

CALIFORNIA EARTHQUAKE EARLY WARNING  
**ADVISORY BOARD**  
MARCH 7, 2019, MEETING



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



# CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

## TABLE OF CONTENTS

Public Meeting Notice.....	2
Previous Meeting Minutes .....	4
Meeting Materials: .....	8



# CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

## PUBLIC MEETING NOTICE



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

### California Earthquake Early Warning Advisory Board

#### Public Notice/Agenda

March 7, 2019  
1:00 PM – 4:00 PM

#### **Meeting Site:**

Governor's Office of Emergency Services  
3650 Schriever Avenue  
Mather, CA 95655  
Multipurpose Room 2

**Date of Notice: February 25, 2019**

**NOTICE IS HEREBY GIVEN** that the California Earthquake Early Warning Advisory Board will meet at the Governor's Office of Emergency Services Multipurpose Room 2 as set forth below. The Bagley-Keene Open Meeting Act applies to meetings of the California Earthquake Early Warning Advisory Board, which are open to the public. Public participation, comments, and questions are welcome for each agenda item. Agenda items may be taken out of order. While the board intends to webcast this meeting, it may not be possible to webcast the entire open meeting due to limitations on resources.

Item	Agenda Topic
I	Welcome – Call to Order – Approval of Previous Minutes – Opening Remarks
II	Business Plan Presentation and Discussion
III	Functional Area Updates
III	General Public Comment*
IV	Adjourn

\* Public comment will be taken before any official actions.

**PUBLIC COMMENT:** If the committee determines that there is not enough time to hear from all those wishing to present comments, the committee will select among those wishing to testify to ensure representation of a range of viewpoints and interests. Those



## CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

providing public comment may choose to supplement their testimony with written statements that will be made part of the official public meeting record.

**SUGGESTIONS FOR SUBMISSION OF WRITTEN MATERIALS:** It is requested that written materials be submitted to the California Earthquake Early Warning Advisory Board Executive Officer prior to the meeting. If this is not possible, it is requested that at least 30 copies be submitted to the California Earthquake Early Warning Advisory Board Executive Officer. This material will be distributed to the California Earthquake Early Warning Advisory Board members.

**ACCESS TO THE HEARING:** The meeting is accessible to those with access and functional needs. A person who needs an access and functional needs-related accommodation or modification in order to participate in the meeting may make a request by contacting Rachel Sierer Wooden at (916) 845-8970 or sending a written request to the Governor's Office of Emergency Services at 3650 Schriever Avenue, Mather, CA 95655. Providing your request at least five (5) business days before the meeting will help ensure availability of the requested accommodation.

### **For further information, please contact:**

General Information:

Rachel Sierer Wooden, California Earthquake Early Warning Advisory Board Executive Officer, at (916) 845-8970 or via email at [Rachel.SiererWooden@CalOES.ca.gov](mailto:Rachel.SiererWooden@CalOES.ca.gov)

Media Information:

Brad Alexander, Public Information Officer, at (916) 845-8455 or via email at [Brad.Alexander@CalOES.ca.gov](mailto:Brad.Alexander@CalOES.ca.gov)



# CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

## PREVIOUS MEETING MINUTES

### California Earthquake Early Warning Advisory Board Meeting Minutes

California Governor's Office of Emergency Services (Cal OES)  
Multi-Purpose Rooms 1 & 2  
Mather, CA  
September 27, 2018

#### **Members Present:**

Mark Ghilarducci, Director of the Governor's Office of Emergency Services (Cal OES)  
Alexis Podesta, Secretary of the California Business, Consumer Services and Housing Agency  
David Bunn, Director of the Department of Conservation, designee of John Laird, Secretary of the Natural Resources Agency  
Susan Fanelli, Chief Deputy Director at the Department of Public Health, designee of Diana S. Dooley, Secretary of the California Health and Human Services Agency  
Carol Farris, designee of Brian Kelly, Secretary of the California State Transportation Agency  
Robert Charbonneau, designee of Janet Napolitano, President of the University of California

