

Alfred E. Alquist Seismic Safety Commission

State Capitol, Room 437

Sacramento, California

Minutes of Regular Meeting

August 13, 2015

Members Present

Timothy Strack, Chairman

Tracy Johnson, Vice Chair

Greg Beroza

Michael Gardner

Mark Ghilarducci

Randall Goodwin (arrived at 10:10 a.m.)

Elizabeth Hess (for Ken Cooley)

Mark Johnson (for Mark Ghilarducci)

Helen Knudson

Jim McGowan

Kit Miyamoto (arrived at 10:56 a.m.)

Ian Parkinson

David Rabbitt (arrived at 10:80 a.m.)

Fuad Sweiss (arrived at 10:20 a.m.)

Mark Wheatley

Members Absent

Anthony Cannella

Peggy Hellweg

Staff Present

Richard McCarthy, Executive Director

Robert Anderson, Engineering Geologist

Henry Reyes, Special Projects Manager

Fred Turner, Structural Engineer

Salina Valencia, Legislative Director

I. CALL TO ORDER AND ROLL CALL

Commission Chairman Timothy Strack called the meeting to order at 10:04 a.m. and welcomed all participants. Legislative Director Salina Valencia called the roll and confirmed the presence of a quorum.

II. CHAIRMAN'S REMARKS

Chairman Strack announced that Senator Anthony Cannella had been appointed to the Commission, and he welcomed Commissioner Cannella. He noted that Commissioner Cannella hoped to attend the next meeting.

III. APPROVAL OF JUNE 11, 2015 MEETING MINUTES

ACTION: Commissioner Michael Gardner made a motion, seconded by Commissioner Helen Knudson, that:

The Commission approve the minutes of the June 11, 2015 meeting as presented.

- * Motion carried, 11 - 0 (Commissioners Randall Goodwin, Kit Miyamoto, David Rabbitt, and Fuad Sweiss absent during voting).

Chairman Strack advised that Item VIII on the agenda would be taken before Item VII.

IV. MULTI-HAZARD SENSOR NETWORK AT LAKE TAHOE AND CENTRAL

NEVADA

Executive Director Richard McCarthy noted that the Commission is interested in partnering with the Nevada Earthquake Safety Council on projects of mutual interest. He said Nevada is working on an early warning network too, and he introduced Mr. Graham Kent, Nevada Earthquake Safety Council, and invited him to discuss that effort.

Mr. Kent said Nevada is building a multi-hazard early warning network based on sensor stations and high-resolution HD cameras that transmit data through microwave and fiber-based systems that are not as likely to fail in catastrophic events as cellular service. He noted that the network is scalable and user-tailored, and it will provide warnings of fires, earthquakes, and extreme weather. He displayed a map of sensor stations in Nevada and California. Mr. Kent identified earthquakes that occurred along the California-Nevada border in 2015, including many larger than a 4 magnitude, and some swarm sequences.

Mr. Kent showed videos of fires spotted by the fire cameras. He said spotting fires results in smaller fires that are controlled earlier. He showed examples of time-lapse videos of fires from the vantage points of various cameras, and he talked about crowd-sourcing funds for additional fire cameras.

Mr. Kent discussed the Alert Tahoe project, a system created to provide emergency information in real time for earthquakes, fires, and floods that will improve business and community resiliency. He said Alert Tahoe will cost about \$2 million to build and run for ten years. He

displayed a coverage map.

Mr. Kent stated that the federal Bureau of Land Management (BLM) also has a fire camera network in northern Nevada that it plans to expand statewide, and he showed a photo of a BLM tower with antenna. He observed that Nevada and California face similar hazards with respect to wildfires, so it would benefit both states to work together. He suggested joint consideration of putting cameras on old fire towers throughout both states.

Mr. Kent said Nevada is working with the University of California at San Diego to develop an integrated unified interface for a microwave-based multi-hazard network rather than one focused on earthquakes only. He remarked that that cellular technologies are still unproven and unreliable in large events, so microwave provides greater reliability and capability. He remarked that there will be 12K fire cameras available soon, and cellular transmission will not be able to keep up. Mr. Kent showed a map of the cellular outage affecting a large section of the U.S. on August 4, 2015.

