



State Of California

ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION



Governor Edmund G. Brown Jr.

State Capitol, Room 4202
Sacramento, California
Minutes of Meeting
September 12, 2013

Members Present

Michael Gardner, Chairman
Greg Beroza
Salud Carbajal
Mark Elsesser (arr. 11:21 a.m.)
Randall Goodwin
Peggy Hellweg
Tracy Johnson
Helen Knudson
Grace Koch
Emir Macari
Jim McGowan
Kit Miyamoto (arr. 10:18 a.m.)
David Rabbit
Timothy Strack
Fuad Sweiss
Daniel Torrez
Chester Widom

Commissioners Absent

Mark Pazin, Vice Chairman

Staff Present

Richard McCarthy, Executive Director
Karen Cogan, Administrative Manager
Robert Anderson, Senior Engineering Geologist
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 10:05 a.m. and welcomed all participants. Legislative and Special Projects Manager David King called the roll and confirmed the presence of a quorum.

II. CHAIRMAN'S REMARKS

Introduce New Commissioners

Chairman Gardner welcomed the four newly appointed commissioners and asked them to introduce themselves.

Commissioner Randall Goodwin stated that he had worked for the City of West Sacramento since 2000 as both a city architect and a building official, and before that was in private practice as a licensed architect, and had also owned a design-build company.

Commissioner David Rabbitt, from Petaluma, described his involvement with the Sonoma County Board of Supervisors, the county's water agency, transportation authority, the Association of Bay Area Governments (ABAG), and the Golden Gate Bridge District.

Commissioner Salud Carbajal, chair of the Santa Barbara County Board of Supervisors, and member of the California State Association of Counties, said he had formerly worked as Chief of Staff for another Santa Barbara County supervisor, and had served as a master plan coordinator and program director with the Santa Barbara County Health Department before that.

Commissioner Tracy Johnson, of Oakland, acting superintendent of Way and Facilities at the Bay Area Rapid Transit District (BART), noted that she first came to the Bay Area after the Loma Prieta earthquake and had worked as a consulting engineer with a structural background.

Chairman Gardner introduced Commissioner Grace Koch, sitting in for Cal EMA Director Mark Ghilarducci, and welcomed her to the meeting. Commissioner Koch noted that she had served on the Commission in 2005 and had spent twenty years working for the Office of Emergency Services, now Cal EMA.

Chairman Gardner welcomed all the new commissioners and guests.

San Onofre Nuclear Power Plant

Chairman Gardner noted that the Commission's role with respect to the San Onofre Nuclear Power Plant is limited to advising the Public Utilities Commission (PUC) regarding seismic studies. He explained that because the San Onofre power plant has been shut down, the plant owners argue that the same level of study is no longer needed. However, he pointed out, the spent fuel pools at the facility still need to be kept cool, and the continued presence of fuel at the site poses an ongoing seismic and tsunami risk. Chairman Gardner reported that he had toured the San Onofre power plant recent and was impressed with its sturdy construction and built-in redundancies. He said the plant can pump water to either of the spent fuel pools, and a substantial quantity of water is stored on-site.

Chairman Gardner stated that the Nuclear Regulatory Commission will decide the level of acceptable risk and determine the level of analysis and studies required. Until then, he noted, the Commission's role is limited to advising California regulatory agencies. He added that Southern California Edison is just completing some tests done for the petroleum industry, and those studies may produce some useful data.

Diablo Canyon Nuclear Power Plant

Executive Director Richard McCarthy reported that the Nuclear Regulatory Commission's site characterization study of the PG&E Diablo Canyon nuclear power plant should be completed in

2014-2015. He said most of the low-energy testing required pursuant to AB 1632 has also been completed.

IV. WELCOME (Out of Order)

Chairman Gardner introduced Mr. James Goldstene, Undersecretary, State Business, Consumer Services & Housing Agency, and invited him to address the Commission.

