State Of California

ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION

Governor Edmund G. Brown Jr.

Alfred E. Alquist Seismic Safety Commission
City Hall, Board of Supervisors Chambers
1 Dr. Carlton B. Goodlett Place, San Francisco
Minutes of Regular Meeting
October 9, 2014

Members Present

Timothy Strack, Chairman
Tracy Johnson, Vice Chair
Greg Beroza
Salud Carbajal
Ken Cooley
Ellen Corbett
Michael Gardner
Randall Goodwin
Mark Johnson (for Mark Ghilarducci)
Peggy Hellweg
Helen Knudson
Emir Macari
Jim McGowan
Kit Miyamoto

Members Present (Continued)

Ian Parkinson
David Rabbitt
Fuad Sweiss
Mark Wheetley
Chester Widom

Staff Present

Richard McCarthy, Executive Director
Karen Cogan, Administrative Officer
Robert Anderson, Senior Engineering Geologist
Henry Reyes, Special Projects Manager
Fred Turner, Structural Engineer

I. CALL TO ORDER AND ROLL CALL

Commission Chairman Timothy Strack called the meeting to order at 9:00 a.m. and welcomed all participants. Administrative Officer Karen Cogan called the roll and confirmed the presence of a quorum.

II. CHAIRMAN'S REMARKS

Chairman Strack thanked Commissioner Fuad Sweiss for his help in arranging the meeting, and he invited him to introduce some special guests.

Commissioner Sweiss welcomed everyone to the San Francisco Board of Supervisors Chambers, and said he was pleased the Commission chose to meet in San Francisco to mark the 25th anniversary of the Loma Prieta earthquake.

III. WELCOME FROM THE CITY OF SAN FRANCISCO

Commissioner Sweiss reported that Mayor Ed Lee sent his regrets at being unable to attend the meeting. He said a number of people involved in San Francisco's seismic safety issues would be addressing the Commission, beginning with City Administrator Naomi Kelly.

City Administrator Naomi Kelly welcomed the Commission to San Francisco, and she thanked the Commission supporting and advancing the City's objectives in seismic safety, emergency preparedness, and resiliency. She said the Loma Prieta earthquake took the lives of 57 people and caused billions of dollars in property damage and economic losses. She noted that San Francisco has chosen to view the disaster as an opportunity to improve and strengthen its infrastructure and buildings to withstand future earthquakes and minimize loss of life and property damage.

Ms. Kelly said the City of San Francisco has an earthquake safety implementation program, which evolved from a ten-year-long community-based study evaluating the vulnerabilities of San Francisco in an earthquake. She advised that the program led to identification of 50 tasks to be implemented over the next three decades. Ms. Kelly noted that key programs include retrofitting soft-story residential buildings, evaluating seismic risks of private schools, and finding ways to fund retrofits and assist building owners.

Ms. Kelly observed that the City has introduced voter initiatives and bonds to fund retrofits. Since 1989, she noted, San Francisco has completed over 200 seismic retrofits and total replacement of public facilities, including the Hetch Hetchy water system, police and fire stations, 44 branch libraries, parks and recreation centers, City Hall, the Ferry Building, the main library, the Academy of Science, Asian Art Museum, and De Young Museum. In addition, she said, the acute-care wing at San Francisco General Hospital will be replaced. Ms. Kelly advised that in June 2014, the voters of San Francisco passed a $400 million earthquake safety response bond, and those funds will be used to continue to retrofit fire stations, firefighting water suppression system, and the offices of the medical examiner and the crime lab facilities.

Ms. Kelly reported that San Francisco has also started addressing its critical infrastructure with its Lifelines Council, a unique public-private utility partnership formed to work together to address common risks.

Ms. Kelly thanked the Seismic Safety Commission for selecting San Francisco as the site for its October meeting, and she expressed her appreciation for the Commission's support.

Chairman Strack thanked Ms. Kelly for her remarks and expressed the Commission's appreciation for the City's hospitality.

Director of Capital Planning Brian Strong welcomed the Commission to San Francisco. He said the City feels strongly about seismic safety and improving vulnerable infrastructure, so the City shares many of the same goals as the Commission. He noted that seismic safety has always been at the top of the priorities listed in the City's capital plan. Mr. Strong said San Francisco is

unusual in being both a city and a county, and this role entails taking care of hospitals, city facilities, fire and police stations, major transportation networks, an airport, a public utilities commission that brings water across several counties and across several earthquake fault lines.

Mr. Strong advised that San Francisco decided eight years ago to develop a ten-year capital plan, which is unique in listing what the City is funding as well as what is not funded. He said this constrained capital plan includes several financial policies that have helped focus efforts on critical seismic needs and infrastructure. He noted there was certainly a boost in retrofitting after the Loma Prieta earthquake, but then funding became more difficult when a couple bonds did not pass. Mr. Strong observed that the capital plan was developed by a group of stakeholders from various City departments and legislative staff, in consultation with other state and regional organizations, and the investments made through that group have been dramatic. He estimated that over $10 billion has been spent so far, primarily from general bonds and revenue bonds. Mr. Strong added that the City was about to embark on a $6 billion program to improve its antiquated sewer system.

Mr. Strong noted that the capital plan includes a resiliency chapter, and the City has developed an energy assurance strategy and related tools. He pointed out that besides seismic issues, the City has potential issues with respect to rising sea levels.

Mr. Strong presented a slide depicting projects the City has accomplished since Loma Prieta. He noted there were over 200 major projects, and he described several examples of building retrofits, transportation system improvements, and utility facilities. He displayed a chart illustrating how projects in the capital plan are prioritized. Mr. Strong said the City uses the HAZUS system to screen and evaluate buildings, assigns a seismic hazard rating, and then uses that data to identify projects to be funded through general obligation bonds, other sources, federal and state grants. He mentioned the City's new rapid post-disaster evaluation program that allows buildings to be inspected and approved for occupancy quickly so businesses can resume operations as soon as possible.

Mr. Strong emphasized the importance of addressing nonstructural damage as well as structural issues. He noted that the City's seismic rating system has scores of 1 to 4, 1 being fully operational after an earthquake, and 4 being a significant collapse potential. He said factors such as the size of the buildings and a number of occupants are taken into consideration in arriving at a rating. He pointed out that City Hall, for example, has a moderate safety level with some nonstructural damage, but the Hall of Justice and San Francisco General Hospital both have high populations and need significant improvements.