Commissioner Greg Beroza said California's early warning system is focused on urban areas, which require greater density of sensors than wildfires would require. He asked how Nevada balances that mixture of needs. Mr. Kent stated that Nevada has many unpopulated areas in the center of the state that provide an excellent line of sight for miles around, but cameras on towers in urban areas would have a much more limited range. He recommended investing in the best equipment available to ensure maximum coverage.

Engineering Geologist Robert Anderson said the Commission staff is watching Nevada's progress with great interest. He noted that having cameras could help spot fires and likely areas of damage after earthquakes.

Commissioner Tracy Johnson commented that the redundancy features and reliable microwave-based technology would make this kind of network attractive to investors.

Mr. Kent noted that public communication networks tend to become overwhelmed after earthquakes and other large events, so this system will provide access to a private network.

Chairman Strack thanked Mr. Kent for his presentation.

V. PROGRESS REPORT ON SOUTH NAPA EARTHQUAKE PROJECT

Mr. McCarthy said the Commission is funding research by the Pacific Earthquake Engineering Research Center (PEER) on lessons learned from the South Napa earthquake, with a final report due by the end of this year. He introduced Dr. Laurie Johnson, PEER, and invited her to provide an update on this project.

Dr. Johnson reported that the contract was restarted in July because of long delays in contract approval. She stated that the report features lessons learned, success stories and best practices, issues with existing policies that were not successful, research needs, and recommendations for new policies.

Dr. Johnson reported that PEER researchers met with the staff to develop a work plan. She said researchers are gathering resources, and scheduling interviews with local officials and key state agencies, and the next step will be identifying policy implications and prioritizing recommendations. She advised that a draft report will be ready in November, and it will include some ideas for 2016 legislation.

Dr. Johnson noted that a great deal has changed over the past couple decades in terms of technology and economic conditions. She said the researchers are looking at lessons learned from other events, including recent earthquakes in New Zealand, Japan, Chile, Mexico, and the 2003 event in San Simeon, California. She reported that a title and outline have been developed, and findings will be divided by topic. She noted that topics will cover a broad range of disciplines, such as geoscience, structural engineering, infrastructure, people and business impacts, government, and others.

Commissioner Knudson asked how many people in the Napa area were still in temporary housing and how social services and infrastructure needs were being provided. She said these were issues in the 2010 Baja earthquake as well. Dr. Johnson replied that she would look at these issues.

Commissioner Rabbitt reported that the Napa city council had just approved a demolition permit for a historic stone structure, and the county council had replaced a bridge. He remarked that the Napa earthquake seems to have alerted local wineries to the need for secure barrel storage

systems.

Commissioner Sweiss asked if the report will look at earthquake impacts on lifelines, and Dr. Johnson responded that infrastructure will be one of the topics. She said the gas system was replaced in the Browns Valley subdivision. She added that there had been some negative comments about the lifeline providers and mutual aid, and a series of meetings was held over the past year to resolve these issues.

Chairman Strack thanked Dr. Johnson for the update and said the Commission looked forward to receiving the report.

VI. PROGRESS REPORT ON RECOVERY MODELING WITHIN THE GLOBAL EARTHQUAKE MODEL

Mr. McCarthy said the Commission is providing funding for two Global Earthquake Model (GEM) projects, one that identifies underlying assumptions in existing damage models, and another to develop simulation tools that will identify policies and practices that tend to facilitate post-earthquake recovery. He introduced Dr. Chris Burton, GEM, and invited him to provide an update on the recovery modeling project.

Dr. Burton provided a brief background on GEM, a global nonprofit public-private organization created to help worldwide communities better understand their risks, identify specific vulnerabilities, estimate losses and damage, mitigate hazards, and speed up recovery. He said

GEM is developing open-source tools for its OpenQuake Web platform that shares data with a wide variety of users.

Dr. Burton displayed photos of buildings damaged in the Napa earthquake and some of the recovery and rebuilding efforts since then. He said GEM's tools take into account a community's built environment, population, policies, and existing programs and resources. He noted that shaking can be linked to damage, and then various external factors are incorporated to plot recovery trajectories and predict recovery time. Dr. Burton reported that GEM researchers are studying the drivers of recovery by identifying and incorporating the appropriate externalities into the calculations.

