



*Cal* OES

GOVERNOR'S OFFICE  
OF EMERGENCY SERVICES

# California Earthquake Early Warning Advisory Board Meeting

September 11, 2024



# Roll Call

- Governor's Appointee representing the Utilities Industry
- Secretary of Transportation
- Chancellor of the California State University
- Secretary of Natural Resources Agency
- Secretary of California Health and Human Services
- Secretary of Business, Consumer Services, and Housing
- Speaker of the Assembly Appointee representing the Interests of Private Businesses
- Senate Committee on Rules Appointee representing County Government
- President of the University of California

# Opening Comments



A large, light blue shield-shaped graphic is positioned on the right side of the slide. Inside the shield, there is a yellow sunburst at the top and a white silhouette of a person's head and shoulders. A small pink star is located above the person's head.

# **Review of Minutes**

December 6, 2023

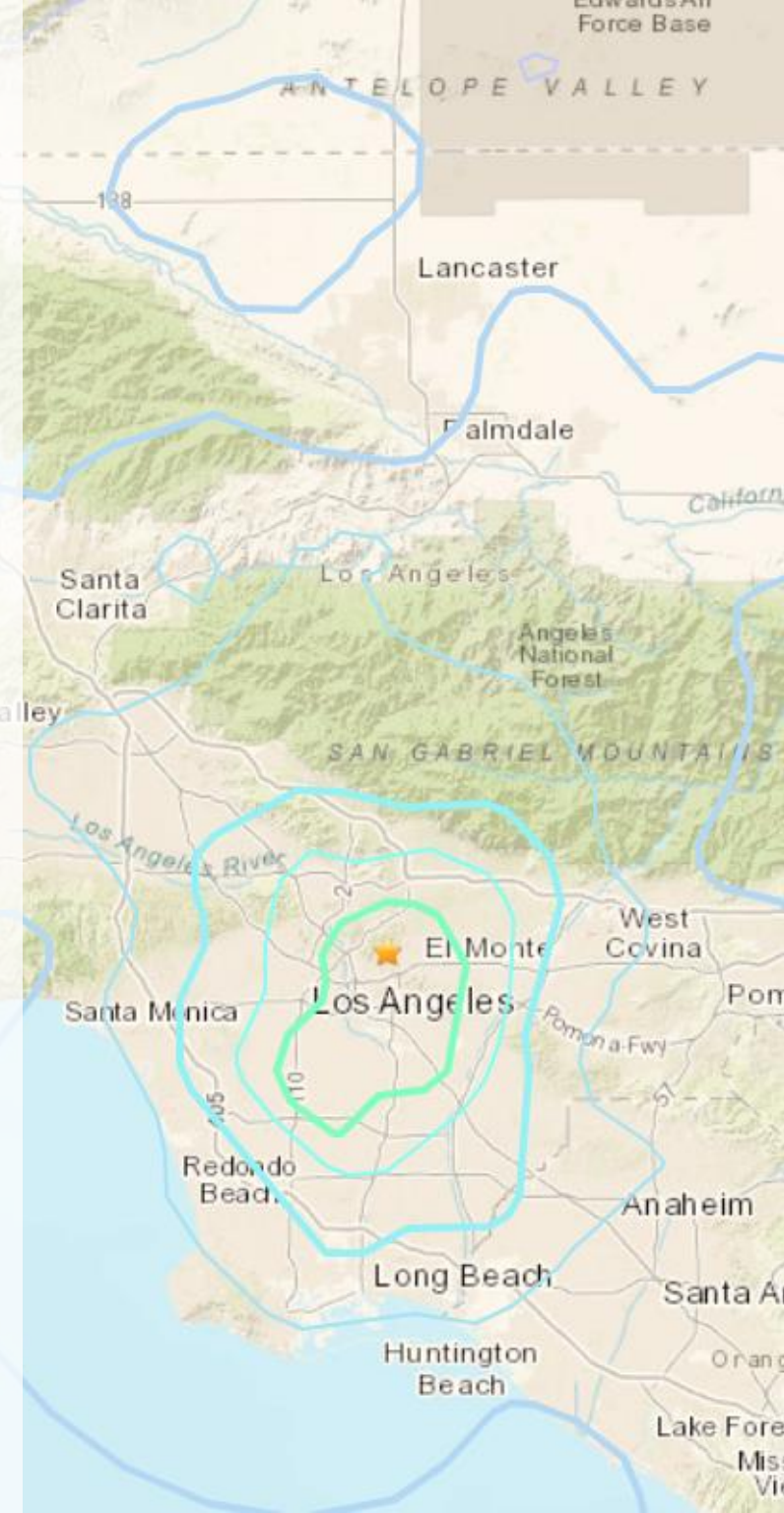
# Recent Events

Phillip Labra, Earthquake Early Warning



# M4.4 – Highland Park, CA

- **Event Occurred:** August 12, 2024, at 12:20 PM Pacific Time
- **EEW Alerts**
  - MyShake alerted 381,255 devices
  - Google/android delivered over 3 million alerts
  - No WEAs were triggered as this did not meet the M5.0 threshold
  - Automated alert notifications
- **USGS Felt Report:** Over 24,200
- **Aftershocks:** 39





# EEW Latency M4.4 – Highland Park

ShakeAlert issued the first alert message in 4.0 seconds. It then took MyShake **1.9 seconds** (total of 5.9 seconds since origin time) to deliver the alert to the first device.

- **20% of the Devices**
  - Received the alert within **6.4 seconds** (total of 10.4 seconds since origin time)
- **50% of the Devices**
  - Received the alert within **7.2 seconds** (total of 11.2 seconds since origin time)
- **80% of the Devices**
  - Received the alert within **9.8 seconds** (total of 13.8 seconds since origin time)