Mr. Strong said San Francisco started its seismic retrofit program in the late 1990's to upgrade seismically unsafe and seismically challenged buildings. He noted that approximately 125 buildings have been inspected, including 20 belonging to the City.

Commissioner Sweiss asked if Mr. Strong was aware of other cities in California with long-term capital plans that include seismic retrofits to infrastructure and buildings. Mr. Strong responded that there are a few other programs in major cities, including Philadelphia and Denver, but they tend to lack dedicated staff and funding resources to provide data-driven information for policy-

makers. He said Austin followed San Francisco's model, and San Diego and Los Angeles are beginning to develop capital plans.

Mr. Strong commented that San Francisco is fortunate that the past six general obligation bonds on the ballot were passed by San Francisco voters, bringing in about $2.4 billion. He recalled an earlier period of seven or eight years when bonds did not pass.

Chairman Strack thanked Mr. Strong for his presentation.

Mr. Michael Carlin, Deputy Director, San Francisco Public Utilities Commission (SFPUC), noted that the Seismic Safety Commission works closely with the SFPUC in overseeing the water system improvement program for almost a decade, and he expressed his appreciation for the Commission's recommendations that have made the program more robust from a seismic safety standpoint.

Mr. Carlin reported that the water system improvement project was currently about 85 percent completed, and the first tunnel under San Francisco Bay is scheduled to be brought into service within a couple weeks. He said a number of other pipelines will come into service in conjunction with the tunnel, and these improvements will greatly enhance the reliability of the system to continue serving customers throughout San Francisco and the Bay Area.

Mr. Carlin noted that the Rim Fire in August 2013 in the Sierras engulfed about 250,000 acres, endangering some of the SFPUC's upstream water facilities and causing about $40 million in damage. He said as a result of this experience, the SFPUC created a post-disaster application that was used for the City of Vallejo during the Napa earthquake. Mr. Carlin played a short video demonstrating the features of the new Photo Map application, which was created to address cost recovery during the Rim Fire. He said the SFPUC gave iPads to its crews once the fire was under control, and they used the application to take pictures of assets and damage.

Mr. Carlin observed that the Napa earthquake was a great opportunity for the SFPUC to help affected cities by dispatching crews to help document damage and losses. He said the SFPUC believes this application would be helpful to other users, and he enlisted the Commission's support in promoting the application for collecting the kind of documentation needed for rapid post-disaster cost recovery.

Commissioner Emir Macari said he was involved in the oversight of the Hetch Hetchy water system delivery improvements. Based on the experience with the Rim Fire, he asked if the SFPUC expected problems with mudslides or landslides after the rainy season starts, and he asked what the SFPUC was doing to protect its facilities. Mr. Carlin replied that the SFPUC has repaired roads and installed culverts in some areas, and tunnels, pipelines, and transmission lines are generally secure and safe. He added the access to remote facilities is likely to be the biggest post-disaster problem.

Commissioner Macari requested a brief update on the status of the work at Calaveras Dam. Mr. Carlin said construction was underway and the dam was expected to be back in service in 2018. Commissioner Macari asked about the impact on the area's water supply, with the water level

behind the dam drawn down because of the repairs, and the ongoing severe drought. Mr. Carlin responded that the SFPUC is making plans to bring in an alternative water supply from Cherry Lake over the Cherry aqueduct, which was damaged during the Rim Fire. He said construction will begin this fall, and the aqueduct will be in service by early spring 2015. He added that any water from Cherry reservoir will have to be filtered before adding it to the system.

Commissioner Macari thanked Mr. Carlin for the update and said he looking forward to working with the SFPUC through the project's completion.

Commissioner Tracy Johnson asked about the SFPUC's asset tracking system. Mr. Carlin said all major assets have been tagged, and the minor assets are being incorporated in the system as well. He noted the application has been used on the sewer system, and efforts are underway to tag the components of the water system, and then incorporate the tagging information with the GIS software and permit-tracking system.

Commissioner Sweiss noted that the Commission heard from the Mayor of Vallejo at the hearing in Napa the previous day, and he expressed his appreciation for the assistance provided by the City of San Francisco after the Napa earthquake.

Mr. Tom Hui, Director, Building Department, said he joined the City staff 25 years ago, one day before the Loma Prieta earthquake, and had received ATC training shortly before that, so he used his skills to inspect and tag buildings around the City's Marina District. He noted his department responds not only to earthquakes, but to other types of disasters, like landslides, fire, water main breaks, sewer main breaks, and even bombs. He emphasized the importance of ongoing training and public preparedness as the best ways to mitigate disaster losses.

Mr. Hui described the permitting, inspection, and enforcement functions of the San Francisco Building Departments. He reviewed the department's goals for the future. He noted that although San Francisco is small geographically, it has more than 150,000 buildings, ranging from single-family houses to compact high-rises, and most were built before 1973, when building codes were amended to provide more stringent seismic standards. He estimated there were over 250 major projects underway, totaling up to $9 billion worth of construction.

Mr. Hui remarked that San Francisco is different from many cities because it has its own building code amendments for existing buildings. He said the department has made significant efforts to clarify interpretations of various building code provisions and explain them in information sheets for the public, and the department has established a code review committee to identify recommended changes in the next edition of the building code. Mr. Hui added that the department staff includes experts on high-rise buildings, soil, seismic engineering, and geology.

Mr. Hui advised that San Francisco established a post-disaster building occupancy resumption program that provides rapid deployment of inspectors and consultants to inspect public and private buildings and tag them as quickly as possible after a disaster.

Mr. Hui said the experience with the 1989 Loma Prieta earthquake highlighted the vulnerability of soft-story buildings. He explained that having a weak bottom story can allow the entire

building to pancake down, but this problem can be mitigating by strengthening the ground floor to reduce the risk of total collapse and reduce damage. Mr. Hui said the Building Department sent letters to 6,600 building owners requesting them to submit screening forms to identify candidates warranting further review by an engineer or architect. He reported that 95 percent of recipients returned their screening forms, and the remaining 5 percent received additional notifications encouraging them to complete their forms.

Mr. Hui reported that the Building Department continues to work with building contractors, developers, interested members of the public, non-profit organizations, and community groups to make sure San Francisco's buildings remain safe in disasters.

Commissioner Cooley said he understood that San Francisco is looking at increasing design requirements for private-sector schools, and he asked about the status of that initiative. Mr. Hui responded that the City recently passed an ordinance that will be implemented after completion of an initial study. He noted that the ordinance affects about 130 private-school buildings.

