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Seismic Safety Commission Meeting Materials

July 18, 2024



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ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION MEETING

AMENDED

July 18, 2024

10:00 am – 2:00 pm PST

In Person Location:

10370 Peter A. McCuen Blvd.
Mather, CA 95655
Building E: Santa Catalina Room

Virtual Information:

<https://us02web.zoom.us/j/87564225481>

Webinar ID: 875 6422 5481

Dial (Toll-free):

(888) 788-0099

For more information please contact:

Tanya Black 916-224-8819 or Tanya.Black@CalOES.ca.gov.



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MEETING AGENDA	TIME EST. *	ACTION
1. Call to Order and Roll Call	5 mins.	Roll Call
2. Chair Remarks	5 mins.	Discussion
3. Public Comment: Items on Agenda	10 mins.	Discussion
4. Approval of Seismic Safety Commission (SSC) April 11, 2024, Meeting Minutes	5 mins.	Discussion & Action
5. Approval for SSC Website Update Ad-hoc Committee - <i>Annde Ewertsen, Executive Director, SSC</i>	5 mins.	Discussion & Action
6. Approval for SSC Staff to Participate on Advisory Panel and Committee: • USGS Grant—Influence of Climate Change on Earthquake Hazard & Risk, Universities of Berkeley, and Merced—Advisory Panel Request • NASA NSPIRES Research Opportunities in Space and Earth Science (ROSES) Grant—Estimating Damage in Seismic Multi-hazard Events (Causality-informed Bayesian Frameworks for Cascading Seismic Multi-hazards and Impacts Estimation by Integrating Multi-modal Remote- and Crowd-Sensing data), John Hopkins University, University of Florida, USGS, and NASA—Advisory Committee Request - <i>Annde Ewertsen, Executive Director, SSC</i>	10 mins.	Discussion & Action
7. Earthquake Reconstruction in Türkiye and New Zealand: Lessons for California - <i>Dr. H. Kit Miyamoto, S.E. Global CEO & Humanitarian Coordinator Miyamoto.</i>	30 mins.	Discussion
8. Adaptive Reuse - <i>Annde Ewertsen, Executive Director</i> - <i>Jia Wang-Connelly, Senior Structural Engineer, SSC</i> Structural Engineers Association of California (SEAOC) Presentation—Adaptive Reuse - <i>Don Schinske, Executive Director, SEAOC</i>	25 mins.	Discussion
9. San Francisco Concrete Building Safety Program - <i>Brian Strong, Chief Resilience Officer and Director Office of Resilience and Capital Planning, City & County of San Francisco</i> - <i>Laurel Matthews, Senior Earthquake Resilience Analyst City & County of San Francisco</i>	20 mins.	Discussion

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Break	15 mins.	Break
10. Earthquakes, Climate, Fire, Water – California's Needs - Dr. Charles Scawthorn, S.E., SPA Risk LLC Pacific Earthquake Engineering Research Center University of California at Berkeley	25 mins.	Discussion
11. Fire Following Earthquake - Darius Luttrupp, Deputy Chief of Operations San Francisco Fire Department	25 mins.	Discussion
12. Project Updates: a. Ferndale Report Updates b. Ferndale & Türkiye c. Fire Station Inventory d. Northridge Anniversary—Quake Heroes e. Shake Table Project f. Mobile Home Building Code Project g. Earthquakes and Climate Change Workshop	20 mins.	Discussion
13. Miscellaneous Announcements	5 mins.	Discussion
14. Public Comment: Items not on Agenda	10 mins.	Discussion
15. Adjourn	5 mins.	Adjourn

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***AGENDA SCHEDULE:** The timing and order of the topics listed on the agenda are subject to change and will depend on the duration and discussion of the presentations and/or speaker's availability.

STATEMENTS FROM THE PUBLIC: The public will be allowed to address the Seismic Safety Commission during Item 3 on any item on the agenda and Item 14 on any item not on the agenda. Questions posed to the Seismic Safety Commissioners may be answered after the meeting or during a future meeting. Dialog or extended discussion between the public and the Seismic Safety Commissioners or staff may be limited per the Bagley-Keene Open Meeting Act. Public comments will typically be limited to two (2) minutes per speaker; however, the Chair may decide to lengthen the public comment periods at their discretion. Although not required, speakers are requested to identify themselves by stating their name and city of residence for the official record. All remarks shall be addressed to the Seismic Safety Commission as a body. Speakers should be brief and are to limit their comments to the subject of discussion.

SIGN-UP & TIME LIMITS: If you wish to speak on an item and you are attending the meeting in-person or virtually and you know in advance that you'd like to comment on an item, please fill out a "Request to Speak" form and give it to a staff person before the meeting. The forms are available online with the current month's agenda here: <https://ssc.ca.gov/>. Submit any requests to speak to InfoSSC@caloes.ca.gov. If you are attending virtually, the Chair will provide an opportunity to comment during the scheduled public comment section and after each item.

SUGGESTIONS FOR SUBMISSION OF WRITTEN MATERIALS: It is requested that written materials be submitted to the Commission staff prior to the meeting. If this is not possible, it is requested that at least 30 copies be submitted to the Commission. This material will be distributed to the Commission members. Applicants are responsible for presenting their projects at the public hearing. NO FAXES will be accepted at the meeting site. You may be able to make prior arrangements with staff by sending an email to InfoSSC@caloes.ca.gov but you will be responsible for paying the hotel or meeting site for its receipt.

ACCESS TO MEETING: Meeting facilities are accessible to persons with disabilities. If you require special assistance, please contact any staff member at the phone or email address below, prior to the meeting. An interpreter for the deaf will also be made available upon request to the staff at least five calendar days prior to the meeting.

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ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING
In-person and Teleconference Meeting
Thursday, April 11, 2024

I. Call to Order

Chair Silva called the meeting to order at approximately 9:05 am.

II. Chair Remarks

Dr. Miyamoto provided an update on the 7.6 magnitude earthquake that struck Japan's Noto Peninsula on January 1st.

III. Roll Call

Tanya Black conducted the roll call. The following table provides information on each Commissioner's and Representative's attendance status.

Commissioner	In-Person	Virtual	Absent
Cindy Silva, Chair, Local Government	X		
Representative Allison Kustic for Assemblymember Rodriguez, Vice Chair, California (CA) Assembly Member	X		
Representative Astghik Hakobyan for Senator Portantino, CA Senate Member		X	
Ida Clair, CA Division of State Architect	X		
Alegría De La Cruz, Social Services		X	
Debra Games, Local Government	X		
Representative Lori Nezhura for Nancy Ward, CA Governor's Office of Emergency Services (Cal OES)	X		
Joone Kim-Lopez, Public Utility		X	
Irina Brauzman, Building Standards Commission	X		
Kevin McGowan, Emergency Services		X	
David Rabbitt, Local Government	X		
Vincent Wells, Fire Protection	X		
Dr. H. Kit Miyamoto, Structural Engineer		X	
Total Attendance:	8	5	0



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IV. Public Comment: Items on Agenda

Chair Silva opened public comment for items on the agenda. There were no public comments.

