



State Of California

# ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION



*Governor Edmund G. Brown Jr.*

Northridge Recreation Center  
18300 Lemarsh Street, Northridge, CA 91324  
Minutes of Meeting  
January 15, 2014

## **Members Present**

Michael Gardner, Chairman  
Greg Beroza  
Salud Carbajal  
Randall Goodwin  
Mark Johnson (Mark Ghilarducci)  
Peggy Hellweg  
Tracy Johnson  
Kit Miyamoto  
Mike Ciorte (Chester Widom)  
Timothy Strack  
Fuad Sweiss

## **Commissioners Absent**

Ken Cooley/Mark Elsesser  
Ellen Corbett/Daniel Torrez  
Helen Knudson  
Emir Macari  
Jim McGowan  
David Rabbit

## **STAFF PRESENT**

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

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

Chairman Michael Gardner called the meeting of the Alfred E. Alquist Seismic Safety Commission to order at 10:00 a.m. and welcomed all participants. Administrative Officer Karen Cogan called the roll and confirmed the presence of a quorum.

## **II. APPROVAL OF NOVEMBER 14, 2013 MINUTES**

Commissioner Peggy Hellweg said she noticed a couple of typographical omissions that she would point out to the staff. Referring to Page 6, she proposed changing the first sentence in the third paragraph about the update on the earthquake early warning system to read as follows: "Mr. Johnson described the six-step process that will be used in creating an earthquake early warning system." She said she would submit her revisions to the staff.

**ACTION:** Commissioner Salud Carbajal made a motion, seconded by Commissioner Timothy Strack, that:

*The Commission approve the minutes of the November 14 meeting as amended.*

\* Motion carried, 11 – 0.

### **III. CHAIRMAN’S REMARKS**

#### **Remembering the Northridge Earthquake**

Chairman Gardner remarked that the Northridge earthquake was a significant event in California’s history, and many lessons have been learned in the past twenty years since that event. He noted that UCLA is hosting a symposium over the next two days to review past lessons and plan next steps to improve seismic safety.

Chairman Gardner introduced and welcomed two past chairs of the Seismic Safety Commission, Donald Manning and Patricia Snyder, and he invited them to address the Commission.

Former Commissioner Patricia Snyder stated that as a native of Southern California, she experienced the San Fernando earthquake and many others since then. She said that in driving to the meeting that morning, she recalled the serious damage sustained by a number of apartment buildings very close to the meeting site, one of areas most heavily damaged by the earthquake.

Ms. Snyder commented that she saw former Commissioner Lucy Jones appeared on a talk show the previous Sunday and said the risk that worries her the most after an earthquake is fire, and then the water supply, and she noted that the Commission is working on both of these issues. Ms. Snyder observed that these problems, as well as the vulnerability of communications systems, have been highlighted in major earthquakes for years. She stated that she was pleased to see the renewed interest in earthquakes and earthquake preparedness in the local media, and she thanked the Commission for its efforts to educate the public and reduce risks.

Former Commissioner Donald Manning said he was chief of the Los Angeles Fire Department at the time of the Northridge earthquake. He noted that the post-earthquake period was a time of tremendous challenges, but it also created a situation where many citizens stepped in and emerged as heroes. Chief Manning advocated preparing for disasters in advance, and he applauded the Commission’s efforts over many years to strengthen unreinforced masonry buildings. He encouraged the Commission to continue making seismic safety a top priority for the state’s leaders and citizens.

Administrative Officer Cogan observed that both former commissioners served as chairs of the Commission at times when the Commission’s survival was at stake, and both fought hard for ongoing funding. She expressed her appreciation and thanks to Ms. Snyder and Chief Manning for their efforts. Executive Director Richard McCarthy added that while serving as chairs, both Chief Manning and Ms. Snyder made themselves available at all hours, took decisive actions, and influenced policy decisions that eventually saved the Commission.

Chairman Gardner thanked Chief Manning and Ms. Snyder for their contributions and leadership.

#### **IV. WORLD BANK STRATEGIES FOR SEISMIC RISK REDUCTION**

Commissioner Kit Miyamoto said he visited the Philippines after the earthquake in December, and he displayed slides depicting some of the damage. He stated that the earthquake destroyed almost 14,000 schools and killed over 25,000 students, but some other types of buildings fared well. He observed that the Philippines enacted a law in 2009 requiring earthquake engineering, but buildings constructed before that time were not engineered for earthquakes. He added that California still has many vulnerable buildings, especially in San Francisco and Los Angeles, many of which could injure people after a major earthquake.

Commissioner Miyamoto said that after he returned from his trip, he and Mr. McCarthy discussed global efforts to reduce seismic risks in areas of the world susceptible to strong earthquakes. He gave a PowerPoint presentation summarizing the World Bank's strategies for seismic risk reduction in the Philippines.

Commissioner Miyamoto advised that the first step was a cost analysis, which showed that replacing damaged schools would cost about \$600 per square meter, while seismic strengthening of older buildings would cost only \$100 to \$260 per square meter, about 20 percent of replacement costs. He said that the World Bank generally uses a 40 percent cost savings as the point to choose strengthening over replacement.

Commissioner Miyamoto indicated the World Bank adapted the HAZUS methodology, the system used in California, to help screen and prioritize the riskiest and most vulnerable buildings. He said the hazard information and building data was combined to develop a probabilistic model, and he presented the results of the analysis. He showed a map and explained that red areas represent heavy damage, yellow represents moderate damage, and green is low damage. He then presented a map depicting expected casualty levels in particular school buildings, factoring in density of student populations, building data, and seismic hazards. Commissioner Miyamoto observed that of the 2 million students in the school district, 24,000 could die in a major earthquake.