Commissioner Greg Beroza asked what criteria the department uses before posting a soft-story building as seismically unsafe. Mr. Hui responded that the program has four tiers: the first targets schools and high-occupancy buildings; the second is anything over 15 units; third is five to 15 units; and the fourth tier is smaller buildings, and each tier has different deadlines for submitting structural information.

Commissioner Macari said he understood the ordinance mandated that building owners submit plans, and he asked about the current compliance rate and plans for the next few years. Mr. Hui said 95 percent of the recipients of the City's notifications responded with information, and a few have submitted further documentation.

Chairman Strack thanked Mr. Hui for his comments.

Chairman Strack welcomed the Commission's newest member, Mark Wheetley, and asked him for a brief description of his background and interests. Commissioner Wheetley said he was the mayor of Arcata, a small town on the north coast. He noted that residents of the north coast are aware of the earthquake risk of the Cascadia Subduction Zone, and they also plan and prepare for tsunamis. He added that he hoped to represent the voice of small cities and local governments throughout the state.

Chairman Strack proposed taking Item XIII out of order.

XIII. PRESENTATION OF RESOLUTION TO SENATOR CORBETT (Out of Order)

Chairman Strack read a resolution recognizing Senator Ellen Corbett for her accomplishments in improving the state's seismic safety, disaster preparedness, and response and recovery.

Commissioner Johnson presented Senator Corbett with a framed copy of the resolution and thanked her for her service on the Commission. Senator Corbett said she was pleased and honored by the Commission's recognition. She expressed her commitment to keeping seismic

safety a key priority for all Californians, and she thanked the Commission for its advocacy and assistance.

Chairman Strack noted that all commissioners were present, and he suggested taking advantage of the opportunity for a group photo. Commissioners gathered for a photo.

IV. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)/JET PROPULSION LABORATORY (JPL) CAPABILITIES AND CALIFORNIA EARTHQUAKE RESILIENCY (PHASE I PROPOSAL)

Executive Director Richard McCarthy reported that he, Commissioners Johnson, Strack, Gardner, and other Business, Consumer Services and Housing Agency representatives had been meeting with JPL representatives to discuss opportunities for applying JPL's capabilities to addressing issues related to earthquakes. He noted the technology used to find people buried in rubble is an example of this collaboration

Mr. McCarthy introduced Dr. Frank Webb, Satellite Geology and Geodynamics Systems Group, NASA/JPL, and invited him to address the Commission.

Dr. Webb said JPL is most famous for planetary and solar system exploration technology, but JPL is also involved in earth science research with respect to climate change, sea level rise, and other issues. He said JPL is using radar from space and GPS on the ground to study earthquakes, and the company is gearing up to provide products to disaster responders worldwide.

Dr. Webb explained that the key elements of the NASA/JPL Phase I pilot project study included participating in development of a post-Napa earthquake response report, and exploring how JPL technology can be used in the future to identify and assess damage. He showed maps of the Napa earthquake and data obtained from radar, and he pointed out areas of deformation. He noted that this information is used to prioritize and deploy resources efficiently.

Dr. Webb said the pilot project will also look at using the Finder radar-based technology being developed with the Department of Homeland Security. He noted that this technology can detect heartbeats in heaps of rubble. He added that the system was tested last year and performed well.

Dr. Webb indicated that radar is also used to create radar proxy maps to measure deformation and identify damaged buildings. He showed examples of how the maps created after the Napa earthquake helped pinpoint areas of potential damage. He said NASA and JPL are interested in finding ways to bring these kinds of technology to disaster responders following an earthquake.

Dr. Webb advised that NASA and JPL are working with the California Department of Water Resources to use airborne radar to look at seeps in Delta levees. He showed photos of some of the damage found in 2010 and 2011. He welcomed ideas for future opportunities to share resources and work with state agencies to address problems that affect California.

Mr. McCarthy recommended that the Commission authorize the staff to enter into a contract in the amount of $49,990 for Phase I.

Commissioner Hellweg questioned the need for the Commission to invest in products already being developed by NASA and JPL, and she asked for clarification as to the specific products the Commission would be funding. Mr. McCarthy said this project will be modeled on the Commission's recent agricultural study, in which Phase I focused on finding out where problems lie, and then Phase II would be a series of recommendations to address specific issues. He noted that the secretary described the project as a partnership with JPL to show them ways their products could be applied to seismic safety. Mr. McCarthy indicated that JPL technology and data will be used to produce a report on the Napa earthquake.

Commissioner Hellweg observed that there are other organizations in California using similar technology. Mr. McCarthy said the contract will be brought to CalOES for evaluation as well, and he noted that Commissioner Johnson attended that meeting. This project could assist JPL in possibly bringing a NASA Hazard Mitigation Center to California.

Commissioner Macari remarked that he was excited about the Commission's partnership with JPL, and he said bringing in partners like JPL and NASA to showcase new technologies that apply to the earthquake community is of great value. He noted that the data obtained from JPL technology is extremely important, and he cited the assessment of levees as an example. He observed that using this technology after an earthquake can help prevent loss of life. Commissioner Macari added that he had not heard about the technology that senses heartbeats in rubble, and he attested to its importance to rescue and response squads.

Commissioner Macari recommended that the Commission fund this project because of its value in enhancing seismic safety. He acknowledged that similar technologies may exist elsewhere, but he pointed out that this is the third time JPL has approached the Commission about collaborative projects. He expressed interest in working with JPL to explore a variety of technologies for post-disaster assessment and asset deployment decision-making.

Commissioner Michael Gardner expressed support for funding this project. He noted that if JPL has technology that can assess levees and prevent loss of life the Commission should work to advance it. He said the Finder technology is important to rescue crews as a supplemental resource to human and canine crews.

Commissioner Corbett said she supported the motion. She noted that the Finder technology appears particularly useful to post-disaster responders, and the damage assessment information will help formulate better standards and policies in the future.

Commissioner Beroza agreed with Commissioner Hellweg that some of the technologies are available through other organizations.

Commissioner Beroza asked Dr. Webb about the role of LIDAR technology.

Dr. Webb stated that JPL does not use a LIDAR system. He acknowledged that LIDAR data might be useful in understanding the effects of a seismic event and planning effective post-disaster responses.

