



State Of California

## ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION



*Governor Edmund G. Brown Jr.*

Alfred E. Alquist Seismic Safety Commission  
State Capitol, Room 4202  
Sacramento, California  
Minutes of Meeting  
July 11, 2013

### Members Present

Michael Gardner, Chairman  
Mark Pazin, Vice Chairman  
Greg Beroza  
Ken Cooley/Mark Elsesser (arr 10:02 a.m.)  
Peggy Hellweg  
Helen Knudson  
Mark Ghilarducci  
Emir Macari  
Jim McGowan  
Kit Miyamoto (arr. 10:20 a.m.)  
Timothy Strack  
Fuad Sweiss  
Daniel Torres  
Chester Widom (arr. 10:04 a.m.)

### Staff Present

Richard McCarthy, Executive Director  
Karen Cogan, Administrative Manager  
David King, Legislative & Special Projects Mgr  
Henry Reyes, Special Projects Manager  
Fred Turner, Structural Engineer

### I. CALL TO ORDER/ROLL CALL

Chairman Michael Gardner called the meeting of the Alfred E. Alquist Seismic Safety Commission to order at 10:01 a.m. and welcomed all participants. Administrative Manager Karen Cogan called the roll and confirmed the presence of a quorum.

### II. CHAIRMAN'S REMARKS

Chairman Gardner congratulated Commissioners Timothy Strack, Emir Macari, Mark Ghilarducci, and Peggy Hellweg on their reappointments.

### Introduce New Commissioners

Chairman Gardner welcomed the newly appointed Commissioners Greg Beroza and Fuad Sweiss, and invited them to introduce themselves.

Commissioner Beroza stated that he had been a professor of geophysics at Stanford University since 1990, chair of the Geophysics Department there since 2008, and deputy director of the Southern California Earthquake Center since 2007. He thanked the Commission for welcoming him and said he looked forward to a productive year.

Commissioner Swiss indicated that he had been City Engineer and Deputy Director of Public Works for the City and County of San Francisco since 2009. He noted that he was originally from Jordan, had worked for the City of Oakland from 2006 to 2008, and had participated in that city's recovery efforts after the 1989 Loma Prieta earthquake.

Chairman Gardner introduced Ms. Sarah Greenseid, Deputy Appointments Secretary, Governor's Office, and he welcomed her to the meeting.

### III. APPROVAL OF MAY 9, 2013 MINUTES

**ACTION:** Commissioner Strack made a motion, seconded by Commissioner Helen Knudson, that:

*The Commission approve the minutes of the May 9 meeting as proposed.*

\* Motion carried, 13 – 0 (Commissioner Kit Miyamoto absent during voting.)

### IV. EXECUTIVE DIRECTOR'S REPORT

Executive Director Richard McCarthy welcomed the new commissioners. He congratulated the Commission on obtaining a permanent funding source through the Insurance Fund, an issue that has been a critical priority for many years. He thanked the Governor, legislature, staff, commissioners, insurance industry representatives, for their support and said he looked forward to rebuilding some of the Commission's important programs.

#### **Budget Status – FY 2012/13**

Mr. McCarthy reported that the staff is anticipating a funding deficit of approximately \$153,000 for Fiscal Year 2013/14, and he presented a series of slides identifying overhead due from research projects, other income, and potential revenue sources. He said if the Commission can collect this projected income from all sources, totaling \$140,812, the remaining deficit will be reduced to \$12,188. Mr. McCarthy added that he would have more information available at the September meeting.

Commissioner Macari asked if the \$12,188 deficit includes any staff layoffs. Mr. McCarthy responded that the Commission will tap other sources instead of staff layoffs. Commissioner Macari urged the staff to look at all possible options, and Mr. McCarthy confirmed that intent.

Chairman Gardner expressed support for the approach suggested by the staff. He encouraged the staff to continue working with the Agency, the Department of Finance, and legislators.

Chairman Gardner cautioned against picking pieces from the research fund to cover Commission costs. He said he would rather get more money from the general fund than to deplete the research fund. Mr. McCarthy clarified that the Commission budget was now part of the Insurance Fund, not the general fund. He suggested hearing Legislative and Special Projects Manager David King's report on the 2014/15 budget change proposal.