# MyShake App – M4.4 Highland Park

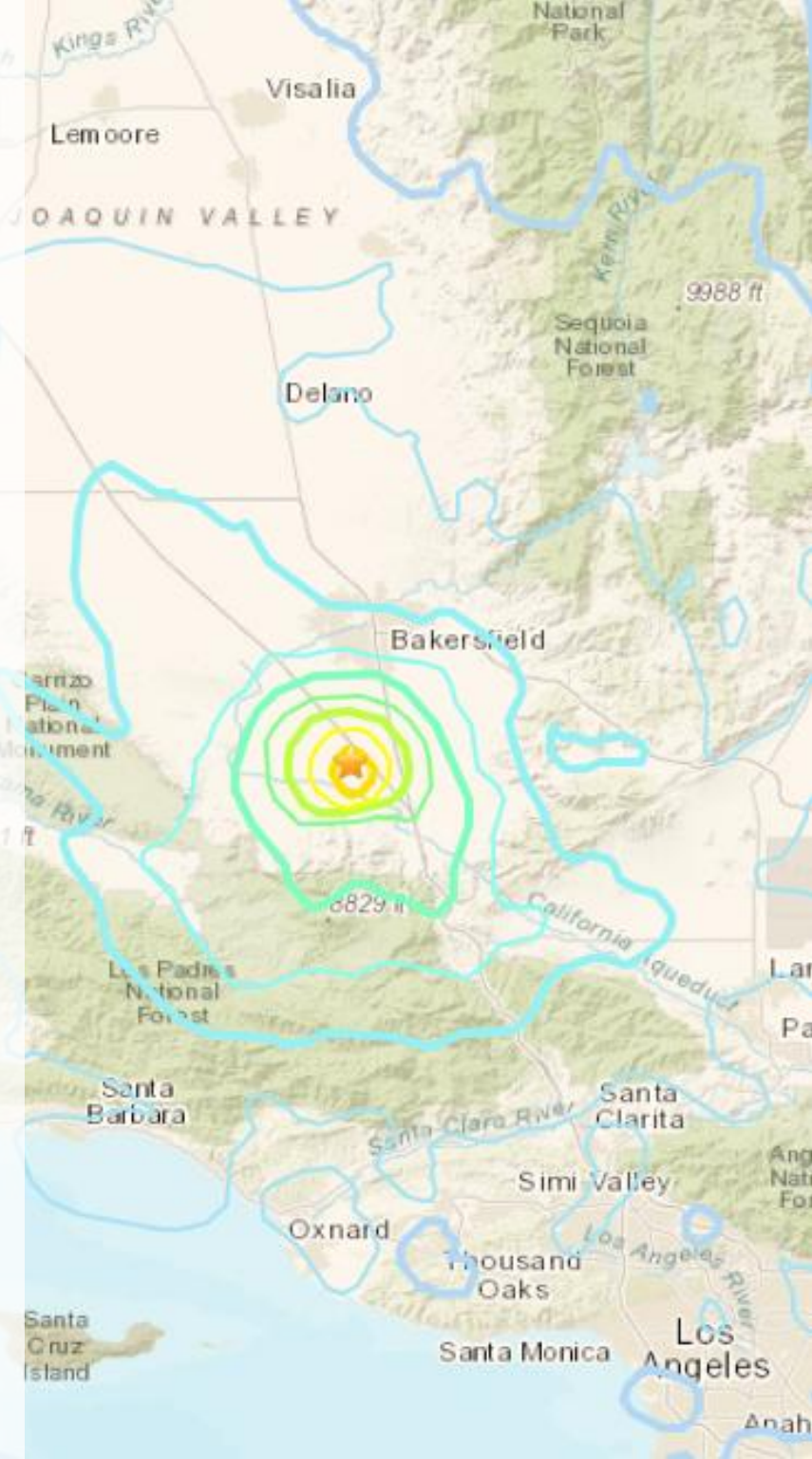
Date	Number of Downloads	Download Daily Increase
08/12/2024	3,416,440	+50,949
08/13/2024	3,462,319	+45,879
08/14/2024	3,481,048	+18,729
08/15/2024	3,500,561	+19,513
08/16/2024	3,516,437	+15,876
08/19/2024	3,529,922	+13,485
<b>Total Increase Since Event:</b>		<b>+164,431</b>





# M5.2 – Lamont, CA

- **Event Occurred:** August 6, 2024, at 9:09 PM Pacific Time
- **EEW Alerts**
  - MyShake alerted 517,354 devices
  - Google/android delivered over 4.9 million alerts
  - WEAs triggered in San Luis Obispo, Santa Barbara, Kings, Kern, Ventura, Tulare, and Los Angeles Counties
- **USGS Felt Report:** Approx. 10,500
- **Aftershocks:** 780+





# EEW Latency M5.2 – Lamont

ShakeAlert issued the first alert message in 6.9 seconds. It then took MyShake **1.29 seconds** (total of 8.18 seconds since origin time) to deliver the alert to the first device.

- **20% of the Devices**
  - Received the alert within **7.4 seconds** (total of 14.3 seconds since origin time)
- **50% of the Devices**
  - Received the alert within **9.0 seconds** (total of 15.9 seconds since origin time)
- **80% of the Devices**
  - Received the alert within **11.6 seconds** (total of 18.5 seconds since origin time)



# MyShake App – M5.2 Lamont

Date	Number of Downloads	Download Daily Increase
08/07/2024	3,279,788	+51,961
08/08/2024	3,317,984	+38,196
08/09/2024	3,337,307	+19,322
08/10/2024	3,350,064	+12,758
08/12/2024	3,365,491	+15,427
<b>Total Increase Since Event:</b>		<b>+137,644</b>