Commissioner Miyamoto noted that 80 percent of the projected fatalities will occur in 40 percent of the overall building stock. He noted that focusing on strengthening the buildings making up that 40 percent would have a huge impact on seismic safety. He explained the prioritization process used by the World Bank and showed the results of that analysis. He pointed that strengthening the worst 5 percent, about 200 buildings, would cost about \$80 million, and it could save up to 6400 lives. Addressing all buildings in the worst 40 percent, about 1500 buildings, would cost about \$356 million, but that effort would save 19,000 students' lives. Commissioner Miyamoto noted that the World Bank recognized the need to communicate the level of risk to President Aquino and other government officials and then identified steps toward that goal.

Commissioner Miyamoto said the Philippine government eventually adopted a national policy of saving 7,000 students' lives by the year 2016, which coincides with the timing of the next election, so incumbent candidates can tout the seismic safety improvements. He noted the World Bank has approved a loan the Philippine government for the seismic strengthening program, consistent with the World Bank's mission of improving seismic safety.

Commissioner Miyamoto summarized the key findings of the World Bank's risk analysis: 1) systematically addressing certain structures can greatly reduce the number of fatalities; 2) seismic strengthening can take place fairly quickly; and 3) similar concepts can be applied to other areas. He noted that the same process was used by LAX to analyze risks of interruption after a major earthquake.

Commissioner Miyamoto remarked that the last major earthquake to strike California was the 1906 San Francisco earthquake. He said a direct hit to a major fault in San Francisco or Los Angeles would certainly damage many of the older buildings in the urban centers, especially high-rise structures. He acknowledged that engineering practices and building code provisions have improved greatly over the past century, but he questioned whether California is adequately prepared for a major catastrophe. Commissioner Miyamoto said focusing on communicating risk to the public, identifying affordable mitigation steps, and strengthening of the most vulnerable buildings would make huge impacts on seismic safety.

Mr. McCarthy observed that the World Bank and the Seismic Safety Commission are both working as partners with the Global Earthquake Model (GEM). He welcomed suggestions from Commissioner Miyamoto about the best ways to leverage that relationship. Commissioner Miyamoto expressed strong support for the projects being sponsored by the Commission, including defining effective rebuilding strategies and developing a transparent, open-source risk model. He said the World Bank can contribute its database resources to the model to provide more accurate information about earthquakes in the past, and the lessons learned from the entire process will lead to risk reductions in California and elsewhere.

Commissioner Miyamoto noted that technology is available to make buildings sustainable after major earthquakes, and the incremental cost is only 2 to 5 percent. He added that this information has not been communicated well to the public. He recommended that the Commission consider ways to facilitate dissemination of seismic safety information to the public. He emphasized that failure of buildings in downtown urban areas will cause major social impacts on all citizens.

Chairman Gardner thanked Commissioner Miyamoto for his presentation.

## **V. DRAFT COMMISSION 2013 ANNUAL REPORT**

Administrative Officer Karen Cogan reviewed the draft 2013 annual report. She explained that Government Code Section 8870.1 of the Seismic Safety Commission Act requires the Commission to report annually to the Governor and Legislature. She thanked commissioners and staff who submitted comments and changes, and noted that the revised version incorporates those points.

Ms. Cogan reviewed the list of the ten projects the Commission accomplished in 2013. She welcomed comments from commissioners and recommended approval of the 2013 annual report.

Commissioner Hellweg noted the description of the Totally Prepared Phase Two project refers to Phase One. Ms. Cogan said she would make that correction.

Staff Engineering Geologist Robert Anderson clarified that the Lake Tahoe project with Northern Illinois University investigated landslide hazards in addition to seismic risk potential within the lake itself.

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

*The Commission approve the 2013 Annual Report as amended.*

\* Motion carried, 11 – 0.

## **VI. ANNUAL REPORT TO ATTORNEY GENERAL ON RESEARCH FUND**

Mr. McCarthy drew attention to the draft annual report to the Attorney General. He said Agency representatives recommended adding a short cover memo, followed by the details and tables. He noted the first table shows the annual amounts from the research fund and the total amounts leveraged. Mr. McCarthy recommended that the Commission approve the draft report as proposed and authorize the staff to send it to the Attorney General by the end of the month.

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

*The Commission approve the report to the Attorney General as proposed.*

\* Motion carried, 11 – 0.

## **VII. REPORT ON DRAFT GUIDEBOOK FOR MANAGING RISK OF COLLAPSE-PRONE BUILDINGS**

Commissioner Goodwin expressed appreciation to Commissioners Sweiss and Miyamoto and to Staff Structural Engineer Fred Turner for their work on the updating the 1987 guidebook for managing risk of collapse-prone buildings. He said the guidebook was written for an audience of local government officials, design professionals, and professional organizations. He noted that because local governments have tremendous difficulty paying for improvements mandated by the state, the intent of the guidebook is to provide usable, practical solutions that local governments can implement voluntarily and that will influence the code-making process and future legislation.

Mr. Turner referred to the information under Tab 7 of the meeting packet. He explained that the Commission formed an ad hoc committee in November to adapt and update guidance to local governments to broaden the focus beyond unreinforced masonry buildings (URMs) to address

other types of collapse-prone buildings. He reported that since November, the committee had three telephone conference calls and was working on a fourth draft outline and some new text. He welcomed Commission feedback and input regarding the committee's emphasis and direction.