### **Budget Change Proposal FY 14/15**

Mr. King indicated that the Commission was notified in January that the Department of Finance was likely to remove \$82,000 from the Commission's budget, reflecting a cut in reimbursement for Senior Engineering Geologist Robert Anderson's position with the California Earthquake Authority. He reported that the Agency was currently reviewing the staff's budget change proposal to restore that funding in Fiscal Year 2014/15.

### **Update on Diablo Canyon Nuclear Generating Station**

Mr. McCarthy noted the Commission received a detailed briefing at the last meeting regarding the status of the independent peer review panel's activities pertaining to the Diablo Canyon Nuclear Generating Station. He explained that PG&E's proposal to conduct high-energy seismic testing offshore had been denied by the Coastal Commission due to concerns about potential impacts on marine life. He said environmental groups have expressed some of the same concerns about low-energy testing, so it is uncertain at this point as to how PG&E will proceed. He added that he would have more news for the Commission in September.

### **Update on San Onofre Nuclear Generating Station**

Mr. McCarthy observed that since the last meeting, a significant development had occurred with respect to the San Onofre Nuclear Generating Station (SONGS): Southern California Edison's decision to decommission the plant. He recalled that SoCal Edison had been planning to establish an independent review panel, but no contracts have been executed. He referred to the written materials in the packet for more details.

Chairman Gardner clarified that the San Onofre plan is actually 80 percent owned by SoCal Edison and 20 percent by the City of Riverside. He noted that SoCal Edison recently announced its plans to decommission and remove Unit 1. He stated that the steam generators in Units 2 and 3 had been replaced a few years ago after the equipment showed rapid wear of steam tubes caused by vibrations. He added that the units were designed by Edison and manufactured by Mitsubishi, and these two parties are blaming each other for the problems.

Chairman Gardner noted that meanwhile, the fuel remains on the site and continues to degrade and produce heat for some time. He said spent fuel typically takes seven to twelve years to cool sufficiently, so there is ongoing risk of tsunami or seismic damage during that time. Once the fuel cools, it can be contained in dry cask storage, and the risk abates.

Chairman Gardner commented that a secondary impact of removing the San Onofre plant from production is the key part it plays in California's electric grid. He noted that without this facility, the entire grid is less stable, and it becomes more difficult to deliver power to customers in southern Orange County and San Diego County. He said the ultimate solution will entail improvements on the transmission system and new sources of generation to replace San Onofre. Chairman Gardner drew attention to the written materials in the meeting packet for more details.

Chairman Gardner remarked that the fate of the San Onofre plant affects what happens at Diablo Canyon and the entire grid. He noted that the Commission might be able to play a role in advising the utility companies and regulatory agencies about seismic risk.

Commissioner Miyamoto observed that all human-made products have the potential for failure, so nothing engineered can be 100 percent safe. He said that although the risk of failure may be small, the potential consequences of failure can be huge.

Chairman Gardner agreed, but noted that the perception of risk can often be far greater than actual risk. He pointed out that the U.S. has suffered relatively minor harm from earthquakes so far compared to many other countries. Commissioner Miyamoto noted that scientists still do not know how to contain a nuclear meltdown, and all of the consequences of this hazard are unknown.

Commissioner Chet Widom expressed his appreciation to Chairman Gardner for his clear description of the situation. He asked for more details about the Commission's potential role and activities. Chairman Gardner proposed taking this question up as part of Agenda Item X., "Commission Direction."

Chairman Gardner noted that the issues are complicated in part because of the parties involved: he said the Nuclear Regulatory Commission and Public Utilities Commission regulate nuclear power plants, the utility companies pay for the facilities, and the Commission serves in an advisory role, making recommendations to the state.

## **V. PREPAREDNESS LESSONS FOR HOSPITALS FOLLOWING RECENT DAMAGING EARTHQUAKES**

Structural Engineer Fred Turner presented a report on preparedness lessons for hospitals. He said California has a history of hospital evacuations following earthquakes, including Agnews State Hospital in 1906, the San Fernando Veterans Administration Hospital and Olive View Hospital in 1971, a number of facilities in the Northridge area in 1994, and more recently, hospitals in El Centro in 2010 and Brawley in 2012. With this background, he noted, the Commission sponsored a research project with investigators from the Pacific Earthquake Engineering Research Center (PEER) and Johns Hopkins to analyze data from the 2010 Mexicali event as well as recent earthquakes in Chile and New Zealand.