V. Approval of SSC January 11, 2024, Meeting Minutes:

Commissioner Garnes made a motion, which was seconded by Commission Clair. A roll call vote was taken, and the motion to approve the amended January 11, 2024, Meeting Minutes passed unanimously. The following table provides details on the vote.

Commissioner	Yes	No	Abstained	Not Present
Cindy Silva, Chair	X			
Representative Allison Kustic	X			
Representative Astghik Hakobyan				X
Ida Clair	X			
Debra Garnes	X			
Alegría De La Cruz	X			
Representative Lori Nezhura	X			
Joone Kim-Lopez	X			
Representative Irina Brauzman	X			
Kevin McGowan	X			
Dr. H. Kit Miyamoto	X			
David Rabbitt	X			
Vincent Wells	X			
Total Votes:	12	0	0	1



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VI. Building Resilient Infrastructure and Communities (BRIC) 2023 Cal OES Seismic Safety Commission (SSC) Building Code Plus Up Speaker Annde Ewertsen, Executive Director, SSC

Executive Director Ewertsen provided an update on the Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) 2023 grant sub-application. The BRIC s Building Code Plus Up sub-application aims to assess current code provisions' effectiveness in meeting mobile home seismic safety standards. Due to an expanded geotechnical scope and higher costs for testing, the grant request increased from \$300,000 to \$450,000. Director Ewertsen sought approval to proceed with the \$450,000 grant, maintaining the 25% local match fulfilled through staff time.

Director Ewertsen explained the \$450,000 sub-application was submitted one week following the previous meeting, providing the option to adjust the amount downward later, if necessary.

Discussion:

Chair Silva confirmed the 25% cost share requirement would be met through staff time. Commissioner Rabbitt asked whether the increased geotechnical scope, which includes testing different soil types, was responsible for the added expenses. Director Ewertsen confirmed and added that higher testing bids also contributed to the increased cost.

Commissioner Garnes made a motion, which was seconded by Commission De La Cruz. A roll call vote was taken, and the motion to approve the increase of the BRIC 2023 Cal OES SSC Building Code Plus Up sub-application to \$450,000 passed unanimously.



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Commissioner	Yes	No	Abstained	Not Present
Cindy Silva, Chair	X			
Representative Allison Kustic	X			
Representative Astghik Hakobyan				X
Ida Clair	X			
Debra Garnes	X			
Alegría De La Cruz	X			
Representative Lori Nezhura	X			
Joone Kim-Lopez	X			
Representative Irina Brauzman	X			
Kevin McGowan	X			
Dr. H. Kit Miyamoto	X			
David Rabbitt	X			
Vincent Wells	X			
Total Votes:	12	0	0	1

VII. Southern California Edison Letter of Support
Speaker Annde Ewertsen, Executive Director, SSC

Executive Director Ewertsen introduced a request from Southern California Edison (SCE) for a letter of support regarding their seismic mitigation upgrades. The request was related to SCE's General Rate Change Filing for 2025-2028. While SSC does not take positions on rate filings or funding methods, a general support letter emphasizing the importance of seismic upgrades to critical infrastructure was drafted by SSC staff.

Discussion:

Commissioner Kim-Lopez expressed support for issuing the letter but sought clarification on the criteria for utility agencies requesting such letters. Each request is considered case-by-case, with the SSC focusing on general support for mitigation efforts rather than endorsing specific rate increases.



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Chair Silva emphasized the importance of supporting agencies with critical infrastructure across the state, highlighting that infrastructure does not last indefinitely.

Commissioner Wells made a motion, which was seconded by Commission Rabbitt. A roll call vote was taken, and the motion to approve authorizing SSC staff to make any non-substantive edits and finalize the Letter of Support for SCE's seismic retrofitting efforts passed unanimously.

Commissioner	Yes	No	Abstained	Not Present
Cindy Silva, Chair	X			
Representative Allison Kustic	X			
Representative Astghik Hakobyan				X
Ida Clair	X			
Debra Garnes	X			
Alegría De La Cruz	X			
Representative Lori Nezhura	X			
Joone Kim-Lopez	X			
Representative Irina Brauzman	X			
Kevin McGowan	X			
Dr. H. Kit Miyamoto	X			
David Rabbitt	X			
Vincent Wells	X			
Total Votes:	12	0	0	1

VIII. Ferndale Earthquake Sequence: Understanding Impediments to Local Recovery in Rio Dell, California
Speaker Annde Ewertsen, Executive Director, SSC

Director Ewertsen proceeded to outline the six priority recommendations, noting that they were not ranked in order of importance:

1. Develop and update a local Emergency Operations Plan (EOP) and drill in coordination with the local operational area/county.



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2. Educate residents and businesses on the value of and funding sources for seismic retrofits and other earthquake mitigation activities.
3. Identify local Non-Governmental Organizations (NGOs) and Community-Based Organizations (CBOs) and establish a post-disaster plan.
4. Encourage FEMA to update eligibility criteria for federal assistance programs so small, rural communities that experience social vulnerability and/or economic disadvantage have equitable access to federal disaster assistance funding.
5. As a stopgap to the lack of federal assistance, work with the State to add an individual assistance funding program.
6. Support long-term disaster recovery and resilience by planning to address the post-disaster social and mental health needs.

These recommendations aim to enhance the preparedness, response, and recovery abilities of Rio Dell and similar communities in seismic-risk areas. Challenges present learning opportunities for future events, fostering a more resilient recovery process.

Discussion:

Commissioner Garnes expressed gratitude for the support and emphasized the importance of the recommendations for all communities, not just Rio Dell.

Representative Nezhura highlighted the group's comprehensive approach, with recommendations covering all levels of government and various community sectors.

Chair Silva emphasized the national scope of the problem, noting that remote or isolated communities across the country face similar challenges in meeting the minimum funding levels for all types of natural disasters.

Representative Nezhura added that the National Emergency Management Association has also raised this issue with FEMA.

Commissioner Kim-Lopez sought clarity on how the SSC could advocate for the recommendations, especially the FEMA eligibility criteria and stop-gap funding to ensure accountability.



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Commissioner Rabbitt emphasized the importance of lowering the financial threshold for federal assistance, particularly given the frequency of emergencies. Challenges with the current budget process in Congress highlight the strain on local reserves during recovery periods, which can lead to financial difficulties.

The committee then addressed the procedure for submitting the report to FEMA, agreeing to revisit the topic in the next meeting.

Chair Silva made a motion, which was seconded by Commissioner Garnes. A roll call vote was taken, and the motion to direct staff to add an agenda item on the Rio Dell report for further discussion at the upcoming meeting passed unanimously.

Commissioner	Yes Vote	No Vote	Abstained
Cindy Silva, Chair	X		
Representative Allison Kustic	X		
Representative Astghik Hakobyan	X		
Ida Clair	X		
Debra Garnes	X		
Alegría De La Cruz	X		
Representative Lori Nezhura	X		
Joone Kim-Lopez	X		
Representative Irina Brauzman	X		
Kevin McGowan	X		
Dr. H. Kit Miyamoto	X		
David Rabbitt	X		
Vincent Wells	X		
Total Votes:	13	0	0

Commissioner Rabbitt made a motion, which Commission Clair seconded. A roll call vote was taken to authorize SSC staff to make any non-substantive edits, finalize, and approve the Ferndale Earthquake Sequence: Understanding Impediments to Local Recovery in Rio Dell Report, which passed unanimously.



