

CALIFORNIA  
EARTHQUAKE EARLY  
WARNING SYSTEM  
**ADVISORY BOARD**

JUNE 29, 2022, MEETING



**Cal OES**  
GOVERNOR'S OFFICE  
OF EMERGENCY SERVICES



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## California Earthquake Early Warning Advisory Board Meeting

June 29, 2022, 1:00 PM

Zoom Video Conferencing

**Participant Call-In Number:** 1-888-788-0099 | **Meeting ID:** 831 7935 2757

**Passcode:** 0J3=Hpfc

**Meeting Link:**

[California Earthquake Early Warning Advisory Board Meeting Link](#)

### AGENDA

- I. **CALL TO ORDER / INTRODUCTIONS**
- II. **REVIEW AND APPROVE OCTOBER 27, 2021 MEETING MINUTES**
- III. **GENERAL PROGRAM UPDATE**
- IV. **SYSTEM OPERATIONS UPDATE**
- V. **RESEARCH AND DEVELOPMENT**
  - a. MyShake Enhancement
  - b. Discussion
  - c. Public Comment
- VI. **FINANCE**
  - a. Budget Update
  - b. Spending Plan and Executed Contracts
  - c. Discussion
  - d. Public Comment
- VII. **GOALS FOR EEW EDUCATION, OUTREACH, AND EXPANSION**
  - a. Letters to Agencies & Associations
  - b. Industry Implementation
  - c. Discussion
  - d. Public Comment



**VIII. EDUCATION AND OUTREACH OVERVIEW**

- a. Fiscal Year 2021-22 Outreach Highlights
- b. Discussion
- c. Public Comment

**IX. CLOSING STATEMENTS AND PUBLIC COMMENT**

- a. Advisory Board Members may provide closing statement
- b. Public Comment

**X. ADJOURNMENT**

Individuals who require special accommodations, or to receive meeting materials, contact the individual below at least seven (7) days prior to the scheduled meeting date:

Jessica Sicard, Earthquake Early Warning Research and Development Analyst  
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## Previous Meeting Minutes

### California Earthquake Early Warning System Advisory Board

California Governor's Office of Emergency Services (Cal OES)

3650 Schriever Avenue  
Mather, 95655 California  
Via Zoom

October 27, 2021

## Previous Meeting Minutes

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### Members Present:

- Mark Ghilarducci, Director, Governor's Office of Emergency Services
- Lori Pepper, Deputy Secretary, Designee of the Secretary of the California State Transportation Agency
- Bryan Cash, Assistant Secretary, Designee of the Secretary of Natural Resources Agency
- Lupita Sanchez-Cornejo, Corporate External Affairs for AT&T, Appointee of the Speaker of the Assembly representing the interests of private businesses
- Melinda Grant, Undersecretary, Designee of the Secretary of the California Business, Consumer Services and Housing Agency
- Jack Andersen, Director of Architecture and Systemwide Chief Building Official, Designee of the President of California State University
- Alicia Jensen, Program Manager of Emergency Management and Business Continuity, Designee of the President of the University of California
- Holly Porter, Deputy Chief Administrative Officer for the County of San Diego, Senate Committee on Rules Appointee representing county government



## **Members Absent:**

- Julie Souliere, Assistant Secretary, California Health and Human Services
- Vacant, Governor's Appointee representing the utilities industry

### **I. Welcome / Call to Order / Introductions**

- Meeting called to order by the Advisory Board Executive Officer. A quorum was achieved.
- Director Ghilarducci welcomed the Advisory Board members and announced important new hires at Cal OES.

### **II. Review and Approve – Meeting Minutes from August 5, 2020**

- Previous meeting minutes were approved by Advisory Board members, Assistant Secretary Cash and Deputy Secretary Pepper.

### **III. General Program Update**

- General updates regarding the California Earthquake Early Warning Program, Earthquake Warning California, and the MyShake app were provided by Advisory Board Executive Officer Nate Ortiz.
  - Comments: None.
- Doug Given, US Geological Survey (USGS), provided updates on the M6.0 Antelope Valley Earthquake event that occurred on July 8, 2021. In addition, USGS provided general updates on the earthquake early warning (EEW) system.
  - Comment: Ms. Holly Porter, Chief Administrative Officer (CAO), San Diego County, asked for details regarding lessons learned from the Antelope Valley earthquake and the Ridgecrest earthquakes. She also inquired about streamlining station acceptance, and whether different station locations and densities were considered to improve system performance.
- USGS provided additional details regarding what was learned post-event from the Antelope Valley and Ridgecrest earthquakes, as well as status of station location and density for improved system performance. Additional information regarding streamlining station acceptance and target density was provided to the Advisory Board. USGS indicated that issues encountered were not due to the target density but due to the current buildout at that point in time.



