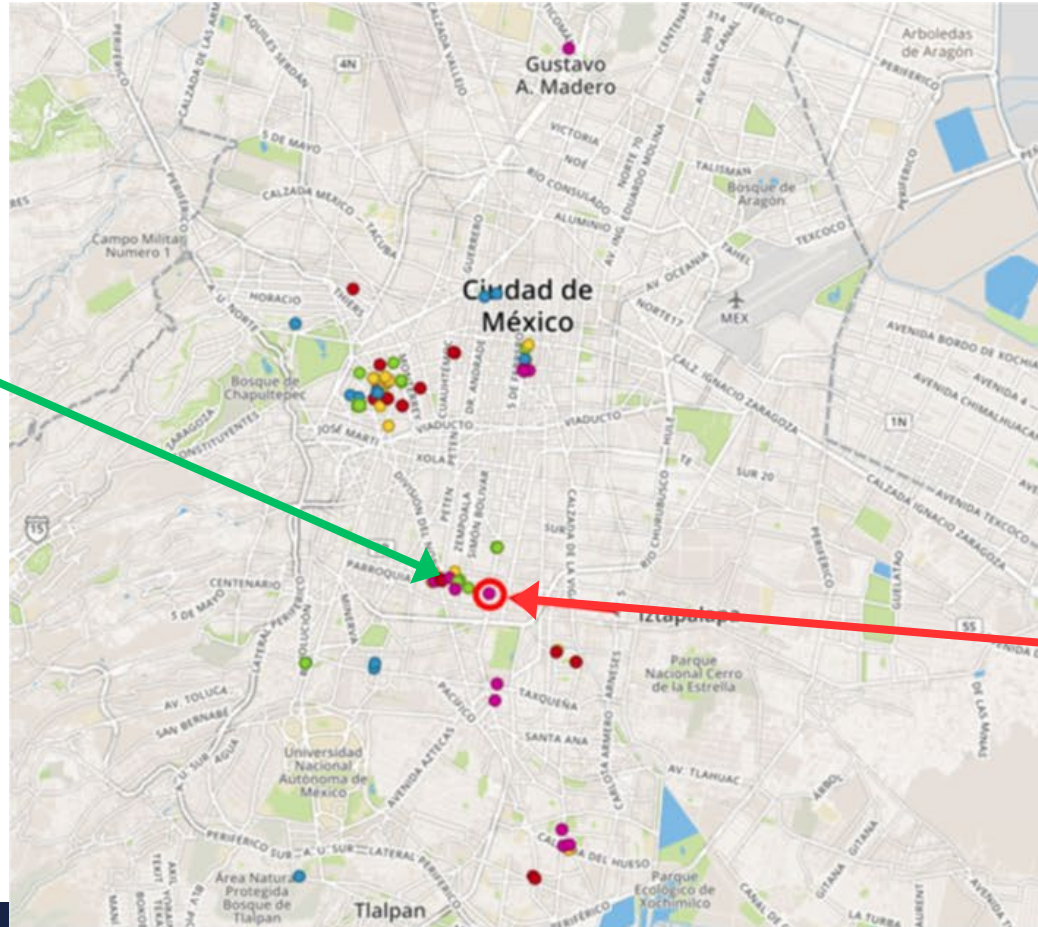
Ridgecrest, 2019

Challenges with traditional post earthquake response

Buildings within a block of each other affected by the M7.1 2017 Puebla Earthquake. Similar year & type of construction.