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Commissioner	Yes Vote	No Vote	Abstained
Cindy Silva, Chair	X		
Representative Allison Kustic	X		
Representative Astghik Hakobyan	X		
Ida Clair	X		
Debra Garnes	X		
Alegría De La Cruz	X		
Representative Lori Nezhura	X		
Joone Kim-Lopez	X		
Representative Irina Brauzman	X		
Kevin McGowan	X		
Dr. H. Kit Miyamoto	X		
David Rabbitt	X		
Vincent Wells	X		
Total Votes:	13	0	0

IX. Earthquakes and Climate Change Workshop
Speaker Annde Ewertsen, Executive Director, SSC

Director Ewertsen explained that the SSC is interested in arranging a workshop on earthquakes and climate change. The workshop would involve collaboration with the California Geological Survey (CGS) and the United States Geological Survey (USGS) and will explore various topics related to climate change and earthquakes. The goal is to foster multidisciplinary collaboration among experts in earthquake science, engineering, and climate science to enhance community resilience to natural disasters, align earthquake issues with California's climate goals, and improve preparedness for climate-induced hazard events. The target audience includes researchers, engineers, and government partners involved in climate and earthquake hazard research and preparedness, mitigation, and resilience planning. The online workshop is estimated to cost \$1,600.



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Discussion:

Representative Kustic endorsed the event, emphasizing Vice-Chair Rodriguez's dedication to emergency preparedness, particularly in the face of multiple concurrent disasters.

Chair Silva asked about the duration and structure of the workshop. Director Ewertsen indicated it would likely last no more than two days and could feature multiple sessions.

Commissioner Kim-Lopez expressed full support for the workshop and raised the question of whether SSC commissioners could provide input about meeting topics.

Commissioner Miyamoto also voiced support for the initiative and emphasized the importance of preparing for potential cascading disasters like fires following earthquakes, especially considering climate change impacts such as drought and extreme weather events.

Commissioner Rabbitt made a motion, which was seconded by Commissioner Miyamoto. After a roll call vote, the motion to approve SSC staff to proceed with planning the Earthquakes and Climate Change Workshop passed unanimously.



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Commissioner	Yes	No	Abstained	Not Present
Cindy Silva, Chair	X			
Representative Allison Kustic	X			
Representative Astghik Hakobyan				X
Ida Clair	X			
Debra Garnes	X			
Alegría De La Cruz	X			
Representative Lori Nezhura	X			
Joone Kim-Lopez	X			
Representative Irina Brauzman	X			
Kevin McGowan	X			
Dr. H. Kit Miyamoto	X			
David Rabbitt	X			
Vincent Wells	X			
Total Votes:	12	0	0	1

X. AB 100 Report: California State University (CSU)
Speaker Andrew Theisen, Emergency and Continuity Manager, Systemwide Emergency Management and Jack Andersen, Chief of Planning & Design, Capital Planning, Design, and Construction

Andrew Theisen shared the background of the CSU system and, specifically, the history of the Northridge earthquake's impact on the community. The CSU system engages in earthquake preparedness education, including participating in the annual Great ShakeOut, conducting drop, cover, and hold drills, and hosting earthquake awareness events like earthquake simulation trailers.

The CSU system employs a Systemwide Emergency Support Team (SWEST) that activates during regional incidents impacting multiple campuses, like major earthquakes. The SWEST facilitates coordination and supports affected Universities through virtual emergency operations centers. It collects and shares campus operational status, instructional impacts, and other relevant information. Andrew Theisen shared more details about various earthquake scenarios.



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Jack Andersen discussed the CSU Seismic Review Board (SRB) and seismic policy, established in 1992 to ensure earthquake safety for students, staff, and the public.

The SRB members are tasked with responding to earthquakes and instituting protocols if measurable damage occurs. They contact three main campus contact points: university police, campus deputy building officials, and university executive facilities officers. If significant damage is identified, the SRB member assumes the Emergency Deputy Building Official (EDBO) role to objectively assess building safety. The EDBO updates the building official and determines building statuses based on assessments using ATC 20 guidelines, categorizing them as red, yellow, or green tagged. University administrators cannot overrule the authority of the EDBO or the building official during such events. Seismic upgrades and improvements have been conducted on several buildings, including the Cal Poly Humboldt Theater Arts Building, the Cal Poly Humboldt Library, the Stanislaus State Library, and the CSU East Bay Library Annex.

Discussion:

Chair Silva inquired why the SRB had only been activated during the Northridge earthquake and no other seismic events.

Jack Andersen clarified that while the full protocol with the appointment of the EDBO was only implemented during the Northridge quake, SRB members had been deployed for assessments during incidents like the Lawndale earthquake and the "hurriquake".

Chair Silva inquired about student displacement resulting from damage to off-campus housing in seismic events.

Andrew Theisen explained they would consider community impacts, utilizing mutual aid systems to support displaced students through other campuses or external agency partners.

Representative Kustic asked about the selection process for assigning structural engineers to specific campuses within the CSU system. Jack Andersen explained that engineers are allocated across different regions throughout the state. While rotations are rare, engineers visit their assigned



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campuses at least once or twice a year to maintain consistency and build institutional knowledge, which is a significant benefit to the program.

XI. AB 100 Report: University of California

Speaker Lauren Friedman, AIA, Executive Director Capital Asset Strategies University of California (UC), Office of the President and Ellen Owens, AIA, Director, Design and Construction Services University of California, Office of the President

Lauren Friedman and Ellen Owens provided an overview of the UC seismic program. Ellen Owens discussed the UC's extensive property holdings, including campuses, health centers, and laboratories, and highlighted the proactive approach taken to ensure earthquake safety. Notable updates, such as the adoption of a 2030 deadline for seismic remediation and the establishment of a seismic advisory board, were discussed. Additionally, seismic assessments for over 6,000 owned buildings were completed in January 2021, with approximately 70% deemed compliant with the policy.

Laura Friedman shared findings after the assessment of the UC-owned space.

Ellen Owens reported non-compliance rates over three years, improvements made through building retrofits, and future plans.

Lauren Friedman concluded the presentation by discussing ongoing challenges in meeting the UC seismic safety policy's 2030 compliance deadline due to funding limitations. Consequently, there's a current initiative to revise the policy, focusing on continual improvement rather than a single deadline. Funding options, such as Governor's Office Bonds, are being pursued, emphasizing prioritizing projects that fulfill multiple campus objectives.

Discussion:

Chair Silva inquired about the UC Seismic Advisory Board and its comparison to the Pacific Earthquake Engineering Research (PEER) Review Board in the Cal State University system.

Lauren Friedman clarified that the UC board serves as an advisory body, unlike CSU's more involved peer review system. The UC board meets



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quarterly and advises on policy and methods for assessing buildings for seismic risk. They collaborate on recommendations for campus projects, such as implementing ground motion analyses and nonstructural hazard mitigation programs.