# EEW Alerting and Awareness

- 800,000+ devices alerted through MyShake
- 300,000+ MyShake downloads
- Surpassed 3.5 million MyShake downloads
- **Lamont Earthquake**
  - 92% of devices received alert prior to shaking
  - Not a densely populated area
  - No significant damage
  - Raised earthquake awareness and preparedness
- **Highland Park Earthquake**
  - Densely populated urban areas
  - Minor damages reported
  - System performed as expected







# Post-Earthquake Rapid Response

- EEW targets impacted communities to send response and recovery communication
  - Interviews
  - Social media
  - Public safety messaging on Cal OES's various platforms
- Reassuring messaging
- Proactive steps to be prepared




**California Governor's Office of  
Emergency Services**

Sponsored

MyShake 運用，是重大地震來臨幾秒鐘前提供  
警示的唯一運用程序。

## 地震预警的 3 种方式





晃动之前收到预警


**EARTHQUAKE  
WARNING  
CALIFORNIA**

[earthquake.ca.gov](http://earthquake.ca.gov)  
 现在就下载  
 State of California


[Learn more](#)



# Discussion

Tell us about your experience(s) with these recent earthquake events:

- Did you receive an alert?
- What reactions/discussions occurred as a result of these events?

The background of the slide features the University of Michigan's official shield logo. It is a light blue shield with a white border. Inside the shield, there is a white silhouette of the state of Michigan. The upper portion of the shield is filled with a gold color, and from the top center, several gold rays emanate downwards, partially overlapping the Michigan map and the text.

