

Seismic Safety Commission
Minutes of Meeting
March 11 and 12, 2004
Paso Robles Inn
1103 Spring Street
Paso Robles, California

Members Participating

Stan Y. Moy, Chairman
Lucy Jones, Vice Chair
Bruce Clark
Lawrence T. Klein
Don Manning (attended March 11 only)
Linden Nishinaga (arr. 3:35 p.m.)
Celestine Palmer
Donald R. Parker
Daniel Shapiro

Members Absent

Senator Richard Alarcon/Chris Modrzejewski
Andrew Adelman
Mark Church
Jimmie Yee

Staff Present

Richard McCarthy
Robert Anderson
Karen Cogan
Henry Reyes
Henry Sepulveda
Fred Turner

I. CALL TO ORDER/ROLL CALL

Chairman Stan Moy called the meeting of the Seismic Safety Commission to order at 3:05 p.m. Executive Assistant Karen Cogan called the roll and confirmed that a quorum was present.

II. CHAIRMAN'S REMARKS

Chairman Moy opened the meeting in memory of Jennifer Myrick and Marilyn Frost Zafuto, the two people who were killed in an unreinforced masonry building in downtown Paso Robles when the San Simeon earthquake struck. He explained that the purpose of the Commission's visit to Paso Robles was to gather information on lessons learned. He said the Commission will be preparing a report for the governor and Legislature.

III. APPROVAL OF JANUARY 15, 2004 COMMISSION MEETING MINUTES

ACTION: Commissioner Dan Shapiro made a motion, seconded by Commissioner Lawrence Klein, that:

The Commission approve the January 15 minutes as proposed.

* Motion carried, 8 - 0 (Commissioner Nishinaga absent during voting).

IV. EXECUTIVE DIRECTOR'S REPORT

Budget Update

Executive Director Richard McCarthy invited Commissioner Klein to provide an overview of the latest budget projections.

Commissioner Klein reviewed the latest budget projections. He said the Commission's revenues and expenditures are on track. He noted that current projections reveal that the Commission can expect to have a small surplus of about \$8,000 at year-end if no additional projects are undertaken. Commissioner Klein added that the staff is awaiting payment of its invoice for activities related to review of the Pacific Earthquake Engineering Research (PEER) Center.

FEMA Appeal

Mr. McCarthy reported that the Federal Emergency Management Agency (FEMA) Region IX has agreed to assist the Commission in obtaining an oral interview with FEMA national representatives to discuss the Commission's pending appeal. He said he will contact Commissioners Manning, Moy, Klein, Shapiro, and Clark once the date is set so they can attend.

State's Multi-Hazard Mitigation Plan

Mr. McCarthy said the staff forwarded the draft seismic section of the state's multi-hazard mitigation plan to the Office of Emergency Services (OES) for review. OES reformatted the document, and it will now be sent out for public comment. Mr. McCarthy noted hearings will be held in northern and southern California to take comments on the seismic section. He asked commissioners to make themselves available to attend those hearings with the staff.

Mr. McCarthy said OES expects to have the entire multi-hazard mitigation plan ready for release at the Disaster Resistant California Conference in May.

San Simeon Earthquake Report

Mr. McCarthy drew attention to the draft San Simeon Earthquake report outline in the meeting packet. He recommended that the Commission discuss the contents of the report after the conclusion of the March 12 public hearing. He suggested focusing on a few key issues rather than duplicating the information in the Earthquake Engineering Research Institute's post-earthquake investigation report.

V. COMMITTEE REPORTS

Research Implementation Committee

Commissioner Lucy Jones reported that the Research Implementation Committee is getting close to completing its update of the Research Implementation Plan. She said the document will be ready for Commission review and approval as soon as the last few comments have been incorporated.

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Ad Hoc Committee on School Safety

Commissioner Jones said the Ad Hoc Committee on School Safety met in Los Angeles in January and in San Francisco in mid-February to obtain input from local building officials. She noted the committee is working on clarifying issues and recommendations for inclusion in a white paper.

Chairman Moy asked if the committee would be addressing charter schools as well as public and private schools. Commissioner Jones explained that charter schools are considered either public or private schools, so they will be covered in the report.

PEER Review Committee

Mr. Robert Anderson reported that the PEER Center's Year 7 annual meeting was held recently in Palm Springs. He noted the purpose of the meeting was to provide an update on PEER activities and make plans for Years 8 through 10.

Mr. Anderson said one of the primary topics of discussion was the Open Sees program and its integration into an advanced computer network used to model complex structural and geotechnical problems. He noted participants also heard a briefing on lifeline issues.

Mr. Anderson drew attention to the summary of the conference provided in the meeting packet. He noted National Science Foundation (NSF) funding for the PEER Center will cease after Year 10, so an alternative funding source needs to be found by then. More immediately, the California Energy Commission's pass-through contract with PG&E is scheduled to expire on June 30, 2004, but the Utilities Working Group may be preparing a new proposal for California Energy Commission funding. Mr. Anderson said the Year 7 NSF site visit is scheduled for May 11 through 13, 2004, at the Richmond Field Station.

Commissioners asked for more details about the PEER Center's funding. Mr. Anderson explained that NSF provided ten years of seed money, or about \$2 million per year, which is supplemented with state matching funds. Commissioner Bruce Clark asked if state money was earmarked for directed projects only. Mr. Anderson responded that some state funds are allocated for directed lifeline projects.

VI. LEGISLATION

Director of Legislation Henry Sepulveda drew attention to his written report under Tab D of the meeting packet.

Carry-Over Bills from 2003

Mr. Sepulveda noted that in January and February, the Legislature processed several two-year bills of interest to the Commission.

He reported that AB 1066 (Liu), a Commission-sponsored bond bill to finance seismic retrofit of

essential services facilities, died in the Appropriations Committee, as did virtually all other bond bills.

AB 920 (Nakano), which would change the natural hazards disclosure form used in real estate transactions, is pending before the Senate Judiciary Committee. Mr. Sepulveda said the change would allow buyers of property to rely on reports made by third parties rather than on the seller and broker.

Commissioner Clark expressed concern about shifting responsibility to a third party. He noted that under the current law, the seller and broker are responsible for collecting and disclosing information. Mr. Sepulveda said the staff has been speaking with the bill's sponsor, the California Association of Realtors. He noted the Commission's Legislative Advisory Committee recommends continuing to watch AB 920.

Mr. Sepulveda stated that AB 1633, a bill that would allow the Building Standards Commission to adopt regulations for certain buildings currently outside state jurisdiction, died in committee. AB 1647 (Wiggins), requiring an inventory of pre-fabricated school buildings in Riverside and San Bernardino, does not appear to be moving. SB 111 (Knight), a clean-up measure that deletes obsolete deadlines and reporting requirements, is expected to pass.

New Commission-Sponsored Bills

Mr. Sepulveda reported that two new Commission-sponsored bills were introduced in February. AB 3032 (Calderon/Yee) exempts retrofitted unreinforced masonry (URM) buildings from the normal placarding requirement and allows alternative signage indicating seismic upgrade. AB 3033 (Calderon/Yee) would decouple seismic retrofit of URM's from some local building requirements.

With respect to AB 3032, Commissioner Shapiro noted some local jurisdictions have low standards with respect to what constitutes adequate seismic retrofit. He recommended setting a statewide URM retrofit standard for purposes of placarding.

Commissioner Shapiro clarified that AB 3033 would exempt URM seismic retrofit projects from local building requirements only, but not from state or federal code requirements. He noted compliance with the Americans with Disabilities Act (ADA) is a major issue for many building owners. Mr. Sepulveda said the bill's author is concerned about allowing ADA exemptions and plans to amend the bill to clarify this intent.

Other 2004 Bills

Mr. Sepulveda reviewed other new bills of interest to the Commission.

Seismic Safety Commission Funding Provisions

First, Mr. Sepulveda noted that in response to concerns expressed by the California Earthquake Authority about the placement of Commission funding provisions in the Insurance Code, the legislative counsel indicated that a reordering change will be included in an omnibus technical

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corrections bill.

AB 1790 (Corbett)

Mr. Sepulveda recommended that the Commission support AB 1790 (Corbett), which establishes a process for schools to request state bond funds for seismic upgrades. He noted the provisions will not take effect until after 2006.

ACTION: Commissioner Jones made a motion, seconded by Commissioner Clark, that:

The Commission support AB 1790.

* Motion carried, 9 - 0.

AB 1831 (Bermudez)

Mr. Sepulveda said AB 1831 (Bermudez) would allocate \$25 million of state homeland security funds for improving interoperability of radio equipment used by local response agencies. He noted the Legislative Advisory Committee recommends supporting AB 1831 in concept, but committee members had concerns about the impact of the funding allocation on other competing uses.

Commissioner Parker suggested describing the bill as having to do with “local radio interoperability” rather than “communications upgrades.”

ACTION: Commissioner Clark made a motion, seconded by Commissioner Don Manning, that:

The Commission support AB 1831 in concept.

* Motion carried, 9 - 0.

AB 2533 (Salinas)

Mr. Sepulveda noted AB 2533 (Salinas) pertains to URM placard enforcement. He said the author plans to amend the bill in the near future.

Commissioner Jones suggested merging this bill with AB 3032 and AB 3033, the two related Commission-sponsored bills discussed earlier.

Commissioner Manning asked why assessing a penalty for noncompliance is viewed as such a problem. Mr. Sepulveda responded that there is some doubt as to the effectiveness of penalties, and local jurisdictions are concerned about the potential costs of enforcement. Commissioner Manning expressed his opinion that penalties can be effective in producing compliance if the amounts are set high enough. Mr. Sepulveda stated that Assemblyman Salinas intends to create a penalty mechanism, but the issue is how much. He recommended watching AB 2533.

AB 2570 (Dutton)

Mr. Sepulveda drew attention to AB 2570 (Dutton), a bill authorizing schools to apply for State

Allocation Board funds to prevent damage to buildings facing “imminent danger” from natural disasters. He recommended that the Commission support AB 2570.

Commissioner Jones questioned whether earthquakes would be considered “imminent danger” because they cannot be predicted. Mr. Sepulveda stated that the term is not defined in the bill.

Commissioner Shapiro asked how the funding could be used. Mr. Sepulveda replied that AB 2570 would provide grants for repairs to prevent further danger. He added that no funding source is identified, and it is unclear as to whether funds could be used for retrofit as well as for post-disaster repair.

ACTION: Commissioner Clark made a motion, seconded by Commissioner Jones, that:

The Commission support AB 2570 in concept and direct the staff to work with the author to clarify the wording of the bill.

* Motion carried, 9 - 0.

AB 2632 (Bogh)

Mr. Sepulveda noted AB 2632 proposes exempting skilled nursing facilities from the California Building Code and from Office of Statewide Health Planning and Development (OSHPD) review. He said the staff contacted OSHPD regarding their concerns, but OSHPD has not yet taken a position on the bill. He recommended that the Commission watch AB 2632.

AB 2720 (Laird)

Mr. Sepulveda stated that AB 2720 would modify the standard for use of structural engineers and architects on hospital seismic projects. AB 2720 would allow engineers to prepare plans and/or supervise projects that do not involve structural or architectural issues.

Commissioner Shapiro expressed his opinion that nearly all work on hospital projects involves structural issues to some extent. He noted that even if the project is limited to constructing a new duct path, a mechanical engineer or structural engineer has to verify that the system meets seismic standards. He recommended opposing AB 2720.

Mr. Sepulveda said the author indicated he would be amending the bill to clarify its intent. He suggested holding off on an “oppose” position pending the amendment.

Chairman Moy proposed watching AB 2720 for the time being, and other commissioners agreed.

AB 3001 (Nunez)

Mr. Sepulveda noted AB 3001 would require the Division of the State Architect (DSA) to perform an inventory of all portable classrooms by June 1, 2005. He recommended that the Commission watch this bill.

SB 3010 (Laird)

Mr. Sepulveda said AB 3010 would exempt all new joint-use facilities on community college

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campuses from the Field Act. He noted that although the Commission will probably want to oppose this bill, Assemblyman Laird intends to amend it, so it might be advisable to wait to see those amendments before taking a position. He recommended that the Commission watch AB 3010 for the time being.