Green = No damage
Ground shaking per USGS: 20.08%g



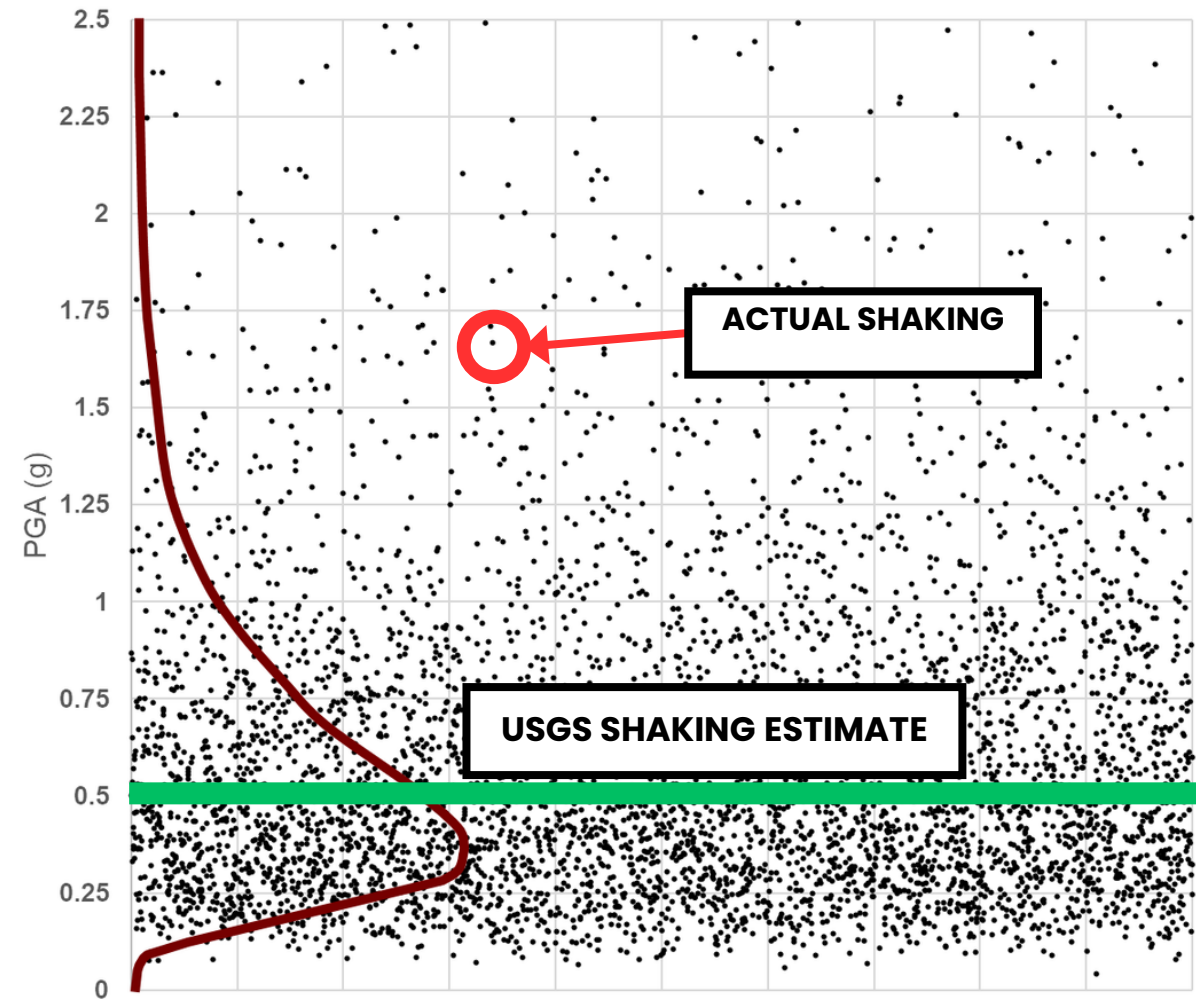
Red = major damage
Ground shaking per USGS: 20.12%g

Source – Applied
Technology Council

Instrumentation At Location Eliminates GMPE Variability...

...and empirically accounts for
soil structure interaction

USGS ShakeMap-estimated PGA for a
specific location associated with a
shallow-crust earthquake in California