Commissioner Rabbitt raised questions about extending the 2030 deadline for seismic compliance and whether the criteria for prioritization would change.

Laura Friedman clarified that while the criteria remain the same, the approach shifts towards an incremental improvement model. The goal is to maintain pressure on campuses while alleviating the anxiety of meeting a fixed deadline.

Chair Silva directed that the following agenda item, 11 UCSD Shake Table, be taken up at the end of the meeting.

XII. Project Updates

Speaker Annde Ewertsen, Executive Director, SSC

A. Ferndale & Türkiye

Director Ewertsen provided an update on the project, highlighting its three components.

1. The Ferndale Earthquake Sequence Report was approved during the meeting.
2. The scenario study examines -triggered earthquake events in Northern and Southern California. Specific magnitudes and fault triggers were outlined for each region. Collaboration with PEER, USGS, and Cal OES was emphasized in this phase. Volume one of the scenario study will be presented to SSC on July 18, 2024, followed by volume two on October 10, 2024.
3. The study, focused on resilience and recovery project scenarios under the IN-CORE contract, awaits the Department of General Services' (DGS) approval.



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B. Fire Station Inventory

Director Ewertsen discussed the Fire Station Inventory Project. The goal is to finish the report, update FEMA HAZUS data by fall 2024, and develop recommendations and action plans with partner groups.

C. Northridge Anniversary – Quake Heroes

Although the Quake Heroes Project was approved last year, there have been delays in securing contract approval. The submission to the Department of Governmental Services (DGS) requires additional details, potentially prolonging the process by 6-8 months.

XIII. Misc. Announcements

Speaker Annde Ewertsen, Executive Director, SSC

Director Ewertsen shared miscellaneous updates, including the upcoming delivery of Commissioner Resource Binders and a poll regarding the SSC meeting start time. Director Ewertsen concluded by expressing gratitude to Chair Silva for her significant contributions to the commission, including her involvement in various ad-hoc committees and support in important initiatives like the Rio Dell report.

XIV. Chair and Vice-Chair Election

Director Ewertsen provided an overview of the Chair and Vice Chair's election process. Candidates were required to submit a Statement of Qualifications (SOQ) by the end of March. The candidates are given a 3-minute opportunity to address the SSC and answer one question from each commissioner. The newly elected officers will assume their duties immediately following the vote.

The Vice-Chair position had only one candidate, Commissioner Garnes, who opted not to speak.

Chair Silva made a motion, which was seconded by Commissioner Wells. A roll call vote was taken, and the motion to elect Commissioner Garnes as Vice Chair for 2024-25 passed unanimously.



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Commissioner	Yes	No	Abstained	Not Present
Cindy Silva, Chair	X			
Representative Allison Kustic	X			
Representative Astghik Hakobyan	X			
Ida Clair	X			
Debra Garnes	X			
Alegría De La Cruz	X			
Representative Lori Nezhura	X			
Joone Kim-Lopez	X			
Representative Irina Brauzman	X			
Kevin McGowan	X			
Dr. H. Kit Miyamoto				X
David Rabbitt	X			
Vincent Wells	X			
Total Votes:	12	0	0	1

Commissioner Rabbitt and Commissioner Rodriguez submitted SOQs for the chair position. Both candidates took the opportunity to speak.

Commissioners were given the chance to ask each candidate a single question. The candidates rotated the order of their responses, ensuring that each had an equal opportunity to speak first.

A roll-call vote was taken, and Commissioner Rabbitt was elected as the new Chair.



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Commissioner	Rodriguez	Rabbitt	Abstained	Not Present
Cindy Silva, Chair		X		
Representative Allison Kustic	X			
Representative Astghik Hakobyan			X	
Ida Clair		X		
Debra Garnes		X		
Alegría De La Cruz	X			
Representative Lori Nezhura		X		
Joone Kim-Lopez	X			
Representative Irina Brauzman		X		
Kevin McGowan		X		
Dr. H. Kit Miyamoto				X
David Rabbitt		X		
Vincent Wells		X		
Total Votes:	3	8	1	1

XV. UCSD Shake Table Update

Speaker Tara C. Hutchinson, P.E., Ph.D., University of California, San Diego

Dr. Tara C. Hutchinson provided an update on their ongoing research project.

Chair Silva sought clarification on the schedule for seismic testing and live fire scenarios. Dr. Hutchinson responded that the projection for seismic testing is tentatively set for April 2025. She explained that after seismic testing, preparations for live fire testing would involve removing seismic sensors and cabling and installing instrumentation for fire testing, extending into May and June 2025.

Chair Silva asked if the public could observe the testing. Dr. Hutchinson stated they would organize partner days for observation. She explained they had initially reserved six weeks for seismic tests without public access, followed by low-level shaking tests for interested parties. They planned to start from the top and work down for the fire test, adjusting as needed. Dr. Hutchinson emphasized the need for flexibility in allowing observers to join at various stages of the program.



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Chair Rabbitt inquired about the impact of analyzing three different construction types and whether finished materials would be used in the fire test or if the focus was solely on the structural integrity post-earthquake.

Dr. Hutchinson addressed Chair Rabbitt's second question first, explaining that the specimen was designed to emulate a slice of a larger building, with finished materials on both the exterior and interior faces. She clarified that the fire test would evaluate the entire structure, encompassing both finished and structural components.

XVI. Public Comment: Not on Agenda

There were no public comments submitted for items not on the agenda.

XVII. Adjourn

Chair Rabbitt adjourned the meeting at 12:08 pm.

To view the full meeting recording, please visit the following link:
<https://youtu.be/0ggFWw4qHDE?si=NnMdhBOnNQolo-YA>



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**ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Approval of SSC Website Update and Ad-Hoc Committee

Recommendation:

Staff recommends Commissioners review the background information, be prepared to provide comments/questions on the presentation, and vote on the website ad-hoc committee.

Background:

To assist the SSC in discharging its duties as outlined in Government Code sections 8589.75 and 8589.76, the SSC established a policy for forming ad-hoc committees at the May 24, 2023, SSC meeting.

The establishment of ad-hoc committees provides SSC staff with counseling and advice on SSC business. Recommendations made by an ad-hoc committee will be presented to the SSC and approved, as necessary.

The SSC has begun updating its website, and commissioners who are interested in assisting in the development of content for this project were asked to volunteer.

Per policy, the Executive Director and the SSC Chair conferred on the requests and are recommending Commissioners Cindy Silva and Debra Garnes be assigned to the SSC Website Update Ad-hoc Committee.

A vote will be taken to establish committee membership.



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ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Approval for SSC Staff to Participate on Advisory Panel and Committee

Recommendation:

Staff recommends Commissioners review the background information, be prepared to provide comments/questions on the presentation, and vote on the support letters and SSC staff participation on the advisory panel and committee.