Mr. Goldstene conveyed Secretary Anna Caballero's greetings and best wishes. He said he meets frequently with the Agency staff regarding Seismic Safety Commission projects, including working with GEM to develop an open-source global risk model that could improve the safety of California's public schools, meeting with businesses and government agencies on post-disaster recovery initiatives and programs to keep the state's economy going, and important research in firefighting water supply and earthquake impacts on agriculture.

Mr. Goldstene explained that the state government reorganization creates a new Department of Business Oversight that can work with the Commission to focus on banking and financial recovery issues.

III. APPROVAL OF JULY 11, 2013 MINUTES

Chairman Gardner drew attention to the next-to-last paragraph on Page 3, first sentence. He advised that the correct percentage of ownership is 18 percent by SoCal Edison and 2 percent by the City of Riverside. He recommended adding at the end of the second sentence, "except for the reactor vessel."

Commissioner Daniel Torrez noted that his name should be spelled "Torrez" rather than "Torres."

Referring to the first paragraph on Page 6, Commissioner Knudson clarified that DOER Marine's manufacturing facility is located in Alameda, not Oakland.

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

The Commission approve the minutes of the July 11 meeting as amended.

* Motion carried, 16 – 0 (Commissioner Mark Elsesser absent during voting).

V. EXECUTIVE DIRECTOR'S REPORT

Next Meeting

Executive Director Richard McCarthy noted that the next Commission meeting would be held in Sacramento on Thursday, November 14. He suggesting holding a workshop in the morning, followed by a Commission meeting in the afternoon. He said he envisioned using the workshop portion of the day to plan the Commission's direction for the next 18 months. He encouraged all commissioners to attend this important meeting.

Mr. McCarthy reported that the U.S. Geological Survey is considering a project to develop fracking policies. He said he would send a copy of the proposal to Commissioners Beroza and Hellweg and would have more to report at the November meeting.

Mr. McCarthy noted that the U.S. Navy Third Fleet worked with the Pacific Earthquake Engineering Research Center to develop a proposal for tsunami modeling and recommendations for San Diego Bay. The proposal is still under consideration by the Navy.

Mr. McCarthy said Commission representatives will be participating in a series of business oversight meetings in October and November with major banks and agricultural lenders. He added that he would have an update on the Commission-sponsored Small Business Development Center project at the November meeting.

Mr. McCarthy noted that the contract for the GEM research project was approved by Agency and sent to the Department of General Services' legal unit for review.

Lake Tahoe Project Update

Mr. McCarthy reported that Phase 1 of the Lake Tahoe hazard survey by remotely operated vehicle went well. He said a draft report on Phase 2 will be available in a few months.

Budget Status – FY 2012/13

Mr. McCarthy reported that the Commission had successfully narrowed the projected year-end deficit from \$150,000 down to \$82,000. He invited Legislative and Special Projects Manager David King to discuss the budget in more detail.

Mr. King referred to his written report in the meeting packet and observed that the Commission's fiscal situation looks good now. Mr. McCarthy added that the Commission had not submitted invoices for certain smaller projects, so the projected deficit will decrease further.

VI. FIRE FOLLOWING EARTHQUAKE PHASE II STUDY

Mr. McCarthy introduced Dr. Charles Scawthorn, Pacific Earthquake Engineering Research Center (PEER), and invited him to provide a brief update on Phase II of his study on fire following earthquake. He recommended that commissioners read and review the written report after the meeting in preparation for discussion at the November meeting.

Dr. Scawthorn explained that the focus of his study was on the reliability of water supplies for fires following earthquakes. He noted that post-earthquake fires were a major problem in the 1906 San Francisco earthquake, and then again in the 1989 Loma Prieta earthquake. He observed that high-rise buildings are a particular concern since the First Interstate Bank building in Los Angeles burned. Dr. Scawthorn pointed out that earthquakes can cause extensive damage to water lines, hydrants, and water mains, which further exacerbates the problem.

