



State Of California

ALFRED E. ALQUIST  
SEISMIC SAFETY COMMISSION

*Jerry Brown, Governor*



**TAB A**

Alfred E. Alquist Seismic Safety Commission  
Minutes of Meeting  
January 13, 2011  
State Capitol, Room 447, Sacramento, California

**Members Participating**

William Chubb, Vice Chair  
Kandiah “Arul” Arulmoli  
Christina Curry  
Jay Elbettar  
Ronald Garcia  
Michael Gardner  
Helen Knudson  
Sharron Leason  
John Littrell  
Emir Macari  
Elizabeth Mathieson  
Gary McGavin  
John McPartland  
Ali Sadre  
Howard Smith  
David Walls

**Members Absent**

Mark Church, Chair  
Michael Stevens

**Staff Present**

Richard McCarthy, Executive Director  
Karen Cogan, Administrative Manager  
Robert Anderson, Senior Engineering Geologist  
David King, Legislative Manager  
Henry Reyes, Structural Engineer  
Fred Turner, Senior Structural Engineer

**I. CALL TO ORDER/ROLL CALL**

Commission Vice Chair William Chubb called the meeting of the Alfred E. Alquist Seismic Safety Commission to order at 9:30 a.m. Meeting Reporter Cynthia Judy called the roll and confirmed the presence of a quorum.

**II. CHAIRMAN’S REMARKS**

Vice Chair Chubb introduced the seven newly appointed commissioners and asked them to give brief descriptions of their backgrounds.

Commissioner Kandiah “Arul” Arulmoli, geotechnical engineer, said he was pleased to be returning to the Commission and was amazed the Commission was able to accomplish so much.

Commissioner Jay Elbetta, licensed civil engineer with a background in structural engineering, stated that he was currently the chief building official for the City of Mission Viejo and served on the Hospital Building Safety Board as well as several committees of the International Code Council (ICC). Vice Chair Chubb congratulated Mr. Elbetta for being named Building Official of the Year for the U.S. by the ICC.

Commissioner Ronald Garcia, councilmember for the City of Brea, said he represented local governments on the Commission. He indicated that was an active participant of the League of California Cities and county groups. He expressed interest in linking seismic safety with community economic development.

Commissioner Michael Gardner, representing the City of Riverside, described his background in anthropology and geology, and stated that he had worked for Southern California Edison for 23 years in facility licensing.

Commissioner Helen Knudson, social services representative on the Commission, described her work as a disaster response consultant for Lutheran Social Services of Northern California and her service as a Red Cross volunteer.

Commissioner Emir Macari, Dean of the College of Engineering and Computer Sciences, Sacramento State University, said he had a background in earthquake geotech engineering, geology, and seismology. He added that he was born in Mexico City eight days before the major earthquake in 1957 and had a lifelong interest in seismic safety.

Commissioner John McPartland introduced himself as a retired Army colonel and a retired Oakland fire chief. He said he had a master's degree in public administration and currently served on the BART board of directors. He noted that he also had experience working as a member of a disaster medical assistance team.

Vice Chair Chubb welcomed the new members of the Commission.

Vice Chair Chubb announced that Chairman Mark Church had submitted names of commissioners to serve as a Nominating Committee to choose new officers for the Commission. He asked Commissioner Gary McGavin, Commissioner Howard Smith, and Commissioner David Walls to propose a slate of offices for the Commission to consider at its next meeting.

### **III. APPROVAL OF OCTOBER 21, 2010 MINUTES**

Commissioner Elizabeth Mathieson drew attention to the last sentence in the second paragraph on Page 6, describing remarks made by Mr. Bill Homes about the New Zealand earthquake. She said the proposed language was misleading because it implied there was damage only in areas of liquefaction and lateral spreading, ignoring the risk of other known hazards like unreinforced masonry buildings. She recommended rewording that sentence to clarify this point.

ACTION: Commissioner Ali Sadre made a motion, seconded by Commissioner McPartland that:

*The Commission approve the October 21 minutes as amended.*

\* Motion carried, 14 – 0 – 3 (Commissioners Arulmoli, Garcia, and Mathieson abstaining).