Mr. Turner said the Commission-sponsored research involved multi-disciplinary experts to identify recurring lessons and develop resilience strategies. He presented a series of slides illustrating recurring lessons from recent earthquakes.

Mr. Turner noted that many hospitals experienced some kind of damage, often to nonstructural components, communication systems, and utilities, but lack of communication about the actual risks and exposure to hazardous materials can lead to unwarranted fear that triggers unnecessary evacuations. He showed slides depicting typical damage to communications systems, power distribution and utility systems, water and wastewater systems, and nonstructural components.

Mr. Turner stated that the researchers are developing two draft resiliency measures for hospitals to use as tools to assess the need for evacuation. He said one involves loss of bed capacity, patient population, and capacity of medical services available; the other involves quality of medical care.

Mr. Turner presented slides showing Johns Hopkins researchers working with local high school students as part of an outreach project to teach them about building resilient structures. He said the students' models were tested on a shake table so they could identify the best structures.

**ACTION:** Commissioner Mark Pazin made a motion, seconded by Commissioner Strack, that:

*The Commission accept the report as presented.*

\* The motion was carried, 14 – 0.

## **VI. SAN FRANCISCO PUBLIC UTILITIES COMMISSION WATER SYSTEM IMPROVEMENT PROGRAM DELAYS – FORMATION OF AN AD HOC SUBCOMMITTEE TO REVIEW AND COMMENT**

Mr. Turner noted that the Commission needs to submit comments to the Legislature on proposed delays in certain components of the San Francisco Public Utility Commission (SFPUC) Water System Improvement Project. He said this is the seventh time since 2006 the Commission's review and comments have been required. He proposed that the Commission form an ad hoc committee to work with the staff to review the delays and generate comments for the Commission's review and approval at the September meeting.

Chairman Gardner invited commissioners to volunteer for the ad hoc review committee. Commissioners Macari, Hellweg, and Sweiss offered to serve. Chairman Gardner said the committee's role will be to analyze the effects of the delays, and he instructed committee members to stay within that charge. Mr. McCarthy noted that open meeting laws and 10-day advance notice provisions apply if three or more commissioners participate. Commissioner Hellweg suggested that Commissioners Macari and Sweiss serve on the committee, and she offered her assistance if necessary. Chairman Gardner thanked the volunteers and appointed Commissioners Sweiss and Macari to serve as an ad hoc review committee. Mr. Turner said he would provide committee members with written copies of the committee's charge.

## **VII. UPDATE ON LAKE TAHOE HAZARD SURVEY PROJECT**

Mr. McCarthy informed the Commission that the remotely operated vehicle partially funded by the Commission would be performing a dive in Lake Tahoe the following week. He said Secretary Anna Caballero will attend a press conference at 9:00 a.m. on Thursday, July 18, and he invited commissioners to contact him if they also wished to attend. He added that Governor Brown will be invited to tour DOER Marine's manufacturing facility in Oakland soon.

Mr. McCarthy introduced Ms. Liz Taylor, President, DOER Marine, and invited her to discuss the remotely operated vehicle (ROV) her company developed. Ms. Taylor provided some general background about DOER Marine and reviewed highlights of the past year and new project spin-offs.

She showed pictures of the ROV created for research in Antarctica that will be tested in Lake Tahoe soon. She displayed images of the ice rover in its folded position, and then fully deployed, and she pointed out the location of sensors along its the 28-foot length.

Ms. Taylor noted the Lake Tahoe dive was postponed because of delays in obtaining funding from the National Oceanic and Atmospheric Administration (NOAA). She said the ROV will be shipped to Port Hueneme in October for transport to Antarctica to collect marine sediments for evidence of possible life forms underneath the ice shelf.

Mr. McCarthy commented that the Lake Tahoe research is a perfect example of a productive public-private partnership. He said the Commission worked with the California Geological Survey and researchers from Nevada and Illinois on this project. He expressed his appreciation to DOER Marine for listening to the Commission when it proposed testing the ROV in Lake Tahoe.