SB 1175 (Denham)

Mr. Sepulveda said SB 1175 is identical to AB 3010 and would exempt community college joint-use facilities from the Field Act. However, in this case, the author has no intention of amending the provisions. Mr. Sepulveda recommended that the Commission take an “oppose” position on SB 1175.

ACTION: Commissioner Jones made a motion, seconded by Commissioner Celestine Palmer, that:

The Commission oppose SB 1175.

* Motion carried, 9 - 0.

SB 1474 (Escutia)

Mr. Sepulveda noted SB 1474 proposes to exclude earthquake claims as a basis for denying new coverage or renewal of homeowner’s residential property insurance policies. He recommended that the Commission watch this bill.

Commissioner Jones asked why the Commission would not want to support SB 1474. Mr. Sepulveda replied that the staff wants to clarify the intent of the bill through discussions with the author’s staff.

SB 1654 (McPherson)

Mr. Sepulveda noted SB 1654 deals with public safety radio interoperability and requires that purchases of new equipment comply with recognized standards. He recommended supporting this bill.

ACTION: Commissioner Palmer made a motion, seconded by Commissioner Nishinaga, that:

The Commissioner support SB 1654.

* Motion carried, 9 - 0.

SB 1727 (Scott)

Mr. Sepulveda stated that SB 1727 proposes to exempt all community college facilities from the Field Act. He recommended opposition.

ACTION: Commissioner Clark made a motion, seconded by Commissioner Jones, that:

The Commission oppose SB 1727.

Commissioner Clark noted the Commission should vehemently oppose this effort.

Mr. McCarthy commented that SB 1727 is the latest in an ongoing effort to get around the Field Act. He noted many school districts have complained about delays in DSA processing and extra costs resulting from Field Act requirements.

Commissioner Klein cautioned that the Commission should prioritize the bills on which it takes positions so staff resources can be used most efficiently. Chairman Moy agreed.

Commissioner Jones expressed her opinion that fighting attacks on the Field Act should be the Commission's highest priority. She urged the staff to convey the Commission's opposition very clearly to the author.

Commissioner Shapiro observed that Governor Schwarzenegger is facing a big learning curve since taking office. He recommended finding ways of bringing this issue to the governor's attention.

Mr. McCarthy noted there was a recent editorial in the *Los Angeles Times* regarding the costs of complying with the Field Act. He emphasized the need to educate the Governor's Office on the historical good performance of Field Act buildings as a way of demonstrating the value of the Field Act to the state. He added it would be helpful to have more detailed estimates from DSA on the costs of complying with the Field Act.

Commissioner Shapiro observed that the *Los Angeles Times* editorial contained a great deal of misinformation. Mr. McCarthy agreed.

* Motion carried, 8 - 0 (Commissioner Klein absent during voting).

SB 1896

Mr. Sepulveda said SB 1896 is a new CEA spot bill to convert two nonvoting board positions to voting positions. He recommended that the Commission watch this bill.

SB 1898

Mr. Sepulveda also recommended watching SB 1898, a bill pertaining to gas shutoff valves.

Chairman Moy asked if Senator Burton had been informed about the Commission's study on gas valve safety, and Mr. Sepulveda said the senator's staff was aware of the report.

Chairman Moy thanked Mr. Sepulveda for the legislative update.

VII. HEARING ON SAN SIMEON EARTHQUAKE

Chairman Moy noted the Commission invited representatives of the scientific community; utility industry; local, state, and federal government agencies; and businesses to provide testimony on the impacts and lessons learned from the San Simeon earthquake. He invited members of the

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public to make comments at the end of the panel presentations.

Seismology/Geology/Engineering Panel

Commissioner Bruce Clark introduced the session on seismology, geology, and engineering issues. He observed that the study of earthquakes raises many complicated and interrelated issues for the scientific community. He invited panel members to discuss their observations and lessons learned from the December 22, 2003, San Simeon earthquake.

Mr. Tony Shackel, California Geological Survey, provided an overview of the earthquake. He said the 6.5-magnitude San Simeon earthquake occurred at 11:15 a.m. on December 22, 2003. He displayed a map showing the epicenter region and discussed the focal mechanism and rupture pattern. Mr. Shackel pointed out the locations of monitoring stations. He showed maps of the surface ruptures, aftershocks, and shaking intensities. He also showed photographs of road damage and ridgetop spreads.

Mr. Shackel commented that the cause of the earthquake appears to have been a blind thrust fault. He noted there was no evidence of through-going surface rupture. However, some ridgetop spreading was observed, ground motion traveled in a directional manner, and there was strong evidence of east-west shaking. Mr. Shackel characterized the earthquake as typical of mountain-building earthquakes.

In terms of lessons learned, Mr. Shackel stated there were not enough monitoring stations to produce high-quality, reliable data. He recommended strong motion instruments with communications capability to provide better real-time monitoring. He noted the Shakemap was an improvement over what was available in the past, but it needs more work and refinement to be useful to emergency responders. Mr. Shackel added that this earthquake also showed that well designed buildings can perform well, but URM buildings are vulnerable to collapse.

Commissioner Clark thanked Mr. Shackel for his presentation.

Commissioner Parker asked if it would be beneficial to install seismic instruments in existing URM's to collect earthquake data. Commissioner Jones responded that although some useful data might be produced, URM's are also vulnerable to collapse. She said most scientists would advocate putting instruments in buildings designed to higher standards.

Mr. Jay Love, EERI *Learning from Earthquakes* Reconnaissance Team Leader, explained that NSF established the EERI investigation team in order to find out what happens in major earthquakes, identify problems, and apply lessons learned. He noted a number of professors from Cal Poly in San Luis Obispo are participants.

Mr. Love reviewed statistics from the San Simeon earthquake. He said two people were killed, 40 buildings were damaged, and total losses are estimated at \$55 million for public buildings and \$250 million overall. Mr. Love drew attention to the draft copy of EERI's written report for more details.

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Mr. Love emphasized that historic structures are still at risk. He showed slides depicting damage at Mission San Miguel, in the downtown section of Paso Robles, and at the Atascadero City Hall. He discussed the collapse of the Acorn/Mastagni Building and showed an aerial view of the roof failure.

Mr. Love pointed out that retrofitting works, and he cited the retrofitted portion of the Atascadero City Hall as an example. He said hospital performance was encouraging, and the California Building Code regulations appear to be working well. Mr. Love added that the records from the Templeton Hospital monitoring station were very helpful in terms of quantifying the ground motion and strength of the earthquake.

Mr. Love showed photographs of damage to residential structures. In particular, he discussed a fairly modern house in Atascadero west of Highway 101 that suffered extensive damage. He noted that even though the structure was braced, there were insufficient nails at the sill plate and the building portions were not tied together well. He commented that the poor quality of construction appears to be the major cause of the damage.

Mr. Love discussed EERI's ongoing initiatives in loss data collection, development of data collection tools, and establishment of a virtual clearinghouse to disseminate earthquake information in a timely and accurate fashion.

Commissioner Clark thanked Mr. Love for his presentation.

Commissioner Nishinaga questioned why URM's performed so poorly after having gone through previous earthquakes. Mr. Love confirmed that there had been major earthquakes in the area in 1906 and 1952. Commissioner Jones pointed out that the Paso Robles area has not experienced much shaking in the past. She noted the 1983 earthquake in Coalinga also caused substantial damage to vulnerable structures. She added that the extent of damage depends in large part on the type of construction.

Mr. Love stated that the modern house in Atascadero was only about twenty years old, so it had not gone through any strong shaking in the past. He noted that wood frame buildings were studied extensively because of their poor performance in the Northridge earthquake, and improvements in bracing and cripple walls have been implemented as a result. However, he said, these protective measures will not work unless they are done properly. Mr. Love recommended focusing on ways of improving the quality of construction.

Commissioner Nishinaga commented that the damage to modern buildings was disturbing.

Commissioner Shapiro observed that quality control and design considerations are both important factors in good building performance. He noted the photographs of the Atascadero house suggested that the sides of the building and the garage door were not able to resist the seismic forces. Commissioner Shapiro recommended applying this lesson to schools, hospitals, and public buildings by insisting on better quality control and design.

Mr. Love commented that EERI is looking at ways of making front openings stronger.

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Commissioner Clark thanked Mr. Love for his presentation.

Mr. Lewis Rosenberg, San Luis Obispo County Geologist, welcomed the Commission to San Luis Obispo County. He displayed a map showing aftershocks from the December 22 earthquake and noted there have been 4,089 aftershocks as of March 9.

Mr. Rosenberg said that during the earthquake, the area experienced strong shaking, liquefaction, and landslides. He showed photographs of oak trees near the epicenter that were snapped off and URM's in Paso Robles that collapsed as a result of strong shaking. He noted evidence of liquefaction was found in the bed of the Salinas River near Templeton, and sand boils popped up in nearby fields. Mr. Rosenberg pointed out that geological disturbances like sand boils have an economic impact in agricultural areas because fields need to be leveled before they can be cultivated.

Mr. Rosenberg discussed areas of lateral spreading in the community of Oceana. He said the areas most affected appear to have been on the borders of old wetlands that had been filled over for housing developments. He also showed photographs of landslides and rock falls that occurred on ranch land and coastal bluffs.

Mr. Rosenberg described San Luis Obispo County's damage assessment process. He said county agencies worked closely with the U.S. Geological Survey (USGS), the California Geological Survey (CGS), the Coastal Commission, and private groups to survey the epicenter area. He noted real-time GPS/GIS programs guided helicopters and field mapping techniques on hand-held computers.

Mr. Rosenberg commented that more and bigger earthquakes are likely to occur in the future. He said Shakemaps were useful, but tended to underestimate the effects of the earthquake in some areas. Mr. Rosenberg noted an important lesson from the San Simeon earthquake was the recognition that liquefaction can have a serious impact on farmland. He emphasized the importance of cooperative efforts among various government and private agencies.

Commissioner Clark questioned the assertion that the San Simeon earthquake occurred on a fault that was not previously known. He said a 1931 Cal Tech thesis identified this fault as well as other faults that are not included on USGS maps, and he recommended investigating that document. Commissioner Clark noted the Seismic Safety Commission should support this kind of research effort.

Mr. Rosenberg said San Luis Obispo County has initiated discussions with USGS to promote more research work in this area.

Commissioner Jones noted the updated Research Implementation Plan recommends strong support for research programs and clarification of the roles and responsibilities of the agencies involved.

Chairman Moy thanked the presenters for their remarks.

Lifelines and Power Plants Panel

Commissioner Klein introduced Mr. Lloyd Cluff, former commissioner and head of the Geosciences Department, Pacific Gas & Electric (PG&E), and invited him to discuss the performance of PG&E's gas and electric systems and the Diablo Canyon nuclear power plant.

Mr. Cluff showed a map of PG&E's service territory. He noted PG&E adopted a comprehensive seismic risk management program after the Loma Prieta earthquake. That program calls for identification of hazards, evaluation of levels of risk, setting priorities, and then implementing appropriate mitigation measures.

Mr. Cluff stated that PG&E's electric system experienced some minor damage in the San Simeon earthquake that caused about 60,000 customers to lose power for two to five hours after the earthquake. Although the gas system was not damaged, some customers had problems because of poor building performance and liquefaction. Mr. Cluff noted many gas customers turned off their gas, so they experienced a disruption in service while waiting for PG&E personnel to turn the gas back on.

Mr. Cluff said Duke Power now owns the Morro Bay power plant, a former PG&E facility. He noted Ms. Barbara Engel would be providing more details on the damage to some of its electrical components.

Mr. Cluff reported that the Diablo Canyon Power Plant performed very well in the San Simeon earthquake. He said the facility was upgraded and re-evaluated before it was licensed to operate, a process that took seven years. He provided commissioners with copies of a 1988 summary of the Diablo Canyon long-term seismic program report. Mr. Cluff described the process used by PG&E to evaluate the safety of the Diablo Canyon Power Plant. He showed a map of active faults in the area, historical seismicity records, and a tectonic model developed by PG&E that was used to develop design criteria for the plant. He said PG&E is working with USGS to integrate their respective data.