# **Sector-Based Implementation**

**Megan Sullivan, Research & Development Lead Coordinator**

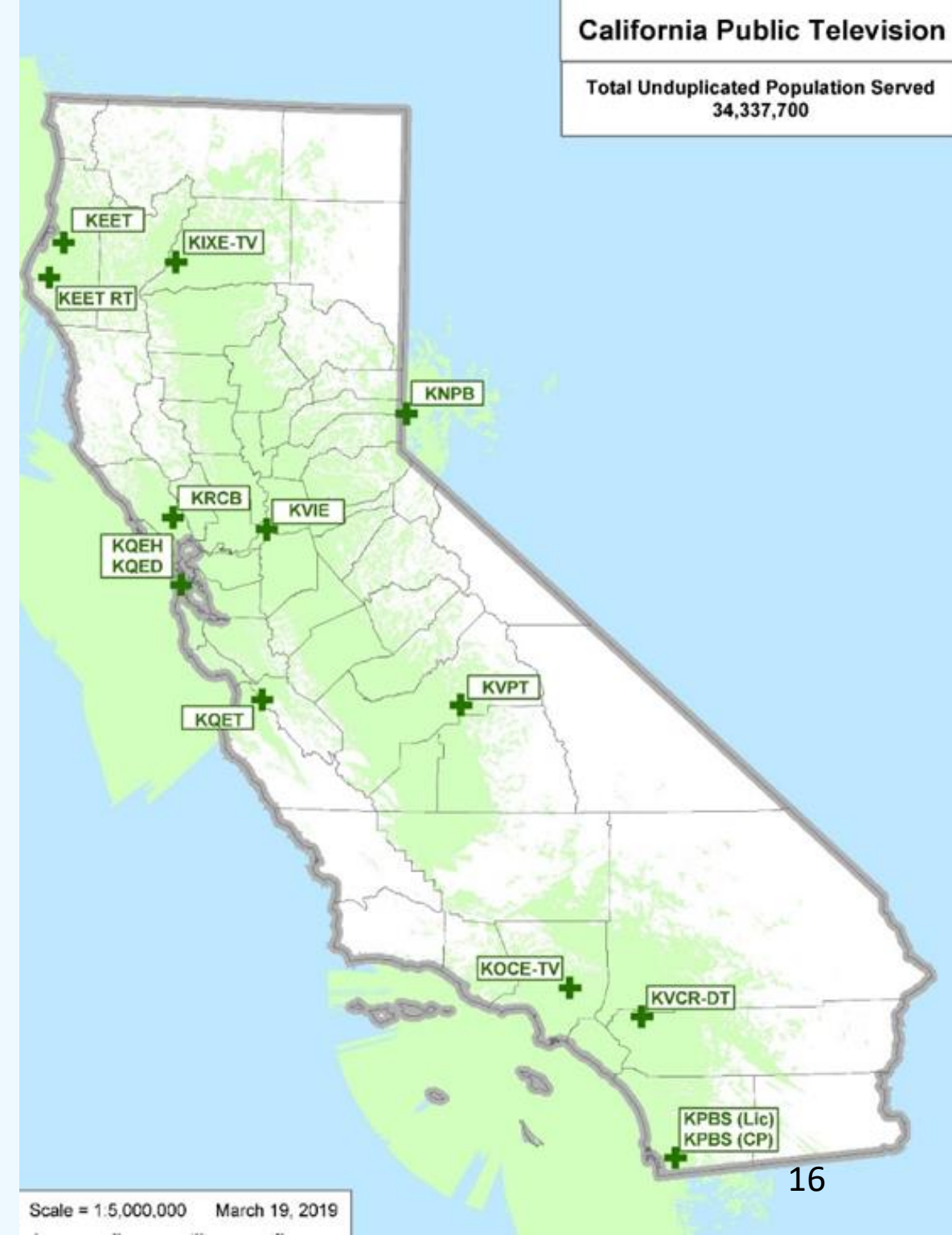




# Datacasting

## Phase 2

- \$500,000 grant to America's Public Television Stations (APTS)
- Goal: Purchase and install datacasting transmission hardware and receivers for the six (6) remaining PBS stations
- Will be completed by December 2024





# Datacasting – Receiver Funding

- AB 102 in the Budget Act of 2023, made amendments to appropriations, which included \$500,000 for the purchase and installation of receiver boxes
- Funds are distributed to America's Public Television Stations (APTS) through a grant
- Focus is on the first responder sector in seismically vulnerable and hard-to-reach places within California
  - Emergency Operations Centers
  - Volunteer Fire Stations