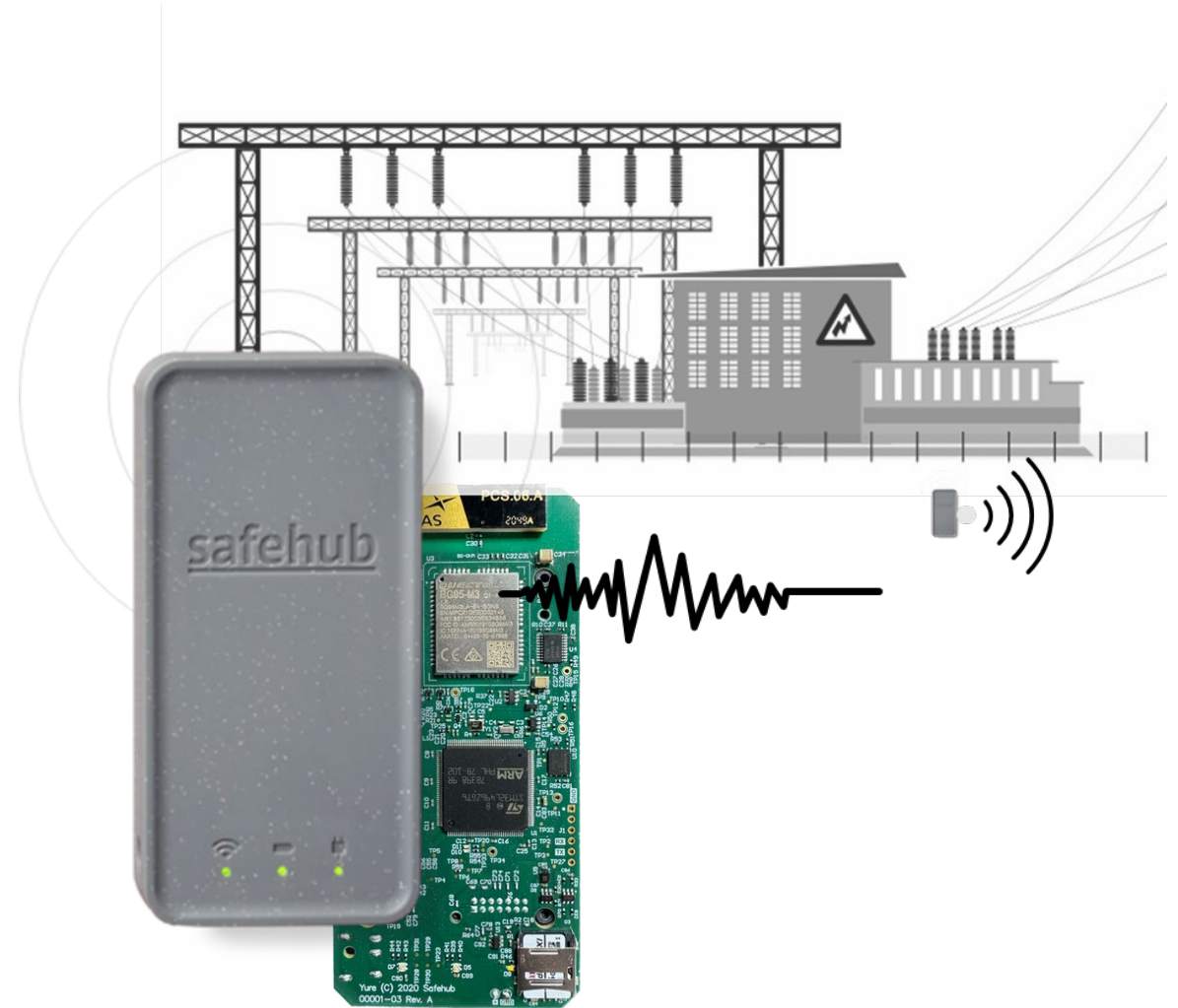


Sensor Technology

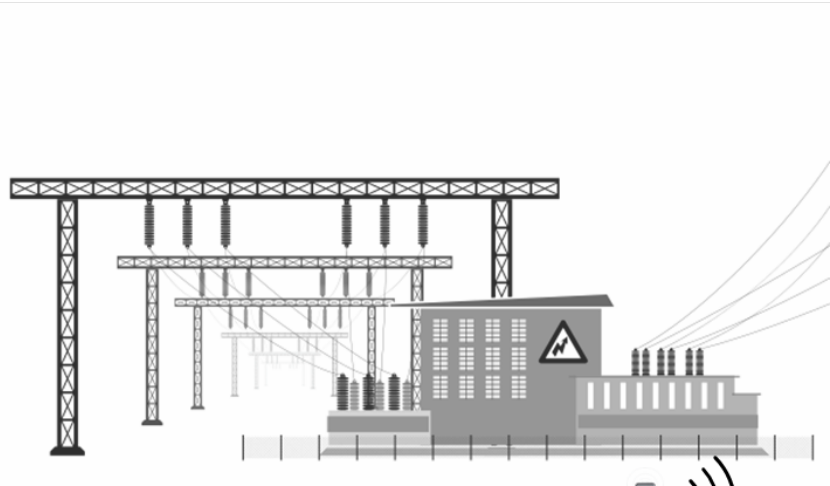


State of the Art MEMS Accelerometer Technology

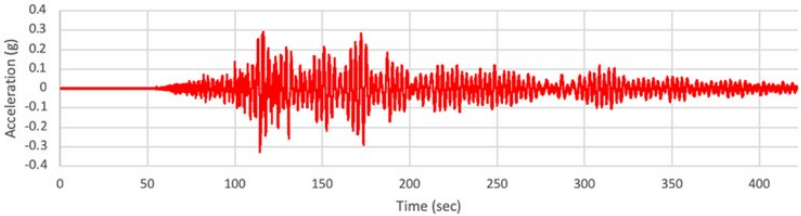
- Scalable: Low-cost, cellphone-sized sensors
- Easy install & pairing process
- Cellular connectivity avoids network concerns
- Automatic mobile network failover, back-up battery, local data storage
- No calibration necessary, no maintenance and remote updating



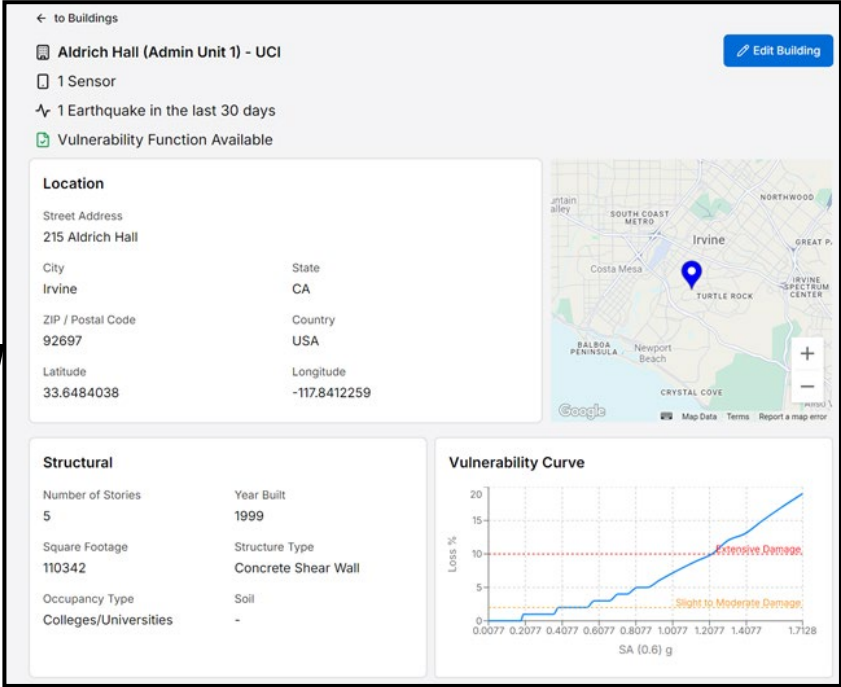
Building Specific Data for Situational Awareness