Dr. Webb said NASA and JPL receive new data from satellites over California every eight days, and that will soon become more frequent with the addition of another satellite.

Commissioner Widom questioned whether Commission funds would be better spent for other purposes. Mr. McCarthy clarified that funding for this project will come from the Commission's research fund, not from the annual Insurance Fund allotment. He added that the Commission currently has a balance of about $4 million in the research fund.

Commissioner Cooley observed that the information provided to the Napa earthquake responders proved very useful, and he recommended exploring ways to use the technology for disaster management and disseminating it to disaster responders. He expressed support for funding this partnership project.

Commissioner Corbett recommended including the Napa earthquake as a specific case study in the proposed research project.

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

The Commission authorize the California Earthquake Resiliency Phase I contract as proposed.

* Motion carried, 19 – 0.

V. POLICY LESSONS FROM THE SOUTH NAPA EARTHQUAKE (PROPOSAL)

Dr. Steve Mahin, Director, Pacific Earthquake Engineering Research (PEER) Napa Project, noted that he and Mary Ann Phipps made a brief presentation to the Commission the previous day on engineering aspects of the Napa earthquake. He observed that the testimony from local official and responders suggested a number of special problems that should be addressed in preparing for the next earthquake. He presented a proposal to develop action items that will lead to improved policies based on lessons learned from the South Napa earthquake.

Dr. Mahin commented that the South Napa earthquake was a fairly localized event in a well-instrumented region, so a great deal of information is available from satellites, photographs, laser scans, and radar surveys. Because of these resources, he noted, the South Napa earthquake is among the best documented. Dr. Mahin advised that a number of organizations are studying the earthquake, including the Earthquake Engineering Research Institute (EERI), PEER, the Structural Engineers Association, ATC, and other groups, and they are fortunate in having new technology and tools for documenting earthquakes. He added that all of this information will be published and reviewed and disseminated in hundreds of publications, but it will be challenging to pull all the findings together to get an accurate picture of the overall impact.

Dr. Mahin explained that the purpose of the proposed project is to use the South Napa earthquake as a way to test the effectiveness of various official policies, and to identify gaps and issues that need to be addressed. He remarked that the South Napa earthquake was a moderate earthquake, and it should serve as a warning beacon to highlight issues that can be resolved

before the next big problem. He said the proposed study will include success stories illustrating how certain policies worked well, a list of best practices for emergency responders and recovery experts, identification of particular problems or instances when things did not work well, as well as suggestions for improvements, and any unanticipated consequences or issues. For example, Dr. Mahin commented, is that the risk of falling hazards from adjacent buildings tends to be overlooked, so more attention should be paid to that issue.

Dr. Mahin noted that many people made recommendations at the October 8 hearing to turn diesel generators on in advance of earthquakes, but most engine manufacturers would not want their engines running during a large event because they might not be able to withstand the strong shaking. He added that this problem could probably be addressed through further research.

Dr. Mahin said PEER would like to assist the Commission in doing its work by proactively gathering, synthesizing, and analyzing the technical information that will become available over the next few months; seeking new information to fill gaps; and produce a report that will lead to the development of better and more effective policies. He noted that there was extensive damage to chimneys, unreinforced masonry buildings, soft-story buildings, and water delivery systems that spurred the City of Napa to make some positive decisions. He advocated taking steps now to apply the lessons learned from the South Napa earthquake to improve the safety of California communities. Dr. Mahin stated that he looked forward to working closely with other researchers, the Commission staff, and individual Commissioners.

Dr. Mahin indicated that he envisioned the final product as a short, concise, and clear document that presents a series of recommendations and options for policy makers to consider. He suggested including links to more formal documentation from others, as well as appendices to support the recommendations. He added that this document is not intended to be a comprehensive overview of all aspects of the earthquake; rather, it will focus on issues, whether they be seismological, technical, political, or economic, that can be addressed in policies. He offered to meet with the staff and Commission to prioritize those action items.

Dr. Mahin proposed starting with a broad-based focus, and then working with the Commission to narrow it down to focus on specific policy issues to examine in more detail. He suggested looking at use of new technology like the early warning system, effects on the built environment, lifeline and utility performance, fire following earthquake, economic resources, and recommended new policies. Dr. Mahin said PEER will leverage the Commission's funds with other resources, gather information already available from other public and private agencies to identify gaps, conduct research to fill the gaps, and seek supplemental input from members of the public.

Dr. Mahin advised that PEER will assemble a small team of staff and volunteers to gather the information and develop a first draft of the report. He recommended getting the work started while the earthquake was still fresh in people's minds. He noted that some people are worried that heavy winter rains could expose new problems and damage that had gone undetected. Dr. Mahin said he was interested in exploring recovery issues and seeing how Napa fares in four months, eight months, one year, and beyond. He added that this project will probably take about a year to complete.

Dr. Mahin mentioned that PEER, USGS, the Seismic Safety Commission, and several other organizations are sponsoring an event later in October to look at risks of fires following a large earthquake on the Hayward Fault, and he offered to provide additional details to anyone interested in attending.

Dr. Mahin noted that participants of the Northridge 20 Earthquake Conference signed a resolution to create an action plan to improve resilience in California. He said a number of organizational meetings have been held, and there are separate groups looking at lifelines, financial and insurance issues, and other topics. He indicated the initiative is called Strategic Action For an Earthquake Resilient California (SAFER California).

Mr. McCarthy recommended that the Commission work with PEER to create a post-earthquake report that can eventually be provided to members of the Legislature and the Governor's Office.

Commissioner Miyamoto agreed with Dr. Mahin that it would be prudent to take advantage of the high level of interest in the Napa earthquake by conducting as much research as possible now. Dr. Mahin noted that the report could be released in sections, with some immediate high-priority issues identified first, and longer-term actions and policies later.

ACTION: Commissioner Gardner made a motion, seconded by Commissioner Sweiss, that:

The Commission approve the PEER South Napa Earthquake research project as proposed.

* Motion carried, 19 – 0.

Chairman Strack introduced and welcomed San Francisco Sheriff Ross Mirkarimi; Mr. Lawrence Arfield, retired, San Francisco seismic safety program; and Ray Lui, manager, Structural Engineering Section, Department of Public Works.

VI. "TOTALLY UNPREPARED" PROJECT OUTREACH TO NATIVE AMERICAN COMMUNITIES

Mr. McCarthy noted that the "Totally Unprepared" project is a partnership with CalOES, and the current phase entails outreach targeting hard-to-reach Native American communities in California. He introduced Mr. Michael Kleeman, Senior Fellow, University of California, San Diego, and invited him to discuss the project in more detail.