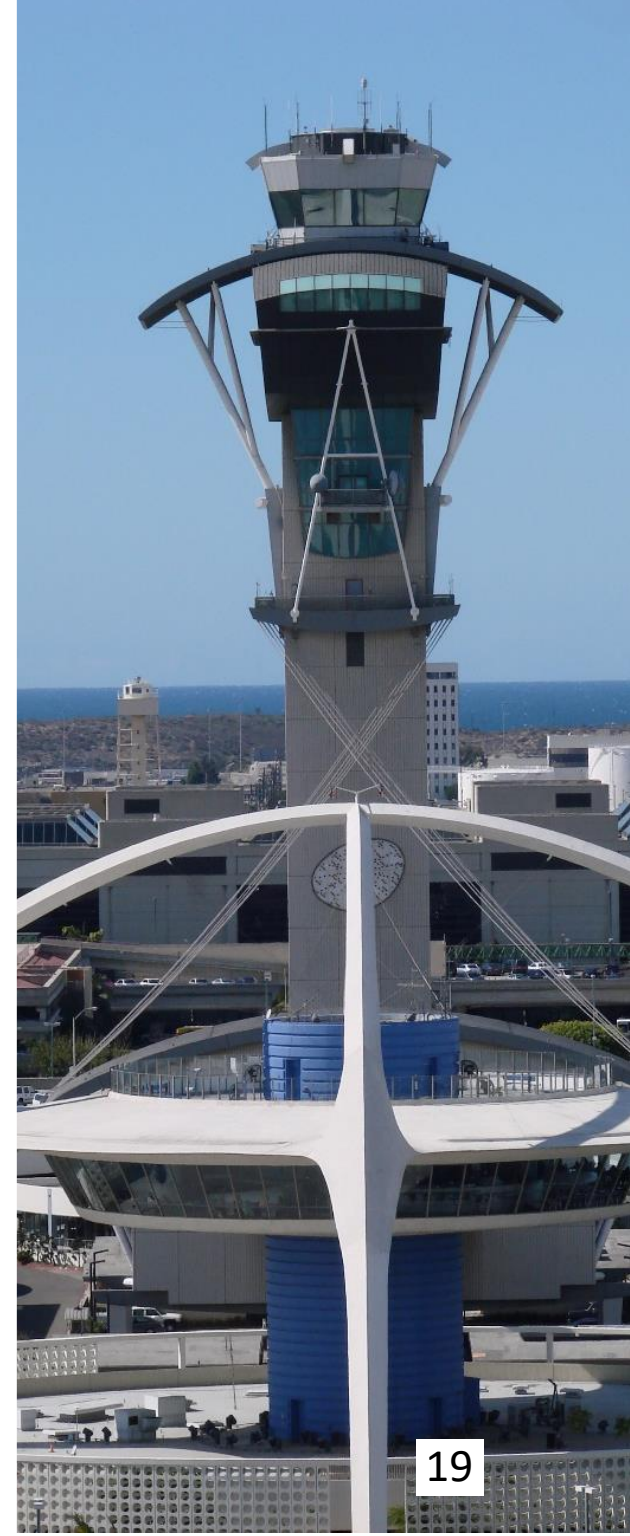
# EEW Fire Station Pilot Project

- Goal: Implement and integrate EEW technology and automated actions within fire stations, including bay door automation
- Subrecipients:
  - Los Angeles County Fire Department
  - Morongo Reservation Fire Department
  - San Bernardino County Fire Department
- Will be completed by December 2025



# EEW Airport Feasibility Study

- Primary stakeholders
  - UC Berkeley Resilient and Innovative Mobility Initiative (RIMI)
  - Pacific Earthquake Engineering Research Center (PEER)
  - UC Berkeley Seismology Lab (BSL)
  - California State Transportation Agency (CalSTA)
  - California Department of Transportation (Caltrans)
- Los Angeles International Airport (LAX) and Palm Springs Airport (PSP)
- Will be completed in April 2025





# Discussion

1) What are the challenges that constrain or delay EEW implementation?



# Discussion

2) What does implementation look like in your industry?

- With multiple seconds of warning before earthquake shaking, what automated actions could be modified or employed to improve safety and earthquake resilience?

# Research and Development







# BSL Placeholder

(EEW Network Performance)



# BREAK

(10 minutes)