Mr. Cluff showed a map of regional fault structures prepared in conjunction with the licensing application for a new spent fuel storage facility.

Mr. Cluff stated that based on its research, PG&E determined that the offshore Hosgri fault is a bigger threat to the Diablo Canyon Power Plant than blind thrust faults on land. He said the mechanism and location of the San Simeon earthquake was not a surprise, and all PG&E structures behaved as anticipated, consistent with PG&E's model. He noted that once PG&E and USGS data have been integrated, a more precise master model can be developed for the area.

Commissioner Clark asked about peak ground accelerations recorded by PG&E seismic instruments. Mr. Cluff responded that all PG&E monitoring stations in the area are on rocky sites, and the highest motion recorded was .05 g. He added that the Diablo Canyon Power Plant was designed to withstand .75 g, well above the level experienced in this earthquake.

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Mr. Cluff introduced Mr. Larry Womack, Diablo Canyon Power Plant. Mr. Womack stated that PG&E stayed in an emergency response mode for a 24-hour period after the earthquake. He described how all structures were checked and evaluated and reported that no damage was found.

Commissioner Klein thanked Mr. Cluff and Mr. Womack for their presentation.

Ms. Barbara Engel, Morro Bay Power Plant, described Duke Power's emergency response, damage assessment, and repair process. She said the San Simeon earthquake caused an old fire main to break, and the plant was evacuated while personnel inspected for damage. She noted that besides the broken water main, the plant experienced damage to boilers, insulation, anchor bolts, an elevator counterweight on a water storage tank, a crane rail, and lightning arrestors. Ms. Engel showed slides of some of the damaged equipment.

Ms. Engel stated that Duke Energy estimates the total cost of repairs will be about \$400,000; she added that the plant has a \$250,000 earthquake insurance deductible. She concluded that a facility built in the 1950's and 1960's, the plant did well.

Commissioner Klein thanked Ms. Engel for her remarks.

Mr. Alfredo Cardenas, City of Paso Robles, discussed the performance of the city's water and sewer system. He noted Paso Robles has 150 miles of water lines, 120 to 130 miles of sewer lines, three water storage tanks, and 14 wells. He said city crews are in a constant triage mode, so they were able to respond quickly when the earthquake occurred. Mr. Cardenas reported that damage to the city's water system was limited to one old tank, and water service was restored within 30 minutes of the earthquake. He said a wastewater treatment plant suffered minor damage, and that facility was off line for one day.

Commissioner Klein thanked Mr. Cardenas for his report.

Ms. Christine Ferrara, Utilities Division Manager, San Luis Obispo County, talked about the county's utility systems. She noted San Luis Obispo County encompasses 3,300 square miles and has a population of less than 240,000. The area is primarily rural, with several small and separate communities. Ms. Ferrara said San Luis Obispo County's major water facilities include three dams, a branch of the state water project, and ground water. Although one section of the state water project blew out after the earthquake, the other facilities performed well. Ms. Ferrara noted the Lopez Dam had been recently retrofitted, and she said the county was very thankful that work had been done.

Ms. Ferrara stated that soil type was the primary factor contributing to damage; utilities in poor or saturated soils did not perform as well as in other areas. Likewise, the age of facilities was also important; modern facilities did well, while older facilities had predictable failures. Ms. Ferrara noted loss of power affected more customers than damage to the water system. In particular, customers reported damage to equipment when power was restored.

In terms of lessons learned, Ms. Ferrara observed that construction methods make a difference,

and she emphasized the importance of compacting soil. She noted cell towers connected with epoxy to failed water tanks also failed. Ms. Ferrara said the county was pleased with the level of cooperation among various local and state agencies, but informal emergency response plans do not work well.

Commissioner Klein thanked Ms. Ferrara for her presentation.

VIII. PUBLIC TESTIMONY

Chairman Moy invited public comment from audience members.

Mr. Stanley Mendes, structural engineer, recommended that the Seismic Safety Commission enlist the leadership of local and regional newspapers to educate the public and increase awareness about the hazards of URM's and other vulnerable buildings. He noted the local press has a great deal of power to spotlight key issues and focus attention on solving community problems. He urged the Commission to work with the press to highlight the dangers of falling hazards such as walls, parapets, and URM's.

Chairman Moy thanked Mr. Mendes for his comments. He clarified that the Commission's role is limited to advising the Legislature and Governor.

Ms. Rochelle Becker, Mothers for Peace, raised a number of questions about the safety of the Diablo Canyon nuclear power plant. She disputed Mr. Cluff's description of the thoroughness and adequacy of PG&E's long-term seismic program. Ms. Becker noted that in spite of the power outage after the earthquake, PG&E was announcing the safety of the Diablo Canyon plant only 15 minutes after the event. She questioned whether the plant is truly safe, given its location in an active earthquake coastal zone, its old design, and the presence of existing cracks in the steam generators.

Ms. Becker stated that many people in the community are concerned about the possible threat of a nuclear accident caused by earthquake damage. She said the Nuclear Regulatory Commission (NRC) does not provide adequate oversight, so the determination of safety should not be left in their hands. Ms. Becker objected to proceeding with a facility to store spent fuel until more studies are completed. She recommended that PG&E X-ray all the equipment at the Diablo Canyon facility to verify its safety.

Mr. Womack responded that the Diablo Canyon licensing process is well documented. He said the NRC inspected the facility and came to the same conclusions as PG&E.

Mr. Cluff added that PG&E's investigation of hypothetical blind thrust faults in the area demonstrated that the Hosgri fault poses a much greater threat to the Diablo Canyon Power Plant.

Mr. David Weisman called for a moment of silence in memory of the earthquake victims. He expressed concern that an accident at the Diablo Canyon Power Plant would necessitate a mass evacuation, a situation for which the county is not well prepared. Mr. Weisman noted that 56 of

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the 132 warning sirens failed, and the cost of replacement is estimated at \$6 million. He questioned whether responsibility for maintaining the sirens rests with FEMA or the county. Mr. Weisman stated that the sirens have no batteries or backup power system, a serious problem during power outages. He noted solar technology to remedy this problem is readily available and should be considered.

Mr. Weisman said he was disturbed to learn that 60,000 PG&E customers were without power after the San Simeon earthquake. He added that cell phones did not work, and some roads were impassable due to landslides and rockfalls. He questioned the adequacy of the county's emergency evacuation plans, given these problems.

Mr. Weisman stated that the NRC does not consider the possibility of an earthquake and nuclear accident occurring at the same time. He urged the Commission to take steps to address these unacceptable conditions.

Chairman Moy thanked Mr. Weisman for bringing these issues to the Commission's attention. He asked Mr. McCarthy to explain what the Commission can do as a result of these hearings.

Mr. McCarthy said the Seismic Safety Commission is an advisory body to the Legislature and governor. He noted that after taking testimony, the Commission will prepare a report with recommendations regarding key issues such as URM's, schools, hospitals, and other community facilities.

Mr. McCarthy suggested that the county work with FEMA to address evacuation issues and siren maintenance. He noted there may be mitigation grants that can be used to repair the warning system. He assured Mr. Weisman that the Commission will follow up on the problems he reported.

Commissioner Clark observed that reliance on tenuous communication systems like cell phones is a recurring problem that should be mentioned in the Commission's report.

Mr. Kyle Gardner asked the Commission to remember Robin Ortiz, Shawn McCormick, and Catherine Treiman, the three people who died in the Loma Prieta earthquake when a URM in Santa Cruz collapsed. Chairman Moy said the Commission will close the March 12 session in their memory as well as those who died in the San Simeon earthquake.

Mr. Gardner noted that power plants and other regulated industries perform well in emergencies; he recommended holding the business community to the same standards. He observed that many people do not know how to respond in emergencies. He suggested working with the Occupational Safety and Health Administration (OSHA) to develop more stringent regulations to ensure workplace safety.

In terms of placarding unsafe buildings, Mr. Gardner recommended more rigorous enforcement and publicity. He said that if people were aware of which buildings in town were URM's, many would choose not to enter or work in those buildings. He added that the two victims of the San Simeon earthquake were not aware of the unsafe status of their building, so they had no choice.

He suggested implementing a program like that developed in the City of San Jose.

Mr. McCarthy agreed with Mr. Gardner and supported everything he recommended. He noted the Commission needs to enlist the assistance of people throughout the state to testify at legislative hearings and support seismic safety bills. He added that it would be helpful to have more details on cost and insurance issues to convince the Legislature of the value of mitigation.

Mr. Gardner praised the owners of commercial buildings who voluntarily retrofit their structures. He noted their efforts saved lives, and these people should be viewed as heroes in their communities.

Commissioner Shapiro commented that the Commission has worked for years to encourage retrofit. He urged Mr. Gardner and others to advocate for stronger laws.

Mr. Gardner noted that stronger laws are not possible without the support of city councils and local governments. He said the mayor of Paso Robles indicated the city council will be looking at revising its URM ordinance to require strengthening sooner than the 2017 deadline.

Chairman Moy added that the Seismic Safety Commission lacks the authority to mandate URM strengthening statewide; he noted the Commission can only encourage local governments to take action.

Commissioner Jones commented that she is reluctant to enter URM's because of their known safety problems. She said many people do not realize they are safer inside buildings than outside. She advocated better public education so people learn how to respond correctly.

Mr. Gardner recommended requiring all businesses to develop emergency plans and educate their employees.

Chairman Moy thanked the people who testified.

IX. RECESS

Mr. McCarthy drew attention to the letter from OES requesting the Commission's input on FEMA's proposed interim policy regarding funds to repair damaged buildings. He asked Commissioners Shapiro and Adelman to work with the staff to draft a response.

At 7:00 p.m., the meeting was recessed, to be reconvened the following day, March 12, 2004, at 9:00 a.m.

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X. MEETING RECONVENED

Chairman Moy reconvened the meeting of the Seismic Safety Commission at 9:10 a.m. and confirmed the presence of a quorum. He invited the first panel members to address the Commission.

XI. HEARING ON SAN SIMEON EARTHQUAKE (Continued)

Legislative Panel

Assemblyman Abel Maldonado thanked the Seismic Safety Commission for coming to Paso Robles. He began by extending his sympathy to the families of the Jennifer Myrick and Marilyn Frost Zafuto, the victims of the San Simeon earthquake.

Assemblyman Maldonado noted the most important job of elected officials is to protect the people they represent. He said he was totally committed to implementing the recommendations the Commission makes in response to the earthquake.

Assemblyman Maldonado said he came to Paso Robles within a few hours of the December 22 earthquake and was shocked by the devastation. He expressed his appreciation to the Governor's Office for immediately responding with offers of assistance. He pledged to continue working with local elected officials and local agencies to make sure they receive the support and services they need in their recovery efforts. Assemblyman Maldonado urged the Commission and others to continue their efforts to improve seismic safety and help communities prepare for future earthquakes.

Chairman Moy thanked Assemblyman Maldonado for his support and presence.

Mr. Rito Guerra, Office of Senator Bruce McPherson, expressed the senator's regrets at not being able to attend the meeting. He said Senator McPherson looks forward to the Commission's report and recommendations. Mr. Guerra pledged Senator McPherson's assistance and support and extended condolences to the earthquake victims' families.

Chairman Moy thanked Mr. Guerra for his remarks.

FEMA/OES Panel

Commissioner Parker introduced Mr. Jeff Lusk, FEMA Region IX, and Mr. Charles Wynne, OES, and invited them to discuss how FEMA and OES respond to disasters. He noted both agencies are actively involved in pre-disaster mitigation programs as well.

Mr. Charles Wynne, State Coordinating Officer, OES, reported that OES and FEMA set up a joint disaster field office in San Luis Obispo County after the president declared the disaster on January 13, 2004. He thanked local public officials and agencies for their cooperation and help.

Mr. Wynne noted the teleregistration period for disaster assistance ends on March 15, and he

encouraged people who have not yet applied to call the designated 800 number. He said the disaster field office functions as a one-stop center for affected communities. He emphasized the critical importance of government agencies working together to provide services and assistance to disaster victims.