#### **IV. EXECUTIVE DIRECTOR'S REPORT**

##### **Budget Update**

Executive Director Richard McCarthy referred to the budget projections in the meeting packet. He said the staff is currently projecting a small reserve at yearend but the situation could change if statewide budget reductions are mandated in the coming months. He added that more details will be available at the March meeting.

Mr. McCarthy noted that Governor Brown's proposed 2011-12 budget anticipates saving money by streamlining and combining various state entities. Mr. McCarthy advised that all boards and commissions, including the Seismic Safety Commission will be evaluated by a Joint Sunset Review Committee. He observed that the Commission needs to emphasize the value it brings to the state from leveraging money and providing services that do not duplicate those of other state departments and commissions.

##### **Annual Report to the Attorney General on Commission Research Program**

Mr. McCarthy drew attention to the report in the meeting packet detailing how the Commission's \$6.5 million in research funds is being spent. He noted that the document identifies projects completed and underway and shows the amounts of funds leveraged. He pointed out that Commission-funded projects have a 2.3 to 1 leveraging ratio overall.

##### **Meeting Locations/Dates for 2011**

Mr. McCarthy said the Commission has been meeting in alternate months on the second Thursday of the month. He asked commissioners to fill out the form provided by the staff to determine if other meeting days would be preferable.

Mr. McCarthy suggested holding the March meeting somewhere in the Bay Area to focus on restoring commerce after major disasters. In conjunction with that meeting, he proposed arranging a field trip to Alameda to tour the plant manufacturing the experimental submersible vehicle that will be used to study the floor of Lake Tahoe (a Commission research project). He said a two-week test dive will take place in March, but access to the Lake Tahoe site would be difficult during winter months.

Commissioner Emir Macari noted that California State University at Hayward is considering seismic retrofit of one of its major buildings, and he suggested the campus might be an appropriate meeting site for the Commission.

## **V. 2010 ANNUAL REPORT**

Administrative Manager Karen Cogan drew attention to the draft 2010 Annual Report in the meeting packet. She noted this version incorporates the editing suggestions already provided by commissioners, and she asked if there were any further comments.

Ms. Cogan recommended approval of the 2010 Annual Report.

**ACTION:** Commissioner Knudson made a motion, seconded by Commissioner Ronald Garcia, that:

*The Commission approve the 2010 Annual Report as revised.*

\* Motion carried, 17 – 0.

## **VI. REPORT ON AGRICULTURAL SUMMIT WITH BAJA CALIFORNIA, MEXICO**

Commissioner Mathieson noted that the Annual Report contains a good summary of lessons learned from the April 4, 2010 earthquake in Baja, and more information on the November 4 Agricultural Summit with Mexican officials and representatives of state agencies is included under Tab D of the meeting packet. She said the 7.2 magnitude earthquake, centered about 30 miles south of the U.S. border caused considerable damage in both Mexico and California, similar to the impacts of other major earthquakes in 1940 and 1979. She observed that the April 4 earthquake raised new awareness of the potential vulnerability to California's agriculture, a topic the Commission will continue to explore.

Commissioner Mathieson reported that the April 4 earthquake damaged canals, irrigation systems, and levees throughout the affected region, which caused extensive flooding and contamination of water supplies. She noted that recovery from soil failures, crop losses, and job losses will take a long time.

Legislative Manager David King said the Agricultural Summit on November 4 featured presentations from Mexican officials that were eye opening for many of the California participants. He indicated that a follow-up meeting was held in early December with representatives from the California Department of Water Resources, Department of Food and Agriculture, major utilities, the California Farm Bureau, and the Cattlemen's Association. He invited agriculture industry representatives to address the Commission.

Mr. Chris Scheuring, environmental lawyer for the California Farm Bureau Federation, observed that seismic preparedness is often an afterthought in the retail agricultural sector, so the November 4 summit was very instructive in terms of identifying key issues and vulnerabilities.