# **System Operations Update**

The background of the slide features a large, faint crest of the University of Toronto. The crest is a shield with a gold field containing a white silhouette of a Native American figure holding a bow and arrow. The shield is surrounded by a blue border.

**Phillip Labra, System Operations Manager**



# CEEWS Network Goal: 1,115 Stations

August 2024 Status



996 (+21) stations in CA  
contributing to Shake!lert™



119 stations to go!!



# CEEWS System Operations

Overview 2016-2024



Caltech



## Sensor Build Out Status

- Completed **699** new and/or updated EEW/real-time stations.
- Connected **114** EEW stations to the existing state microwave.

\* **(Red)** text indicates completion since last EEW AB meeting

	Funded New/Updated EEW Stations	Completed	Remaining
CA Geological Survey	232	230	2
US Geological Survey	161	161	0
UC Berkeley	152	151 <b>(+8)</b>	1
Caltech	133	133	0
Department of Water Resources (DWR)	24	24	0
<b>Total</b>	<b>702</b>	<b>699 <b>(+8)</b></b>	<b>3</b>
	Funded EEW Microwave Connection	Completed	Remaining
Communications	350	114 <b>(+1)</b>	236



# USGS Placeholder



# BSL Placeholder (Farallon Islands)



# Education and Outreach

A large, light blue shield-shaped graphic is positioned on the right side of the slide. Inside the shield, there is a yellow sunburst at the top and a white map of the Pacific Northwest region (including Washington, Oregon, and Idaho) on a yellow background.