Background:

1. Dr. Scawthorn, UC Berkeley, has requested a Letter of Support for his collaborative research project with Professor John Abatzoglou, UC Merced. They are applying for USGS's 2024 Earthquake Hazards Research Program grant. The research project, modeling of an M7 earthquake on the Hayward fault under Diablo wind conditions, consists of a one-year in-depth examination of the influence of climate change on earthquake hazard and risk. Climate change and earthquake risk are major foci of national and local policies in the US, but their linkages, interplay, and compound hazards are largely unaddressed.

Large portions of the US population, property, and infrastructure are at risk due to earthquakes, as well as the role of climate change or weather-related perils, and billions of dollars are and will be committed to reducing these risks. However, almost no research has examined potential mechanisms through which climate change may influence either earthquake risk or impacts.

The research project proposes to address these questions in two phases: Phase 1 will conduct an in-depth review of the state of knowledge on how climate change affects earthquake risk, and Phase 2 will focus on the aspect of earthquake risk most severely exacerbated by climate change.

Executive Director Annde Ewertsen and Senior Structural Engineer Jia Wang-Connelly have been invited to participate on the project's advisory panel. The panel will provide input on the research and review the research project results. Other panel members include Chief Larry Collins, Cal OES; Chief Consultant Mike Dayton, CA Assembly Committee on Emergency Management; and Dr. Daniel Swain, Institute of the Environment and Sustainability, UCLA and National Center for Atmospheric Research.

2. Dr. Susu Xu, Johns Hopkins University, has requested a Letter of Support for her proposed research project in collaboration with the University of Florida and the USGS, which will be submitted to NASA for an NSPIRES Improving the Usability of the Research Opportunities in Space and Earth Science (ROSES) Grant. The research will help develop tools to aid emergency response by estimating seismic multi-hazard events by developing a fundamentally new paradigm for capturing the time-varying complexity of spatio-temporal interdependencies of seismic multi-hazards in a tractable yet accurate manner. The project will propose a novel causality-informed multi-modal learning system that aims to understand and model the causal dependencies between geological features, multiple hazards, building and road damage, human movement, and multi-source/multi-modal sensing data. The goal is to provide accurate and robust estimations of large-scale earthquake-cascading hazards and impacts with an online platform. The multi-modal sensing data includes multi-source regional satellite images (SAR and optical imagery), UAV images (e.g., drones, UAVSAR), open-source geospatial data (e.g., Open Street Map), infrastructure footprint, and image and natural language data from social media.

The key idea is to model the causal chains where earthquakes trigger large-scale cascading hazards and impacts, which further induce changes in sensing observations through one holistic causality-informed deep Bayesian network considering scenarios with or without partially observed ground truth data. The researched framework will be demonstrated on seven moderate-to-large earthquake events in the United States territory.

Executive Director Annde Ewertsen and Senior Structural Engineer Jia Wang-Connelly have been invited to participate on the project's advisory committee. The committee will provide feedback on the data products and tools for seismic damage mapping. Other panel members include the USGS National Earthquake Information Center, the Washington Military Department's Emergency Management Division, and NASA's Goddard Flight Center.



July 18, 2024

Dr. Charles Scawthorn, S.E.
744 Creston Road
Berkeley, CA 94708

Subject: Letter of support for research by Professor John Abatzoglou, University of California (UC) Merced, and Dr. Charles Scawthorn, UC Berkeley, on the influence of climate change on earthquake hazard and risk and Advisory Panel participation

Dear Dr. Scawthorn,

The Seismic Safety Commission (SSC) is pleased to submit this letter of support for the proposed research on the impact of climate change on earthquake hazards and risks.

Earthquakes have long been recognized as a major threat to California, and climate change is increasingly emerging as an even greater threat. Recent wildfires, with their devastating consequences, highlight the potential for even greater losses in the future due to climate change. A major earthquake coinciding with extreme fire weather could be catastrophic. Understanding this potential is critical, and your research will be instrumental in improving preparedness.

Your proposed research aligns with the interests of the SSC, which exists to address earthquake risk in California. Tools that assist the emergency response decision-making process in estimating seismic events and impacts are important to the SSC.



If the US Geological Survey's 2024 Earthquake Hazards Research Program selects the research project for funding, we accept your invitation to serve on the Advisory Panel, which will provide direction on the research by reviewing and providing feedback on sources of information, findings, and any future needs. Other members of the panel will include the California Governor's Office of Emergency Services Special Operations & Hazard Mitigation Section, UCLA's Institute of Environment and Sustainability, the National Center for Atmospheric Research, and the California Assembly Committee on Emergency Management.

Sincerely,

Annde Ewertsen
Executive Director, Seismic Safety Commission

cc: David Rabbitt, Chair, Seismic Safety Commission



July 18, 2024

Dr. Susu Xu
Johns Hopkins University
Baltimore, Maryland

Subject: Letter of support for National Aeronautics and Space Administration's (NASA) NSPIRES Improving the Usability of the Research Opportunities in Space and Earth Science (ROSES) Grant—and Advisory Committee participation

Dear Dr. Xu,

The Seismic Safety Commission (SSC) is pleased to submit this letter of support for the proposed research project submitted to NASA by Johns Hopkins University, the University of Florida, and the United States Geological Survey (USGS) entitled "Causality-informed Bayesian Frameworks for Cascading Seismic Multi-hazards and Impacts Estimation by Integrating Multi-modal Remote- and Crowd- Sensing Data."

Your proposed research aligns with the interests of the SSC, which exists to address earthquake risk in California. The SSC values tools that assist the emergency response decision-making processes by estimating seismic damage from multi-hazard events and impacts.

If NASA selects the project for funding, we accept your proposal to serve on the Advisory Committee. Other members of the committee will include the USGS National Earthquake Information Center, Washington Military Department's Emergency Management Division, and NASA's Goddard Flight Center. Our participation will include collaborating with the team to provide feedback on the potential utilization of the data products developed (e.g., remote sensing products and landslides/liquefaction/building damage/transportation damage



maps induced by an earthquake) and feedback about how features of these products could be improved to better benefit emergency management.

Sincerely,

Annde Ewertsen
Executive Director, Seismic Safety Commission

cc: David Rabbitt, Chair, Seismic Safety Commission



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES



**ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Earthquake Reconstruction in Türkiye and New Zealand: Lessons for California

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the presentation.

Background:

Commissioner Miyamoto will share details about the 2023 earthquake in Türkiye, which destroyed over 100,000 modern mid-rise buildings and prompted a massive ongoing reconstruction effort. Similarly, the 2011 earthquake in New Zealand shut down the entire downtown area of Christchurch for over a year. Significant areas of downtown Christchurch remain empty lots today. California, facing the threat of major earthquakes, can learn critical lessons from these disasters.



Earthquake Reconstruction in Turkey and New Zealand; Lessons for California

Dr. Kit Miyamoto, SE

miyamoto.