He noted that the agriculture industry tends to focus on big-ticket and infrastructure items, but preparedness at the production level is also a critical component of post-earthquake functionality. Mr. Scheuring added that California cannot afford to lose its agriculture industry for a six-month recovery period. He said some on-farm risks can be mitigated by improving wells, roads, and water delivery systems.

Mr. Scheuring observed that the Department of Water Resources prepares for major events that impact the state's supply network, but there is often a gap at the local distribution level. He emphasized the importance of working with individual irrigation districts to make farmers aware of the problem.

Mr. Justin Oldfield, California Cattlemen's Association, noted that the impacts experienced in Mexico are also a risk to California's beef and dairy producers. He said California's agricultural economy is larger than Texas and Iowa combined. He observed that the Baja earthquake underscores the serious risk and huge potential impacts on livestock. He stated that feed lots used to finish cattle before market, many of which are located in the Imperial Valley, are most vulnerable because they require complex infrastructure. In the Baja earthquake, feed lots in Imperial Valley experienced broken water pipes and flooding, and some feed mills broke, forcing producers to purchase and import grain from elsewhere.

Mr. Oldfield informed the Commission that both feed and water for livestock are serious issues for California. He said most of the cattle feed used in the state comes by rail from the Midwest. He stressed the need for comprehensive mitigation plans that address moving livestock and feed to safer locations, financial assistance, quick repair assistance, expedited permitting processes, and abatement of potential enforcement actions for air and water quality compliance during emergencies. He noted that one Kansas-owned packing plant in the Imperial Valley is its region's largest employer, so a disruption in operations would impact jobs as well. Mr. Oldfield pointed out that there would be foreign trade implications as well, because 60 percent of the beef products are shipped overseas, and the plant in Brawley accounts for 80 percent of that supply.

Mr. Oldfield noted that Mexico has strong ties to the US beef industry and is the US' largest agricultural trading partner.

Mr. Wade discussed risks to California's agricultural water supply system in more detail. He noted that California's \$36 billion agriculture industry includes many small producers and many diverse irrigation systems. He reported that the California Water Coalition contacted high-risk members after the April 4 earthquake and found that although most counties have multi-jurisdictional hazard plans, most water districts are not included, and few water districts have their own plans. Mr. Wade advised that there are approximately 200 water districts for agricultural purposes in the state, some of which also supply potable water to consumers. He said many water districts voluntarily participate on the Agricultural Water Management Council, a statewide group established because of legislation passed in 1990.

Mr. Wade noted the comprehensive water legislation package proposed in 2009 addressed only water use efficiency, not disaster planning. He recommended modifying or developing a new

statewide plan for irrigation districts. He observed that having a statewide database would help evaluate risks and provide opportunities to develop solutions.

Vice Chair Chubb thanked the presenters for their information. Mr. McCarthy invited the presenters to stay for the later agenda item regarding restoring commerce after disasters. He encouraged representatives of the agriculture industry to participate in future meetings with other business leaders and insurance industry representatives.

## **VII. UPDATED HAYWARD EARTHQUAKE SCENARIO**

Ms. Janiele Maffei, structural engineer, Earthquake Engineering Research Institute (EERI), provided a PowerPoint presentation updating the 1995 Hayward earthquake scenario developed by EERI. She explained that the 1995 scenario was a multi-disciplinary effort that analyzed potential impacts of a magnitude 7.0 earthquake on the Hayward fault. She showed a map of the Hayward fault and said a large earthquake would create huge economic losses affecting the Bay Area's 7.4 million population and \$300 billion economy.

Ms. Maffei said a number of technologic improvements since 1995 have enabled scientists to better assess risks, including the ability to track ground motions by satellite, improvements in Alquist-Priolo fault zone maps, and development of new liquefaction and landslide maps that are now available online. In addition to advances in technology, she noted, major infrastructure improvements have also taken place. Ms. Maffei described the East Bay Municipal Utilities District's seismic improvement program: upgrades to the Hetch Hetchy water distribution system to strengthen pipelines that cross faults, BART's retrofit efforts, Caltrans improvements to road and bridge designs, the Bay Bridge replacement project, retrofits to city halls in the Bay Area, progress in firefighting capabilities and retrofits of fire stations, upgrades to the Port of Oakland and airports, and updated building codes that incorporate more information on ground motions and near-source effects.