- USGS indicated that certain locations will have slight information and telemetry delays. Post-Ridgecrest Earthquake event, significant changes occurred to ensure that the EEW algorithms are more tolerant when data arrives, especially if they arrive out of order. Additionally, station acceptance deals with noise around the site that could cause false alarms.
- USGS informed the board that various stations did not pass quality control after install, which may have caused issues if they had been online. Staffing shortfalls was also cited that contributed to the delay of this work.
  - Comment: Deputy Director Nezhura asked about the process to make algorithms and what an appropriate timeline would be to make necessary changes.
- USGS provided additional details regarding the EEW system algorithms and indicated that scientific partners continue to work on system improvements through the EEW working groups. USGS explained that once new algorithms are coded, they go through a testing performance working group and codes are compared to the baseline of current performance. The duration it takes to modify algorithms depend on the complexity of the change and are tested extensively, over 100 events that also include earthquakes in Japan. The algorithms are routinely checked and modified after earthquake events to ensure they are working appropriately.
  - Comment: Ms. Alicia Jensen, Program Manager of Emergency Management and Business Continuity, asked Mr. Given to repeat the information provided about logic and wanted to know how long it takes for changes to occur.
- USGS indicated that some changes in coding have already been made. The next quarterly cycle begins on November 1 and the additional codes will be submitted. Testing will take approximately 2-3 weeks, and the latest updates will launch in early December if testing is successful.

#### **IV. System Operations**

- Cal OES Earthquake Early Warning Program provided updates on System Operations.
  - Comments: None



## V. Research and Development

- Dr. Jennifer Straus, MyShake Project Manager, UC Berkeley provided updates on the MyShake application platform, blind zone issue factor, and alert notification processes and times, as well as a demonstration of alert notification within the MyShake application.
  - Comments: Ms. Tina Curry, Chief Deputy Director, Cal OES asked for Dr. Strauss to expand on the blind zone factor, and what does the data from the accelerometer inform us about our assumptions.
- UC Berkeley indicated that the Caron earthquakes confirms the previous knowledge that it takes seconds for all information to transmit to the alert centers to process and deliver to devices. In some areas, it can take shorter or longer amounts of time. Additionally, MyShake must receive the alert, process 1.5 million registrations, take the subset in the area, and push to Google Firebase, which launches the push notifications. There is an additional layer within Google Firebase that may push alerts before, during, and after the events.
  - Comments: Igor Stubailo, Research Engineer, California Institute of Technology (Caltech), stated that phone companies need to send a certain number of texts to comply with industry standards. He also asked if sending earthquake alerts during an actual event is scalable, if it would be limited, and if alert messages have higher priority.
- UC Berkeley indicated that push notifications from the app are based on tokens, which do not share the same threshold as sending a text. Token notifications have a different threshold. UC Berkeley also indicated that the app notifications has not reached a ceiling for alert dissemination, even after largescale, rapid-fire tests. This may be due to app messaging having a high priority and approvals in place for critical alerts. UC Berkeley will continue to monitor the situation.

## VI. Finance

- Deputy Director Nezhura provided updates and held discussions regarding the California Earthquake Early Warning System budget allocations.
  - Comments: Director Ghilarducci indicated that the \$17.283 million annual allocation will help to fund one-time





programmatic costs. There is an expectation to continue funding the system, and to secure sustainable, long-term, robust funding, as opposed to one-time allotments. He expressed that this will continue to be discussed further in future meetings.

## VII. Education and Outreach Overview

- Ms. Katherine Carlson, Education and Outreach Program Manager, Pulsar Advertising provided updates on the Earthquake Warning California campaign that launched in August 2020.
  - Comments: Director Ghilarducci expressed his appreciation of the results and inquired further about the number of impressions and user interface. At 1.5 million users, he commented that he thought there would be a larger number in app usage considering there are 40 million people in California. He continued by asking about the challenges of getting individuals to download the app and why there are not more MyShake app users.
- Pulsar Advertising responded by indicating that industrywide, people are app fatigued and may be wondering how much value an app will provide. She added that there is over proliferation of downloading apps, especially if people think they can receive alerts in different ways. From an exposure standpoint, it is important to continue to influence and encourage people to take action. She also added that additional exposure should continue to move the team forward in the campaign.
  - Comments: Director Ghilarducci inquired if there is other areas for improvement that would result in additional downloads.
- Pulsar Advertising responded by stating that a number of different messaging was tested that directed individuals to the app store instead of a website, which reduced the number of steps to download the app.
- Pulsar Advertising indicated that continued exposure, diverse messaging, and other creative products would assist to increase impressions, site visits, and app downloads.
  - Comments: Ms. Porter asked how much of the efforts are centered on expectation management because earthquake early warning has made significant progress with public alerting,



and that the system continues to be built and algorithms adjusted.