Chairman Gardner thanked Ms. Taylor for her presentation.

## **VIII. GLOBAL EARTHQUAKE MODEL (GEM) REPORT**

Ms. Kate Stillwell, Scientific Board Management/Product Strategy, Global Earthquake Model (GEM), noted that Mr. McCarthy and Commissioner Miyamoto attended the meeting of GEM's Governing Board in late June. She said GEM held a public meeting to announce the release of Version 1.0 of its open source engine next year. Ms. Stillwell reported that GEM is completing 10 projects that will produce the underlying data sets for the open-source engine. She observed that GEM's next big challenge will be to leverage resources, such as research money from the Commission, to pay for tools and resources that will move the dissemination of data forward.

Ms. Stillwell advised that GEM's secretary general will be proposing the Seismic Safety Commission as a full member with voting rights, a change that could encourage other organizations to participate in much-needed research.

Ms. Stillwell said the Commission identified two particular GEM projects as candidates for Commission research funds: 1) an analysis of the assumptions underlying existing risk management models, and 2) identifying key factors that lead to greater resilience and speedier recovery after disasters. She reviewed a list of potential projects GEM hopes to complete within the next five years. Ms. Stillwell observed that GEM needs to balance the scientific and research aspects of its activities with dissemination and outreach efforts. Consistent with this philosophy, GEM decided developing regional databases is more important than creating new methodologies.

Ms. Stillwell noted that recent articles in *Nature* and *Science* magazines have given GEM some favorable publicity.

Commissioner Miyamoto commented that GEM's work is critical for California, where fewer than 10 percent of homeowners have earthquake insurance because of high deductibles and coverage limitations. He contrasted this with New Zealand, where 80 percent of homeowners have insurance, and he pointed out that this is a critical factor in economic recovery. He said GEM's work will be useful for insurance models and recovery models, and he expressed strong support for the Commission's research projects.

Commissioner Cooley asked if GEM has global reinsurance partners or members. Ms. Stillwell indicated that about 60 percent of GEM's funding comes from insurance-related entities. Commissioner Cooley recommended contacting the National Association of Insurance Commissioners for help in disseminating information. Ms. Stillwell said GEM made a presentation to that group two years ago, and she added that she would contact the association again.

Commissioner Cooley noted that New Zealand created its national insurance program after World War II, and the fund has grown tremendously since then. He recalled that California had considered a similar program years ago.

Mr. McCarthy advised that the two GEM contracts were being reviewed by the Department of General Services legal staff.

Chairman Gardner thanked Ms. Stillwell for her report.

## **IX. 20-YEAR ANNIVERSARY OF NORTHRIDGE EARTHQUAKE CONFERENCE**

Mr. McCarthy informed the Commission that both the U.S. Geological Service and PEER were planning conferences and events in Los Angeles next January to mark the twentieth anniversary of the Northridge earthquake. He distributed copies of a planning meeting agenda and asked if the Commission wanted to participate.

Mr. McCarthy suggested discussing this topic further at the September meeting and said the staff would investigate costs. Commissioners expressed support for pursuing the possibility of Commission participation.

## **X. COMMISSION DIRECTION**

Chairman Gardner noted that the Commission can finally make plans for the future now that it has a secure source of funding from the Insurance Fund, and he encouraged commissioners to talk about priorities and issues they felt were worth the Commission's attention in the coming months. He clarified that the Commission serves an advisory and policy leadership role by bringing recommendations to the Governor and Legislature and investigating important subjects pertaining to seismic safety.

Mr. McCarthy said the Commission has been involved with nuclear power plant seismic issues for several years, and the Commission is currently represented on the independent peer review panel established for Diablo Canyon. He stated that the Commission's intent is to continue working with the PG&E and the Public Utilities Commission with respect to the seismic risk at Diablo Canyon. Mr. McCarthy said the Commission will be part of another panel dealing with San Onofre, but no contract has been completed yet. He noted that Southern California Edison is not planning any more scientific studies in the near future, and the Commission recommends continuing to use existing vessels and equipment to produce information that will ultimately go to the Nuclear Regulatory Commission.