#### **Members Absent:**

Lupita Sanchez-Cornejo, the Speaker of the Assembly's appointee representing the interests of private businesses.  
Governor's appointee representing the utility industry  
Senate Committee on Rules appointee representing county Governments

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

- Meeting called to order at 1:02 p.m. by Emily Holland, Acting Advisory Board Executive Officer. A quorum was achieved.
- Motion: Secretary Podesta motioned to accept the April 30, 2018 meeting minutes; seconded by Director Dunn. The motion passed.
- Director Ghilarducci provided opening remarks, which emphasized the importance of timely alerts, the efforts undertaken by the State of California including all the funding allocations for the California Earthquake Early Warning System (CEEWS), and acknowledged that there is a lot of work that still needs to be done collaboratively.



# CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

## II. General Program Update

- Mr. Ryan Arba, Seismic Hazards Branch Chief, Cal OES provided a general update about the CEEWS program that included the proposed roll out plan for 2018.
- Mr. Doug Given, United States Geological Survey (USGS) Earthquake Early Warning (EEW) Coordinator, provided an overview of alert distribution methods including: Wireless Emergency Alerts (WEA) alerts, cell phone applications and datacasting. Notably WEA is operated by cellular carriers on a voluntary basis and currently there are no regulations in place requiring them to do so.
- When asked about the number of sensors to create an EEW, Mr. Given provided that USGS has tested sensor counts and determined that four sensors are ideal because of the reduced chance of false alerts, while issuing an alert fast enough to be useful.
- Mr. Arba outlined the plan for WEA test in the fall of 2018. During the test a WEA alert will be distributed to cell phones; the alert will include an invitation to participate in a survey to measure latency. To be approved by the Federal Communications Commission, any WEA tests will require a public awareness campaign.
- Mr. Arba asked the board for input on the upcoming WEA test. Chief Deputy Director Fanelli asked about public education and outreach options. Mr. Arba provided that the program will participate in various media campaigns, and other public outreach efforts. Director Bunn suggested conducting a series of tests with multiple surveys would be helpful to create general awareness.
- Public Comment: Dr. Dave Crocker (USGS) asked if upgrades on iOS are required to receive alerts and Mr. Given answered that no upgrades are needed and expanded that the speed in which cellular application push notifications are delivered is also unknown and may need modifications to meet speed requirements.
- Dr. Jennifer Strauss, External Relations Officer for the UC Berkeley Seismic Lab, and Northern California Regional Coordinator for ShakeAlert, outlined the current pilot project design and the vetting system currently being used to determine if the projects will meet the requirements.
- Dr. Strauss initiated a discussion about how to increase pilot participation. Director Ghilarducci provided that he learned about challenges with the current pilot project signup process and suggested finding a way to make it as easy as clicking "I agree" to use a cell phone application accordingly. Dr. Strauss provided that there are several "choke points" in the process, starting with the application. The purpose of the intense application process is to vet prospective pilot users and ensure that they will use the signal appropriately and not deliver false promises about EEW capabilities. Director Ghilarducci responded that signal users should agree



## CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

to certain terms and conditions and the state can absorb liability for good faith signal distribution if those are concerns.