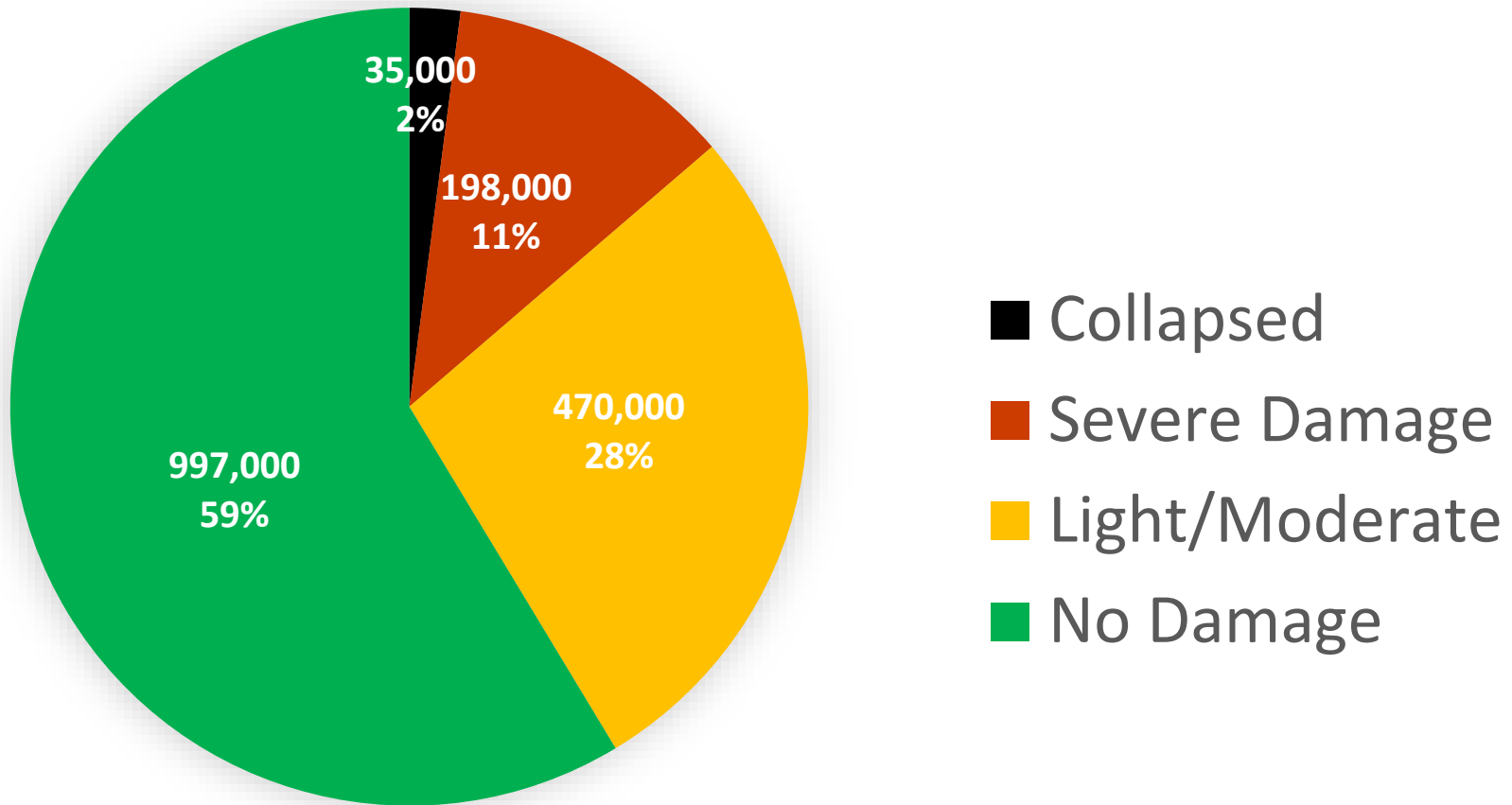
Save lives, **impact** economies.

Impact

- Affected 14M people
- 51,000 fatalities, 107,000 injuries
- 4.1M displaced people
- \$104 billion direct damage (9% of GDP)



Total affected buildings: 1,700,000

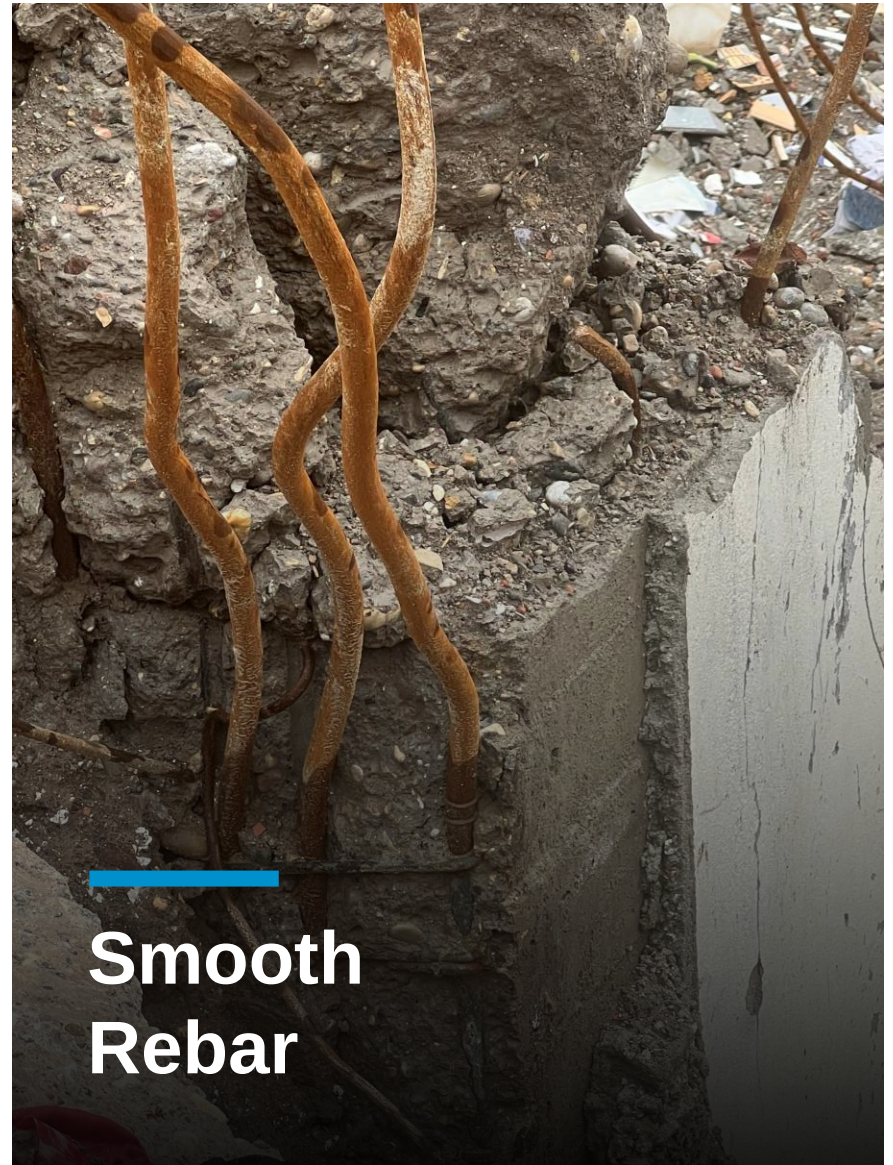


Why?