Mr. Turner stated the committee has not yet settled on a precise list of collapse-prone buildings beyond URMs, and there has been some discussion of keeping the list open-ended. He said the committee plans to articulate options local governments can implement on a voluntary basis. He noted that the graphics and text will be directed at non-technical readers. Mr. Turner indicated that technical background and support information will be included in the appendices for people who want more details, and more information can be added in the future as better cost-benefit studies and building rating systems become available. He added that the committee also needs to establish a plan for regular updates.

Mr. Turner said the primary audiences are policy makers at the city and county level, building officials, building owners, the general public, and building design professionals. Commissioner Carbajal pointed out that city managers and administrators and county executive officers are responsible for implementing policy, so they should also be included. Other commissioners agreed. Mr. Turner welcomed suggestions for language tailored specifically to those audiences.

Mr. Turner presented a draft outline of the guidebook. He said the guidebook include an introduction, a description of the responsibilities of building owners, discussion of public-private partnerships and the nexus needed to engender positive change, steps to manage collapse risks, and reference materials. He noted that steps to manage risk provide direction to local governments about public participation, identifying the size and nature of their collapse risks, developing risk management options and creating incentives, and implementation. Mr. Turner described some of the possible options and tools for local governments.

Commissioner Carbajal noted that local governments should consider incentive for private property owners such as streamlining the permitting process, relief from fees, rebates, and property tax reductions. Mr. Turner said the Commission has a number of old publications that identify seismic retrofit incentive programs. He stated that the Commission once sponsored a bill to provide a property tax exclusion for seismic retrofits. He advised that the committee will review a wide range of options for local governments.

Commissioner Sweiss said the committee talked about relaxing density standards for building owners who invest in seismic upgrades. He noted the committee will develop a menu of options for local governments to consider. Mr. Turner proposed including some success stories to illustrate examples of possible incentives.

Mr. Turner said the committee plans to add next text about management considerations, and much of the advice will be based on lessons from past successes and failures. He emphasized the importance of managing seismic risk in conjunction with other objectives like smart growth, green buildings, transit hub densification, and economic revitalization. He noted the guidebook will also address metrics and ways to track progress over time, historical buildings, staff training and qualifications, managing risk after earthquakes and post-earthquake actions.

Commissioner Mark Johnson commented that this document would complement the Office of Emergency Services' (OES') efforts to promote hazard mitigation as a best practice. He said he planned to share drafts of the guidebook with OES' hazard mitigation branch. Mr. Turner noted that the committee and staff have had lengthy discussions with OES' hazard mitigation branch about ways to measure progress. He remarked that the state can play a useful role in encouraging and promoting uniform reporting across local governments.

Mr. McCarthy asked if the post-earthquake section talks about managing aftershocks. Mr. Turner recommended adding text to address that risk as well. He said some building systems gradually degrade with each aftershock, so the level of risk increases.

Mr. Turner discussed possible titles. He said the committee was leaning toward the first choice, "2015 Guidebook for Local Governments to Manage the Risk of Collapse-Prone Buildings in California." He invited comments from commissioners.

Commissioner Sweiss asked Mr. Turner to explain to the Commission why 2015 was selected. Mr. Turner explained that the committee estimated that hiring a consultant to write and edit the document could take several months, so the final product would not be published until next year.

Commissioner Tracy Johnson suggested mentioning recovery in the title of the guidebook. Commissioner Hellweg proposed "2015 Guidebook for Local Governments for Improving Seismic Outcomes for Collapse-Prone Buildings in California." She noted that adding a subtitle might be a better approach. Mr. Turner said the committee will consider these ideas and confer with OES before making a final decision.

Mr. Turner reviewed the committee's proposed schedule for completing the update of the guidebook. He indicated that the committee recommends hiring a consultant to conduct technical editing of the draft, provide advice about effectively communicating risk, and provide public information and outreach. He noted the committee believes the total cost would be under \$50,000, and the work could be completed within eighteen months. Mr. McCarthy explained that the state contract approval process can take several months. Mr. Turner said a faster way would be to enter into an interagency agreement with another state agency.

Commissioner Carbajal recommended working with the Institute for Local Government for help in developing and disseminating the guidebook. He noted this organization is a unique type of non-profit public agency. Mr. Turner said he would investigate that possibility. He noted that a competitive bid would be required to hire a private consultant.

Commissioner Miyamoto questioned whether \$50,000 would be adequate for the scope of this project, and he proposed dividing the work in two phases. He suggested that the staff come back to the Commission with a more definite budget and proposal at the March meeting. Other commissioners expressed support for this approach.

Chairman Gardner thanked Mr. Turner and committee members for their report.

## **VIII. FINAL REPORT ON LAKE TAHOE PROJECT-CGS/NIU**

Mr. McCarthy drew attention to the final report on the Commission-sponsored Lake Tahoe project, a joint effort by CGS and researchers at Northern Illinois University. He proposed inserting an executive summary, and he invited comments from commissioners. He recommended that the Commission consider approving the report with that revision.

Dr. Gordon Seitz, California Geological Survey (CGS), discussed findings from two dives conducted at Lake Tahoe in 2012 and deployment in 2013 of new remotely-operated vehicle (ROV) technology developed to collect data under the Ross Ice Shelf in Antarctica. He presented slides depicting active faults and seismic hazards on the bottom of Lake Tahoe. He noted that scientists have data on long-term slip rates on the faults, but not much is known about the paleoseismic history and behavior of the faults.