Dr. Scawthorn stated that he worked with others at PEER and at UC Berkeley in Year One of the project to reach out to water departments and fire departments to gauge their understanding of the potential damage likely from fire following earthquakes and to assess the adequacy of their plans for maintaining a water supply for firefighting purposes. He said the study revealed that most local fire and water departments could be better informed about the risks to their facilities; that fire and water agencies communicate with each other infrequently; that improvements tend to be piecemeal, and mostly to transmission systems rather than distribution networks; and that many fire and water districts have inadequate plans to transport water to sites where it may be needed.

Dr. Scawthorn stated that development and dissemination of performance goals is a key component of the work in Year Two. He said activities will include working with water and fire agencies to promote voluntary adoption of the performance goals, and collaborating with health agencies to examine the carbon footprint of fires following earthquakes. He noted that the performance goals come with commentary and references.

Dr. Scawthorn advised that implementation of the performance goals would be voluntary, similar to the program established by SB 547 to address unreinforced masonry buildings. (URMs) He explained that under SB 547, local agencies were required to take an inventory of the URMs within their jurisdictions, and then adopt a loss reduction program. He said the performance goals for fire following earthquakes call on local agencies to 1) estimate the likely fires that would follow a major seismic event; 2) develop a plan for dealing with the emergency; 3) publish information on expected fire losses to the public, and 4) exercise and update their plans.

Dr. Scawthorn clarified that these performance goals will be applied only to large cities, defined as those with populations over 100,000, that are located in high-risk areas, defined in terms of an expected level of ground-shaking. He displayed a map showing the areas that would be covered, and he noted that most of the large population areas in the state would be included.

Dr. Scawthorn reported that he had met with many fire and water agencies, and most expressed general support for the concept and a willingness to participate. He said he made a presentation at a FIRESCOPE meeting, and had met with California Hospital Association representatives in April.

Dr. Scawthorn stated that he looked forward to working with health agencies to study the carbon costs of fires. He said using the scenario from the 2012 ShakeOut, fires following that earthquake would release between 3.5 and 4 million tons of carbon dioxide, only 4 to 6 percent of the average total of 213 million tons from all fires in the lower U.S. He remarked that even

though fire following earthquake may not be a significant global warming impact, these fires still have significant human, financial, and environmental impacts.

For the future, Dr. Scawthorn advocated working for continued fire and water agency support for the performance goals. He said he planned to hold four workshops with fire and water and health agencies throughout the state to disseminate the performance goals and reach consensus on the guidelines. He welcomed the Commission's feedback and added that he hoped for Commission support for a third year of work.

Dr. Scawthorn said San Francisco spent \$100 million to upgrade its saltwater pumping system recently, and he estimated that a similar system in Southern California would cost about that much. He pointed out that this figure equates to about \$120 per capita, a highly feasible amount. Commissioner Miyamoto agreed that such a system would definitely be feasible.

Chairman Gardner thanked Dr. Scawthorn for his presentation. He noted that the Commission would discuss the written report at the next meeting.

VII. EARTHQUAKES AND CALIFORNIA AGRICULTURE

Dr. Daniel Sumner, Director, UC Davis Agricultural Issues Center, discussed the results of his one-year research project looking at the vulnerability of California's agriculture industry to major earthquakes. He introduced his colleague, Professor Scott Brandenburg, UCLA. Dr. Sumner said his presentation would provide a general overview of the vulnerability of three segments of California agriculture: vegetable crops, cattle, and dairy farms, and then Professor Brandenburg would discuss specific case studies in Imperial County.

Dr. Sumner noted that the agricultural sector is often overlooked when it comes to earthquake planning, but it represents a huge part of the state's economy. Taking just Imperial County, he estimated that its agricultural operations produce about \$2 billion in value toward the state's economy. He showed a pie chart depicting the diversification of crops and farm production. Dr. Sumner also noted that about one third of Imperial County's agricultural operations rely on three north-south canals. He observed that there is a definite seismic risk to the area, as evidenced by the 2010 Mexicali earthquake and the storm of earthquakes in August 2012.