Dr. Burton showed examples of color-coded maps used to portray rates of recovery from a Mississippi hurricane at six-month intervals for four years for different affected communities. He showed damage maps and recovery trajectory graphs. He noted that this kind of quantifiable data can be used to identify drivers of recovery in terms of environmental, social, community, economic, institutional, and infrastructure-related factors, and then regression models can be developed to understand the predictive values of various factors.

Dr. Burton outlined next steps, included ongoing data collection and in-depth analysis of recovery drivers. He said researchers have been able to incorporate lessons learned from other earthquakes and externalities for Southern California, and a software tool is being developed that will expand this capability.

Mr. McCarthy expressed concern about the potential impact of a large earthquake in California now, given current economic conditions and the growing stress imposed by the drought.

Commissioner Miyamoto commended GEM for going beyond just scientific data and looking at social factors too, noting that this kind of analysis is often the most difficult. He asked how confident GEM was of its forecasting ability. He noted that GEM's modeling efforts can help spot trends, and tools must be flexible enough to accommodate the needs of many users.

Commissioner Miyamoto emphasized the importance of social and psychological components in influencing government policies. He recommended that GEM work with local building departments and first responders to make them aware of how the software and tools can enhance their understanding and ability to recover.

Dr. Burton indicated that GEM used census data and was confident of its statistical models, and other GEM tools will be incorporated in the recovery model as well. He advised that GEM plans to invite community leaders to review the tool and provide their feedback. He added that the model was tested in Katmandu twice, as well as in Quito, Addis Ababa, and 30 cities in Nepal, and the Napa earthquake provides a great opportunity to demonstrate its benefits.

Commissioner Knudson recommended considering earthquake insurance as an additional external feature. Dr. Burton agreed that insurance coverage was an importance variable, and he said the researchers will need to obtain data on that issue. Commissioner Mark Ghilarducci offered his assistance in working with the California Earthquake Authority to obtain the information, and Dr. Burton thanked him for his help.

Chairman Strack thanked Dr. Burton for the update.

VIII. EARTHQUAKE EDUCATION/OUTREACH RESEARCH PROJECT FOR SMALL BUSINESSES (PHASE II)

Mr. McCarthy noted that the Small Business Development Centers (SBDC) had completed Phase I of its Commission-sponsored project, which entailed surveying business owners about their preparedness needs, and then developing preparedness guidelines for small businesses. He introduced Mr. Joel Ayala, SBDC, and invited him to discuss Phase II of the work. He added that a proposal will be coming to the Commission for approval at the October meeting.

Mr. Ayala reported that the survey of small business revealed that not many are prepared or have plans for coping with major disasters. He said many respondents identified restoration of utilities as their biggest concern. He advised that Phase II of the project will involve outreach and finding the best ways to reach small business owners. Mr. Ayala clarified that SBDC can play an important role in helping organizations like the Commission disseminate their messages and access small businesses.

Mr. McCarthy indicated that the staff was waiting for feedback from GoBIZ. He added that a number of small business owners had already expressed interest in the early earthquake warning system.

Commissioner Chester Widom stated that the Division of the State Architect created a certified access specialist program to help small businesses improve their understanding of access requirements. He encouraged SBDC and DSA to find ways to work together. Mr. McCarthy said he would arrange a meeting before the October Commission meeting.

Commissioner Ghilarducci observed that keeping small businesses going after a disaster is critical to recovery. He noted that 80 percent of small businesses close after major events, and the same impacts and results have been observed after disasters for many years. He emphasized the need to change these conditions, and he supported a goal of working in partnership to help small businesses become key cornerstones of resiliency.

Mr. Ayala said SBDC is working with GoBIZ, the Department of General Services, and other state organizations to help them reach small businesses at their conferences and summits. He encouraged the Commission to attend future small business summits.

Chairman Strack thanked Mr. Ayala for his presentation. He added that keeping small businesses functioning after a disaster is a high priority for California.