Mr. Lusk noted FEMA also engages in pre-disaster activities such as providing educational materials for use in schools and developing ongoing partnerships with state agencies like OES.

Commissioner Parker explained that it is up to local agencies to request help after a disaster. He said the first step is for local officials to declare a disaster, and then to ask for regional assistance and mutual aid. After that, the governor can declare a state disaster so state resources can be brought in, followed by federal government aid once a national disaster has been declared.

Mr. Wynne said local emergency responders had a Shakemap within minutes of the San Simeon earthquake, but the information on the map was unclear at first. The Shakemap was refined within several minutes, and initial GIS damage estimates were available within an hour after the event. He noted there is a need for more strong motion instruments in the area, but the existing monitoring stations provided some useful information.

Mr. Wynne reported that 48 public agencies have requested FEMA assistance so far, and the cost of damage to public agencies is estimated at \$64 million. He said FEMA has issued about \$7,000 worth of grants and \$10 million in loans to individuals.

Mr. Lusk commented that tools like the Shakemap, the HAZIS damage estimation system, and the California Integrated Seismic Network were very helpful in the days following the earthquake. He said operations went quickly from a response mode to a recovery mode, and he commended OES and local agencies for working together effectively.

Mr. Lusk reported that FEMA has received over 4,200 teleregistrations as of March 11, and the five disaster recovery centers in the area served over 2,000 visitors since mid-January. He said FEMA has provided almost \$6.7 million in housing funds to individuals. The Small Business Administration (SBA) reports receiving applications for \$10 million in loans to repair damage to homes and \$1 million to repair damage to businesses. In addition, the SBA has disbursed about \$240,500 in economic injury loans.

Mr. Lusk discussed some of FEMA's hazard mitigation activities. He noted FEMA is working with the wine industry to investigate failures of rack systems. FEMA plans to conduct seismic retrofit training sessions for building professionals by the end of May. Mr. Lusk said FEMA also engages in community outreach to schools and provides how-to sheets on basic mitigation techniques on its Web site. He added that these materials are being translated into Spanish.

Commissioner Parker asked the FEMA and OES representatives whether mitigation funds might be available to maintain the county's warning siren system. Mr. Wynne stated that equipment damaged in the earthquake would be eligible for FEMA's public assistance program. However, he said hazard mitigation funds are not generally available for preparedness efforts.

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Mr. Lusk said Mr. Wynne was probably correct. He cautioned that problems due to deferred maintenance would probably not be eligible for FEMA funds. On the other hand, he noted, FEMA has paid for some warning systems in the past, and he encouraged local government agencies to submit applications to the state.

Commissioner Jones observed that the warning sirens are intended to respond to a nuclear accident, not an earthquake.

Mr. Wynne stated that the deadline for public agencies to apply for hazard mitigation grants is April 9, and limited funds are available.

Commissioner Jones asked if it was possible to quantify the benefits of using the California Integrated Seismic Network as a response tool. Mr. Wynne responded that the CISN was very useful to him, but it would probably be difficult to quantify the benefits. He added that OES has not done a cost-benefit analysis to provide that kind of data. Commissioner Jones asked OES to provide written materials documenting the use of the CISN. She noted OES has been a supporter of the network, and it would be helpful to emphasize its use as a response tool. Mr. Wynne said he would talk with Mr. Rick Eisner, OES director, about what materials could be gathered. He expressed his opinion that the CISN can be very helpful in emergency response, recovery, and mitigation activities.

Commissioner Parker expressed an interest in hearing more about the performance of the CISN. Commissioner Jones offered to provide a briefing at the April meeting.

Mr. Lusk noted cost-benefit information on the TriNet system was available. He added that Mr. Josh Morrow, who was scheduled to make a presentation later in the meeting, indicated the Shakemap was helpful to him in assessing damage to local wineries.

Chairman Moy thanked the FEMA and OES representatives and commended both agencies for their efficient response.

Local Government Panel

Commissioner Nishinaga expressed his appreciation to the City of Paso Robles and San Luis Obispo County for hosting the Commission meeting. He invited Mr. James App, Paso Robles City Manager, to address the Commission.

Mr. App reported that Paso Robles was well prepared to respond to the earthquake. He added the community was fortunate that more injuries and damage did not occur.

Mr. App said Paso Robles had just completed work on a new emergency operations center, but it was not well equipped at the time the earthquake struck. He noted the city had been working on a disaster response plan, but the document had not been adopted and the staff had not yet been trained.

Mr. App stated that Paso Robles will be pursuing a more rigorous URM retrofit ordinance. He

commented that it would be helpful to have more tools to encourage property owners to retrofit voluntarily. He noted the city can order compliance and even provide some funding, but having to pay prevailing wages is a major impediment for many building owners. He estimated that prevailing wages can add 30 or 40 percent to the costs of a building project.

Mr. McCarthy said the Seismic Safety Commission has been trying to develop mitigation incentives for years, and it would be helpful to have more cost-benefit data to convince legislators and the governor of the value of mitigation. He welcomed suggestions from Mr. App as to what the state can do to help Paso Robles and other cities.

Mr. App recommended that the state provide more relief for private property owners in the form of funding and waiving the prevailing wage requirement. He added that retrofitting a building provides no apparent value to a building tenant, and building owners complain that they are unable to recoup the costs of retrofit by increasing rents.

Commissioner Nishinaga thanked Mr. App for his remarks.

Mr. Wade McKinney, Atascadero City Manager, reported that Atascadero is also in the process of rewriting its emergency plan. However, the city created an interim plan that provided a clear definition of the roles and responsibilities of employees, and that plan was very helpful in responding to the San Simeon earthquake. Mr. McKinney said Atascadero experienced some damage to buildings downtown, but most damaged structures were residences in the hills outside of town. He noted that the Atascadero City Hall suffered some serious damage, so employees had to be evacuated. He added that working from a local pizza parlor has been quite a challenge for the staff.

Commissioner Shapiro observed that much of the damage to residential structures appears to be due to quality control problems such as inadequate inspection and shoddy workmanship. He asked about Atascadero's permitting and inspection process. Mr. McKinney responded that Atascadero's Building Department has three inspectors on duty, and the city is very zealous in terms of inspections. He expressed his opinion that the time of construction was a bigger issue, and noted the number and size of hold-downs and anchor bolts has been increased in recent editions of the building code. Mr. McKinney added that one of the damaged residences had its vents taped shut, probably to keep animals out, but the closed vents caused dry rot underneath the house, and the house pulled off its foundation in the earthquake.

Mr. McKinney asked for the address of the damaged house featured in the EERI presentation the previous day.

Mr. McKinney said Atascadero's police chief and fire chief were great assets in the damage assessment process. He noted there were eleven damage assessment teams, and the city had a good idea of the extent of damage by late afternoon on December 22.

Commissioner Nishinaga recommended that the Commission's report highlight things that went well in addition to key problems. He noted Atascadero's advance planning and preparation paid off in terms of efficient response. Mr. McKinney confirmed that most things went very well.

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Commissioner Clark asked if the city lost utilities or cell phone service. Mr. McKinney responded that cell phones were inoperable for a few hours after the event. He said the city relied on police and fire radios and portable phones.

Commissioner Clark suggested highlighting weak spots in communications as a major issue in the Commission's report. Commissioner Jones commented that many people assume cell phones will work well after disasters, so the failure is worth noting.

Commissioner Palmer asked for clarification of Mr. McKinney's statement about the timing of construction being more of an issue than quality control. Mr. McKinney explained that building code provisions have evolved over time to require stronger connections, bracing, and hold-downs.

Mr. McKinney added that the Atascadero City Hall probably would have collapsed if it had not been partially retrofitted.

Mr. Ron Alsop, Emergency Services, County of San Luis Obispo, agreed and noted the retrofit work saved lives.

Mr. Alsop described countywide response and recovery efforts. He said San Luis Obispo County is structured as a single operational area, and the county has a good working relationship with all local governments. He reported that the county's emergency operations center was up and running in 29 minutes after the December 22 earthquake. County staff began the damage assessment process by contacting each of the seven cities and the university with its "red phone" system, and then mutual aid resources were prioritized.

Mr. Alsop stated that the county developed an emergency plan in 1985, and the document was updated in 1998 and 2002. He said the plan will be revised again as a result of the earthquake, and local jurisdictions will develop their own plans consistent with the countywide plan. Mr. Alsop noted four cities in San Luis Obispo County obtained federal anti-terrorism grants to develop emergency plans. He commended the City of Paso Robles voters for having the foresight to pass a bond issue to construct a new emergency operations center and safety center.

Mr. Alsop reported that overall, local agencies responded well to the earthquake. He said the mutual aid system was used extensively, and eight strike teams from outside the area assisted local teams in conducting damage assessments. He noted urban search and rescue techniques were used to help remove people from the collapsed buildings, and he expressed his appreciation to the Paso Robles Fire Department for their assistance.

Mr. Alsop said county responders did not lose radio communications capabilities because backup generators were available. However, in the City of San Luis Obispo, batteries for the backup generator failed, so emergency 911 calls had to be switched to the county.

Mr. Alsop noted the response phase of the county's operation was over by 11:00 p.m. on December 22, at which time the recovery effort began.

Mr. Alsop said state and federal teams arrived on December 26 to view the damage and conduct preliminary damage assessments. Based on what they observed at that time, there was some doubt as to whether a disaster would be declared. Local jurisdictions engaged in a concerted effort to gather more detailed damage information and sent a 47-page report to OES on January 1. As a result, federal and state teams came back to the area and determined that a disaster declaration was warranted. Mr. Alsop noted that five disaster recovery centers were opened in the county, and FEMA and OES were very cooperative throughout that process.

Mr. Alsop commented that one lesson he learned was that local jurisdictions should not rush to complete a preliminary damage assessment; he emphasized the importance of taking the time to conduct a thorough damage assessment.

Mr. Alsop clarified that the county has ways of alerting the public even if the warning siren system does not work. He said the county developed a series of two-minute, prescribed emergency messages to broadcast to the public after disasters. However, after the San Simeon earthquake, that system was not implemented because local radio and television stations were making live announcements within minutes after the earthquake. Mr. Alsop noted another lesson learned was the need to provide more detailed information to the media.

Mr. Alsop said most of the county's 131 warning sirens are on commercial power, but 56 sirens are not, so they did not work during the power outage. He stated that the siren warning system is 99.7 percent reliable and meets all federal requirements, and the NRC and FEMA are kept informed of the siren system's status. Mr. Alsop noted that the siren system is maintained by PG&E and operated by the county. He added that the county is currently working with PG&E to clarify their respective responsibilities.

Commissioner Klein thanked Mr. Alsop for his detailed presentation. He asked Mr. Alsop to provide a written summary of his remarks after the meeting. He also requested copies of the county's emergency plans, and he welcomed suggestions about what aspects worked well and what did not work well. Commissioner Klein asked Mr. Alsop what advice he would give other jurisdictions based on his experience with this earthquake.

Mr. Alsop said interagency cooperative arrangements worked well. He noted the county's emergency plan prioritizes response tasks and spells out staff roles and damage assessment procedures. He commented that the biggest weakness he observed was the lack of adequate public information, and he recommended strengthening that part of the plan.

Commissioner Jones asked if San Luis Obispo County was aware of information available from automated seismic networks. Mr. Alsop said county responders used the Shakemap to identify potential areas of damage.

Commissioner Jones asked if the county's efforts were hampered by the lack of seismic monitoring instruments in the area. Mr. Alsop answered that county employees were too busy responding to the emergency to notice gaps in information.

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Mr. Jay Short, Utilities Supervisor, Templeton Community Services District, reported that Templeton's volunteer fire department assembled after the earthquake and formed crews to check on residences in rural areas. He said the utility department conducted a full analysis of its facilities and determined that the water and sewer system performed well. He noted two water tanks were lost because of damage, but two more tanks kept running, so service was not interrupted. Mr. Short added that some phone communications were lost immediately after the earthquake.

Commissioner Shapiro asked about Templeton's building stock. Mr. Short responded that the city has a mixture of primarily wood and metal structures. He noted there are some masonry buildings, many of which have been retrofitted over the years.