Triaxial acceleration record



Transformation to PSA
at 0.3 or 1.0 seconds



Heavy damage expected

Moderate damage expected

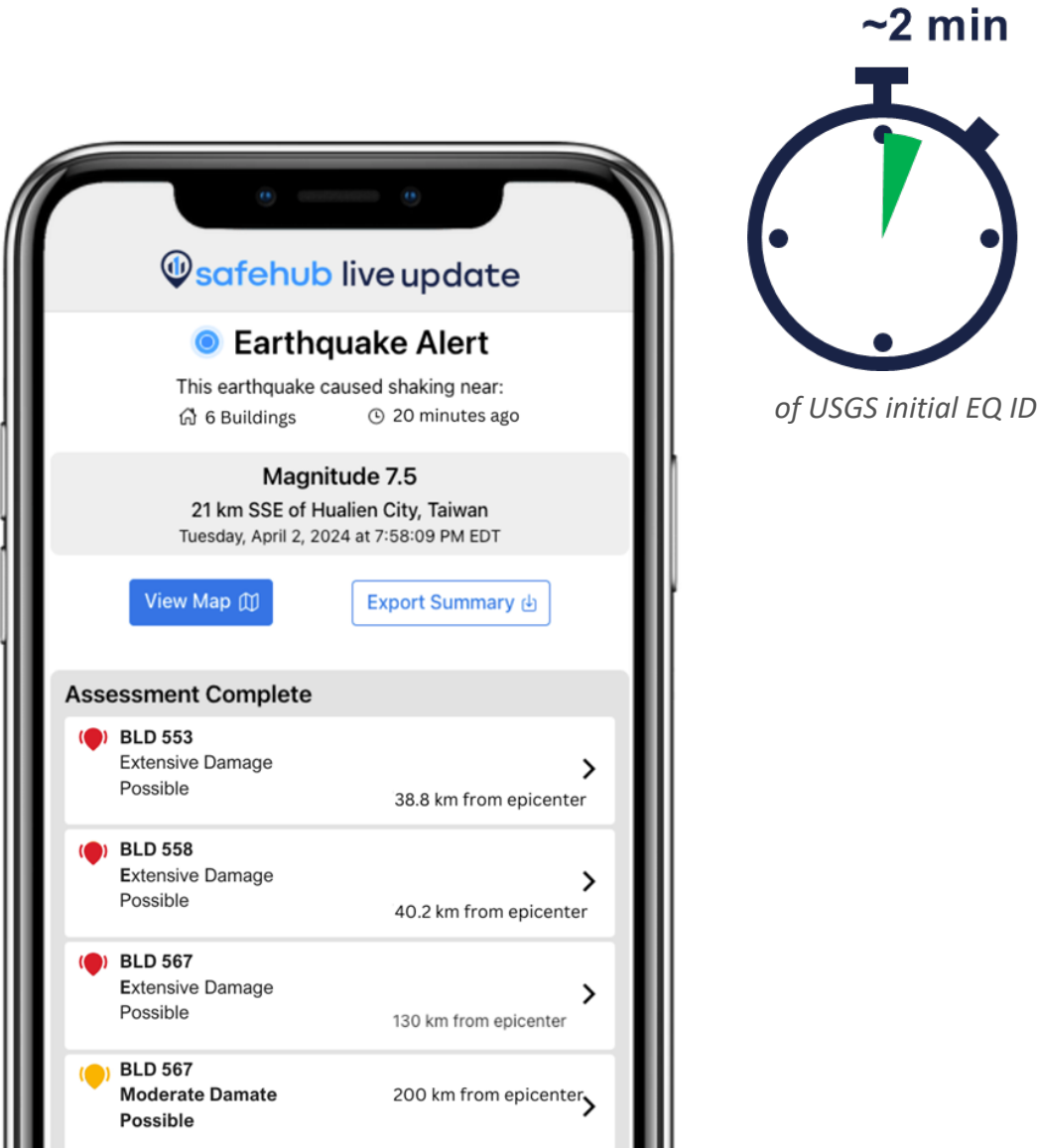
Minimal damage expected

Damage Indicators	
Damage	% Loss
Cost	\$ Loss
Downtime	Days

Rapid Damage Alerts