Dr. Sumner displayed a map showing confined animal facilities in the state and in Imperial County. He pointed out the locations of particular cattle feed lots and meat processing plants. He explained that cattle feed lots receive their feed by rail from the Midwest, and they receive a supply of steers from dairy farms elsewhere in the state. Dr. Sumner said the animals are then sold, but agricultural prices have been generally decreasing as operations become more efficient.

Professor Brandenburg said he lived in the Imperial Valley and worked in his father's cattle facility before moving to Los Angeles. He showed a map identifying earthquake ruptures that resulted from the 2010 Mexicali earthquake. He said the Meloland Cattle Company experienced fairly strong ground motions of .4 g, while the National Beef processing plant in Brawley only experienced .2 g. He noted that neither facility suffered any major impacts from the Mexicali earthquake, but it did raise concerns about vulnerability and preparedness.

Professor Brandenburg explained that cattle must be fed every day or they become sick. He said Meloland usually stores a three-day supply of water and a one-day supply of rolled grain mixed feed. He showed a series of graphs depicting fragility functions for key components, such as chillers, generators, and pumps. Professor Brandenburg displayed a map of the area's water infrastructure, and he pointed out the three main canals. He said any disruption in the water supply would pose tremendous problems for many facilities in the area.

Professor Brandenburg said the primary lesson learned from Meloland was that equipment tends to be earthquake-resistant, but water, electrical, and transportation networks are vulnerable to damage.

Professor Brandenburg stated that the National Beef processing facility in Brawley is a tilt-up concrete building that suffered no damage in 2010, but damage to connections in the 2012 earthquake swarm. He noted that the roof separated, resulting in over \$1 million to repair the damage and closing the plant for five days. He showed a fragility curve for a tilt-up building.

Professor Brandenburg said the owners of the facility are quite concerned because of the damage from the small earthquakes in 2012, and the potential damage to ammonia-based cooling units on the roof. He observed that California exports a considerable amount of beef, and beef export markets will be affected if California ports are damaged.

Professor Brandenburg commented that he was a member of the 2010 earthquake reconnaissance team that visited Mexico and saw firsthand the major drainage problems, soil subsidence, and breaks in irrigation canals in the area. He reported that a new irrigation canal is being built now.

Commissioner Miyamoto observed that equipment may be resilient, but the functionality of buildings, lifelines, and infrastructure is also critical for recovery. He asked what steps businesses and the public sector can take to reduce risk and vulnerability. Professor Brandenburg noted that being aware of risks and identifying problems is the first step.

Commissioner Miyamoto agreed that education was the first step, and then communicating with stakeholders. He asked what could be done beyond that to achieve implementation. Dr. Sumner clarified that the purpose of this study is to identify vulnerabilities and highlight key issues, then work with the Commission to communicate with water agencies, electric utilities, and others about the vulnerabilities in transportation and supply systems. He noted that California's agricultural operations are important for employment, especially in small towns and sometimes affecting whole regions.

Chairman Gardner thanked Dr. Sumner and Professor Brandenburg for their presentations.

VIII. NORTHRIDGE EARTHQUAKE CONFERENCE, 20 YEAR ANNIVERSARY

Professor Steve Mahin, Director, Pacific Earthquake Engineering Research Center (PEER), explained that PEER is a consortium of eight major research universities in California, and PEER researchers focus on earthquake performance-based design and engineering, probabilistic

estimation of hazards, and computer simulations to estimate damage and losses to communities and individuals. He said PEER participated in the study of nonductile concrete structures in Los Angeles, in the new study of tall buildings, and in a broad range of areas, including transportation infrastructure, electrical utilities, fires, water hazards, and tsunamis. Professor Mahin displayed a map of recent damaging earthquakes.