Dr. Seitz pointed out the location of the West Tahoe Fault and the Genoa Fault, and said these faults were largely ignored because they were largely submerged and onshore portions were in highly forested areas. He noted that Lidar data was collected for the entire basin two years ago, and that effort completely changed mapping details to show the exact locations of faults.

Dr. Seitz indicated that the two dives in which he participated were on the West Tahoe Fault just north of McKinney Bay. He stated that McKinney Bay was formed by a mega-landslide that created waves in the lake as high as 100 meters. He said some geologists believe the landslide was triggered by an earthquake, but others believe it was a result of a lowering of the lake after glaciation 60,000 years ago.

Dr. Seitz advised that Lake Tahoe was selected as the site for this study because its location is close to Alameda where the submersible vehicle was manufactured, there were definite scientific targets, a comparable water depth, and data was difficult to collect any other way. He said the ROV used for the research was constructed by DOER Marine. The vehicle is designed to collapse into a tube and then unfold underwater upon deployment. Dr. Seitz noted that the vehicle has an array of sensors, high-definition cameras, and CHIRP seismic unit, and a higher resolution multi-beam unit is being added now.

Dr. Seitz noted the Lidar survey of the Tahoe basin shows spectacular glacial geomorphology on the west shore of Lake Tahoe, with numerous faults crossing the glacial forms, as well as areas where no faults were detected. He presented Lidar images of the area. He said there have been discussions with the California Emergency Management Agency (Cal EMA) and Nevada officials about developing better inundation maps based on these findings.

Mr. Anderson noted that using the ROV with its sensors in 2012 gave the researchers a chance to try new technologies to look at faults and fault ruptures in lakes, for which no standard methodology has been established. He recommended using these tools to analyze other lakes with known faults, like Lake Isabella. Dr. Seitz said technology and methods could also be used in the future to assess risks offshore.



For future steps, Dr. Seitz recommended gathering more scientific information to improve modeling, and then raising awareness and preparedness levels within the local communities.

Chairman Gardner thanked Dr. Seitz for his report.

## **IX. FINAL REPORT ON TOTALLY UNPREPARED PHASE II**

Mr. McCarthy noted that the Commission worked with OES and the California Earthquake Authority to develop a public awareness campaign. He said the second phase of the project entailed outreach through social media, including a presence on Facebook and Twitter. He invited Mr. Michael Kleeman, University of California at San Diego, to discuss Phase II of the project.

Chairman Gardner advised that a local cable television channel in his area has been running “Totally Unprepared” spots on a regular basis, and the community has responded with very positive feedback.

Mr. Kleeman offered to provide commissioners copies of the video segments and extra handouts. He explained that “Totally Unprepared” was the result of an idea developed by Mr. McCarthy and representatives from the California Earthquake Authority and Cal OES. He noted that past preparedness messages have generally been prescriptive and authority-based, but they have not been effective over time in engaging the public in preparedness activities. He said the purpose of this project was to make the subject interesting, leverage social media, and get people to act because the activity is viewed as fun and engaging. Mr. Kleeman stated that Phase I of “Totally Unprepared” combined earthquake preparedness with a “Mythbusters” approach; Phase II increases outreach, especially to high at-risk populations in California.

Mr. Kleeman reviewed the goals of the Phase II work. He said the researchers decided not to produce new media, but to continue blogging and resourcing other third-party content to keep things fresh. He noted there have been over 80 updated blog posts over the course of the year. The functionality of the mobile app was expanded, in-person and online activity were leveraged, and new efforts were focused on embedding preparedness into communities in a meaningful way. Mr. Kleeman showed an example of the old Website and compared it with the redesigned look, which is easier to navigate and appears lighter and less cluttered.

Mr. Kleeman described some of the “Totally Unprepared” Phase II activities, including explaining how David Letterman’s suit stunt related to earthquake preparedness, in a way that appeals to the general population, especially younger people. He noted the American Red Cross to develop a world-class earthquake and other disaster preparedness app, and the researchers decided to promote and partner with that effort rather than develop a competing disaster preparedness app.

Mr. Kleeman advised that the campaign included print article placements, co-branded materials, cross-links on Websites, video-sharing, radio interviews, handouts, and roundtable discussions with ethnic media representatives to find better ways of reaching their communities. He said the researchers worked with three schools in pilot programs, and he described a project in Salinas

that entailed baking and constructing gingerbread houses, and then subjecting them to various levels of shaking, a fun way to demonstrate seismic safety. Mr. Kleeman presented a list of cross-linked Websites. He noted that “Totally Unprepared” partnered with some cities and counties to provide training. He identified a number of partner organizations.

Mr. Kleeman advised that “Totally Unprepared” was about to launch a multi-segment outreach program to “carpet-bomb” the community of Richmond, California, with preparedness messaging. He said the “Totally Unprepared” Website was leveraged, and a new community Web page with local blogs and videos will be established. He noted that worthwhile content developed locally will be promoted to the Home page on the main site.

Mr. Kleeman noted that in addition to the project focusing on Richmond, “Totally Unprepared” will target similar outreach efforts to a Native American community near San Diego, working through their tribal council as well as local print and broadcast media. He said “Totally Unprepared” is trying to raise funds to conduct a survey of 1500 or so people to gauge whether these kinds of programs increase preparedness activities by individuals or families. He thanked the Commission for its support.

Chairman Gardner suggested that commissioners bring lunches back to the meeting room and work through lunch. At 12:50 p.m., the Commission recessed for lunch. The meeting was reconvened at 1:30 p.m.