Mr. Kleeman said "Totally Unprepared" was a novel and entertaining multi-media approach to spreading earthquake and disaster preparedness messages. He stated that the project used social media and online video content with direct in-person activities at community centers, schools, and local organizations. He talked about using the example of a gingerbread house to illustrate concepts of structural safety on a shake table, an interesting activity for kids, and one they talk about at home. Mr. Kleeman noted that students are given materials to provide to other family members, and this promotes improvements in individual levels of preparedness.

Mr. Kleeman described the proposed pilot outreach effort targeting Native American communities in California. He said California's tribal communities are wide-ranging in terms of backgrounds, size, and wealth, but they all have a sense of cultural sensitivity and want to take the lead in communicating with their communities, so finding the right partners is a key element in successful outreach. Mr. Kleeman reported that the researchers at UC San Diego spent considerable time identifying specific tribes for the pilot program. He drew attention to the written project summary in the meeting packet.

Mr. Kleeman indicated that UC San Diego worked with the San Diego Chapter of the American Red Cross and the Intertribal Long-Term Recovery Foundation, which has been operating for seven years in the San Diego area, and these three entities have formed an effective three-way partnership. He said the project will be centered around the Ramona tribe in the Valley Center area. He noted that researcher will target three local schools with the gingerbread house shaking experiment for middle school students, a preparedness pillowcase kit for younger kids, and introducing the "Masters of Disaster" program developed by the San Diego Office of Emergency Services and the Red Cross. He said a series of videos will reinforce the students' involvement in these activities.

Mr. Kleeman advised that a major earthquake preparedness event will be held at a casino October 18 in conjunction with the Intertribal Long-Term Recovery Foundation. He noted the Red Cross is already planning home visits to educate the public about disaster preparedness and smoke and fire preparation, and the "Totally Unprepared" researchers are working with Red Cross to participate in the home visits.

Mr. Kleeman talked about the media overlay to spread the message of preparedness in the targeting tribal communities. He said the researchers originally considered a cross-tribal newsletter called the "Voice of San Diego" and a local public radio station, and that list has since been refined and expanded to include community newspapers, print ads, editorials, and local stories about preparedness. He added that all of these media promotions will be co-branded with the tribal councils, in partnership with the Intertribal Long-Term Recovery Foundation and the Red Cross.

Mr. Kleeman reported that the researchers have picked the communities, and the Intertribal Long-Term Recovery Foundation is providing seven years of preliminary baseline data. He indicated that he next step will be to validate the baselines to determine the current level of preparedness, launch the outreach campaign, and then follow up to evaluate its effect. He recommended finding a northern California tribal organization similar to the Intertribal Long-Term Recovery Foundation to take the lead in expanding the program to their communities. He added that the long-term goal is to involve local businesses and community organizations to make preparedness more of an ongoing and locally relevant concern.

Commissioner Wheetley acknowledged the challenges in dealing with diverse tribal groups in California, and he expressed his support for this outreach effort. He suggested approaching the Northern California Indian Development Council as a potential partner.

Commissioner Macari commented that it might be helpful for tribal communities to know this project is endorsed by UC San Diego, and to showcase the great work California universities produce. He said connecting universities to worthwhile programs may inspire some children in the communities to dream about one day attending those institutions.

Commissioner Wheetley pointed out that tribal lands are not subject to the Division of the State Architect and the California Building Code, and tribal construction is not always done to the same standards as other buildings in the state. He noted that it would be helpful for the Commission to share information with tribal officials so they have the benefit of the latest engineering and scientific advice. Mr. Kleeman said that kind of information can be included in the community outreach.

Chairman Strack thanked Mr. Kleeman for the update.

VII. UPDATE ON EARTHQUAKE EARLY WARNING SYSTEM WORKING GROUP

Mr. Mark Johnson, Branch Chief, Earthquake and Tsunami Program, California Office of Emergency Services, provided the Commission with an update on the development of an earthquake early warning system for California. He said SB 135 (Padilla), passed in 2013 and later codified as Government Code Section 8587.8, authorized development of a statewide comprehensive system, but identification of funding sources remains a big challenge. He explained that the existing California Integrated Seismic Network (CISN) will be used as a foundation for the earthquake early warning system, which can provide almost immediate notification of earthquakes and a shake map identifying location, magnitude, and ground shaking, all of which are important factors in allocating emergency response resources. Mr. Johnson stated that the goal is to provide advance notification in tens of seconds before shaking occurs so people can take protective actions and isolate hazards where needed.

Mr. Johnson said the earthquake early warning system is based on the concept of measuring the difference between a P wave and an S wave to calculate time. He noted that benefits include improved life safety for building occupants, opening fire station doors, and programming elevators in high-rise buildings. He acknowledged that there are also many limitations and difficulties inherent in such a system, including California's many fault zones and complex geological dynamics, blind zones that lack sensing equipment, and educating the public about the possibility of false alarms.

Mr. Johnson advised that earthquake early warning systems are under development in Italy, Greece, and India, and there are systems already in place in Japan, Mexico, Turkey, Taiwan, and Romania. He noted that California has its own demonstration system in the CISN Shake Alert system, a partnership of USGS and university seismology labs.

Mr. Johnson said that in conjunction with SB 135, CalOES began gathering subject matter experts in early 2013 to begin looking at the issue and determining how to proceed. He noted the initial step was to develop a system description to identify components and their costs. He added that USGS estimates costs at $80 million, and that estimate will be fine-tuned and verified.

Mr. Johnson stated that CalOES' outreach team is looking at 17 different topic areas and formulating recommendations for rolling out a program to educate the public, private, and government sectors.

Mr. Johnson indicated that a steering committee was formed to coordinate the overall effort between the public and private sectors and take advantage of existing capabilities. He said a number of committees were established to look at specific issues, and he thanked commissioners and staff for their willingness to participate on some of the committees.

Mr. Johnson noted that the funding committee has been reaching out to different agencies to explore funding options, and the committee will be issuing a status report soon. He said other committees have been meeting to develop a range of products for the implementation plan. Mr. Johnson stated that the steps in the process include building a project charter, defining underlying assumptions and expectations, defining the project scope, establishing performance requirements, and formulating findings and recommendations. Once the recommendations are approved by the steering committee, he said, the implementation plan will be developed if funding is available. He observed that the work remaining to be done after that includes establishment of performance standards, provisions for future maintenance, and public outreach.