Commissioner Clark asked how the City of Templeton found out about problems in outlying neighborhoods. Mr. Short said fire department crews assessed local schools and hospitals, and then began checking residences. He noted many citizens called in, and some reported water leaks in their homes.

Chairman Moy thanked the presenters for their information. He noted the meeting was running a bit ahead of schedule, and he invited comments from members of the public.

Ms. Amber Wylie, Office of Assemblyman Simon Salinas, explained that Assemblyman Salinas is working on placarding legislation, and she welcomed Commission input on strategies for encouraging retrofit.

Mr. Sepulveda noted the staff is working with Assemblyman Salinas' staff on AB 2533, a bill the Commission discussed during the March 11 session. He said various options are being considered, including tax breaks, criminal and civil penalties, and fines. He invited commissioners to indicate their preferences and suggest incentive strategies.

Commissioner Jones commented that the proposed memorial bill provides a chance for the state to deal with serious issues related to URM's. She recommended improving enforcement of the placarding law. She noted imposing an unfunded mandate creates a problem for local jurisdictions because enforcement is handled locally. She suggested imposing fines for non-compliance and using any monies collected to pay for enforcement activities. Commissioner Jones also supported the concept of allowing building owners who retrofit to remove warning placards or change the wording on the placards to identify the building as having been retrofitted.

Commissioner Jones expressed her opinion that building owners who do not retrofit unsafe buildings should be held responsible for injuries and deaths to building occupants. She said failure to retrofit should be viewed as a form of negligence. Commissioner Jones also observed that the idea that having good building codes ensures good buildings is a myth, because codes do not apply retroactively. She emphasized the importance of addressing problems in existing buildings. She noted that URM's are more dangerous than other types of buildings, and the public needs to be educated to understand this hazard.

Commissioner Parker agreed with the concept of rewarding building owners who retrofit by amending placards to indicate that their buildings are safer as a result. He said he would like to see all URM's destroyed if they are not retrofitted.

Commissioner Palmer suggested including a provision in the bill requiring local jurisdictions to identify URM's so the public is aware of which buildings are hazardous.

Ms. Wylie thanked commissioners for their input.

Mr. Kyle Gardner expressed concern that levying fines or penalties on building owners will not ensure safe buildings. He noted owners who cannot afford to retrofit are likely to ignore fines if the penalties are not high enough. On the other hand, wealthy building owners could opt to pay the fines in lieu of retrofitting their buildings. Mr. Gardner cited the example of developers in the area who would rather pay fines than comply with grading restrictions and other requirements.

Mr. Gardner said that after the earthquake, one of the employees at his wife's business smelled gas after the earthquake. He noted the fire department responded after 45 minutes, and he ended up shutting off the gas. He again emphasized the importance of businesses having emergency plans so employees know what to do. He also urged the Commission to address the issue of gas leaks.

Chairman Moy noted the Commission conducted an extensive study of gas shutoff valves and made a number of recommendations on that topic. He also explained that the Commission has no power to mandate action by other agencies.

Commissioner Klein added that the Commission did not recommend use of gas shutoff valves in all situations because of doubts as to their cost-effectiveness. The Commission concluded that the decision about requiring gas shutoff valves should be left up to local jurisdictions. Commissioner Klein agreed with Mr. Gardner that homeowners, renters, and building occupants should be trained so they know how to shut gas off when necessary. He added that many consumers turn their gas off unnecessarily, and then have to wait for utility company people to restore the service.

Mr. Gardner commented that many local government agencies lack the manpower necessary to respond to gas leak emergencies. He suggested deputizing skilled people in the community to assist consumers. He proposed offering training for volunteers and finding ways of protecting cities from liability.

Mr. Gardner also recommended that the Seismic Safety Commission publicize its activities and resources. He said that before this meeting, he was not aware that the Commission existed. He noted materials like the *Commercial Building Owners Guide*, available on the Commission's Web site, should be promoted through the media. He urged the Commission to improve its public outreach to get the word out and make people more aware of resources and information available to them.

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Chairman Moy thanked Mr. Gardner for his comments.

Senior Structural Engineer Fred Turner commented that the Commission took no position on the placarding law passed in 1992. He noted the law has a number of serious flaws; in particular, no enforcement agency was designated, and there has been a widespread lack of enforcement as a result.

Mr. Turner said the Commission studied placarding as a mitigation tool and concluded that placarding itself was not effective unless backed up with a comprehensive risk management protocol and training for building occupants.

Chairman Moy noted the Commission will revisit the placarding issue later when the report contents are discussed in more detail.

Commissioner Shapiro commented that OES has asked the Commission to respond to FEMA's interim policy regarding use of funds to repair building damage. He noted FEMA's current practice, reflected in the interim policy, is to provide funds to repair buildings to their prior state, but not to improve them. FEMA also says they will provide more money if local jurisdictions require more, but some triggering mechanism must be in place. Commissioner Shapiro expressed his opinion that this was a reasonable approach to the problem of having to provide extra aid. He encouraged local jurisdictions to enact building code requirements that obligate building owners to upgrade if they have a certain extent of damage.

Mr. Turner said he also discussed this issue with the California Association of Building Officials (CALBO). He clarified that California building codes currently do not require retrofit of buildings beyond repair of damage. He noted CALBO is working on a couple model ordinances that address this issue.

Commissioner Shapiro said some jurisdictions, such as San Francisco, require seismic retrofit for major projects. He supported the concept of demanding a certain level of safety from building owners.

Commissioner Parker asked if FEMA funds can be used to repair pre-existing damage that occurred prior to an earthquake. Commissioner Shapiro answered that FEMA funds are restricted to repair of earthquake damage.

Commissioner Parker said he spoke with the Morro Bay fire chief, who indicated an apparatus bay at a local fire station had been condemned as substandard prior to the San Simeon earthquake. He added that the same problem occurred in the Oakland fires, when insurance companies paid homeowners to rebuild houses to prior code standards, while the city required upgrades to current code.

Mr. Turner stated that none of the local jurisdictions in San Luis Obispo County have triggers requiring upgrades beyond repair. He noted historic buildings and older buildings are also a problem because many do not meet FEMA funding criteria. He added that the State Historic Building Code is probably too discretionary to be to meet the "trigger" requirement. Mr. Turner

suggested talking with former commissioner Fred Herman about this issue.

Commissioner Parker asked the staff to provide commissioners with copies of the CALBO model ordinances.

Mr. McCarthy requested that Commissioners Adelman and Shapiro work with the staff to draft a response to OES' request for input on the FEMA interim policy. He asked Commissioner Shapiro to take the lead in this effort.

At 11:25 a.m., the Commission recessed for lunch. Chairman Moy reconvened the meeting at 1:37 p.m.

XI. HEARING ON SAN SIMEON EARTHQUAKE (Continued)

Schools, Hospitals, State Parks Panel

Commissioner Jones noted the focus of this panel would be on performance and safety issues related to schools, hospitals, and state park properties.

Dr. Patrick Sayne, Paso Robles Joint Unified School District, commented that the school district was fortunate that school was not in session at the time the earthquake struck on December 22. He noted the school district has an emergency plan, but most of the staff was off for the winter recess. Dr. Sayne said some custodians were on duty, however, and a daycare center had to be evacuated. He reported that school district personnel searched all rooms to make sure there were no occupants, and then structures were checked for damage. The Flamson Middle School, a building constructed in 1924 and retrofitted in 1959, was closed because of cracks. Dr. Sayne stated that the school district has one modern school and two schools over 50 years old, but the older buildings had been retrofitted to ensure life safety. Dr. Sayne added that the Field Act, which requires school buildings to withstand magnitude 8 or 8.5 earthquakes, protected the lives of students.

Dr. Sayne said the school district's emergency procedures worked well. He noted that if school had been in session, the district's policy is to keep students in school and release them to parents and authorized caretakers only. Dr. Sayne indicated that radio communications were vital in the hours after the earthquake because cell phones did not work. He expressed his opinion that it would have been helpful to have a generator facility to provide uninterrupted power. He noted the school district also needs to develop better communication with other agencies.

Commissioner Shapiro asked how nonstructural elements in school buildings performed. Dr. Sayne responded that some suspended ceilings at the high school were damaged and ceiling tiles failed, but the light fixtures held up.

Commissioner Jones questioned Dr. Sayne's interpretation that Field Act buildings are designed to withstand magnitude 8.5 earthquakes. Dr. Sayne said he had heard that figure bandied about. Commissioner Jones pointed out that Paso Robles is about the same distance from the San Andreas Fault as it is from the San Simeon fault, so the area can expect major earthquakes in the

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future.

Commissioner Jones said she was interested in more details on the problems at Flamson School. She pointed out that older school buildings are only as safe as the standards in effect at the time they were built. She asked what the school district intends to do with Flamson School. Dr. Sayne expressed his opinion that the building was unsafe and should not be used. He noted the school was retrofitted to standards that are now 35 years out of date. He said engineers have indicated some of the problems can be fixed with epoxy, but he added that he remained skeptical about multi-story school buildings because of seismic safety issues.

Dr. Sayne said the Office of Public School Construction sent notices to all school districts informing them of potential problems with older buildings, but no solution was offered. He noted that FEMA regulations only allow funding to restore damaged buildings to their previous condition, which may be unsafe.

Commissioner Jones thanked Dr. Sayne for his presentation. She invited the panel from the Division of the State Architect (DSA) to address the Commission.

Mr. Jack Bruce, DSA, described DSA's response to the San Simeon earthquake. He said DSA tried to call local school districts to find out if they had experienced damage, but it was difficult to reach key people because schools were out on break. He thanked Mr. David Bell, San Luis Obispo County Office of Education, for his assistance and cooperation. Mr. Bruce said that once contact had been established, DSA conducted site visits with structural engineers to inspect local schools. He reported that no buildings were posted except the Flamson School auditorium.

Mr. Bruce noted that Flamson School had been retrofitted in 1959 with reinforced gunite walls, plywood diaphragms securing roofs and floors, and wall ties. He said DSA representatives observed cracks and falling hazards, and the condition of the building is still being investigated.

Mr. Shaf Ullah, DSA, reported that no structural damage was found at any of the 24 school sites within San Luis Obispo County, although there was some nonstructural damage. He said damage at the Atascadero High School gymnasium may have been due to pre-earthquake shrinkage. Mr. Ullah noted nonstructural damage included ceilings, unanchored bookcases and televisions, and roof tiles. In addition, some seismic joints were damaged, pointing out the need for adequate separation between structures. Mr. Ullah suggested it might be appropriate to change the building code to require anchoring of items less than 5 feet tall.

Mr. Dennis Bellet, DSA, clarified that Title 24 regulations are intended to ensure that school buildings can resist the strongest expected earthquakes without collapse, and the recent earthquake demonstrates that mission was accomplished. He noted the San Simeon earthquake was not a major earthquake, so more serious damage could occur with stronger ground shaking.

Mr. Bellet said AB 300 required school districts to take an inventory of their pre-1976 non-wood-frame buildings, and San Luis Obispo County has 56 buildings matching that description. He stated that Flamson School was not included in the inventory because it was not a wood-frame building. Mr. Bellet recommended that the state address the need to evaluate and retrofit

older school buildings, focusing particularly on pre-1976 structures. He said DSA has a retrofit guide and checklist on its Web site, and he recommended publicizing these helpful documents.

Commissioner Jones asked if school districts are aware that these materials are available. Mr. Bellet responded that DSA has published the documents on the Web site but has not engaged in any widespread outreach to promote their use.

Commissioner Jones asked if Title 24 regulations require anchorage of nonstructural elements. Mr. Bellet responded that anchorage is not currently required. Commissioner Jones observed that school seismic safety depends to some extent on the income level of people in the school district; she noted PTA's in well-to-do districts often undertake bracing and anchoring projects, but poorer districts lack that protection.

Chairman Moy asked about the distinction between the Field Act and Title 24. Mr. Bellet explained that the Field Act gave DSA the authority to write regulations, and Title 24 represents the regulations that implement the Field Act.

Chairman Moy asked whether the Field Act and the California Building Code provide the same level of building performance. Mr. Bellet responded that the California Building Code is based on a life safety standard, while the Field Act is intended to ensure minimal structural damage. He stated that the Field Act provides a higher level of safety than the normal building code provisions.