- Turkish Building Code changed in 1998
- No license system for contractors
- No inspection required by engineers













Eskişehir City Hospital | 2017 | 330,000 m² | 1081 Bed | 973 FPS Isolator



MALATYA HOSPITA... Daha fazla göster



Assessing the Damage

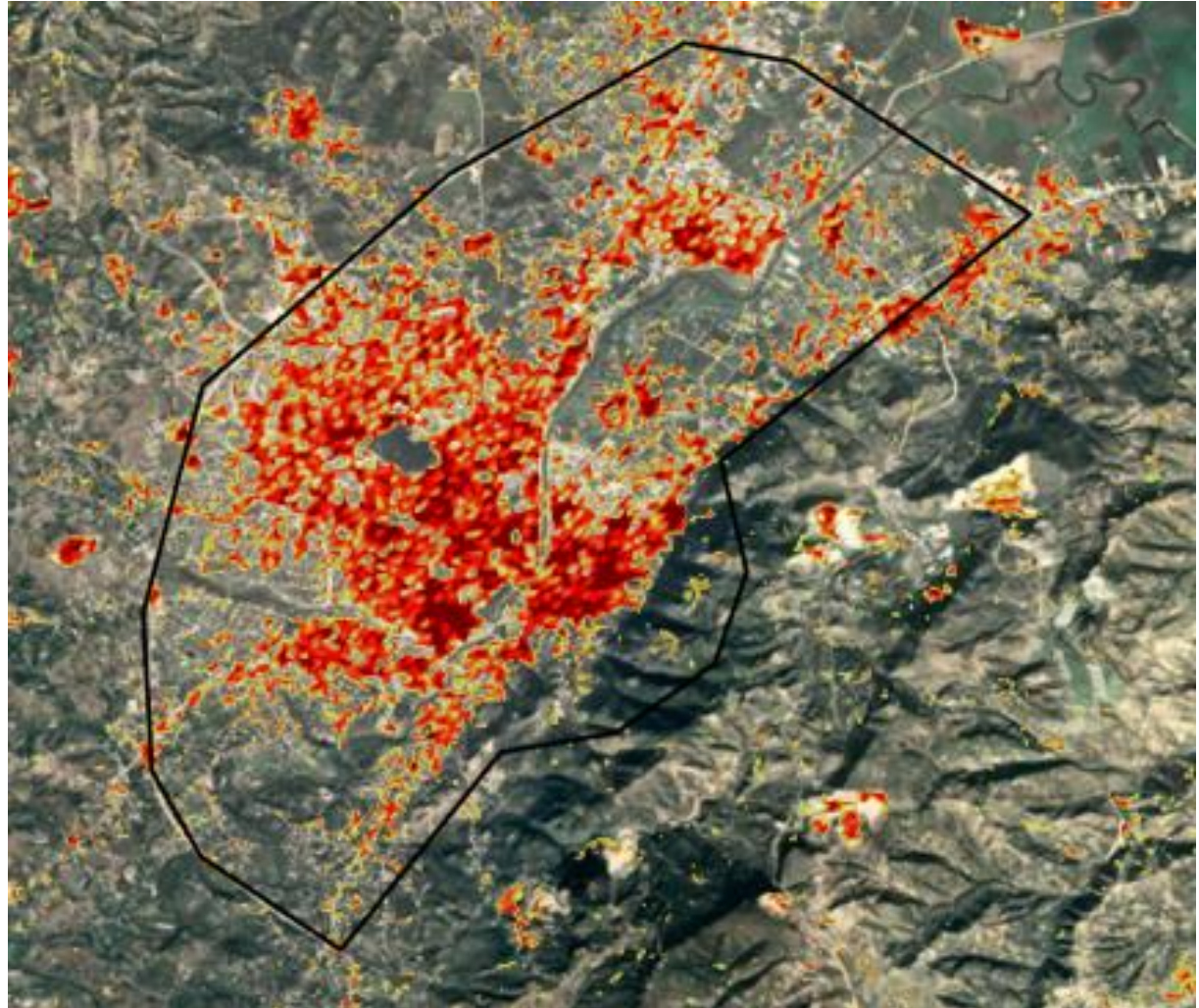
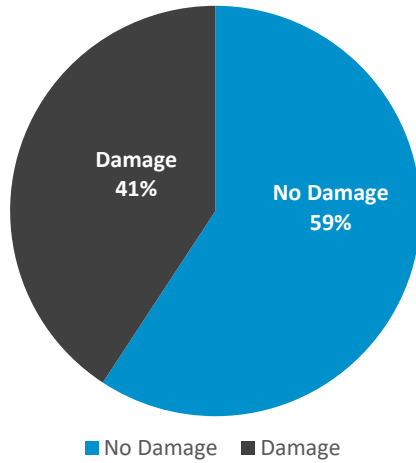
Satellite Imagery (NASA JPL) Real Time Damage Assessment