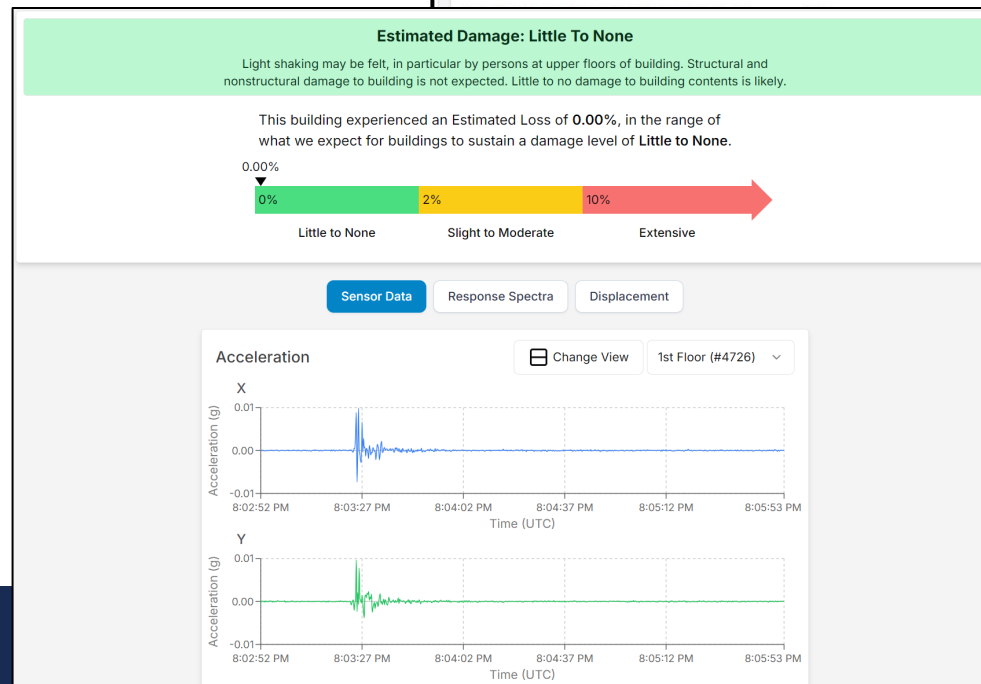
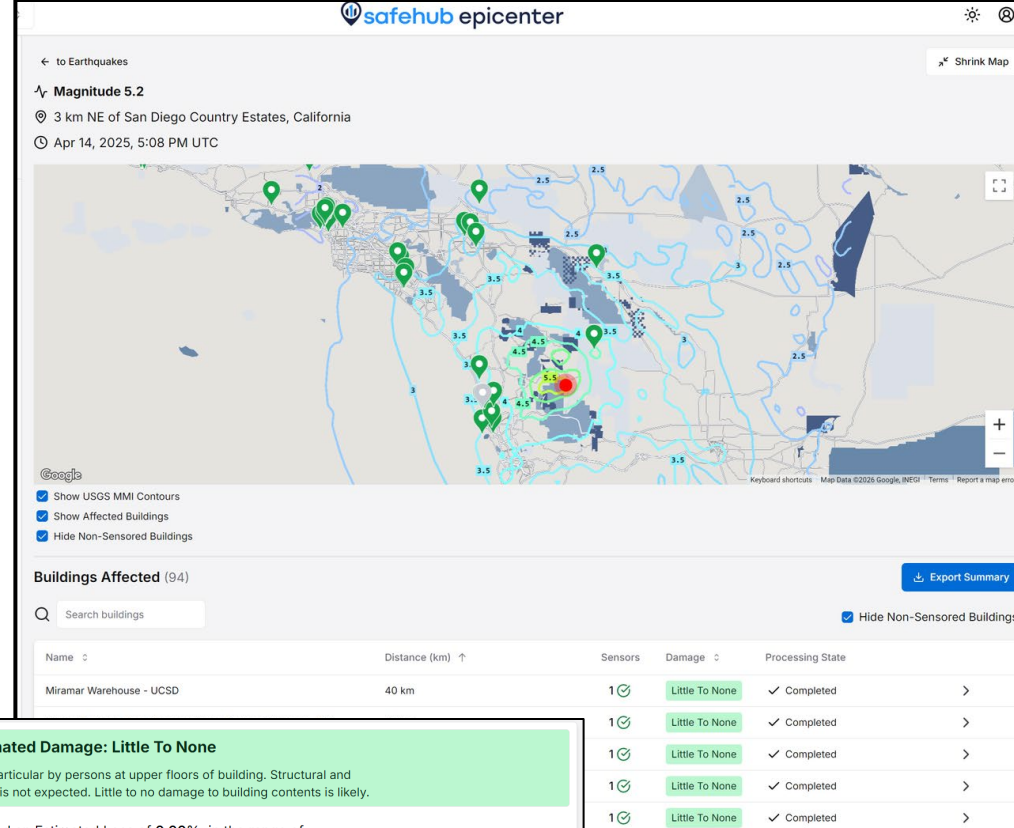
Text & email alerts, along with live updates on damage estimates:

-  **Extensive** damage expected
-  **Slight-to-Moderate** damage expected
-  **Little-to-No** damage expected