VII. PROPOSAL: “THE VALUE OF A CALIFORNIA EARTHQUAKE EARLY WARNING SYSTEM”

Update on SB 494

Commissioner Ghilarducci stated that SB 494 (Hill), creates an overarching set of earthquake programs and would entail moving the Commission away from the Business Services, Consumer, and Housing Agency where it is currently housed, to the California Office of Emergency Services (OES).

Commissioner Ghilarducci noted that the Commission's chief role is to provide important multi-disciplinary advice to the state on earthquake preparedness issues, post-earthquake impacts, research needs, and government policies. He pointed out that many of the Commission's useful products and resources have ended up on a shelf because interest in earthquake safety predominately spikes immediately after a large earthquake but fades after that. He expressed his hope that having the Commission with OES will give the Commission greater access to key decision-makers and more influence on state policies.

Commissioner Ghilarducci expressed his opinion that working with OES can provide some important benefits for the Commission, such as the ability to better on projects and earthquake efforts rather than administrative tasks, and making decisions and recommendations that can have an immediate impact on state operations. He advised that the legislative goal is to pass SB 494 this session, and then roll in implementation in the new year.

Update on Early Warning System

Commissioner Ghilarducci said SB 135 created a process for developing an earthquake early warning system for California. He noted the intent of the legislation is to combine and integrate

public and private resources to leverage funds and develop a statewide network. He clarified that the goal is not earthquake prediction, but rather to provide an advance alert based on detection of “P” waves before an earthquake’s “S” waves are felt. He stressed that the network needs to be reliable, systematically implemented, and cost-effective; otherwise, its development will waste unnecessary time and money and undermine public confidence.

Commissioner Ghilarducci advised the SB 135 established a multi-disciplinary working group of public and private stakeholders to define the standards for inclusion in the network, identify funding sources, and convincing potential private-sector sponsors of the system’s benefits. He remarked that a number of major utilities, transportation businesses, and telecommunications companies are on board, but other industries still need to be engaged. He advocated performing a cost-benefit analysis to provide more concrete support of the potential benefits.

Commissioner Ghilarducci agreed with Dr. Burton of GEM that transmission of signals through Internet channels is often impossible after a major disaster, and he underscored the need to work with other systems to leverage public and private resources. He indicated that the working group has already identified potential funding sources and is recommending a stronger governance model to consolidate efforts and coordinate with other organizations.

Commissioner Ghilarducci said the working group is also crafting a proposal for a new board to identify research and development needs, set standards, and gather input from stakeholders, then supervise operations of the early warning/seismic network in coordination with tsunami programs, the Strong Motion Instrumentation Program, California Geological Survey, and public

education programs; as well leveraging and managing funding, ongoing administration, and maintaining the system in future years.

Discussion of SB 494

Commissioner Beroza asked if funding issues would be resolved by January of 2016, and Commissioner Ghilarducci responded that funding sources have already been identified, and passage of SB 494 will accelerate that process.

Commissioner Goodwin noted that from a local government perspective, the Seismic Safety Commission does great work and has an excellent reputation. He observed that the Commission has always been transparent as a state government entity, and he asked if moving the Commission to OES would change that. Commissioner Ghilarducci expressed his opinion that the change will enhance the Commission's abilities and provide a more integrated collaboration with all disciplines. He said public involvement strengthens California's preparedness level, so the Commission can continue and enhance its current capabilities and engage more sectors.

Commissioner Michael Gardner commented that SB 494 is an interesting and sweeping proposal that commissioners need to think through and digest. He said he could see benefits of moving to OES, but he also expressed concern about the makeup of the oversight board, and he suggested including the chairman of the Seismic Safety Commission and a public safety representative. He expressed support for having three cabinet-level state officials and local government representatives from north and south. Commissioner Ghilarducci thanked Commissioner

Gardner for his suggestions.

Commissioner Ian Parkinson said he spoke with Mr. McCarthy about the proposed change, and it seems that transferring administrative functions elsewhere would help the Commission focus on its work. He acknowledged that many details still need to be worked out.

Commissioner Ghilarducci said California needs to do something different and soon. He emphasized that another big earthquake will happen, perhaps on the Hayward or San Andreas fault. He noted the focus of disaster preparedness changed in the U.S. and California after 9/11, shifting from natural disasters to terrorism; after Hurricane Katrina, the focus shifted again to an all-risk approach.