Professor Mahin invited the Commission to attend a symposium in January to mark the twentieth anniversary of the 6.7-magnitude Northridge earthquake. He said that event resulted in 57 deaths, 9,000 injuries, about 125,000 people made homeless, damage to 82,000 residential and commercial units, and over 5,400 mobile homes damaged or destroyed. He stated that the Northridge earthquake caused \$20 billion in direct losses, plus another \$49 billion in economic losses, making it the fourth largest national disaster in the U.S.

Professor Mahin noted that many of the lessons learned from the Northridge earthquake were repeat lessons, such as awareness of the vulnerability of unreinforced masonry buildings and older, nonductile concrete buildings, hospitals, highway bridges, water systems, gas and electric utilities, and single-family homes, especially when disasters strike large urban areas. He said the Northridge earthquake also taught some new lessons about brittle weld fractures in steel-frame buildings, wood apartment buildings with tuck-under parking areas, and damage to nonstructural elements. Professor Mahin stated that losses to insurance companies exceeded \$15 billion, or about 28 times the premiums they had collected, causing many to stop offering earthquake coverage in California; this situation led to establishment of the California Earthquake Authority (CEA) in 1996.

Professor Mahin described the plans for the symposium in January. He said the symposium will be held on January 16 and 17 at the new UCLA conference facility. The first day, Thursday, January 16, will feature plenary sessions on Northridge earthquake impacts, outcomes, and next steps, and then a number of concurrent technical and educational sessions will be held on the second day, Friday, January 17. Professor Mahin added that the UCLA conference center offers free parking and airport shuttles.

Professor Mahin noted that PEER and 40 participating organizations are planning various aspects of the symposium, and he invited the Seismic Safety Commission to participate on some of the organizing committees. He said participants include representatives from insurance, finance, and business interests. He welcomed suggestions for potential guest speakers and presenters, as well as invitees. Professor Mahin encouraged commissioners to visit the symposium Website at www.northridge20.org for more details.

Chairman Gardner asked the staff to come back with some cost estimates and options at the November meeting.

Mr. McCarthy noted that the Commission might consider using some of its research funds to work with PEER on an end product resulting from the conference. Professor Mahin proposed developing post-conference recommendations for next steps. Chairman Gardner asked Mr. McCarthy to work with Professor Mahin and come back with a proposal at the November meeting.

IX. SAN FRANCISCO COMMUNITY ACTION PLAN FOR SEISMIC SAFETY (CAPSS) AND SOFT STORY PROGRAMS

Commissioner Fuad Sweiss introduced Mr. Patrick Otellini, Director of Earthquake Safety, Office of the City Administrator, City of San Francisco, and invited him to discuss San Francisco's Community Action Plan for Seismic Safety (CAPSS) program and soft-story ordinance.

Mr. Otellini said San Francisco, a city of about 800,000 people, has 147,979 buildings, including 6,381 soft-story buildings covered by the new soft-story ordinance. He showed a map of faults and projected ground-shaking levels, and noted that the CAPSS program was established after the Loma Prieta earthquake to encourage mitigation efforts. He advised that addressing soft-story buildings was a recommendation made by CAPSS after ten years of study, and former Mayor Gavin Newsom's thirty-year Earthquake Safety Implementation Plan includes such an ordinance. Mr. Otellini said Mayor Lee pursued this goal, and a summit was held in January 2013 with private-sector lenders and many other stakeholders, following by passage of the ordinance in February by a unanimous vote.

Mr. Otellini explained that the new ordinance applies to buildings constructed before 1978 with five or more units and two or more stories over a weak bottom story. He said building owners are required to have their buildings screened within one year, a fairly simple process. He estimated that nearly half of the buildings covered by the ordinance may not need retrofit; units requiring retrofit would then be sorted into four tiers based on a combination of vulnerability factors. Mr. Otellini noted that an application is available on the CAPSS Website, and he encouraged commissioners to look at CAPSS' policies pertaining to private schools, façade maintenance, and soft stories. He added that CAPSS has established a public "demonstration" space called "Epicenter," and interested people can also follow CAPSS on social media.