Mr. Johnson said California's existing CISN provides rapid information and shake maps to assist emergency managers in prioritizing and deploying resources. He noted the CISN also provides strong-motion data engineers can use to develop design improvements.

Mr. Johnson described how the CISN will be integrated to accept data from other systems and take advantage of technological capabilities, such as smart phones, as part of one system. He said that based on the system description, the committees will define standards for minimum coverage and delivery systems, performance standards, management structure, best practices for outreach and education, and funding options.

Mr. Johnson said the $80 million estimate from USGS includes construction costs, upgraded seismic stations and GPS stations, annual operation and maintenance, staff for implementation and testing, operation, outreach, and continued research and development. He noted the investment will probably occur over time, and a five-year implementation is anticipated. He emphasized the importance of vetting the implementation plan once it is developed.

Mr. Johnson reviewed the deliverables and current due dates. He reported that CalOES completed a project charter outlining goals and objectives in February, the first steering committee was held in July of 2014, and committees have been meeting since then. He said the group expects to have draft findings and recommendations ready by January 2015, have a full implementation plan developed by 2016, and then create work plans for each agency having a role or responsibility in implementation.

Chairman Strack thanked Mr. Johnson for the update.

Chairman Strack proposed returning to the City of San Francisco presentations to hear remarks from Mr. Patrick Otellini, City Resiliency Director.

III. WELCOME FROM THE CITY OF SAN FRANCISCO (Continued)

Chairman Strack invited City Resiliency Director Patrick Otellini to discuss San Francisco's safety implementation plan, including the soft-story ordinance and the private school assessment program.

Mr. Otellini welcomed the Commission to San Francisco. He said the last time he addressed the Commission, the City was just launching its soft-story screening process. He noted that preliminary feedback from residents of San Francisco indicated that they wanted to participate in the process of screening their properties to find out if they were included in the City's program, so the City sent notifications and gave a one-year response deadline. He indicated that the City was very pleased with the 93 percent compliance rate.

Mr. Otellini said all of the property information is posted live on the Website each week, and the staff was doing a very comprehensive data analysis. He observed that communication with building owners seems to prompt a good response, as indicated by the over 3,000 people who attended the earthquake fair, and the spike in online interest after sending notifications. He reported that some property owners have now begun applying for retrofit permits, and they will have three to six years to complete the work. He noted that City inspectors will be able to observe the progress of construction and learn more about building performance. Mr. Otellini emphasized the importance of preparedness as the best way to keep people in their homes and neighborhoods after disasters.

Mr. Otellini advised that in order to fund retrofits of unreinforced masonry buildings, the City introduced a general obligation bond to create a loan fund, and this same mechanism will be used to help soft-story building owners. He said the City worked a with a wide range of commercial and private lenders, and also created a discontiguous opt-in Mello-Roos district that allows property owners to borrow money from the City and pay the funds back in property taxes over twenty years. He reported that after a competitive bid process, the City selected Alliance Energy, backed by Deutsche Bank, as its primary partner. Mr. Otellini noted that there are already 330 applicants seeking $27 million in the first round of funding.

Mr. Otellini discussed the City's private school effort. He said the City learned a great deal through the outreach and feedback gathered during the legislative process. He noted that most parents were unaware that private and public schools had different building standards, and he remarked that he often cited the Commission's 2004 report on this issue. He expressed his appreciation for the Commission's guidance at the state level which can then be leveraged at the local level to improve the safety of buildings and infrastructure.

Mr. Otellini stated that the City's private school ordinance provides for notification of approximately 120 private schools to have a structural evaluation performed over the next three years. He said this information can then be used by schools to make informed decisions about their risks, and the City will provide support and help along the way.

Mr. Otellini reported that he visited Napa two days after the earthquake to see the damage firsthand. He said he was struck by the risk of façade failures, and as a result, San Francisco is working with local building owners and structural engineers to develop a façade maintenance program that requires periodic inspections and repairs.

Commissioner Miyamoto asked for more details about the pool of funds for retrofit loans. Mr. Otellini said the City envisions twenty-year terms, no down payments, and interest ranging between 5 and 7 percent. He added that the City's rent ordinance allows the costs of this kind of work to be passed through to tenants at the rate of 100 percent amortized over twenty years. Commissioner Miyamoto commended San Francisco for providing this creative option. Mr. Otellini said he was working with his counterparts regionally and statewide to expand this kind of funding.

Commissioner Corbett congratulated Mr. Otellini on the success of the soft-story building screening program, and she asked if a similar notification process applied to private schools. Mr. Otellini said the City worked closely with schools to narrow down the candidate buildings, establish time limitations. He noted that building owners have one year to submit a simple scoping document identifying which buildings are to be evaluated, and then an engineering evaluation will be required. Mr. Otellini stated that engineers will provide their data in a standard template, and all data will be maintained in the City's records. He clarified that the buildings will all be screened for life safety, but no further action would be required from the property owners. He added that he was aware of many schools that were already planning to do retrofit work.

Chairman Strack thanked Mr. Otellini for his presentation.

VIII. REVIEW OF DELAYS FOR SAN FRANCISCO PUBLIC UTILITIES COMMISSION WATER IMPROVEMENT PROJECT

Staff Structural Engineer Fred Turner informed the Commission that there were additional delays to the SFPUC's Water System Improvement Program (WSIP), and he drew attention to the written report under Tab 8 of the meeting packet. He recommended that the Commission review the recommendations and arrive at a consensus at this meeting.

Mr. Turner stated that the Commission's primary concern is the cumulative delay, although the actual incremental delays based on this last review are relatively minor. He said there are significant delays on major seismic safety projects, and over two and a half million people rely on this system for their water. He noted that of the 21 projects related to seismic safety, 7 have experienced additional delays, and this puts the people of the Bay Area in danger in the event a major earthquake occurs before all aspects of the WSIP are completed.

Commissioner Gardner agreed with Mr. Turner's description of the effect of the cumulative delays. Commissioner Macari concurred. He said that during the course of this major construction effort, the SFPUC has experienced a change of directors, but the program appears to be moving forward now, and no additional delays are expected.

Mr. Turner introduced the new program director, Mr. Dan Wade, WSIP Manager. Mr. Wade reported that he had been working on the WSIP for the past eight years before moving to his new position.