Commissioner Ghilarducci observed that much has changed over the past decade in California as technological capabilities have exploded. He mentioned that San Francisco and Los Angeles have both enacting groundbreaking ordinances to deal with hazardous buildings in their jurisdictions, and the California Earthquake Authority is offering new programs. He advised that there has been considerable private-sector interest in California's earthquake early warning system, and California can springboard on these efforts for the next ten or twenty years. He said the state can bring all this together, and also work with Nevada, Oregon, and Washington, and other states.

Commissioner Chester Widom proposed a minor amendment; citing the description of the advisory committee on page 2, he recommended specifying a structural engineer, and including a

mechanical-electrical-plumbing engineer and an architect as well.

Commissioner Mark Wheeler remarked that Cascadia is a huge dilemma for the north coast. He agreed that OES could enhance the Commission's abilities, and it could be good for local governments as well. He noted there are existing networks for vetting policies, such as CSAC and the League of California Cities, and the business community, and he suggested working closely with those organizations.

Commissioner Ghilarducci advised there is a saying that "All disasters are local," and community resiliency is a critical factor in disaster recovery. He expressed interest in how local governments use their networks, and he noted that communications could help reduce fires and power outages in some circumstances. He said the City of Los Angeles has encountered resistance from businesses when trying to enforce aggressive hazard mitigation objectives, so building stronger community partnerships would be very beneficial.

Commissioner Johnson expressed her opinion that moving the Commission into OES makes sense, and she recommended clarifying the Commission's role. She said she envisioned the Commission as developing partnering relationships, fostering broad thinking, providing a forum for ideas, and initiating outreach to a range of populations. She noted the Commission has formed ties with Nevada and is working in partnership with small businesses and other groups.

Commissioner Ghilarducci said he had the same view of the Commission's role. He noted that working under OES will likely create more work for the Commission in terms of review and

advice.

Commissioner Miyamoto said OES seems a natural fit for the Commission. He pointed out that there were also benefits to being outside OES, and he asked how independent the Commission would be and what checks and balances would exist.

Commissioner Ghilarducci responded that the Commission's role now is to make recommendations and provide advice to OES and the Governor's Office, and that role would continue. He said the Commission will continue to be transparent and independent, but also more collaborative, and in a better position for checks and balances as a result. He noted that OES can streamline the Commission's access to top decision-makers in the state, so the Commission will have more influence on policy development, implementation, operations, and strategy.

Commissioner Miyamoto said he was excited to be part of OES because implementation of seismic safety policies is a critical step in making a change. He acknowledged that there might be some loss of independence, and noted that California does need an independent voice. He recommended creating some kind of system within OES to fill that need. Commissioner Ghilarducci thanked Commissioner Miyamoto for his recommendation and said OES will consider this point.

Commissioner Rabbitt commented that streamlining administrative tasks for the Commission would be a wonderful idea. He expressed concern about the effects on local governments of the

change in Commission governance. He said local governments are overwhelmed and need help, especially with implementation. Commissioner Ghilarducci clarified that OES is a coordinating agency, not a regulatory agency, but OES can work with regulatory agencies on behalf of local governments, and the Commission can act as a forum for gathering input from local governments.

Chairman Strack thanked Commissioner Ghilarducci for his remarks. He noted that the lack of cohesiveness with respect to earthquake policies in different local jurisdictions has been frustrating to commissioners for many years, so it is encouraging to hear about opportunities for the Commission to work within OES to expand outreach, and to keep the value of the Commission intact.

Update on Earthquake Early Warning System

Mr. Mark Johnson, Cal OES, provided an update on the progress in developing an earthquake early warning system for California. He said the state has been working with private- and public-sector representatives since 2013 to develop a strategy, and the next task is completion of a cost-benefit analysis. He explained that because the early warning system is a complex initiative and represents a sizable investment for the state, a study is needed to validate and identify the benefits for utilities, telecommunications, lifeline providers, and other industries in California. Mr. Johnson referred to the draft scope of work in the meeting packet. He explained that the proposal is for a consultant to interview representatives of the financial sector, water companies, utilities, telecom industries, technology experts, managers, hospitals, and other

sectors to identify the specific benefits to them of the earthquake early warning system, and then to produce a written report to OES and the Commission. He recommended that the Commission authorize OES to proceed with the contractor selection process and authorize the funding for this work.