Chairman Gardner thanked Mr. Otellini for his presentation.

X. SAN FRANCISCO PUBLIC UTILITIES COMMISSION WATER SYSTEM IMPROVEMENT PROGRAM

Commissioner Macari reported that he and Chairman Gardner met as a subcommittee with the staff and then held conference calls with SFPUC representatives to arrive at a consensus on the contents of the Commission's proposed comment letter to the Joint Legislative Audit Committee.

Senior Structural Engineer Fred Turner advised that the Commission's comments are due by September 26. He said the Commission's charge is to review changes in the schedule impacting seismic safety. He stated that the Commission identified 20 projects in 2006 that related to seismic safety, of which 10 have experienced delays ranging up to 16 months each. Mr. Turner noted that the Commission's focus is on cumulative delays, and he displayed a chart showing all delays in the projects so far. He indicated that the overall program is being delayed by about 8 months, but seismic projects will experience an 8- to 112-month delay, forestalling critical

improvements to a water system serving 2.5 million users. Mr. Turner pointed out that every delay increases the window of vulnerability.

Mr. Turner displayed a map of the Hetch Hetchy system and pointed out the location of the Calaveras Dam and Reservoir, the area of the water system improvement program involved in the projected new 112-month delay. He recommended Commission approval of the proposed letter detailing the Commission's comments and recommendations and authorization to forward the letter to the Joint Legislative Audit Committee.

ACTION: Commissioner Macari made a motion, seconded by Commissioner Strack, that:

The Commission approve the proposed recommendations and authorize the staff to forward the letter to the Joint Legislative Audit Committee as proposed.

* Motion Carried, 14 – 0 – 1 (Commissioners Elsesser and Widom absent during voting; Commissioner Sweiss abstaining.

Mr. Turner advised that the Commission has an opportunity to participate in a field trip and tour of the Bay Division pipeline project and the Calaveras Dam in mid-October. Commissioner Hellweg asked commissioners interested in participating to let her know, and several commissioners indicated they would like to attend. Mr. McCarthy said the staff will poll commissioners about their availability and arrange for notice as a public meeting.

XI. STATUS REPORT FOR BAY AREA RAPID TRANSIT'S EARTHQUAKE SAFETY PROGRAM

Commissioner Johnson gave a PowerPoint presentation on the status of the Bay Area Rapid Transit's earthquake safety program. She noted that BART is a vital transportation link for the entire Bay Area, and she traced its history. She said the current system, with an estimated replacement cost of \$20 billion, has 5 lines, 43 stations, 104 miles of track, and about 385,000 daily riders.

Commissioner Johnson displayed a map showing Bay Area earthquake faults and the BART system. She observed that there is an increasing probability of another major earthquake in Northern California, and BART wants to be ready. She stated that the 1989 Loma Prieta earthquake caused extensive damage to much transportation infrastructure in the Bay Area, resulting in closure of the Bay Bridge and many other roads, but BART fared well in that event.

Commissioner Johnson said BART launched its earthquake safety program with a 2002 study to identify vulnerabilities throughout the system that could cause disruptions in service and traffic impacts. She advised that the 2002 study determined that the Transbay Tube, about 25 miles of aerial guidelanes and their column supports, and certain stations were the most vulnerable parts of the system. She noted that voters passed a \$980 million bond measure in 2004, and many of these vulnerabilities have been addressed since then. Commissioner Johnson added that later studies indicated that the soil underneath the Transbay Tube was not as prone to liquefaction as scientists had thought.

Commissioner Johnson showed a diagram of a typical column retrofit, noting that steel jackets are placed around columns, and the foundations are broadened to provide sturdier support. She pointed out the retrofit locations on a map and displayed photographs of construction work. She reported that all the core work identified in 2009 was completed by April 2013, and the remaining improvements include retrofit of three more stations, installing a liner around the Transbay Tube, and other miscellaneous retrofits.

Chairman Gardner thanked Commissioner Johnson for the update.