- Pulsar Advertising stated that expectation management is important and is something that continues to be improved. Earthquake Warning California encourages individuals to learn about earthquake preparedness and to have a plan, as well as to download the MyShake app. The messaging is centered on encouraging people to be prepared for an earthquake.
  - Comments: Ms. Porter asked if participation in the app would increase if MyShake users had the ability to assist in app development to further advance the alert and warning system.
  - Director Ghilarducci indicated that additional work needs to occur in public education and is a priority for Cal OES. Cal OES informed the board that public education and outreach is a priority and will continue to increase education efforts at the community level.
  - Deputy Director Nezhura added that the next presentation will indicate the education efforts being done at the community level.
  - Ms. Alicia Jensen, Office of Emergency Management, designee of the President of the University of California expressed her appreciation of the campaign and added that the composition of the Advisory Board provides an opportunity to share information about EEW with their respective staff and programs. She has the ability to reach out to the University of California communications team and would follow-up on this effort.
- Pulsar Advertising encourages agencies to visit the website, which provides a robust number of materials to distribute for various sectors and industries.
  - Ms. Jensen added that if the materials come from a trusted source, individuals may be more receptive to the messaging.
  - Director Ghilarducci agreed and indicated that the department will send correspondence to cabinet secretaries, partner agencies, California State University, University of California, and California Community Colleges about the Earthquake Warning California campaign. He also expressed that for those representing departments or the private sectors, he is not comfortable with where the system is currently. And, highlighted



that it is important to accelerate the pace of system development so that we can engage private entities and corporations to integrate EEW into safety and security protocols.

- Advisory Board Executive Officer Ortiz presented on behalf of United Way and provided updates regarding four (4) Earthquake Warning California grants given to target underserved communities. In addition, Cal OES is working with the Imprinta Communications Group to augment outreach towards underserved communities. In addition, he provided information regarding the 2021 Great ShakeOut event.

### **VIII. Next Steps**

- Advisory Board Executive Officer Ortiz discussed integrating EEW systems into various industries and sectors, buildings, and infrastructure. Cal OES will also follow-up by sending letters to engage partners and industries. He inquired how the Advisory Board plans to implement and integrate these systems into their respective areas; and to determine next steps and recommend an approach.
  - Comments: Ms. Lupita Sanchez-Cornejo, Corporate External Affairs, AT&T, stated that a good component of her industry is the ability to connect with business organizations and chambers of commerce. which will allow them to reach a wide range of industry, a cross section of representatives, and their workforce.
  - Undersecretary Grant echoed Ms. Sanchez-Cornejo's suggestions around outreach because within her agency on the consumer side, flyers can go out with business license renewals and other regular mailings. That is a way to expand reach, not just to state workers but also to use procedures already in place.
- Advisory Board Executive Officer Ortiz offered assistance regarding any public relations materials needed, such as flyers, that can be developed by Cal OES.
  - Comments: Vice President Zago indicated that his organization works with 39 chambers of commerce that would assist with extended outreach to companies like Chevron, Panda Express, Raley's, Gap, HP, John Muir Health, and more.
  - Director Ghilarducci expressed his appreciation for all the recommendations and will work with Pulsar Advertising to create packages in order to engage with the various audiences



mentioned. In addition to downloading MyShake, he mentioned that it is important to let businesses know what they can get out of the EEW system. Implementing the system can potentially reduce employee injuries and workers' compensation costs. For example, during the recent earthquake in Southern California, several refineries flared operations, which is how refineries respond to these events and they coordinate with utilities to do this. There is an area of focus and priority, and the department will continue to accelerate and engage this part of the EEW system with partners for implementation.

- Advisory Board Executive Officer Ortiz announced that there will be presentations on system operations at the next meeting.

#### **IX. Closing Statements and Public Comment**

- Advisory Board Executive Officer Ortiz discussed the next steps which includes a focus on increasing EEW implementation among the public at all levels as, well as moving forward with automatic actions triggered by EEW notifications. Resources for board members include [earthquake.ca.gov](http://earthquake.ca.gov) (toolkits, videos, FAQs), [ListosCalifornia.org](http://ListosCalifornia.org) (Disaster Ready Guide, other resources), and [Caloes.ca.gov](http://Caloes.ca.gov) (Preparedness Ambassadors curriculum).
  - Comments: Deputy Director Nezhura mentioned that although the resources mentioned do not focus on MyShake primarily, they provide case studies of actual disasters in the state, as well as resources for students. These resources include a family guide that children can take home to complete with their families and create an earthquake preparedness plan. She also indicated that Cal OES is looking to integrate EEW in future revisions and that these resources have been a focus in magazine articles for teacher associations.

#### **X. Adjournment**

- Director Ghilarducci provided closing remarks.
- Ms. Sanchez-Cornejo motioned to adjourn.
- Ms. Jensen seconded the motion.