

## UTAH'S EARTHQUAKE RISK IS HIGH

The 5.7 magnitude Magna earthquake in 2020 was a wakeup call for Utah. That minor seismic event caused \$600 million in damage and exposed vulnerabilities in our infrastructure and utilities.

- ▶ We are overdue for a major earthquake. Utah's Big One is expected to be magnitude 7.0 or greater.
- ▶ 80% of Utah's population lives within 15 miles of the Wasatch Fault between Brigham City and Nephi.
- ▶ Utah has an estimated 175,000 unreinforced masonry buildings, a primary cause of earthquake-related deaths. California has just 25,000.



▶ Damage to unreinforced masonry structures from the Magna earthquake. Photo: The Salt Lake Tribune

### Did You Know?

Utah's Big One will be **90 times** more powerful than the Magna earthquake.

An estimated 100,000 of Utah's unreinforced masonry buildings would be **uninhabitable** after a major earthquake.

20 schools were damaged during the Magna earthquake, including West Lake STEM Junior High, which had to be **demolished**.

## UTAH IS VULNERABLE TO EARTHQUAKES

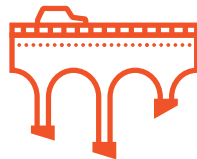
The Next Big One Will Result In:

### Unnecessary Loss of Life



More than 72,000 Utah children attend school in unreinforced masonry buildings—a serious earthquake safety risk.

### Economic Damage



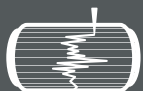
Rebuilding costs from a large Utah earthquake are estimated at \$30-\$60 billion, far exceeding the state's entire annual budget.

### Prolonged Recovery



Disruptions to major water aqueducts and utilities will leave 330,000 homes without drinking water and/or sewer services for up to three months.

## FILLING A PUBLIC NEED



Utah stands alone as the most seismically hazardous state in the nation without a dedicated earthquake engineering center.



Engineers in the private sector are working hard to implement seismic design provisions, but many have no in-depth or formal training in earthquake engineering.



Utah currently has less than 0.1% of the trained, private-sector engineers needed to inspect buildings following a large earthquake.

# UTAH STATE UNIVERSITY PROPOSES AN EARTHQUAKE ENGINEERING CENTER

To help promote resiliency and prepare for a more rapid recovery following a major earthquake.



## The Utah Earthquake Engineering Center Will Provide:

### Education & Training

- ✓ Train a new generation of earthquake engineers and develop Utah's first graduate-level earthquake engineering emphasis area.
- ✓ Provide in-person and online training for working engineers in areas of seismic design provisions and post-earthquake building inspection.
- ✓ Facilitate technology transfer and training on seismic design and retrofitting to benefit Utah's transportation, water, energy, and telecom sectors.

### Engineering Solutions

- ✓ Develop Utah-specific solutions to Utah-specific problems that reduce time and costs associated with hardening our buildings and infrastructure.
- ✓ Provide seismic risk evaluations to prioritize which vulnerabilities to fix first and how to design new buildings and infrastructure better the first time.
- ✓ Focus efforts aimed at fixing Utah's overwhelming number of deadly unreinforced masonry buildings, homes and schools.

### Resilient Recovery

- ✓ Serve the people of Utah as the state's trusted leader in engineering for resiliency and rapid recovery time following an earthquake.
- ✓ Encourage investment in our future: national studies show that every \$1 spent on disaster mitigation saves \$6 in future recovery costs.
- ✓ Help Utah navigate FEMA's new seismic design standards that will focus on minimizing functional recovery time following an earthquake.

## WHY AN EARTHQUAKE ENGINEERING CENTER AT USU?

- Utah State University has a strong engineering tradition and a cohort of faculty with significant experience in earthquake engineering.
- Utah State University will commit \$200,000 annually in faculty and staff support for the center.
- We envision a thriving organization that supports a growing network of civic, industry, academic, and government partnerships.
- The University of Utah Seismograph Stations provide an invaluable public service through seismic research and science. They do not, however, focus on engineering services for seismic infrastructure design and retrofitting. The Utah Earthquake Engineering Center will fill this need.



The Center for Civil Engineering Earthquake Research at UNR houses state-of-the-art shake tables. These types of tools do not exist in Utah. Photo: University of Nevada, Reno

## One-Time Funding Request

### \$1.4 Million

- Custom, large-scale shake tables for simulating earthquake loads and testing building and infrastructure components

### \$650K

- Field testing equipment and fiber optic systems for measuring seismic response in bridges, pipelines, and other infrastructure

### \$1.1 Million

- Upgrading existing USU facility to house new equipment

## \$3.15 Million



UtahState  
University



VIDEO

## UTAH EARTHQUAKE ENGINEERING CENTER

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