Data in one place

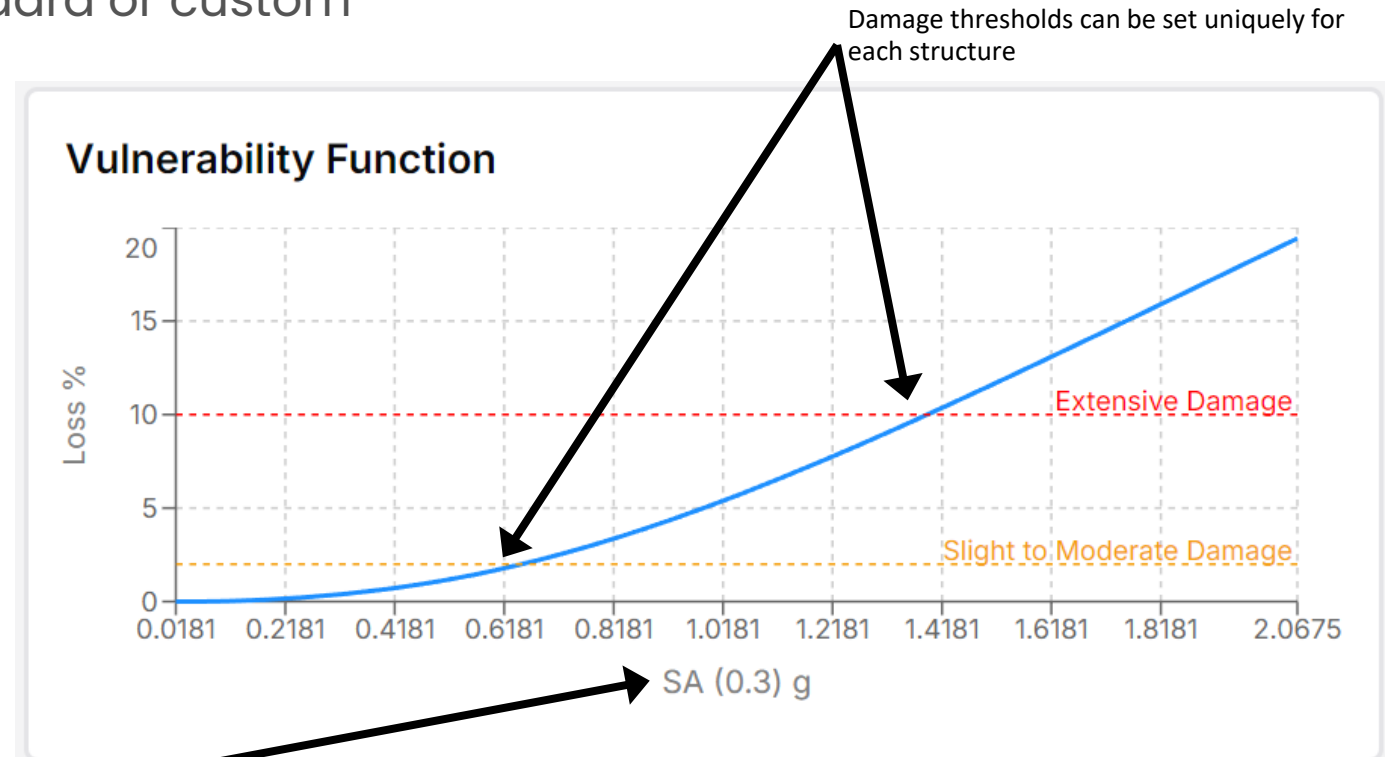
- Maps of impacted assets
- Higher fidelity and accuracy than regional intensity maps
- Rapid triage of inspection priorities
- Building specific acceleration data
- Integration with existing EOC programs



Building Specific Vulnerability Functions Improve Damage Estimates

Vulnerability functions based on standard or custom evaluation methodologies

- HAZUS
- FEMA 154
- ASCE 41
- FEMA P58
- FEMA E74 – for equipment
- Custom based on testing



Shaking based on spectral acceleration to align with building response and reduce noise impacts

Sensor Testing



*“The measurements are **nearly identical** within the range most important to most civil infrastructure...Overall we also observed that the wireless sensors are simple to attach and robust to remove and reattached, while retaining power for several days in the outdoor environment.”*

– Dr. Tara Hutchinson, UC San Diego

*“The measurements were **virtually indistinguishable** from [force balanced sensors used by CSMIP].”*

– Dr. Amarnath Kasalanati, PEER Associate Director

UC San Diego JACOBS SCHOOL OF ENGINEERING



STRUCTURAL SYSTEMS
RESEARCH PROJECT

Report No.
SSRP-24/06

Comparing the Performance of a
Compact Wireless Vibration Sensor
to Conventional Wired Vibration
Sensors in the TallWood Shake
Table Test Program

by

Shokrullah Sorosh and Tara Hutchinson
(University of California San Diego)

November 2024

Department of Structural Engineering
University of California San Diego
La Jolla, California 92093-0085