For the benefit of newly appointed commissioners, Mr. McCarthy explained that the Commission participated on an independent review panel for Diablo Canyon that looked at existing seismic and geologic maps and identified ten targets onshore and offshore for further investigation and four particular offshore areas for deep surveys.

Commissioner Widom expressed his opinion that Bay Bridge design and construction issues were not relevant to the Commission's charge.

Commissioner Beroza pointed out that communications systems seemed to be a key problem with hospitals after earthquakes, and he asked if the Commissioner ever got involved in investigating the reliability of the state's cell phone system. Mr. Turner recalled that the Commission studied this issue in the early 1990's.

Commissioner Ghilarducci expressed interest in finding ways to involve communities in business recovery after disasters.

Commissioner Pazin observed that the issue of interoperability of emergency communications systems has been a problem in responding to past earthquakes, and he emphasized the importance of working with Cal EMA and the federal agencies on this issue. Commissioner Strack advised that local agencies are expecting cuts in federal funding next year.

Commissioner Cooley remarked that the Commission's mission is articulated in its enabling statute, and he suggested the Commission might want to spend time reviewing the statute, cleaning up outdated language, and including provisions reauthorizing the hazard study proposed in the 1989 *California At Risk* report. He expressed his opinion that the Commission's role is to serve as multidisciplinary fact-finders and promoters of resilience. He said that with a long-term funding source in place now, it might serve the Commission well to take a systematic look at its

enabling statute and update key provisions. He advocated a long-term funding strategy of covering a broad range of issues with the latest insights possible.

Mr. McCarthy noted that the Commission is already working on a variety of post-earthquake recovery issues, including a post-disaster economic recovery project with GO-Biz, research on earthquake impacts on agriculture, and a study to find ways of helping small businesses. He added that the Commission participated in an earlier Deloitte study of key obstacles to business recovery. He advised that GO-Biz has asked for a more detailed study to identify steps the Governor and Legislature can take now to facilitate rapid recovery after earthquakes.

Commissioner Knudson expressed support for placing a high priority on creating a small business recovery model. She said she liked the idea of leveraging money from other sources, and she urged the Commission to continue to explore those opportunities. She also advocated moving ahead with a statewide early alert system. Commissioner Knudson observed that it might be time for the Commission to revisit the idea of working with schools to encourage them to upgrade unsafe buildings.

Commissioner Widom advised that the Division of the State Architect has bond money available in the seismic mitigation fund, but local school districts have trouble contributing the matching funds. He said some districts are worried that identifying certain buildings as unsafe will expose them to greater liability.

Commissioner Knudson observed that with the economy picking up, it might be possible to find funds for more outreach next year. Commissioner Widom stated that the Division of the State Architect continues to work the other state agencies and school districts to promote retrofit projects.

Commissioner Sweiss noted that many cities have innovative and worthwhile programs, but there is little connection among cities and regions in the state. He cited San Francisco's soft-story ordinance as an example of something other jurisdictions might want to adopt. He suggested that the Commission work to help bridge the current disconnect by bringing cities together to share lessons and best practices.

Commissioner Pazin proposed that the Commission conduct a workshop session the day before the September meeting to prioritize a list of ideas for the coming year. Chairman Gardner expressed support for this approach, and Mr. McCarthy said the staff will send copies of the enabling legislation to all commissioners.

Commissioner Strack remarked that the Commission's charge should be broad enough to allow the Commission to explore the most relevant issues facing the state at any given time. He noted that the Commission-sponsored study of fire suppression water supply is an example of how the Commission's work can bring end users like FireScope and Cal EMA together, and he strongly supported continuing such activities.

Commissioner Ghilarducci observed that the Commission's role goes beyond implementation to a higher level of policy leadership. Commissioner Cooley recommended that the Commission

work with cities and counties through the League of California Cities and California State Association of Counties, regional organizations like the Association of Bay Area Governments (ABAG), and local councils of governments. He urged the Commission to develop a recommended protocol for sharing best practices.

Commissioner Gardner thanked commissioners for their input and said the Commission would identify priorities at the September meeting.

## **XI. POLICY POSITION ON AN EARTHQUAKE EARLY WARNING SYSTEM FOR CALIFORNIA**

Commissioner Mark Ghilarducci reported that the working group assembled to consider an alert system for California accomplished a great deal over the past three months. He said the basic concepts for a system have been defined, and the group has discussed possible funding mechanisms. He added that the working group is aware of the importance of how it communicates with the public and the distinction between the “warning” and “alert” terminology has been noted.