**Yvette LaDuke, Earthquake, Tsunami, and Volcano Program Manager**  
**Jon Gudel, Education and Outreach Lead Coordinator**



# 2023 Great CA ShakeOut Metrics



**Seven Cities  
Over  
Seven Days**



**Total Ad  
Equivalency  
\$2.4 Million**



**500+ Shake  
Simulator  
Experiences**



**1.4 Billion  
Audience  
Reach**



**39+ Media  
Outlets**



**507 Media  
Mentions**



**1,662 Social  
Media Posts**





# Great CA ShakeOut Drill

- **Thursday, October 17 at 10:17am**
  - Drop, Cover, and Hold On
  - MyShake App
  - Earthquake Safety and Preparedness
- **Cal OES Headquarters**
  - Drill coordination with the California State Warning Center
  - Information booths
  - Digital outreach
  - Engage Cal OES staff







# Great CA ShakeOut Drill

- **UC Berkeley**
  - Bay Area media market
  - Open to the public
  - Campus preparedness activities
  - Earthquake simulator
- **Los Angeles**
  - Southern California media market
  - Closed to the public
  - Full-scale exercise
  - Earthquake simulator







# Great CA ShakeOut Tour

- **Monday, October 14**
  - San Diego
- **Tuesday, October 15**
  - Los Angeles
  - Orange County
- **Wednesday, October 16**
  - Sacramento
- **Thursday, October 17**
  - Berkeley
  - Los Angeles
  - Cal OES Headquarters





# Thank you



# United Way Community Outreach Grant

## Overview

- Earthquake Early Warning Education and Outreach Program focuses on vulnerable populations in the following targeted counties:
  - San Francisco/Santa Clara
  - Riverside
- Funds awarded to two subrecipients:
  - United Way Bay Area (San Francisco/Santa Clara)
  - Inland SoCal United Way (Riverside)







# Program Goals

- 20,000 or more direct public engagements per county
- Focus on areas with increased seismic risk where populations may be socially vulnerable
- Interactions with community members where they are provided education and resources
- Increase earthquake awareness and preparedness
- Community outreach such as:
  - Town Halls
  - Neighbor-to-Neighbor (homes and workplaces)





# Inland SoCal United Way Notable Events

- Vaccine clinics/health fairs
- College and community picnics
- County partner meetings and events with VOAD collaboratives
- Back-to-school events and resource fairs
- Winter Wonderland and Holiday Smiles
- Longest Night of the Year Lunar New Year Festival
- Women's Health Expo
- Salvation Army's Veteran Expo





# Bay Area United Way

## Notable Events

- San Francisco Community Agencies Responding to Disaster (SF CARD) collaborated with other organizations dedicated to sharing preparedness information to vulnerable populations in San Francisco and Santa Clara.
- Outreach to engage people in their native language and demographic includes:
  - Community Living Centers
  - Sunday Streets Community Youth Center
  - Cantonese and Mandarin Community Living







# Discussion

What opportunities (associations, events, conferences, etc.) exist within your sector for EEW outreach or potential partnerships?

The seal of the University of Alaska is a shield-shaped emblem. It features a white silhouette of a grizzly bear walking towards the left. The background of the shield is a light tan color. In the upper left corner of the shield, there is a pink five-pointed star. Above the star, there are several thin, light-colored rays emanating from the top edge of the shield.

# Finance

**Brandon Howland, Education and Outreach Coordinator**



# EEW Budget Update


## FY 2024-25 Spending Plan

- Approximately \$17.1 million ongoing General Fund
- With dedicated funds for:
  - Continued outreach in DEI communities
  - Research and development projects
  - CEEWS operations and maintenance



# Cal OES Director

## Closing Comments



# **Advisory Board Member** Closing Comments



# General Public Comment



# Adjournment