- Director Bunn suggested directly approaching organizations that the USGS would like as ShakeAlert pilot users. Dr. Strauss provided that the USGS is currently interested in working in much larger groups, like regulatory agencies with insight on best practices in working with large groups. Director Ghilarducci suggested cutting out the choke points in the application process. CEEWS Advisory Board was composed to engage all industries to fully operationalize the system.
- Secretary Podesta asked about the goals of the pilot, if there is a commercial off-the-shelf (COTS) product or solution that a utility can modify if needed, and advised against suggesting products for consumption in case organizations wish to create a custom solution. Dr. Strauss replied that pilot organizations are providing EEW to people so they can take protective actions. EEW products can be internally developed. One of the choke points is financing the development of an EEW product.
- As a point of clarity, Secretary Podesta asked for examples how people can misuse ShakeAlert data. Dr. Strauss said that pilots are focusing on alerting personnel and that automatic actions are a longer term goal. Mr. Given added that the USGS is frustrated with the lack of connections high enough within organizations to generate excitement and adoption, so the USGS will continue to vet pilot applications to ensure that ShakeAlert pilot users can actually do what they claim they can do.
- Chief Deputy Director Fanelli, noted that different units even within the same hospital may want to take very different actions upon an impending earthquake.
- Director Ghilarducci said that it is the state's job to get the signal out and private industry's duty to develop products for each sector.
- Director Ghilarducci asked how the Joint Committee on Communication, Education and Outreach (JCCEO) fits into the governance structure of CEEWS. Mr. Given said that Dr. Robert DeGroot (USGS) and Dr. Strauss head the group, and they expand on education and outreach backed by social science. Mr. Arba added that the JCCEO has working groups to help create a unified West Coast message for EEW so efforts are not duplicated. Director Ghilarducci suggested that the JCCEO could identify issues for discussion by the Advisory Board.
- Mr. Given said that in fall 2018, a new version of ShakeAlert will be available with the limited rollout. The current version delivers the earthquake location and size, but new version will include ground motion. Magnitude thresholds are currently set at 3.5 for institutional users and 5.0 for public alerting. Mr. Given provided that it is not the job of USGS to tell people what action to take upon receipt of the signal.



## CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

- Mr. Arba provided that there will be limited public rollout to include a statewide counties call to distribute information about the WEA test; media events at BART and Caltech and the Great ShakeOut event at Los Angeles City Hall; and a media campaign to include radio ads funded by the CEEWS FY 2016-17 General Fund allocation.

### **III. Functional Area Updates**

- Mr. Arba provided updates about CEEWS System Operations; Communication, Education, Training, and Outreach activities and plans; Research and Development efforts; and overall Finance and Investment.

### **IV. Public Comment**

- No further public comments were made.

### **V. Adjourn**

- Director Ghilarducci thanked everyone for their efforts and all of the progress that has been made in different areas related to CEEWS. He emphasized that much work still needs to be done in an efficient and expeditious manner and that all parties need to continue working together to accomplish these goals.
- Director Ghilarducci adjourned the meeting.





# CALIFORNIA EARTHQUAKE EARLY WARNING ADVISORY BOARD

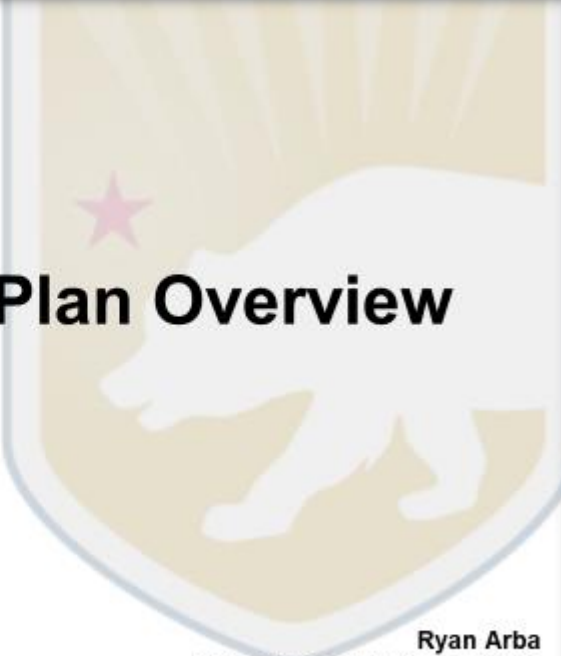
## MEETING MATERIALS:




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

## California Earthquake Early Warning Advisory Board Meeting

March 7, 2019



# Business Plan Overview



**Ryan Arba**  
Seismic Hazards Branch Chief  
Cal OES



## Background

- SB 438 (Hill, 2016) required Cal OES to publish Business Plan and provide annual updates
  - System progress
  - Funding acquired and expended
  - Contracts and RFPs
  - Summary of recommendations made by Board to Cal OES



## Operationalizing the System throughout California





## State Funding Received

- 2016-17: \$10 million General Fund
- 2018-19: \$15 million General Fund
- 2019-2020: \$16.3 million in the Governor's January Budget Proposal



## Spending Plans for State Funding

### 2016-17 Spending

- \$6.5 million for System Operations
- \$2.3 million for Education and Training
- \$700 thousand for Research and Development
- \$250 thousand for Finance

### 2018-19 Proposed Spending Plan

- \$11.4 million for System Operations
- \$2.4 million for Telemetry
- \$1.2 million for Research and Development

### 2019-20

- \$16.3 million proposed to fulfill the remaining one-time costs





## Ongoing (Proposed)

- \$16.4 million in ongoing annual funds are required to support operations and maintenance.
- Initially, recurring funds to be distributed across the sectors that most closely align with the benefit and funding parameters outlined in the Original Business Plan.
  - Investor Owned Utilities
  - Transportation
  - Wireless Telecommunications
- Cal OES is committed to continue to work with all critical infrastructure providers to identify an expanded portfolio of potential investors to ensure a diverse and sustainable funding plan for the future.



## Reported Advisory Board Actions

- Individual interaction with warnings
- Finance
- Increase end-users throughout California





## Functional Area Update



### 2019 CEEW Program Objectives

- Operationalize components of statewide public alert
- Scale demonstration pilots to statewide sector build outs
- Develop standards for end user applications
- Implement ongoing financing structure
- Educate the public



## Public Alert Mechanisms

- Wireless Emergency Alerts
- Cellular phone applications
- On-site receivers
- Other innovative solutions
- Public Alerting Rollout Schedule
  - August 2019: SF Bay Area and urban SoCal
  - August 2020: Central Coast and North Coast
  - August 2021: Statewide



## Wireless Emergency Alert Test

Wireless Emergency Alert  
Earthquake Early Warning Test  
Coming to Bay Area



To learn how to participate in the test and for more information please visit [www.caloes.ca.gov/eeew](http://www.caloes.ca.gov/eeew)



- **Date:** March 27, 2019
- **Location:** Downtown Oakland
- **Objectives:**
  - In partnership with USGS, test the network end to end, from the seismic laboratory to individual cellular phone handsets.
  - Measure the latency between test alert and receipt via survey designed in partnership by Cal OES and USGS



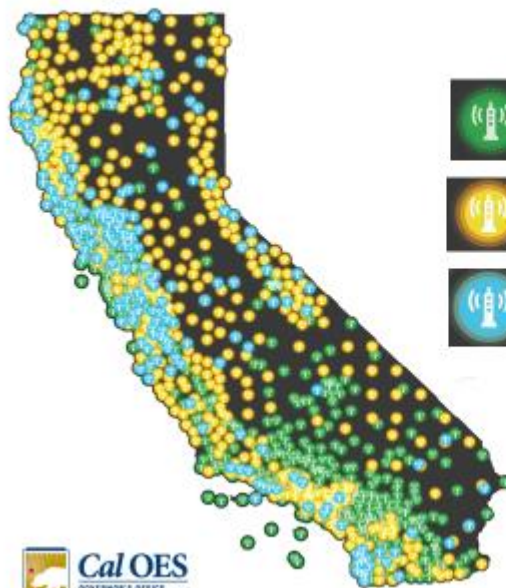


## System Operations

- Current: Progress on seismic station build out, integrate with State Microwave Network
- Future: Build out complete, fully leverage State Microwave Network, build out “last-mile” applications with critical partners