XII. PARTNERING WITH MEXICO TO REDUCE SEISMIC RISK

Commissioner Macari reported that he had been contacted various Mexican government agencies over the past six months in an effort to encourage better cooperation and information-sharing, and he said he was invited to participate in a forum discussion of collaborative programs when President Obama visited in May. He stated that he attended a meeting in July to identify common areas of interest, including post-disaster economic recovery, expansion of the tsunami warning buoy system south of Los Angeles, and improving the reliability of the water delivery system. Commissioner Macari added that he mentioned the Commission's work with the Global Earthquake Model (GEM) and encouraged Mexican officials to consider joining.

Commissioner Beroza remarked that both California and Mexico would benefit from exchanging seismic data, and he expressed support for expanding these efforts. Commissioner Macari said he fully agreed.

Commissioner Hellweg noted that the Southern California CISN is working with government officials in Ensenada to exchange real-time data using the same software.

Commissioner Koch stated that Commissioner Mark Ghilarducci had been attending conferences with governors of the U.S. border states and Mexican officials.

Chairman Gardner thanked Commissioner Macari for his report.

XIII. EARTHQUAKE EARLY WARNING UPDATE

Commissioner Koch introduced Mr. Mark Johnson, Cal EMA, to discuss the activities of the earthquake early warning working group.

Mr. Johnson said the working group was formed in March 2013 to develop recommendations for establishing a public-private collaboration that would incorporate existing technology and cover the entire state. He reported the working group met in July and agreed on the following recommendations: 1) a model public-private partnership should be created to develop a cost-effective and reliable earthquake early warning system; 2) the system should be managed by a statewide organization, such as CISN; 3) there should be a standards approval mechanism to evaluate technology used in the system; 4) the system should be promoted through education and training; and 5) there should be a distributed funding model based on a combination of federal

and state assessments and fees, private contributions, support from research institutions, code requirements, and subscription services. Mr. Johnson noted that the working group formed a separate subgroup to estimate the costs and annual maintenance expenses. He said preliminary estimates are \$23 million to create the system and about \$12 million each year for maintenance.

Mr. Johnson advised that the next steps will entail converting the working group's recommendations into concrete objectives, establishing a timeline, and creating project teams for each objective.

Chairman Gardner thanked Mr. Johnson for the update.

XIV. PUBLIC COMMENT

Mr. Paul L. Anderson, geologist, spoke to the Commission about his concerns relating to falling hazards in big-box warehouse stores like Costco, Lowes, and Home Depot. He noted that many of these facilities stack heavy items on high shelves, creating life safety hazards for shoppers. He asked what agencies were responsible for regulating these kinds of businesses, and he urged the Commission to pursue this issue.

Chairman Gardner explained that the Commission was unable to take action at this meeting because this issue was not listed on the agenda. He said building design is generally governed by the building code, and local building officials are responsible for enforcing the codes.

Commissioner Jim McGowan volunteered to research the issue and respond in writing to Mr. Anderson. He asked for a written copy of Mr. Anderson's comments. He said he was unaware of any specific building code provisions, but there may be local ordinances dealing with these types of hazards. Mr. Anderson expressed his opinion that there should be regional or statewide oversight rather than leaving enforcement up to local jurisdictions.

Mr. Turner clarified that there are federal and state regulations requiring restraints for any contents stored on shelves over 12 feet high. He added that the OSHA is hampered by a lack of staff to police stores proactively. He offered to provide Mr. Anderson with more information about applicable regulations.

Mr. McCarthy recalled that California passed a law requiring contents to be secured with shrinkwrap in certain circumstances, but another law imposing additional restrictions was rejected. Mr. Turner said he had information on shake-table testing of shrinkwrapped contents that he would provide.

XV. GOOD OF THE MEETING

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

XVI. ADJOURNMENT

There being no further business, the meeting was adjourned at 2:11 p.m.

Sue Celli
Office Manager

Approved by:

Richard McCarthy
Executive Director