Commissioner Ghilarducci stated that the working group hopes to expand California’s existing integrated seismic network (CISN) by incorporating private-sector capabilities. He said California Geological Survey already has a network of sensors to detect ground motion, but they do not generate alerts. Commissioner Ghilarducci noted that the working group has agreed that the system should provide statewide coverage without any gaps or shadow zones.

Commissioner Ghilarducci indicated the working group would be meeting again the following week to finalize criteria for participating in the statewide network and identify next steps and funding mechanisms. He added that he expected the working group to complete its task within six months and would have more to report at the September meeting.

Chairman Gardner asked if the Commission was playing a role on the working group. Commissioner Ghilarducci replied that the working group includes a Commission representative. Chairman Gardner noted that the reliability of the system is critical for its statewide acceptance. Commissioner Ghilarducci agreed that reliability is the central issue for public confidence, and statewide coverage is part of its reliability. He observed that the state needs to manage public expectations about the system by conveying messages that it will help reduce damage and facilitate economic recovery. Commissioner Ghilarducci added that he has spent twenty years working on this issue and looked forward to accomplishing this task.

Mr. McCarthy said USGS envisions a warning system for the entire West Coast. Commissioner Ghilarducci said that although the working group’s focus is California, a statewide system could have huge benefits for both Oregon and Washington. He noted that many other states will be watching California, but many are constrained by the need to contribute matching funds to receive federal support. He observed that public-private partnerships are critical in creating a sustainable and viable system. He added that local communities will receive benefits without having to pay more for the costs.

Mr. McCarthy noted that the Commission has a long history of support for public-private partnerships, and he offered the Commission's assistance. Commissioner Ghilarducci noted that the private sector, with its focus on the bottom line, will be largely responsible for delivery of the statewide system, while the public sector, with a mission focus, will provide the underlying network. He added that the Legislature will support the system if a funding stream is identified, but that issue has not yet been fully determined.

Commissioner Miyamoto said he liked the idea of calling the system an "alert" system rather than a "warning." He described Japan's system, noting that the messages can save lives if people have enough time and distance to respond. However, having an early alert is of limited effectiveness when events are close by or in large cities. Commissioner Miyamoto expressed support for tapping into commercially available systems and taking advantage of private assistance to achieve 100 percent coverage.

Commissioner Strack indicated he was pleased with the working group's progress and agreed with Commissioner Miyamoto that such a system would offer great benefits to California. He encouraged the California Emergency Management Agency (Cal EMA) to consider working with the Commission to promote stakeholder involvement and vetting of the concepts so an effective proposal can be presented to the Governor and Legislature. Commissioner Ghilarducci responded that the working group was headed in that direction and making progress toward that goal.

Commissioner Ghilarducci noted that private-sector engagement in the criteria adjudicating body is essential to private-sector participation. He said acceptance criteria will eventually be presented to the Seismic Safety Commission and to the public for their input. He emphasized the importance of openness and transparency throughout the process.

Commissioner Beroza asked for more details about the respective roles of private and public partners. Commissioner Ghilarducci explained that there are existing private models and pilot projects that provide alerts based on their own sensor networks. He said the goal is to incorporate those capabilities into the existing government system so the two can work together. Commissioner Beroza suggested a weather forecasting analogy, and Commissioner Ghilarducci agreed, noting the NOAA and the U.S. Weather Service work with local agencies and forecasting networks.

Chairman Gardner thanked Commissioner Ghilarducci for the update and said the Commission looks forward to more news in September.

## **XII. PUBLIC COMMENT**

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

## **XIII. GOOD OF THE MEETING**

Commissioner Ghilarducci noted that as part of the Governor's reorganization plan, Cal EMA is back in the Governor's Office along with other emergency management, public safety, and communication agencies.

There were no other items brought to the Commission's attention.

#### **XIV. ADJOURNMENT**

There being no further business, the meeting was adjourned at 12:33 p.m.

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Sue Celli  
Office Manager

Approved by:

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Richard McCarthy  
Executive Director