Parametric Earthquake Insurance

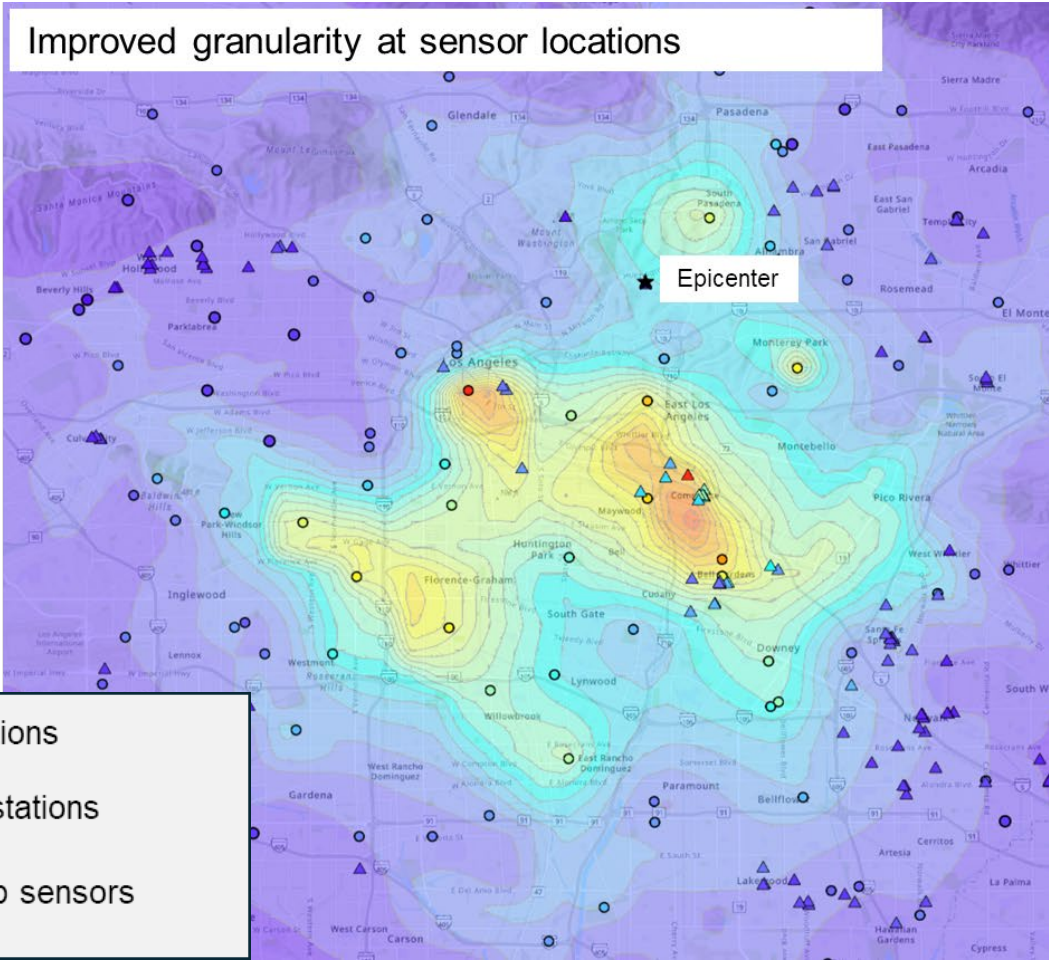
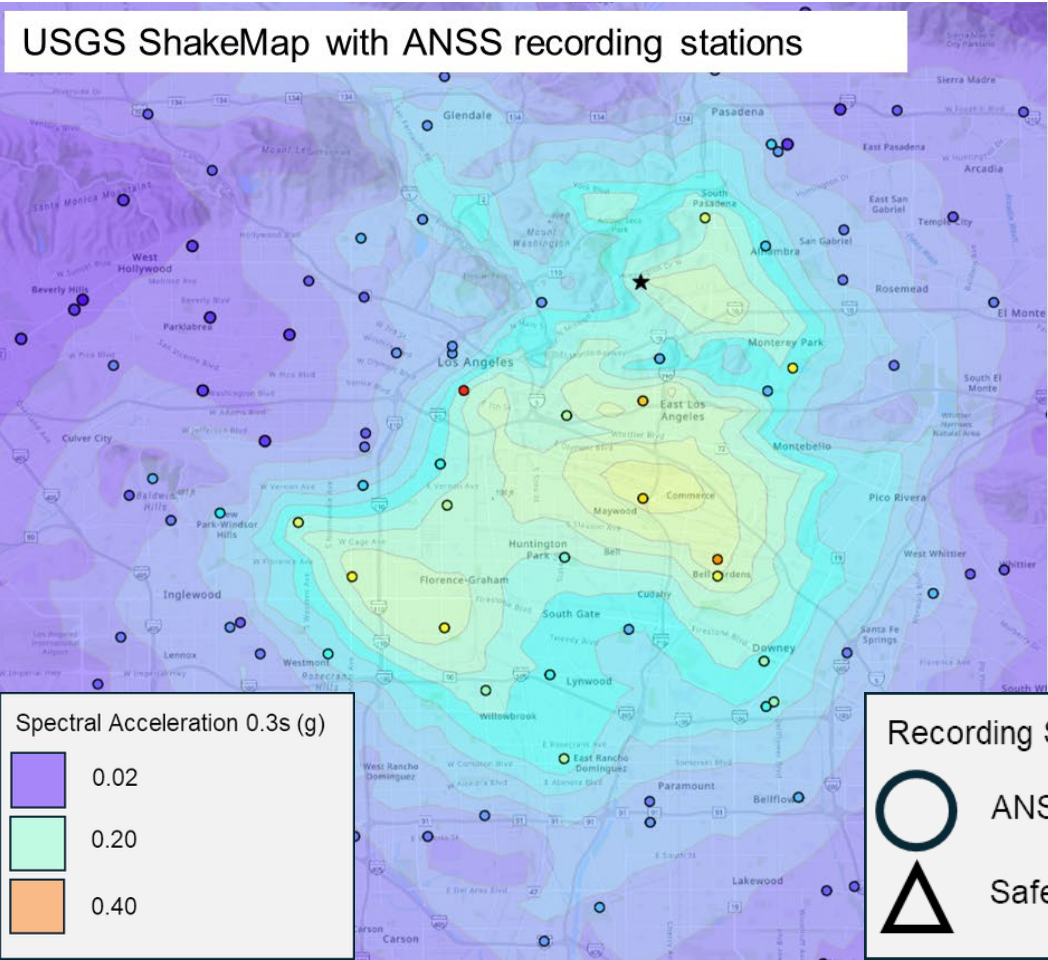


Parametric Insurance: Pros & Cons Compared to Traditional Insurance

- Immediate payment based on pre-defined trigger levels
- Flexible use of proceeds for any earthquake related costs
- High basis risk if policy uses only regional shaking intensity maps