Ms. Maffei acknowledged that power, telecommunications, and fuel delivery systems will still be challenges for the Bay Area in major earthquakes. She said limited progress has been made retrofitting hospitals and public schools, although there are some exemplary efforts in certain places. Ms. Maffei stated that emergency housing will be an issue because the Bay Area's population has grown, but not much has been done to retrofit existing commercial or residential structures. She noted that some communities have passed ordinances regarding hazardous soft-story buildings, but they should go further by moving from voluntary to mandatory compliance. Ms. Maffei presented updated estimates of insured and uninsured losses.

Ms. Maffei advised that the updated scenario is available online. She encouraged the Commission to continue studying key issues, informing legislators and the public, and incentivizing improvements.

Vice Chair Chubb thanked Ms. Maffei for her presentation.

## **VIII. RESTORING CALIFORNIA COMMERCE AFTER DISASTERS**

Mr. Stan Devereux, Pac/West, provided an update on the Commission's work with business leaders to address post-earthquake functionality. He noted that California currently has a 12 percent unemployment rate, and a major earthquake would exacerbate this problem. He observed that the faster businesses can return to normal, the better conditions will be for employees and local communities. He reported that the Commission has been meeting with business leaders to identify what they will need to stay open, preserve market share, and maintain supply chains after disasters. Mr. Devereux explained that the purpose of the inquiry is to determine what can be done now, before a disaster strikes, so a framework is in place to facilitate rapid recovery and prevent businesses from relocating.

Vice Chair Chubb thanked Mr. Devereux for the update.

## **IX. CSSC RESEARCH PROGRAM – UPDATE ON CURRENT PROJECTS**

### **Fire Following Earthquake Risk**

Dr. Charles Scawthorn, Pacific Earthquake Engineering Research Center (PEER), reported that the Commission-sponsored study of post-earthquake fire suppression water sources was about 60 percent complete. He displayed a map showing locations where fires ignited following the Loma Prieta, Whittier Narrows, and Northridge earthquakes. He said wildland fires are still a problem in many areas of the state, and the recent conflagration resulting from a gas line explosion in San Bruno highlighted the extensive damage that can result from post-disaster fires. Dr. Scawthorn pointed out that the Los Angeles Basin has refineries and pipelines that form a dense network of fuel sources for fire, and high-rise buildings exacerbate the problem there.

Dr. Scawthorn stated that there are three essential elements for firefighting: equipment, trained personnel, and water, and this project focuses on the water part of the equation. He said the purpose of his analysis was to evaluate water distribution systems so water agencies and fire departments better understand the potential for damage and improve their firefighting water supplies. He noted that the research entails a surveying all metropolitan fire departments and water departments, following up with interviews, preparing a quantitative analysis, and identifying effective mitigation measures.

Dr. Scawthorn said San Francisco and Vancouver both have special auxiliary water supply systems that pump seawater for firefighting purposes, Oakland has a portable water supply, but Los Angeles has no auxiliary water system. Dr. Scawthorn reported that his research indicates that pumping seawater through existing drainage channels could be a feasible option there with a relatively modest investment in equipment, pipelines, and connections.

Vice Chair Chubb thanked Dr. Scawthorn for the update.

## **Tall Buildings Initiative**

Dr. Jack Moehle, Pacific Earthquake Engineering Research Center, reported that the study of performance-based designs for tall buildings was nearing completion. He said Commission funds helped pay for development of a guidelines document that was disseminated recently, and a final report will be available within a month.

Dr. Moehle explained that the seismic safety of high-rise buildings became a concern because of their proliferation in recent years and because of the inadequacy of the current prescriptive building code to address some of their innovative and nontraditional features. He said the purpose of PEER's research project was to determine whether performance-based designs worked better and to provide guidance to designers of high-rise buildings.