## **X. FINAL REPORT ON EARTHQUAKE RISK TO AGRICULTURAL INDUSTRY**

Dr. Scott Brandenburg, UCLA, noted that Dr. Daniel Sumner, UC Davis Agricultural Center, was unable to attend, so he would be presenting the results of the study of seismic effects on California agriculture. He said the draft report was submitted in December, and the final report will be ready soon.

Dr. Brandenburg explained that this study focused on two different regions, a cattle-feeding operation in the Imperial Valley and an economic analysis of a produce company in the Salinas Valley. He noted there was a strong earthquake in 2007 that affected cattle companies in Imperial Valley, so one purpose of the study was to identify lessons they had learned in that event.

Dr. Brandenburg said the Imperial Valley case study looked at how well on-site equipment performed at a particular feed lot where the USGS has a strong motion recording station. He added that his father owns the facility, so he was willing to share information. Dr. Brandenburg stated that the shaking in the 2007 earthquake registered about .4 g, with peak velocities of 75 centimeters per second, and there was no disruption to cattle operations. He noted that a system fragility analysis confirmed a low probability of disruption from that particular ground motion. An assessment of the infrastructure systems as well, one of which is a siphon from the American Canal and the New River. Dr. Brandenburg advised that the western third of the valley relies on water that flows through this siphon, and the siphon almost failed during the earthquake.

Dr. Brandenburg reported that the researchers also studied a National Beer packing plant in Brawley. At that site, he said, the building housing the packing plant was damaged in a swarm of small earthquakes, ranging from 3.5 to 5.5 magnitudes, in 2012. He commented that the shaking caused separation of walls from the roof diaphragm of this tilt-up concrete structure, and that resulted in a shut-down of the facility for five days. Dr. Brandenburg observed that a higher level of seismic protection may be needed for some of these important structures, and there should be a shift toward more performance-based design rather than prescriptive code compliance.

Dr. Brandenburg advised that the Salinas Valley study recognized that the production of perishable crops is potentially very susceptible to seismic damage, as certain products must be cooled immediately after harvest, and many are transported in refrigerated trucks along Highway 101, an additional source of risk for disruption. Dr. Brandenburg noted that the Salinas Valley produces more than 80 percent of the national crop total of certain crops between May and October. He observed that if a major earthquake occurred during that peak time, the total crop loss would be very large. Dr. Brandenburg added that economic losses could actually be smaller if an earthquake happens during peak production times, because prices will increase considerably if production goes down.

Dr. Brandenburg said one of the purposes of the study was to identify future research needs. He advocated doing a better assessment of international literature on earthquake damage to agriculture. He noted that Dr. Sumner found materials on damage to wineries in Italy and agricultural production in New Zealand. He stated that the Mexicali Valley irrigation infrastructure was destroyed by the 2010 earthquake, and it would be useful for U.S. scientists to work with Mexican officials to exchange information.

Dr. Brandenburg advised that the Sacramento-San Joaquin Delta area is another vulnerable area in California. He said this area is the hub of the state's water distribution system, so failure of that system would have huge impacts on agriculture in the San Joaquin Valley and the Delta. He recommended more focus on the dairy and wine industries in California. He observed that dairy industry seems especially vulnerable because cows need to be milked every day, and these operations make extensive use of mechanical equipment.

Dr. Brandenburg reported that the study also analyzed major infrastructure systems that are critical to feed lot functionality. He showed a picture of the siphon from the All American Canal and New River. He indicated that the pipes performed satisfactorily, but one of the canal embankments slumped and moved, causing an increase of sediment seepage and necessitating emergency repairs. He remarked that failure of this facility would have been a huge problem for the agricultural operations that depend on this source of water. Dr. Brandenburg showed a slide depicting liquefaction damage to the irrigation infrastructure. He noted that the Imperial Irrigation District had over 250 repair projects in Imperial County as a result of the 2010 earthquake. He said liquefaction also caused considerable roadway damage, and he displayed photos of damaged areas.

Dr. Brandenburg discussed the study of the National Beef processing plant in Brawley. He noted that this facility is the slaughterhouse where all of the cattle from the Imperial Valley go, in

addition to cattle from Arizona. He said the facility slaughters about 600,000 head per year, and the Imperial Valley provides about half of that total. Dr. Brandenburg observed that the economic wellbeing of the packing plant depends on the feed lot, and feed lots are vulnerable to damage in packing plants.

Dr. Brandenburg displayed a diagram of the swarm of earthquakes in 2012, and he pinpointed the location of the National Beef processing facility in Brawley. He estimated that peak accelerations were as high as .4 g there. He noted the facility was shut down for five days because of concerns over food safety and employee safety when the walls separated from the roof of the tilt-up concrete building. Dr. Brandenburg said he asked the facility manager what would happen if damage to the ports of Los Angeles and Long Beach prevented export of beef, and the manager told him there was no way the company could stay in business without international exports.

Dr. Brandenburg discussed the results of Dr. Sumner's economic study of Monterey County agriculture. He reported that this area contributed over \$4 billion in crops in 2012, about 10 percent of the state's total agricultural output, and the region is ranked fourth in California behind three counties in the San Joaquin Valley. Dr. Brandenburg said fresh produce accounts for about 80 percent of the crops in Monterey County, about half of which are lettuce and strawberries. He displayed a map showing the distribution of crops in Monterey County, noting that vegetables are 65 percent, and fruit and nuts are 26 percent. He added that post-harvest cooling and processing is crucial to agricultural operations in this area.