Asset Specific Data vs USGS ShakeMap

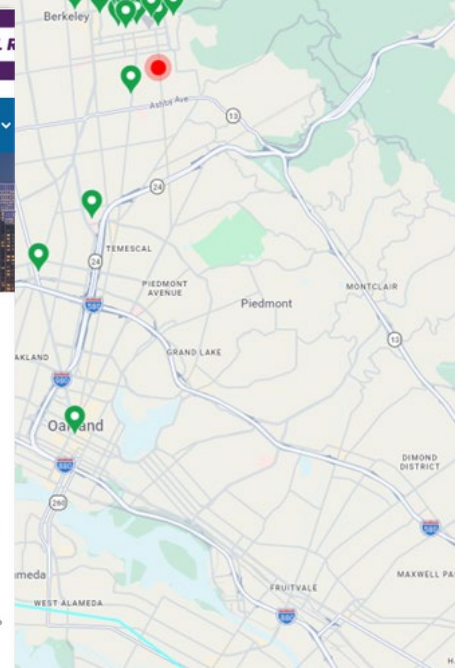
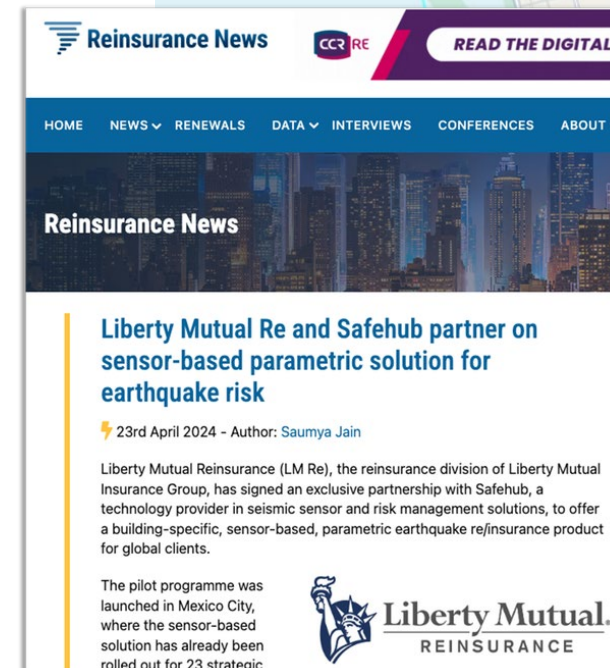
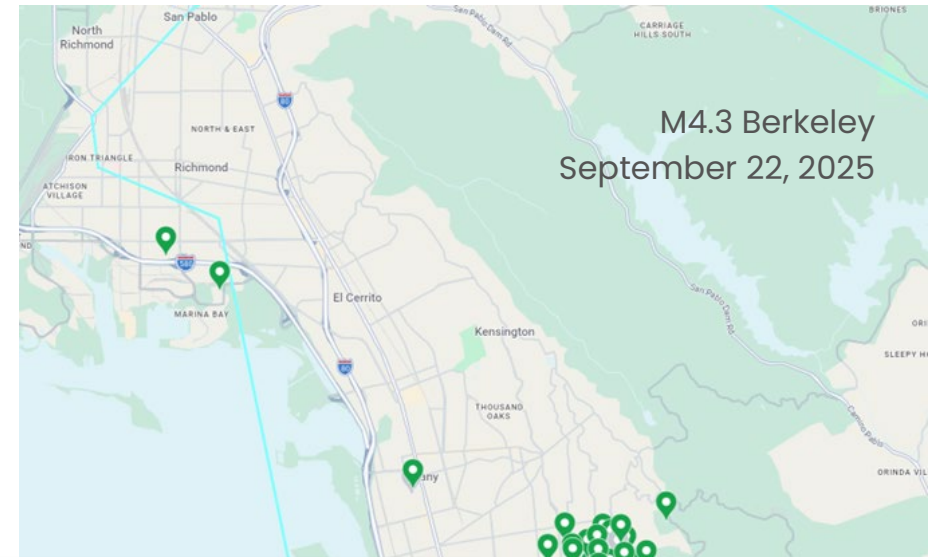
M4.4 Highland Park Earthquake; August 12, 2024



University of California

World's first sensor based parametric earthquake program

- \$55 million policy across UC system
- Also includes post-earthquake damage assessment
- 198 sensors installed across all 10 UC campuses
- 190 earthquakes captured as of February 01, 2026





safehub

Thank You

Item #5 Draft Video by California Geological Survey on the Importance of Instrumentation in Hospitals

- Discussion and public input

Facilitators: Courtney Johnson (or designees)

Item #6 Updates, Progress, and Needs for Planned Deliverables

- Two-page summary
- How-to guide
- Webinar outlines
- Discussion and public input

Facilitators: Courtney Johnson (or designees)

Item #7

Potential White Paper Update

- Discussion and public input

Facilitators: Courtney Johnson (or designees)

Item #8

Comments from the Public/Subcommittee Members on Issues not on this Agenda

The Subcommittee will receive comments from the Public/Subcommittee Members. Matters raised at this time may be taken under consideration for placement on a subsequent agenda.

Facilitator: Teresa Endres (or designee)

Item #9

Adjournment