Commissioner Klein asked whether the largest likely earthquake projections vary from one part of the state to another or whether the standard is uniform statewide. Mr. Bellet said previous versions of the code had different standards for Seismic Zone 3 and Zone 4, but the current code uses the largest expected earthquake for both zones.

Commissioner Jones thanked the DSA presenters for their remarks.

Mr. Hoyt Fields, Museum Director, Hearst Castle, Department of Parks and Recreation, discussed how the Hearst Castle fared during the San Simeon earthquake. He said there were 400 visitors at the Castle when the earthquake occurred, but there were no problems. He credited the excellent earthquake-resistant design created by architect Julia Morgan.

Mr. Fields displayed slides showing the original construction of Hearst Castle. Begun in 1919, the project took 28 years to complete. Mr. Fields said Hearst Castle withstood a major earthquake in the early 1930's without any major damage. He noted the Castle is built on a rocky outcropping, and most of the buildings are reinforced concrete with very thick walls.

Mr. Fields reported that only 12 of the 24,000 artifacts at Hearst Castle were damaged in the San Simeon earthquake. He estimated it will cost \$561,000 to repair or restore these items. He showed slides of damaged antique pots, statues, and stone columns. Mr. Fields said most of the other artifacts at the Castle are secured with a special earthquake wax. He noted a Hearst Castle employee developed a type of wax that becomes more adhesive when shaking occurs, and this method of securing objects worked very well.

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Commissioner Jones asked if any of the damaged artifacts had been secured with the special earthquake wax. Mr. Fields responded that none of those items had been secured.

Commissioner Jones thanked Mr. Fields for his presentation. She said the Commission was looking forward to touring Hearst Castle the following day.

Brother Bill Short, Mission San Miguel, discussed damage to buildings at the mission. He noted Mission San Miguel Arcangel was founded in 1797. He said the church and front building were constructed in 1812 to 1815, and the rest of the facility was rebuilt in 1928.

Brother Short reported that there was significant damage to the main adobe structure, particularly around the front entrance. He said the front corridor archway keystones failed, some interior painted wall surfaces were damaged, and the arches supporting the roof cracked. In addition, two unanchored statues were damaged when they fell down. Brother Short noted the mission is now closed. Church services are being held at a homeless shelter, and the Franciscan monks staffing the mission have been transferred to Mission San Antonio, located to the north in southern Monterey County. On the positive side, Brother Short commented that heavy roof tiles did not fall because they were secured with tie-downs, and there were no catastrophic failures of doors or window frames because of previous shoring efforts.

Brother Short said experts in strengthening adobe have been called in to provide repair advice, and they seem to believe restoration is possible. He noted a meeting with expert engineers will be held near the end of March to discuss future plans. He added that a committee has been organized to raise funds for the restoration.

Commissioner Jones commented that California's historic missions are important to the state's identity. She noted the missions pose a real challenge for the state in terms of balancing historical preservation with seismic safety.

Commissioner Clark emphasized the importance of getting conservators and engineers to work together in a cooperative manner.

Chairman Moy thanked the panelists for their presentations.

Unreinforced Masonry Building Issues Panel

Commissioner Shapiro noted the safety hazards of URM's have been known and discussed for many years. He said most previous earthquake fatalities in California have occurred because of URM's, and he expressed his opinion that the state needs to address this problem soon.

Mr. Roy McKee, Bethel Lutheran Church, Templeton, talked about the performance of the Bethel Lutheran Church building in the recent earthquake. He said the church as built by Swedish immigrants in the 1880's and is considered an important historical building in San Luis Obispo County. Mr. McKee said the original structure was well built, with thick walls constructed of high-quality brick, solid headers, and a truss system.

Mr. McKee said church members considered retrofitting the building several years ago, but backed off because of budget constraints. However, the county stepped in and ordered the building fixed, the church hired an independent engineer to evaluate the structure and make recommendations, and the structure was retrofitted last summer. Mr. McKee noted that the retrofit saved the historic building and protected it from major damage. He said although congregation members were upset when they were forced to upgrade the building, they are grateful now that the work was done.

Mr. McKee reported that the church suffered some minor damage in the earthquake and was yellow-tagged. He noted repairs are underway, and the work is expected to cost less than \$30,000. He again expressed his relief that the building was not destroyed in the earthquake.

Commissioner Shapiro said a local workman informed him that there was a significant difference in the quality of brick from San Luis Obispo County compared to brick from the eastern U.S. He asked if the church had experienced any structural problems in the past. Mr. McKee responded that there had been no previous problems. He said the artisans who worked on the church came from the Midwest and used excellent masonry techniques. He noted people who tested the brick recently were amazed at its strength after all this time.

Commissioner Shapiro thanked Mr. McKee for his remarks.

Mr. John Bertoni discussed the status of repairs to the Touch of Paso Building, a URM constructed over 100 years ago. He said the San Simeon earthquake caused the building to move at the floor line, cracking two corners and causing extensive damage. The building owner hired a structural engineer to evaluate the building, and the engineer recommended removing the brick, moving one wall, and retrofitting the inside. Mr. Bertoni noted that the repair plans changed as the work got underway, and the project became more complicated and more expensive than originally anticipated. The engineer initially recommended building a 2-foot thick footing around the building, but an 8-foot footing is now being installed. Mr. Bertoni expressed his opinion that such a heavy footing was unwarranted. He questioned the need to remove all the brick and said he believed the existing walls could be saved by drilling holes to install bolts and repairing them with epoxy.

Mr. Bertoni emphasized the need to use common sense in determining what should be done in a retrofit. He noted the roof of the building has to be secured in order to raise the structure. Because of the extensive work entailed, the remodel will trigger the need to make bathrooms ADA-accessible and provide other upgrades. Unfortunately, the building owners lacks the financial resources to pay for all this work.

Mr. Bertoni recommended that the state or county government provide more assistance and advice to building owners. He suggested forming a committee to help building owners evaluate the safety of their structures, identify what needs to be done, and determine the best ways to retrofit their buildings. He noted structural engineers often disagree with each other, so it would be helpful to have an independent and neutral body to provide that kind of advice.

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Commissioner Shapiro thanked Mr. Bertoni for bringing these issues to the Commission's attention.

Mr. Gary Smith introduced himself as the owner of a two-story URM in downtown Paso Robles. He said his grandfather constructed the building in 1922. Mr. Smith stated that he looked into retrofitting the building in the late 1980's, but eventually decided to do a minimal upgrade in order to avoid triggering more significant upgrades. At that time, a diaphragm was added and the downstairs ceiling was replaced. However, in 2000, the building next door caught on fire and spread to his building, causing major damage. Mr. Smith said he decided to go ahead with a major upgrade after the fire.

Mr. Smith stated that the retrofit included addition of a steel frame around the front window, installation of new floor joists on the second floor, a new roof, trusses, tie-ins, and a below-ground sheer wall. He said he was pleased to report that the building survived the earthquake intact with only minor cracks in the stucco. He estimated the costs of repairing the damage will be only \$30,000 to \$40,000. He added that the retrofit was successful in saving the building and saving lives.

Mr. Smith discussed some of the problems and glitches he observed in the recent earthquake. First, he said, the City of Paso Robles erroneously informed building tenants after the earthquake that the building was going to be demolished, so the tenants evacuated. Although five of the seven tenants moved back within a month, and the remaining two came back later, there was still a disruption in rental income. Mr. Smith questioned who has the authority to tag a building.

Mr. Smith also noted that major remodel and repair projects trigger the need to comply with ADA requirements, upgrade restrooms, and provide better access, and the added expense of having to do this work is a major problem for many building owners. He urged the Commission to look for ways of waiving these extra upgrade requirements and providing some cost relief for building owners.

Mr. Smith recommended using FEMA and SBA funds to strengthen URM's and save lives. He suggested focusing on the most hazardous buildings first, especially in old downtown areas. He advocated working with building owners to encourage voluntary upgrades.

Commissioner Shapiro thanked Mr. Smith for his suggestions.

Mr. Fred Schott, Structural Engineer, began by clarifying that earthquake magnitudes are based on the amount of energy released, not on the amount of damage anticipated. He said damage and level of shaking depend on a number of factors, including distance from the epicenter, type of soil, and directivity of the earthquake movement.

Mr. Schott noted the building code is designed to protect life safety; building to code does not ensure that structural damage will not occur, and it does not safeguard against damage to nonstructural components. He said the same basic code provisions apply to schools, but the Field Act provides better plan-checking, details, and inspection. Mr. Schott observed that the San Simeon earthquake was not nearly as strong as the design-level earthquake. He cautioned

that .25 g is sufficient shaking to knock down many URM's.

Mr. Schott stated that the San Simeon earthquake did not teach any new lessons and was not unexpected. He noted the engineering community has known for a long time what types of buildings perform well and what types perform poorly. In general, he said, wood-frame buildings fare better than masonry, but heavy tile roofs on wood-frame structures can cause damage. Adobe block structures perform very poorly in earthquakes unless they are reinforced with stucco.

Mr. Schott expressed his opinion that URM chimneys need to be addressed in the code. He pointed out that chimneys are falling hazards in every earthquake, and the current code allows inadequate connections between chimneys and buildings. In addition, chimneys do not have to be designed by architects or engineers. Mr. Schott said there is a major difference in the type of brick used; he noted fired brick is much more resistant to weathering than unfired brick. Similarly, the kind of mortar used makes a difference; lime mortar tends to disintegrate quickly, while cement is more durable. Mr. Schott recommended either mandating more than conventional building requirements for chimneys or upgrading conventional building requirements. He said he has been talking with the Structural Engineers Association of California about developing a code change proposal to address this problem.

Mr. Schott discussed the partial retrofit done on the Atascadero City Hall in 1984 and 1985. He noted that at that time, the floor on the fourth floor was reinforced, perimeter rails were installed, and the rotunda was tied to the walls and frames with steel beams. He expressed his opinion that the walls would have collapsed if this work had not been done. Mr. Schott said the City of Atascadero considered upgrading the remainder of the building in 1991, but that project was put on hold because of funding constraints.

Mr. Schott advocated upgrading URM requirements. He noted a state law was passed in 1976 requiring local jurisdictions to inventory their URM's and develop city ordinances to address them. He said the City of San Luis Obispo actively opposed the law and hired attorneys to fight its passage. Like many other local communities, Paso Robles and San Luis Obispo decided to put off forcing owners to upgrade their buildings. Mr. Schott expressed his opinion that the current 2017 deadline needs to be accelerated. He recommended not allowing major remodel projects without requiring seismic retrofit and fire sprinkler upgrades at the same time. He urged the Commission to make sure local jurisdictions do something soon and not allow this problem to be put off any longer.

Chairman Moy thanked all the panelists for their presentations.

At 3:45 p.m., the Commission took a brief recess. Chairman Moy reconvened the meeting at 4:00 p.m.

Business Panel

Commissioner Palmer welcomed representatives of the local business community. She noted earthquakes jeopardize both human safety and economic stability, and the effects of earthquakes

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on the business community can be long-lasting and severe.

Mr. Josh Marrow, P.E., Simpson, Gumpertz & Heger, Inc., discussed earthquake impacts on the wine industry. He noted that the wine industry is a significant segment of the California economy, generating revenues in terms of products and tourism. He said the 2000 earthquake in the Napa area highlighted some important problems and issues that need to be addressed to prevent devastating damage in future earthquakes.

Mr. Marrow presented a slide showing how the amount of wine stored in barrels at wineries varies throughout the year, depending on whether the harvest season is underway or wine is being aged. He noted wine growers, like other people in agriculture, are used to dealing with risks pertaining to weather and growing conditions, but earthquakes are not viewed as a major threat.

Mr. Marrow said he came to the Paso Robles area within hours of the San Simeon earthquake to investigate winery performance and damage. He reported that of the 80 to 110 wineries in the region, more than 50 sustained nonstructural damage, and 15 to 20 experienced damage to barrels and tanks stored in their cellars that resulted in a loss of inventory. Mr. Marrow showed a Shakemap highlighting the location of local wineries. He observed that most of the damage occurred within a narrow, one-mile strip in the direction of the earthquake.