Dr. Moehle stated that the research entailed identifying specific performance objectives based on earthquake ground motions, developing design models, performing case studies, and producing guidelines. He referred to the PEER Website for more detailed information on each task. He noted that the end product of the research, the guidelines, serve as a roadmap in good practices to ensure seismic safety of high-rise designs. Dr. Moehle explained that the researchers looked at three building systems: a concrete core wall, a concrete dual system, and buckling restrained brace frames; then three buildings were designed using each system, with one design based on the prescriptive building code, a second based on the City of Los Angeles' alternative procedures, and a third based on the Tall Buildings Initiative guidelines. Dr. Moehle said the study demonstrated that usability and cost-effectiveness of the guidelines. Researchers learned that performance-based designs performed better than designs based on the prescriptive code requirements.

Vice Chair Chubb thanked Dr. Moehle for his report.

## **Prop 1D Retrofit Study**

Dr. David Zian, Chief of Program Services, Office of Public School Construction (OPSC), noted that Proposition 1D, approved by the voters in November 2006, provided \$199.5 million for seismic retrofits of public schools. He said the Division of the State Architect (DSA) had already identified the most vulnerable buildings and adopted regulations to establish an application process, but only three school districts in the state were approved for funding, leaving \$194.7 million unused. Because the costs of the required structural evaluation were an impediment for many districts, the Seismic Safety Commission contributed \$200,000 to develop a simple, uniform template that could be used to perform the evaluations. Mr. Zian reported that two contracts were awarded, one to a Northern California firm and one to a firm in Southern California, to help schools identify risks and supply engineering reports so their applications could be processed. He stated that DSA expects more applications using the template. He added that the template will provide expeditious, consistent, cost-effective, and complete evaluations. The template will help screen buildings with design and construction deficiencies likely to lead to collapse in major earthquakes.



Mr. Zian explained that in order to qualify for retrofit funds, school buildings identified as vulnerable need to meet three criteria: location, occupancy by students and staff, and type of building. He said evaluations will not move forward unless those three criteria are met. In addition, the school districts are required to provide 50 percent matching funds, although hardships exemptions are available under certain circumstances.

Mr. Zian advised that the OPSC surveyed 16 districts with vulnerable buildings, and 9 of those, representing 38 buildings, expressed interest in participating in a pilot program. He said contractors will use the evaluation template to inspect buildings and make recommendations; site visits are expected to be completed by the end of January. Then DSA and OPSC will review the engineering reports, identify good retrofit candidates, and submit funding recommendations.

Mr. Zian thanked the Commission for providing funds, assistance, and guidance.

Vice Chair Chubb thanked Mr. Zian for his presentation.

### **Lake Tahoe Hazard Study**

Senior Engineering Geologist Robert Anderson explained that the Commission is contributing funds for a remotely operated vehicle (ROV) that will eventually be used to explore areas under Antarctica's ice cap. Before being used for that purpose, the ROV will be deployed in Lake Tahoe and will be gathering geologic information about underwater faults and landslides. Video feeds from the Lake Tahoe test dives will be transmitted to a number of locations throughout the state.

Mr. Anderson informed the Commission that parts for the remotely operated vehicle (ROV) arrived from Germany in mid-December, so construction is proceeding and the ROV will be ready for test dives in March. He said the ROV was displayed at the American Geophysical Union conference in December, where it attracted considerable interest.

Vice Chair Chubb thanked Mr. Anderson for the update.

## **X. LEGISLATIVE UPDATE**

Mr. King advised that the Legislature was just starting a new session so there were no bills being tracked yet. He noted that the 2011/12 budget was the main focus.

## **XI. PUBLIC COMMENT**

Senior Structural Engineer Fred Turner introduced Urim Kim, a mechanical engineering extern from UC Berkeley.

## **XII. GOOD OF THE MEETING**

Commissioner Elbettar recommended that the Commission publicize the availability of the Tall Buildings Initiative guidelines so they can be used by architects to create better performance-based designs. He suggested working to have the guidelines incorporated in the next edition of the building code. Mr. Turner said he would follow up to propose this for the next code cycle.

## **XIII. ADJOURNMENT**

There being no further business, Vice Chair Chubb adjourned the meeting at 1:02 p.m.

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Sue Celli  
Office Manager

Approved by:

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Richard McCarthy  
Executive Director