Chairman Strack noted the Commission's next meeting is in October, and action is required before then. He suggested that two commissioners volunteer to assist OES with finalizing the contract so they can proceed with the work.

Commissioner Beroza noted that Task 3 is a summary of other countries' systems. He suggested finding out if data is available on impacts and benefits and incorporating that as well.

Commissioner Johnson observed that the focus of the study is the benefits of the system. Mr. Johnson clarified that cost savings would be considered a benefit. Commissioner Gardner recommended identifying the benefits that will be the most important driving forces in attracting funding. Commissioner Johnson suggested acknowledging costs when interviewing people, and she agreed that completing the cost-benefit analysis was a critical step. Commissioner Ghilarducci said a better estimate of costs is also needed.

Commissioner Ghilarducci advised that the working group has been able to get utilities to support the proposal, but they need to present the idea to their shareholders using independent data. He noted that utilities already provide a credit for hazard mitigation each year.

Commissioner Wheeler pointed out that California's ports also face tremendous environmental and economic risks, and he suggested working with them as well. Mr. Johnson stated that OES has contacts with ports, and he said this language can be added to the scope of work.

ACTION: Commissioner Gardner made a motion, seconded by Commissioner Wheeler, that:

The Commission authorize OES to proceed with contractor selection as proposed and move forward with the work.

* Motion carried, 13 – 0 (Commissioners Parkinson and Widom absent during voting).

Commissioners Wheeler and Gardner volunteered to work with OES to finalize the contract.

IX. LEGISLATIVE UPDATE

Legislative Director Salina Valencia stated that the Legislature was currently on its summer recess, due to return to the Capitol the following Monday. She noted that Commissioner Ghilarducci had already covered SB 494, and she said she would have more to report at the October meeting.

X. EXECUTIVE DIRECTOR'S REPORT

Budget

Mr. McCarthy said the Commission ended the 2014-15 fiscal year in satisfactory shape, having billed for overhead costs on research projects. He estimated there was still a \$20,000 reserve in the research fund and \$3,000 in unbilled overhead. He indicated he would have better projections available at the October meeting. Mr. McCarthy added that he would send fiscal year recap figures to commissioners as soon as they become available.

Filling Vacant Staff Services Manager I (Specialist) Position

Mr. McCarthy reported that about twenty applications had been received for the vacant staff services manager position, and he said he would be contacting one or two commissioners to participate with Agency and OES representatives in interviews.

October Meeting

Mr. McCarthy noted that Commissioner Mark Wheatley will be hosting the Commission's October meeting in Arcata. He said the staff is investigating possible field trips, such as a tour of the Carson Mansion in Eureka and a river and salmon-fishing excursion with a Yurok tribal group. He added that a three-day Cascadia workshop will take place following the Commission meeting, so some commissioner may want to attend that event as well.

Mr. McCarthy said the staff will be working with Commissioner Wheeler to develop a draft agenda and field trip options for the Commission to consider. He indicated that the Commission will be hearing presentations from local government agencies and people from Humboldt State University, and he invited commissioners to contact him if they had suggestions for other agenda items.

Co-Sponsorship of “User Needs Workshop for the National Seismic Hazard Mapping Project”

Mr. McCarthy advised that the Commission will be co-sponsoring and upcoming user needs workshop with the U.S. Geological Service (USGS) and others, and he noted that Commissioner Beroza and Engineering Geologist Robert Anderson planned to attend.

Shake Table Demonstration at State Fair

Mr. McCarthy reported that the Commission worked with OES and EERI supplied a shake table for demonstrations at the state fair, and he said this activity was well attended and popular.

XI. PUBLIC COMMENT

There were no members of the public who wished to address the Commission.

XII. MISCELLANEOUS AND GOOD OF THE MEETING

There were no other matters brought to the attention of the Commission.

XIII. ADJOURN

There being no further business, the meeting was adjourned at 12:49 p.m.