## System Buildout Timeline



Pre-2016 Stations



Stations to be completed in 2019



Stations to be completed by 2021





## Research and Development

- Current: 30+ pilots at various stages
- Future:
  - Map out path forward for statewide implementation
  - Write standards/regulations for technology integration
  - Reduce latency with “no-warning zone” and on end-user applications
  - Oversee Compendium project with UC Berkeley
  - Provide guidance to scale up and streamline the end user enrollment process



## Finance and Investment

- Current:
  - One Time Funding:
    - \$10 m FY 2016-17 State General Fund, \$15m FY 2018-19, \$16.3 m (proposed)
    - \$5.5 m in one time Federal Funds
    - Benefit cost analysis contract being finalized
- Future
  - Implement ongoing funding
  - Work with government and industry to identify funding sources for “last-mile” applications
  - DRRA / Hazard Mitigation Funding

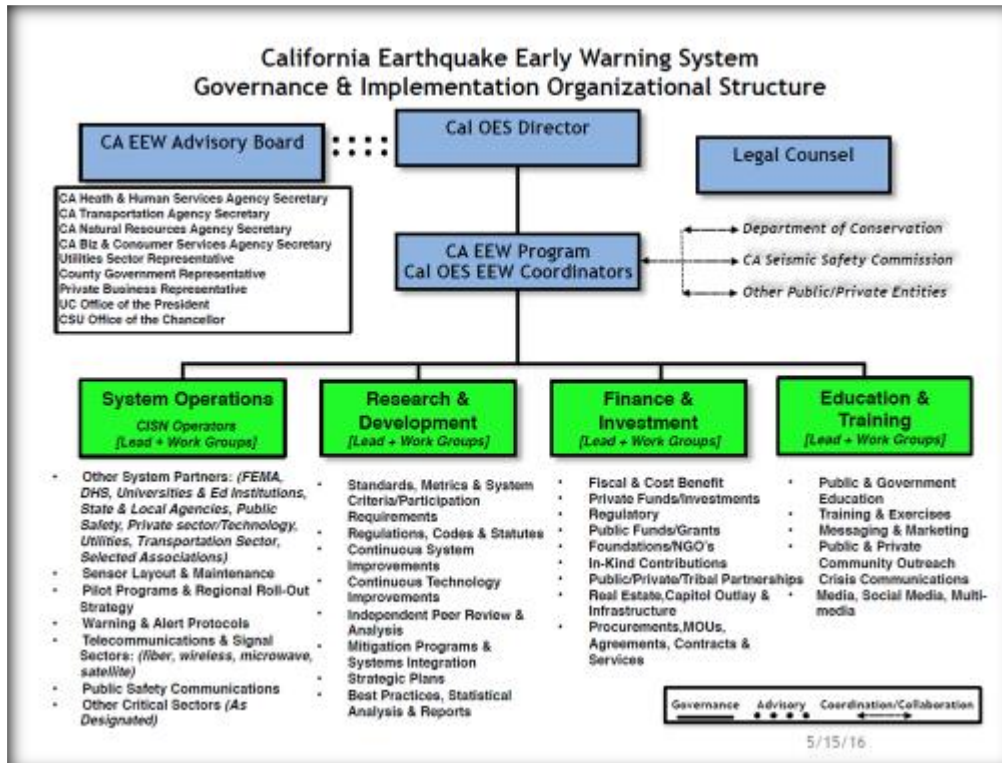






## Education and Training

- Current: radio ads, symposiums, presentations at industry specific meetings
- Future
  - Enhanced educational materials/website
  - Statewide campaign using multiple media options
  - Protective actions for individuals and workforce safety applications





## Work Group Organization

- Cal OES to designate leads for each working group
- Each Advisory Board member designate staff to work on day-to-day issues
- Work groups/group leads in coordination with CEEWS staff will:
  - Establish objectives, timelines and measurements for each functional area
  - Leads will report progress at each Advisory Board Meeting, contribute to the annual Business Plan Update as well as other activities as they emerge.



# Adjourn