Mr. Wade provided a brief overview of the WSIP, consisting of 83 projects, including dams, several tunnels, treatment facilities, and extensive pipeline replacements, repairs, upgrades, pumps, and reservoirs. He said the project is spread over seven counties, making administration and management more challenging. Mr. Wade advised that construction all projects except for three with specific level-of-service goals will be completed by the end of 2015, and administrative close-out will be completed in 2016. He said there were other support projects that will continue past 2016, but the lion's share will be completed within the next year and a half. He indicated that all work would be completed by 2019.

Mr. Wade stated that one of the WSIP's goals is seismic reliability, which means the ability to restore basic service within 24 hours after a major seismic event. He pointed out that this entails 229 million gallons per day to the 2.6 million customers in San Francisco and throughout the Bay area. He said the secondary goal is to restore average-day demand, up to 300 million gallons per day, within 30 days after a major seismic event.

Mr. Wade presented a slide showing the progress and status of WSIP projects pertaining to seismic reliability. He emphasized that the purpose of the entire program is to upgrade this water lifeline to the Bay Area, starting from Hetch Hetchy Reservoir in the east, passing across the San Joaquin Valley, and then crossing three major earthquake faults in the Bay Area. He pointed out the Crystal Springs-San Andreas transmission upgrade project, an essential link in ensuring sufficient water supply for the Peninsula and San Francisco, and reported that the work was substantially complete and the facility was in service.

Mr. Wade acknowledged that the Peninsula Pipelines seismic upgrade project was behind schedule, due to the fact that this project was added to the program in 2009 after discovery that some major pipelines crossed the Serra Fault, making them vulnerable in a large event on the San Andreas Fault.

In terms of overall status, Mr. Wade reported that the WSIP was 80 percent complete. He noted there were 16 major projects underway, worth $2.8 billion in construction, and many more expected to start construction soon. He said the latest revisions have a completion date of May 2019, only one month later than the schedule approved in 2013. He advised that the revised program budget increased by $125 million to address some changes with the Calaveras Dam and other scoping changes.

Mr. Wade noted that as a result of AB 1823, there were some major changes in the WSIP, primarily dealing with the Calaveras Dam replacement that added nine months to the schedule. He acknowledged that this project has had delays in the past due to different site conditions. He said there were other delays due to difficulties during construction and dovetailing new facilities with aging existing facilities.

Mr. Wade said the delays for the reliability upgrade and crossover projects were administrative delays; he clarified that construction had been completed since 2013 and the facilities were in service, but there was pending litigation on one and administrative agreements with stakeholders needed for another. He noted there were 21 projects the Seismic Safety Commission is monitoring. He presented a slide showing construction completion and administrative close-outs, and he pointed out that construction completion for all projects except Calaveras will be done by 2015.

Mr. Wade talked about the Peninsula Pipeline seismic upgrade project, added in 2009 to address potential fault rupture on the Serra Fault, as well as liquefaction potential and strong ground-shaking that could affect the pipeline system. He explained that the project is divided into three phases, with the first and second having to do with the Peninsula south of San Francisco, and he reported that those projects were under construction. Mr. Wade said Phase Three is the work being planned for San Francisco. He showed a map of the pipelines and pointed out specific areas of concern.

Mr. Wade advised that when the modeling work was done to establish level-of-service standards for the program, this project was modeled as a single project in its entirety, assuming that all three phases were needed to achieve the level-of-service goal. He said the reality is that the major construction work will be done on the Peninsula by the end of 2015, but the work in San Francisco will take longer. He noted that the San Francisco improvements are still in the planning stage.

Mr. Wade said Phase Two projects include isolation valves within San Francisco, and potential pipeline rehabilitation in Stern Grove to address slope instability issues. He showed photos of pipe being delivered to a site in Millbrae for encasement in concrete to provide shear resistance at bends in the pipe. He showed photos of the Bay Tunnel and other sites.

Mr. Wade acknowledged that work at the Calaveras Dam has had significant challenges during construction. He showed an aerial photo of the existing dam, and noted it is susceptible to liquefaction and foundation failure, so the reservoir has been restricted for about fifteen years. He said the new dam will be constructed just downstream, and he showed pictures of the excavation work. Mr. Wade reported that two ancient landslides were discovered in the area of the left abutment of the future dam, and the construction schedule and costs have increased as a result. He said this will be the last project in the WSIP to be completed, and he reported that good progress was being made in the excavation phase.

Mr. Wade noted that an articulated pipeline was installed across the Hayward Fault pipeline crossing, and that improvement is already in service. He said construction on the Crystal Springs project was essentially complete, and the Harry Tracy Water Treatment facility project was on schedule and expected to be substantially complete later this year.

Chairman Strack thanked Mr. Wade for his presentation.

Mr. Turner said that in response to the staff recommendations regarding the Peninsula Pipeline seismic upgrade project, Mr. Wade submitted proposed revisions to the staff recommendations, and he invited Mr. Wade to discuss those changes.

Mr. Wade said he wanted to make sure the document reflects that many of the level-of-service goals will be in place in 2015 when the first two construction phases are complete, and the SFPUC will continue to aggressively pursue Phase Three as well.

Mr. Turner said that after considering the SFPUC's comments, he concluded there were two main issues: 1) The Commission is spending a great deal of time on one of 21 projects, and that one may arguably not the most important project in the program. There are many larger projects that are not even mentioned, so the amount of attention is uneven. 2) Mr. Turner noted that the risk modeling bar chart showing Phases One and Two coming online in 2015 appears to suggest that Phase Three is being separated from the other two phases in level-of-service modeling, and he recommended describing this point in terms of percentages and impacts.

Mr. Wade explained that the chart shows when each of the three phases will be complete. He clarified that the model does not take credit for the level of service until Phase Three is complete. Mr. Turner observed that the bar chart does not reflect this, and Mr. Wade agreed. Mr. Turner recommended that the Commission either pass a motion to approve staff's recommendations or to approve the revisions offered by the SFPUC staff.

Commissioner Gardner commented that the SFPUC recommendation is effectively the same as the staff's, with some minor changes. Commissioner Macari stated that the recommendation had already been thoroughly discussed and reviewed, and the ad hoc committee agreed that the language was very similar. He said he had no problem approving the SFPUC version.

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

The Commission approve the recommendations as proposed.

* Motion carried, 19 – 0.