Mr. Marrow noted that rack storage systems collapsed and storage tanks were damaged. He commented that these kinds of failures are predictable and can be prevented with proper stacking, bracing, and anchorage systems.

Mr. Marrow discussed the case history of the Wild Horse Winery to illustrate some important lessons learned in the earthquake. He said that although this winery experienced no structural damage, an estimated \$4 million in inventory was lost. In addition, stacked barrels blocked access from some storage area, posing a risk to human lives. Mr. Marrow noted the cellar master at Wild Horse Winery was seriously injured when stored barrels collapsed. Although she suffered broken ribs, she might have been killed if she did not have the presence of mind to stay on a forklift with protective roll bars. Mr. Marrow added that he was unable to take photographs of the damage to the winery because of management concerns about releasing proprietary data, another issue that needs to be addressed.

Mr. Marrow described some of the lessons learned in the Napa and San Simeon earthquakes. He noted that many wineries use rack systems that allow barrels to be stacked five high. He reported that his testing showed that these tall stacks are very vulnerable to collapse when they are shaken. In addition, large vats and tanks tend to be free-standing rather than anchored. Mr. Marrow observed that many winery owners lack a clear understanding of these risks to their products and their people, and they do not consider the implications of business interruption and loss of inventory.

Mr. Marrow identified a number of policy issues for the Seismic Safety Commission's consideration. First, he suggested there might be a need for more regulation and education on content storage hazards. He advocated more outreach to raise the level of awareness of business

owners. He recommended finding ways of getting wineries to release what they consider proprietary data on damages. Mr. Marrow noted winery owners are currently making important financial decisions pertaining to insurance, financing, and mitigation activities without having adequate knowledge about performance and levels of risk.

Commissioner Clark asked if the wine industry was likely to be supportive of efforts to install strong motion instruments in their facilities. He noted use of instrumentation could lead to a better understanding of the risks and better designs for rack systems. Mr. Marrow asked who would pay for the instruments. He said most industry groups are regional and very competitive, and they may be reluctant to release damage data. He added that his own research was sponsored by wineries statewide.

Commissioner Nishinaga asked if better rack systems were available. Mr. Marrow expressed his opinions that changing the rack systems would not be practical because of the huge infrastructure investment they represent. However, he noted there are inexpensive technologies available for retrofitting the racks to prevent barrels from shifting and falling.

Commissioner Nishinaga suggested one possible solution might be to deal with rack systems the same way nonstructural components of buildings are treated in the building code. Mr. Marrow pointed out that this approach might not work because most racks are freestanding and not attached to any structures. He suggested the fire code might be a better way of addressing the problem.

Chairman Moy commented that it was probably not a good idea to require barrels to be attached to the superstructure of a building. Mr. Marrow agreed, and noted winery owners need to understand that inventory can be damaged from ground acceleration as well as from barrels and tanks impacting walls of storage buildings.

Commissioner Shapiro observed that protecting worker safety could be a workers' compensation issue for an employer. Mr. Marrow pointed out that injuries and fatalities could be a financial problem as well. He added that no winery workers have died in earthquakes yet, so the seriousness of the problem has not been recognized.

Commissioner Jones recommended advocating for federal funding for instrumentation. She noted expressions of support from businesses could be very helpful in that effort.

Commissioner Jones said research shows that tethering items like computers to allow some degree of flexibility and movement is better than rigid bracing. Mr. Marrow stated that research on storage tanks indicates that unanchored tanks generally sustain more damage than anchored tanks. He noted that tank manufacturers do not design products strong enough to resist seismic forces in Zone 4.

Commissioner Jones suggested it might be helpful to winery owners to know more about the probability of aftershocks. She noted it might be possible to produce something like Shakemaps so people are aware of the continuing risk to safety after a major earthquake.

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Mr. Guna Selvaduray, Collaborative for Disaster Management, talked about ways of helping small business owners deal with earthquake impacts. He noted small businesses are extremely vulnerable to earthquakes, and they are also extremely important to the state's economy. In particular, rural areas and areas dependent on tourism are often severely impacted. Mr. Selvaduray said many small businesses in the area reported damage to contents, and typical losses range from \$5,000 to \$50,000. Because these amounts are usually lower than earthquake insurance deductibles, business owners have to absorb the costs themselves.

Mr. Selvaduray reviewed a number of important lessons learned in recent earthquakes. First, he emphasized that large earthquakes can occur anywhere in California. He emphasized the need to focus more on preparedness and mitigation. Mr. Selvaduray said the Commission's publication, *The Commercial Building Owner's Guide to Earthquake Safety*, presents a wealth of helpful information, and he urged the Commission to do more to disseminate that information and make it more usable for small businesses.

Mr. Selvaduray observed that immigrants who cater to certain ethnic markets own many small businesses. In order to reach these people, he recommended translating the document into Vietnamese, Chinese, Korean, Russian, and other foreign languages.

Mr. Selvaduray advocated creating incentives to encourage business owners to engage in mitigation activities. He noted mitigation is the best insurance for many small businesses. He recommended inculcating mitigation in the social fabric of California by incorporating it in educational curriculum and teacher training programs. Mr. Selvaduray added that the San Simeon earthquake presents a chance to collect more data on the cost-effectiveness of mitigation, and he urged the Commission to take advantage of this opportunity. Mr. Selvaduray recommended taking steps to address the well-known vulnerability of URM's, soft first-story buildings, and other hazardous structures.

Commissioner Parker asked if the Commission's *Commercial Building Owner's Guide to Earthquake Safety* was available in both hard copy and downloadable formats. Mr. McCarthy responded that interested people can order copies from the Commission. He noted FEMA recently purchased 500 copies of the *Homeowner's Guide* and the *Commercial Building Owner's Guide*, and these documents are available for free at the local disaster field offices.

Commissioner Parker suggested working with local Chambers of Commerce and city disaster councils to publicize the availability of Commission publications. He emphasized the importance of building these partnerships before disasters.

Mr. Selvaduray agreed with Commissioner Parker's suggestions. In addition to booklets, he suggested providing training workshops, and noted Chambers of Commerce are likely to be receptive to these activities. He recommended taking the approach that mitigation is doable and practical. Mr. Selvaduray noted there are also many self-help materials available for building owners with tips about inexpensive ways to mitigate nonstructural hazards.

Commissioner Palmer thanked Mr. Selvaduray and Mr. Marrow for their presentations.

Business Owners

Commissioner Palmer introduced Mr. Tom Martin, owner of the Paso Robles Inn. She thanked him for letting the Commission use the Inn's meeting facilities.

Mr. Martin noted the meeting room was in an enforced masonry building constructed in 1891. He pointed out the suspended ceiling and said the building is reinforced with I-beams on the sides. He added that he and his wife also own four masonry buildings in downtown Paso Robles.

Mr. Martin said the city's block grant program was instrumental in getting the retrofit work done at Paso Robles Inn. Under that program, the city pays for structural engineers to evaluate the seismic safety of buildings. Mr. Martin noted that disruption to tenants is often an issue with building owners, and retrofit projects tend to get postponed to avoid disrupting rental income. However, with the city block grant program, building owners can obtain permits and do the work when existing tenants turn over.

Mr. Martin expressed his opinion that the 2017 retrofit deadline should be accelerated. He recommended identifying the most dangerous buildings, establishing some kind of grading system, and then tackling the most hazardous buildings first.

Mr. Martin noted FEMA funds should not trigger the need to pay prevailing wages. He urged the Commission to work to change that requirement. He pointed out that retrofitting URM's should be viewed as an emergency.

Mr. Martin said the Paso Robles Inn experienced a major fire in 1940, after which the building housing the ballroom was abandoned for many years. He noted the retrofit project was difficult and time-consuming, taking two years to complete, but well worth the effort. He reported that the structure performed well in the recent earthquake, except for one parapet wall near the lobby. In addition, Mr. Martin said, brick veneer on the main tower building bulged and is currently being replaced. He added that one old soft-story building used for storage had to be red-tagged. Although that building had been remodeled in the 1950's, it had a very heavy roof and was not sufficiently reinforced.

Mr. Martin expressed his gratitude to the City of Paso Robles for helping expedite post-earthquake repairs. He said there was an initial rush of activity immediately after the earthquake, but then things stalled as building owners waited for FEMA's response. He noted some of the paralysis was due to liability concerns, but the delay had a huge impact on downtown business. Mr. Martin reported it took 41 days for the Paso Robles Inn to obtain a demolition permit to clean up the damage, and other businesses experienced similar problems. He added that the eventual demolition and construction activities drove away tourists and business customers.

Commissioner Nishinaga asked for more details about the city's block grant program. Mr. Martin explained that the city issues block grants for various projects, including retrofit of URM's. Building owners need to submit three bids, and the City pays for retrofit plans.

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Commissioner Palmer asked if any employees of the Paso Robles Inn were out of work in the period after the earthquake. Mr. Martin responded that the Inn was closed for only two days. He said business slumped significantly because the downtown area continued to look like a disaster area for many weeks. He added that local merchants are still working to recover from the economic impact.

Main Street Program

Mr. Steve Martin, Atascadero Main Street Association, emphasized the importance of returning to normalcy and restoring business vitality as quickly as possible. He noted seismic retrofit is a major problem for many business owners because they cannot afford to lose sales tax and rental revenues. As a solution, Mr. Martin suggested creating a mechanism like the Williamson Act, which allows owners of agricultural land to defer property taxes in exchange for preserving the land. He proposed a similar program for owners of historic buildings and URM's, whereby property taxes can be deferred for five or ten years contingent upon retrofit. Mr. Martin also supported the idea of placarding hazardous buildings, annotating deeds so future owners are aware of the hazard, and imposing penalties for noncompliance.

Mr. Martin noted the benefits of a tax deferral program include historical preservation, greater awareness of risk, increased public confidence, and financial relief for building owners. He said the result would be higher property values and better public safety.

Mr. McCarthy commented that Mr. Martin's idea was quite intriguing, and he expressed an interest in exploring the concept further after the meeting.

Mr. McCarthy asked Mr. Martin if he favored the idea of allowed owners of buildings to remove placards once retrofit has occurred. Mr. Martin said he believed owners who undertake retrofit projects should be rewarded by removing placards and deed annotations.

Commissioner Nishinaga expressed support for the approach suggested by Mr. Martin.

Commissioner Palmer thanked Mr. Tom Martin and Mr. Steve Martin for their presentations.

Housing Panel

Chairman Moy drew attention to the letter from the Paso Robles Housing Authority in the meeting packet.

Chairman Moy welcomed Mr. Ron Javor, State Department of Housing and Community Development (HCD), and invited him to discuss HCD's role in ensuring safe housing.

Mr. Javor said one of HCD's primary responsibilities is to encourage safe and affordable housing in California. HCD recommends building standards to the Building Standards Commission, establishes installation standards for manufactured homes and mobile homes, certifies earthquake bracing devices, and establishes standards for maintenance and operation of mobile home parks. Mr. Javor noted that California requires better piers and tie-down systems

for mobile homes than the federal Housing and Urban Development (HUD) standards. He reported that no units with tie-downs fell off foundations or shifted during the recent earthquake, and there have been no deaths in California manufactured homes due to structures failing or falling off piers. Mr. Javor said HCD is currently working for a new federal standard requiring strapping of water heaters in manufactured homes.

Mr. Javor said one HCD inspector was on hand immediately after the San Simeon earthquake, and two more arrived shortly afterwards. He noted the inspectors are responsible for assessing damage park by park and unit by unit, and then reporting that data to OES. Mr. Javor stated that HCD inspectors were able to handle all post-earthquake inspections internally, although in major disasters, assistance can be requested from local building departments and OES. HCD opened a disaster field office and began issuing field permits.

Mr. Javor said that in the recent earthquake, 34 manufactured homes in the area dropped off their foundation, and 54 shifted. All must be repaired by licensed contractors before they can be reoccupied. Mr. Javor noted HCD issues permits for new installations, repairs, and alteration projects. However, no permit is required for like-kind repairs or replacement items. Mr. Javor added that HCD can work with local jurisdictions to train their employees to conduct inspections.