Dr. Brandenburg noted that Monterey County is vulnerable to strong earthquakes, and he pointed out the location of major faults. He said damage estimates depend on the time of year an earthquake happens, and, as discussed before, some economic losses in production may be offset through higher prices. He recognized that the shipping industry and other industries depend on the region's agriculture could suffer considerably due to lower inventories. Dr. Brandenburg said Dr. Sumner's study looked at the potential impacts of a 25 percent reduction in key crops due to an earthquake during peak and non-peak production times. He noted that the study found that an earthquake in June would result in an increase in revenues for leaf lettuce, but a decrease in revenues for strawberries and head lettuce. On the other hand, an earthquake in November would result in losses uniformly for all crops that would be almost completely offset by gains in other regions.

Dr. Brandenburg reviewed recommendations for future research, including an assessment of international literature; working with Mexican water agencies to better understand the disruption to the irrigation infrastructure in the 2010 earthquake; analyzing the economic impact of an earthquake in the Delta that disrupts water delivery from that system; studying the dairy and wine industries, from the farm through the processing of the final product; creating indices of vulnerability by industry and region to share with stakeholders throughout the states; and assessing benefits and costs of mitigation for stakeholders and the public.

Mr. McCarthy informed the Commission that he planned to present a draft of this report to the Agency Secretary at the UCLA conference the next day and would seek direction on some of the key recommendations. He thanked Dr. Brandenburg for his presentation.

## **XI. UPDATE ON SMALL BUSINESS DEVELOPMENT CENTERS BUSINESS SURVEY**

Mr. McCarthy said the Commission was introduced to the Small Business Development Centers by the Governor's Office of Business and Economic Development as a way of reaching more small businesses in the state. He noted the Commission approved funding for an outreach project last year, and he invited Ms. Pricilla Lopez, State Chair, California Small Business Development Center Leadership Council, to provide an update.

Ms. Lopez thanked the Commission for inviting her to speak. She welcomed the Commission to Southern California to mark the twentieth anniversary of the Northridge earthquake. She recalled that on the day of the earthquake, she had just landed from a trip to Mexico and was staying at her grandparents' house in San Fernando, and she awoke to a strong jolt that morning, followed by a series of aftershocks.

Ms. Lopez said the focus of the Commission-sponsored outreach project is to promote disaster preparedness by small business owners. She said the California Small Business Development Centers (SBDC) is surveying its clients, tapping its national network, and partnering with other business organizations to determine the most effective ways of improving levels of preparedness.

Ms. Lopez said the California SBDC is one of over 63 nationwide SBDC networks that receives funding from the U.S. Small Business Administration. She noted that the California SBDC is the largest resource partner of the U.S. Small Business Administration (SBA), and because of its size, the California organization has been divided into six major regions. She indicated that her regional network is hosted by California State University at Fullerton, and other regional networks in the state are located at Humboldt State, Chico State, UC Merced, Long Beach Community College District, and Southwestern Community College District. Ms. Lopez stated that the SBDC provides a range of services, including one-on-one consulting, training for small businesses, and information for small business owners.

Ms. Lopez introduced Mr. Blake Welch, project consultant, and expressed appreciation for his assistance. She noted that Mr. Welch has both a business background and a background in disaster preparedness. She said the Commission contract calls for a survey of business owners and development of a best practices handout. She provided copies of a small brochure of best practices lessons compiled from SBDC's in other states. Mr. Welch stated that the researchers approached SBDC's, post-disaster responders, and small businesses that had lived through traumatic events like tornadoes, hurricanes, storms, and earthquakes to find out what they learned from their experiences. He indicated that a number of useful lessons about preparedness were culled from that information, and the end product is a single document that will help all small business in California.

Ms. Lopez said the data gathered from elsewhere also helped in putting together the survey questions. She reviewed some of the key results from the survey. She reported that the survey was disseminated on December 5, and 125 people had responded so far, about half of the desired target number. Of those responses, she noted, 48 percent are sole proprietors and 18 percent are incorporated; 25.6 percent of respondents have been in business for over twenty years, and there

is a good mix of established businesses, businesses in operation for two to five years, and start-ups. Ms. Lopez stated that most of the responses came from service industries. She indicated that one of the purposes of the survey was to identify the specific needs of different types of businesses. She said most respondents said they backed up data frequently, but 18 percent do not, a worrisome statistic. Ms. Lopez expressed her hope that the survey results will spur people to think about and address some of these issues.

Mr. Welch observed that experience in past disasters shows that businesses that did not secure important documents and data encountered obstacles in dealing with the SBA and lenders.

Ms. Lopez noted that the survey respondents view their biggest threats as fire, man-made disasters, and then earthquakes. Most reported that they do not currently carry any type of disaster insurance, although some do have fire insurance, flood insurance, and earthquake insurance. Ms. Lopez said many businesses are unaware that they should have specialty insurance to help cover economic losses.

Ms. Lopez stated that the survey also included a section for people to identify actions the state can take to facilitate disaster recovery. Responses included suggestions that the state should have an active disaster plan in place at all time, provide a sense of control, and convert a more functional and effective plan into action, but the major themes were communications and transportation systems. Some respondents said the state can keep roadways moving, prevent crime and looting, and provide economic relief. Ms. Lopez said people generally want to make sure the public is kept informed about current conditions.

Ms. Lopez advised that the survey ends on January 30. She said Southwest Airlines generously donated a free airline ticket as an incentive to complete the survey. She noted the disaster preparedness best practices manual will be posted on the California SBDC Website, and she requested that the Commission consider posting it on its Website as well. She recommended further outreach through workshops for small businesses throughout the state.