IX. GUIDE TO IDENTIFY AND MANAGE SEISMIC RISKS OF COLLAPSE-PRONE BUILDINGS FOR LOCAL GOVERNMENTS

Chairman Strack advised that this item would be tabled until the Commission's December meeting.

Chairman Strack noted that the Commission was in danger of losing a quorum, so he proposed taking action items out of order.

XII. APPROVAL OF AUGUST 12-13, 2014 MEETING MINUTES (Out of Order)

Commissioner Hellweg said she pointed out some typographical errors and minor editorial changes to the staff.

Referring to Item VI, Commissioner Helen Knudson – something about conference in San Francisco or Oakland???

ACTION: Commissioner Gardner made a motion, seconded by Commissioner Carbajal, that:

The Commission approve the minutes of the August 12-13 meeting as amended.

* Motion carried, 16 – 0 – 3 (Commissioners *, *, and * abstaining).

XI. EXECUTIVE DIRECTOR'S REPORT (Out of Order)

Budget

Mr. McCarthy drew attention to the latest budget report and noted that the Commission was doing well at this point. He said the staff would have updated figures at the December meeting.

Letter of Support for UC San Diego-Outdoor Shake Table

Mr. McCarthy noted the Commission supported UC San Diego's outdoor shake table project and helped fund the inclusion of floors in the model building that were furnished and equipped like typical hospitals. He said the facility now needs upgrading, and the purpose of the letter of support is to advocate for continued funding.

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

The Commission approve the letter of support as proposed.

Motion carried, 19 - 0.

Letter of Support for Cost-Benefit Study of Earthquake Early Warning System

Commissioner Hellweg recommended that the Commission express its support for a cost-benefit analysis of having an earthquake early warning system, and she drew attention to the request for proposals for interdisciplinary research to evaluate California's early warning system. She added that this is a four-year project estimated at almost $3 million, and it will produce quantitative results for policy-makers.

Mr. McCarthy proposed that Commissioner Beroza and Commissioner Hellweg draft a letter of support.

ACTION: Commissioner Knudson made a motion, seconded by Commissioner Wheetley, that:

The Commission authorize Commissioners Beroza and Hellweg to draft the letter of support as proposed.

* Motion carried, 19 – 0.

X. LOMA PRIETA 25-YEAR ANNIVERSARY CONFERENCE

Ms. Arietta Chakos, Policy Administrator, Association of Bay Area Governments (ABAG), thanked the Commission for the opportunity to speak on behalf of ABAG again. She recommended inviting an ABAG speaker to a future meeting to talk about the new resilience program that was just being launched.

Ms. Chakos invited the Commission to participate in the conference to mark the 25th anniversary of the Loma Prieta earthquake. She said the conference is an opportunity to advance policy implementation throughout the state and to improve lifelines and safe housing. She noted that ABAG plans to build on collaborative research and policy development, particularly the work from the Northridge 20 conference in January. Ms. Chakos reported that ABAG has used that conference's recommendations and guidance from working groups to frame policy recommendations.

Ms. Chakos discussed ABAG's commitment to becoming more responsive to what goes on in the state and helping to build a much stronger California. She noted that ABAG conducted a recent study sponsored by Caltrans on the interdependency of lifelines in the Bay Area, with particular attention to regional airports. She said ABAG reviewed the work of colleagues at USGS and the Environmental Protection Agency to examine the condition of housing with respect to seismic and sea level rise risks, and ABAG concluded there was a great deal of work to do on those issues.

Ms. Chakos stated that the Loma Prieta 25 conference would begin on October 16 at the Oakland Kaiser Center with a full day of discussions and recommendations. She expressed her appreciation to the Commission staff for their assistance.

Ms. Chakos presented two state policy objectives from ABAG. First, she said, ABAG is working on enacting statewide guidelines on the identification, evaluation, and retrofit of soft-story buildings, along with a consensus-developed set of standards. She expressed her hope that this initiative will advance the agenda for safer housing in the state. Second, she noted, ABAG is asking the Commission to join ABAG on an examination of the public utilities throughout the state. Ms. Chakos said ABAG plans to convene a council, including representatives from the Commission, the PEER Center, and Professor Mahin, to look at issues of concern in the coming years.

Ms. Chakos stated that ABAG's regional policy objectives are focusing on development of incentives for safety retrofits throughout the state. She noted that San Francisco has already

done a great job in this area, and ABAG was currently working with the City of Oakland to identify innovative ways to obtain funding. Ms. Chakos said ABAG is working to improve local building codes, and having much more substantive local amendments, to lead to better performance outcomes when disasters hit. She commented that this is a way to carefully and frequently improve how buildings are constructed and renovated. She welcomed the Commission's help in convening a Bay Area, and perhaps Southern California, pilot study on lifelines.

Ms. Chakos said ABAG is looking to the Commission for leadership and oversight in ways the state can move forward more energetically with seismic safety implementation, and also for help in developing policies that support resiliency. She indicated that ABAG will continue to work with the Commission as a partner and will continue the consensus process on the seismic recommendations, both from the Northridge 20 conference and the five now being presented.

Ms. Chakos invited commissioners to attend the Loma Prieta 25 conference, and she noted that commissioners received copies of the agenda and policy recommendations, and she welcomed further discussion after the conference.

XV. MISCELLANEOUS AND GOOD OF THE MEETING (Out of Order)

Commissioner Hellweg stated that Commissioner Beroza missed the Commission's May meeting because he received an award from the European Geosciences Union, and she congratulated him on the honor. Commissioners applauded Commissioner Beroza.

XIV. PUBLIC COMMENT

Mr. Scott Nebenzhal, Vice President and Director of Government Affairs, Seismic Warning Systems, expressed his deep appreciation to the Commission for the thorough discussion at the October 8 hearing. He confirmed his company's commitment and acknowledgment of the important policy decisions the Commission has with respect to the efficacies and approaches to early warning systems. He thanked that Commission again.

Commissioner Sweiss encouraged commissioners to remain in San Francisco for an event that evening at the Marine's Memorial, 609 Sutter Street. He mentioned Fleet Week activities planned for the next few days, and he invited commissioners to join.

Chairman Strack thanked Commissioner Sweiss for hosting the meeting in San Francisco and arranging the presentations.

IX. ADJOURNMENT

There being no further business, the meeting was adjourned at 1:22 p.m.

_____
Sue Celli
Office Manager

Approved by:

_____
Richard McCarthy
Executive Director