Mr. Javor reported that HCD is in the process of training inspectors in the OES tagging process.

Chairman Moy thanked Mr. Javor for his information.

Commissioner Nishinaga asked how expensive it would be to translate Commission publications into other languages. He noted many California cities and rural areas have significant populations of immigrants who speak languages other than English, and it would be helpful to provide them with mitigation information and assistance.

Mr. McCarthy responded that the cost of translation would depend on the size of the document and the specific language. He noted it cost approximately \$10,000 to translate the Commission's *California Earthquake Loss Reduction Plan* into Japanese, and it would probably cost a similar amount for other publications.

Commissioner Nishinaga expressed support for the idea of translating the *Commercial Building Owner's Guide to Earthquake Safety* into other languages.

XII. PUBLIC TESTIMONY

Chairman Moy invited comments from members of the public.

Mr. Gary Nemeth, Paso Robles City Council, spoke in support of Mr. Steve Martin's idea about allowing a tax break like the Williamson Act for buildings owners who retrofit URM's. He said the City of Paso Robles is currently looking into ways of strengthening its URM ordinance and accelerate the 2017 deadline. Mr. Nemeth noted that in order to tackle this problem effectively, communities in California need to start by developing an action plan that encourages building

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owners to retrofit and creates incentives for compliance.

Mr. Nemeth reported that although the City of Paso Robles acted quickly after the San Simeon earthquake to respond to emergencies and take care of the downtown area, the small community was unprepared for action and lacked resources to move ahead on its own. He acknowledged that some clean-up and demolition work stalled because people were worried about documenting everything properly for FEMA. He added that use of FEMA funds for demolition triggers the requirement to pay prevailing wage, and that additional cost was a huge obstacle for many building owners.

Mr. Nemeth reported that city officials and staff met recently with people from Santa Cruz to share some of the lessons they learned in the Loma Prieta earthquake, and meetings are scheduled with Menlo Park representatives in the near future. Mr. Nemeth urged the Seismic Safety Commission to think of ways to reach out and inform small jurisdictions. He recommended that the Commission form a clearinghouse to share lessons and after-action reports. He encouraged the Commission to consider tax incentives and outreach programs, especially to small cities. Mr. Nemeth suggested contacting city council members and city managers to inform them about these efforts.

Mr. Nemeth said Paso Robles' block grant program was an effective way of getting some building owners to undertake retrofit projects, but the prevailing wage deters others from making use of that option.

Commissioner Parker informed Mr. Nemeth that the Emergency Management Institute offers comprehensive training workshops for city officials and interested citizens at their Emmitsburg, Maryland, facility, and he encouraged the City of Paso Robles to look into this resource. He said FEMA pays virtually all costs, except food, and the sessions are designed for elected officials, department heads, and mid-level managers. He offered to provide more information after the meeting.

Mr. Nemeth thanked Commissioner Parker for his suggestion. He recommended publicizing training resources to all small cities.

Commissioner Clark recommended coordinating the City's emergency plan with that developed by the county. Mr. Nemeth agreed. He noted the City was in the process of revising the plan, and it was to be reviewed on December 23, the day after the earthquake.

Mr. Nemeth said small cities can face some important emergency issues as a result of their rural character and size. For example, he noted, most emergency services and resources for San Luis Obispo County are located in the City of San Luis Obispo. If highway bridges were to fail, Paso Robles could have been cut off from that source of aid.

Commissioner Clark observed that many jurisdictions comment on their need for more information and familiarity with the FEMA process, so it would be helpful to provide more assistance with that topic. Mr. Nemeth agreed, and said the FEMA process was new to the city staff.

Chairman Moy thanked Mr. Nemeth for his comments.

Mr. Leroy Myrick, father of earthquake victim Jennifer Myrick, stated that the last time he visited the Paso Robles Inn, he came with his wife and daughter to arrange details for her upcoming wedding, an event that never occurred because of the December 22 tragedy. He said his daughter and her co-worker were killed as they tried to flee the Acorn Building in downtown Paso Robles, an unreinforced masonry structure.

Mr. Myrick observed that the public has a false sense of security about the safety of the buildings in their communities. He expressed his opinion that cities should not allow remodel projects without requiring seismic retrofit at the same time. He noted that although building owners are required to disclose the hazardous condition of their structure at the time of sale, that information is not passed along to tenants. Mr. Myrick pointed out that building owners are required to warn occupants of chemicals and other hazards, but they often fail to comply with the placarding law, and local governments fail to enforce it.

Mr. Myrick acknowledged that addressing the problem of URM's will be more challenging due to the state's budget crisis, but the urgent need to ensure life safety should take precedence over financial concerns. He recommended not waiting, and pointed out the costs of doing the repairs are likely to be even less affordable in the future.

Mr. Myrick urged support for AB 2533, a bill that would tighten enforcement of the placarding law. He noted many jurisdictions in the state have not complied with the inventory requirement, and others have failed to adopt local programs, as mandated by law. He recommended imposing stiff penalties on noncompliance and mandating that local governments enforce the law.

Commissioner Klein expressed his deep sympathy for the Myricks' loss.

Commissioner Klein commented that he recently learned that URM's will fall, even without major earthquakes. For that reason, he recommended revising the proposed placard wording to delete the word "major" before "earthquakes." Mr. Myrick responded that the exact wording is being clarified. He noted the placards are intended to warn people "inside or near" the hazardous buildings.

Mr. Kyle Gardner noted that Mr. Fred Turner of the Commission staff had indicated that placarding should not be viewed as a cure-all in and of itself. However, he said, his own feelings changed when he saw a list of URM buildings in the downtown area. He suggested that other people, by simply being aware, might alter their behavior.

Commissioner Jones also offered her condolences to the Myricks and said she liked the idea of the placard. She cautioned that one of the most disconcerting things about the tragedy and loss in this earthquake is the awareness that this same level of shaking happens in California every year. She emphasized that it does not take a major earthquake to make URM's collapse.

Chairman Moy thanked Mr. Myrick and Mr. Gardner for their comments.

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Ms. Allison Frost, daughter of earthquake victim Marilyn Frost Zaputo, said the loss of her mother was devastating and irreparable. She noted the two deaths in the earthquake were the result of acts of man, not natural hazards. She pointed out that California has known about earthquake danger for decades, and URM hazards are also well known. Ms. Frost urged the city not to allow building owners to defer retrofitting.

Ms. Frost also emphasized the need to enforce the current placarding law. She noted Proposition 65 required building owners to advise building occupants about workplace hazards, and she recommended requiring similar warnings for URM's. She proposed amending the Health and Safety Code to cover earthquake hazards from URM's as a recognized workplace hazard that must be abated. Ms. Frost stated that OSHA establishes that all employees have a right to a safe workplace, and they should have a right to know about the status of the building they occupy. She acknowledged that retrofit could be very expensive, but suggested promoting it as a way of making buildings safer for workers and customers. Ms. Frost asked for the Seismic Safety Commission's help in preventing future tragedies.

Chairman Moy expressed his appreciation to Ms. Frost for her attendance and presentation.

Commissioner Klein thanked Ms. Frost and said he was amazed and impressed with her persuasive description of the problems and potential solutions.

Mr. McCarthy agreed, and invited Ms. Frost to testify in Sacramento at legislative hearings. He assured her the Commission will offer its support and assistance.

There were no other members of the public who wished to address the Commission, so Chairman Moy closed the public hearing.

XIII. COMMISSION DISCUSSION - FINDINGS AND REPORT

Chairman Moy encouraged commissioners to discuss their ideas for issues to be included in the post-earthquake report.

Commissioner Jones offered to share her notes on key issues and points. She recommended not trying to cover a laundry list of all topics, but rather focusing on the major lessons learned, what to do about key problems, and what went well. Other commissioners agreed.

Commissioner Jones identified the following important issues: 1) URM retrofit and support for AB 2533; 2) improving emergency communications capabilities and correcting false assumptions; and 3) recognizing the usefulness of the Shakemap and seismic networks in organizing an appropriate response. She said other topics might include ways of encouraging businesses to develop emergency response plans, training civilian volunteers to restore gas service and assist with other recovery functions, requiring anchoring of nonstructural items in schools and businesses, decoupling seismic retrofit from other building requirements, and publicizing training and information resources.

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Commissioner Clark suggested focusing on assisting local governments move more smoothly from the response to the recovery phase. Commissioner Jones agreed, and noted FEMA training, business plans, and training volunteers all fall under the general category of transitioning to recovery.

Commissioner Shapiro observed that business owners reported a sense of paralysis after the initial response due to fears of liability or FEMA problems from moving too quickly. He noted to be effective, emergency responders must be willing to take the initiative without fear of liability.

Commissioner Klein agreed with Ms. Frost's comment that URM collapses are man-made hazards. He suggested pursuing legislation to hold building owners responsible for injuries or deaths as a result of their failure to retrofit. Commissioner Klein pointed out that when a URM is sold, its market price reflects its known vulnerability. But when URM buildings are rented to tenants, the rental rate is not adjusted downward to compensate for the hazard.

In order to address the delay caused by fear of FEMA disapproval, Commissioner Klein recommended that the state provide an OES consultant within 24 hours after an event to guide local officials through the FEMA process.

Mr. McCarthy noted local jurisdictions are being required to develop all-hazard mitigation plans as a prerequisite for FEMA funding eligibility in the future. He said the state OES is in the process of drafting a statement all-hazard plan that will be presented to FEMA in a few months. He recommended that local jurisdictions use the statewide plan as a basis for their local plans to ensure consistency. Mr. McCarthy also noted that comments from local governments on the statewide plan are due in April. He offered to send a copy of the seismic section and notice of public hearings to city officials in the area.

Mr. McCarthy observed that the San Simeon earthquake highlighted the need to reinforce public outreach to educate people as to the proper response. He noted people need to know not to run outside to escape a hazardous building. He suggested that the Commission recommend that OES reinforce the message that building occupants should stay inside. Chairman Moy observed that this recommendation would be a subset of the overall URM issue.

Commissioner Jones confirmed that research demonstrates people are safer seeking cover under a table than running outside.

Commissioner Clark expressed concern that people may not know whether the structure is a URM or soft-story building, so the same advice may not apply in every situation.

Commissioner Nishinaga proposed recommending retrofit incentives to encourage building owners to undertake the necessary work. He expressed appreciation to some of the speakers for their suggestions in that regard. Chairman Moy suggested looking into tax incentives and other options. He proposed discussing this topic in more detail at the next meeting.

Commissioner Palmer commented that historic buildings should be addressed along with

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URM's. Commissioner Shapiro observed that not all historic buildings are URM's, and there are many complicated factors involved in restoration. He remarked that it is often difficult to satisfy both safety and historic preservation concerns. However, he agreed that the issue of historic buildings needs to be addressed.

Mr. McCarthy recommended developing a concise report with an easy-to-understand punch. He said the staff will compile the ideas discussed by the Commission and produce a draft report for the April meeting. He suggested focusing on a series of findings and a few major recommendations.

Commissioner Shapiro commented that past major earthquakes in California have focused attention on key themes, such as the 1931 Long Beach earthquake and schools, or the 1971 San Fernando earthquake and hospitals. He said URM's are likely to be the driving issue from the San Simeon earthquake, and he suggested directing most of the Commission's findings toward that issue.

Commissioner Parker stated that he was very impressed with the community's response and recovery efforts. He expressed his gratitude to the City of Paso Robles, the County of San Luis Obispo, and the people of the area for sharing their important lessons learned with the Commission.

Chairman Moy again thanked all the presenters and the people who attended the meeting. He noted the information in the presentations will help advance seismic safety knowledge and improve the state's ability to respond to devastating earthquakes in the future.

XIV. MISCELLANEOUS & GOOD OF THE MEETING

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

XIV. ADJOURNMENT

At 6:30 p.m., Chairman Moy adjourned the meeting in memory of Jennifer Myrick, Marilyn Frost Zafuto, Robin Ortiz, Shawn McCormick, Catherine Treiman, and other victims of California earthquakes.

Sue Celli
Office Manager

Approved by:

Richard McCarthy
Executive Director