Mr. McCarthy said he was surprised to learn that many businesses in California do not view earthquakes as their major threat. He recommended trying to find out specifically what type of economic assistance they want from the state, noting that this is something the Governor would want. Mr. Welch remarked that one of the biggest lessons learned was that SBA assistance was not enough to help small business. He stated that in places like Joplin, Missouri, local banks called all loans, forcing borrowers to use any insurance proceeds they received to pay off their loans rather than to rebuild. He advocated setting up local, grassroots community lending groups who can provide matching funds, grants, and cash to small businesses for situations the SBA and local banks do not address.

Mr. McCarthy said the Commission heard a presentation at the last meeting about the state's business oversight efforts to regulate banks and credit unions in California. He recommended exchanging information with that group, and he offered to provide contact information after the meeting. Mr. Welch thanked Mr. McCarthy for his assistance.

Mr. Welch observed that some states, like New York, may be vulnerable to only one or two types of major disasters, while California faces risks from fires, floods, earthquakes, and other problems. He said he has learned that businesses do not necessarily know what they need on hand to prepare, as well as what they need to prepare for. He noted that 50 percent of the businesses in the survey said they could not survive beyond a week without potable water; and electricity was very important as well, but many did not take into account possible disruptions in their supply sources and transportation providers.

Chairman Gardner noted the local Chambers of Commerce and Business Improvement Districts can help disseminate the survey to their member organizations. Ms. Lopez thanked Chairman Gardner for his suggestion.

Chairman Gardner thanked Ms. Lopez and Mr. Welch for their report.

## **XII. BRIEFING ON CALIFORNIA STATE THREAT ASSESSMENT CENTER**

Mr. McCarthy introduced Mr. Tom Knowles, Outreach and Liaison Officer, California Threat Assessment Center, an expert on cybersecurity, and he invited Mr. Knowles to discuss security issues after disasters.

Mr. Knowles apologized for missing the last meeting, and he thanked the Commission for inviting him to speak. He said his organization was initially the state Terrorism Threat System, because anti-terrorism funds were the primary source of funding. He noted the name changed since then to the state Threat Assessment System.

Mr. Knowles described his experience working with the FBI on international terrorism missions overseas. He said he has worked as a contractor over the past six years helping to train first responders on indicators and awareness of terrorism.

Mr. Knowles provided a brief overview of the Threat Assessment System, a group that was first established after 9/11. He said the Homeland Security Act of 2002 funded the creation of 83 fusion centers across the country, including six in California. He identified each regional center and the state center in Sacramento. He displayed a map showing the regions in California, and he observed that these regions match the FBI's Joint Terrorism Task Force field offices in California, and those programs work hand in hand.

Mr. Knowles said that over the years, the mission of the Threat Assessment System has expanded beyond terrorism to include all hazards and all kinds of crimes, especially those requiring in-depth investigations. He stated that the organization's mission is to keep California administrators aware of potentially threatening events that could have impacts on day-to-day existence in California. He noted that information from the state's database can be used to assist first responders and members of the public to prepare for an incident. Mr. Knowles advised that the Threat Assessment System staff have expertise in terrorism, critical infrastructure, gang analysis, extremist groups, and cyber- and transnational crime. He indicated that 24-hour reports are disseminated daily to state administrators as well as every chief and sheriff in the state; in addition, situational reports are issued to convey certain fast-breaking news. Mr. Knowles

reported that the Threat Assessment System trained 84,529 first responders as of December 1, 2013, including police officers, firefighters, and paramedics. He added that people in California tend to be very concerned about civil rights, so everything the Threat Assessment System does must be done in strict accordance with applicable laws.

Mr. Knowles described the Threat Assessment System's current outreach program. He said the federal government established a program several years ago that defined critical infrastructure sectors that need to be kept up and running after catastrophic events. He stated that he was now developing particular contacts within each sector to promote dialogue and information exchanges between the Threat Assessment System and their industries. He talked about outreach efforts to banks, credit unions, and other financial institutions in the state. Mr. Knowles reported that he had contacted people in the chemical industry, livestock and beef producers, self-storage companies, lodging associations, crime analysts, and hazardous material handlers.

Mr. McCarthy remarked that the statistic about 100 million fraudulent credit card transactions per day was alarming, and Mr. Knowles agreed. He noted that this kind of cyber-crime is increasingly difficult to stop. He advocated more public presentations to increase awareness of this problem. Mr. McCarthy commented that businesses that accept credit cards after a disaster appear to be particularly vulnerable to fraud. Mr. Knowles advised that existing laws do not keep up with rapid developments in technology, so detection and prosecution of cyber-crimes is very complicated. He remarked that people like Edward Snowden have increased public awareness of information security issues.

Commissioner Mark Johnson said that in training 84,000 first responders of the past six years, he understood that the Threat Assessment System works at the local level with fire and police departments and conducts regular exercises. Mr. Knowles explained that the exercises focus on prevention rather than emergency response. He expressed his opinion that government agencies failed the public in their actions after 9/11, and people need to learn to take steps now to protect themselves from future disasters. For example, he noted, government agencies can serve a vital role in advising the public about how to detect and report suspicious activities.

Chairman Gardner thanked Mr. Knowles for his presentation.

Chairman Gardner introduced and welcomed Ms. Collier representing Councilmember Englander's office. Ms. Collier welcomed the Commission to Northridge and expressed her appreciation to the Commission for hosting the meeting in Northridge to mark the twentieth anniversary of the Northridge earthquake. She said preparedness is the most important message the City of Los Angeles can convey to its citizens, and she thanked the Commission for sharing that message with the rest of California. Ms. Collier added that she would be attending a dinner later that tonight featuring Dr. Lucy Jones as the guest speaker, and a special remembrance ceremony and other events scheduled for the following days.



### **XIII. UPDATE ON CALIFORNIA EARTHQUAKE EARLY WARNING PROJECT CHARTER**

Commissioner Mark Ghilarducci, Governor's Office of Emergency Services, provided an update on the activities of the earthquake early warning working group's activities and the next steps in the process. He reported that the working group held its final meeting on January 7, at which time the group transitioned to a steering committee with a series of standing committees. He noted the last actions of the working group were to approve the draft charter, which will now be processed for signatures and shared with all stakeholders.

Commissioner Ghilarducci described the purpose and scope of the charter, roles and responsibilities, and deliverables and due dates. He explained that the charter is intended to serve as a roadmap or blueprint of what an implementation plan should look like. He said the charter gathers all the necessary elements and combines them in one document expressing the state's intention of creating an implementation plan for an earthquake early warning system. Commissioner Ghilarducci reviewed and identified the six phases that will be part of developing an implementation plan. He noted that SB 135 requests that the developers of the state's earthquake early warning system identify costs and funding options; ensure that the system operates efficiently by developing a good, clear system description and plans for ongoing maintenance; develop a model for a public-private partnership; formalize an organizational structure; and develop a comprehensive education and training program. He added that a few minor edits need to be completed before the final version of the charter is ready for publication.

Commissioner Ghilarducci advised that the steering committee has established a stakeholder liaison group, in addition to five standing committees: a funding options committee, model committee, standards committee, management committee, and education and training committee. He showed a diagram depicting the proposed organizational structure and talked about the roles of each group. He said the charter outlines the objectives and identifies a series of tasks for each committee, and he reviewed the proposed implementation schedule. Commissioner Johnson said OES has been maintaining lists of potential stakeholders who may be interested in serving on committees and assist with outreach to their constituents.

Chairman Gardner thanked Commissioner Ghilarducci for his report.

### **XIV. UPDATE ON POTENTIAL PARTNERSHIP PROJECT WITH MEXICO**

Mr. McCarthy indicated that Commissioner Emir Macari was unable to attend this meeting, so he would be making the presentation on a potential partnership project with Mexico. He noted that ever since the 2010 Mexicali earthquake, Commission representatives have been holding discussions with the Consul General of Mexico in Sacramento about possible ways of working together. He referred to the letter from the Commission to the Consul General and the response from Mexico City. Mr. McCarthy said he forwarded the communication to OES and had a conference call with the Governor's Office last week. He reported that the governor may be traveling to Mexico sometime over the next few months to address air quality issues, and that visit may provide an opportunity to introduce the subject of a potential partnership.

Mr. McCarthy recommended sending a team from the Seismic Safety Commission and Cal OES to Mexico, noting that Mexican representatives had traveled to California for a number of meetings already. He welcomed ideas for topics that might be mutually productive partnership opportunities, and he suggested water, economic issues, and the early warning system as possibilities. He said he expected a response from Mexico within the next week or so.

Chairman Gardner thanked Mr. McCarthy for his report.

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

### **Budget**

Mr. McCarthy drew attention to the last budget projections, and noted that six months into the fiscal year the Commission is in the black by \$23,000. He recommended waiting until after July 1 to charge overhead costs for research projects in case those funds are needed to address a shortage. Chairman Gardner noted the Commission's research fund will not get replenished once it is used, and he encouraged the staff to find other ways to pay for Commission overhead.

Mr. McCarthy advised that nine commissioners and three staff members would be attending the conference at UCLA over the next two days.

### **Northridge 20 Statement of Support**

Mr. McCarthy drew attention to the statement of support in the meeting packet, and he recommended Commission approval. He said the statement endorses the concept of working together and authorizes preparation of a white paper. Mr. McCarthy advised that he had been asked to chair the signing ceremony on Friday, and he noted that he planned to invite Chairman Gardner to step forward from the audience and be the first to sign. Mr. Turner said he believed the conference organizers were using surplus registration funds to pay for the white paper.

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

*The Commission approve the Statement of Support as proposed.*

\* Motion carried, 11 – 0.

Chairman Gardner said he looked forward to signing the statement on Friday.

## **XVI. APPOINT NOMINATING COMMITTEE TO SELECT VICE CHAIR**

Chairman Gardner noted that former Vice Chair of the Commission, Mark Pazin, was appointed to a full-time position in the Governor's cabinet and had to resign from the Seismic Safety Commission. He proposed having Commissioners McGowan and Knudson serve as a Nominating Committee to screen applicants and nominate a new Vice Chair, and commissioners expressed support for this idea. Chairman Gardner said he would contact Commissioners McGowan and Knudson to confirm their willingness to serve. He encouraged commissioners

interested in serving as Vice Chair to submit their names to the staff for forwarding to the committee.

**XVII. PUBLIC COMMENT**

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

**XVIII. GOOD OF THE MEETING**

Committee Hellweg asked about the status of committee appointments. Mr. McCarthy said the staff will circulate an updated list before the March meeting.

**XIX. ADJOURN**

Chairman Gardner thanked commissioners, staff, and guests for their participation.

There being no further business, the meeting was adjourned at 3:30 p.m.

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Sue Celli  
Office Manager

Approved by:

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Richard McCarthy  
Executive Director