Change in amplitude and phase of image
pixels from before and after EQ

Location: Hatay

↗ ↖
↘ ↙ Total City Area
46 Sq km

🏠 Damage Zones
18.75 Sq Km









Response And Recovery













Rapid and Sustainable Shelter Solutions for Affected Communities

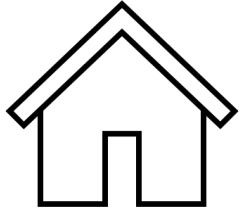


USAID
FROM THE AMERICAN PEOPLE



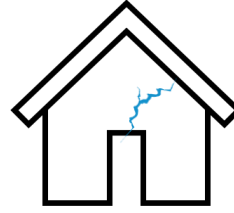
Habitat for Humanity

Overview of Activities



24,500+

undamaged HH
units assessed and
communicated



12,500+

lightly damaged HH
units assessed and
BOQs developed



150,000+

people reached
via **in-person**
communication

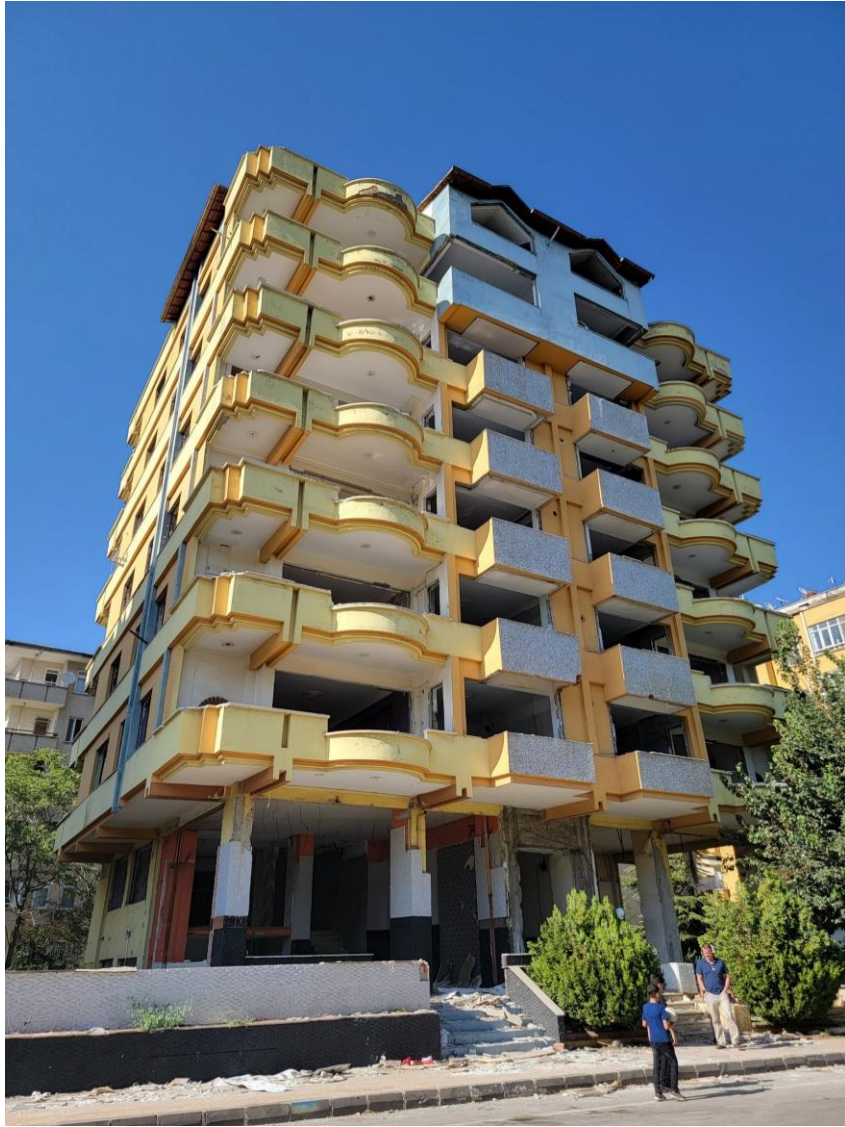


2.4 M+

people reached via
Instagram and
Facebook

Media Coverage





Building with **medium** damage



New apartment **built by GoT** outside the city



Container city in Osmaniye province

Christchurch, New Zealand: Pre- 2011 Earthquake



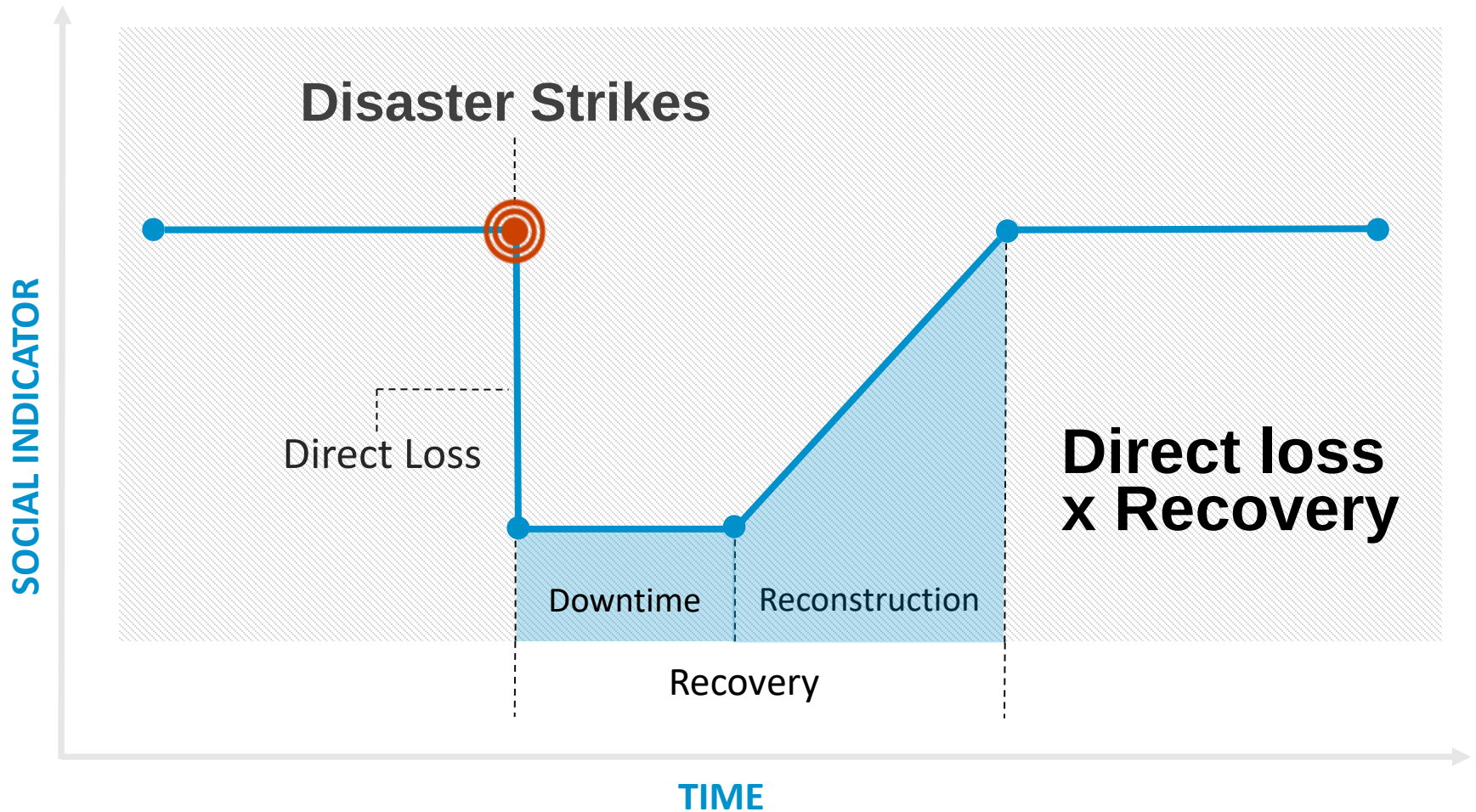
Christchurch, New Zealand: Post-Earthquake







What RESILIENCE Means?



Next Great Earthquake in California

- 3 million buildings in LA
- 5% red tagged, 10% yellow tagged
- 150,000 red tagged and 300,000 yellow tagged buildings after Great LA Earthquake
- Plus fire damages

Next Great Earthquake in California

- Facilitate reconstruction effort by private owners
- Avoid large red zone area
- Inter-cities agreement for mutual repair plan approval support
- Pre-assess damage forecast map
- Fast approval process established

Permit Simplicity

- Time is critical in response and recovery
- Over-the-Counter Permit
- Special Use, Limited project type



Make the World a Better, Safer Place.



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**ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Adaptive Reuse

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the presentation.

Background:

Recent efforts around the state have focused on adaptive reuse of underutilized commercial buildings for residential uses. The Structural Engineer's Association of California (SEAOC) and its member organizations have been involved in this process in Southern California and the San Francisco Bay areas. Executive Director Don Schinske and other SEAOC representatives will provide an overview of the efforts and the organization's perspective.



Adaptive Reuse – State and Local Policy Considerations

SEAOC Presentation to the California Seismic Safety Commission

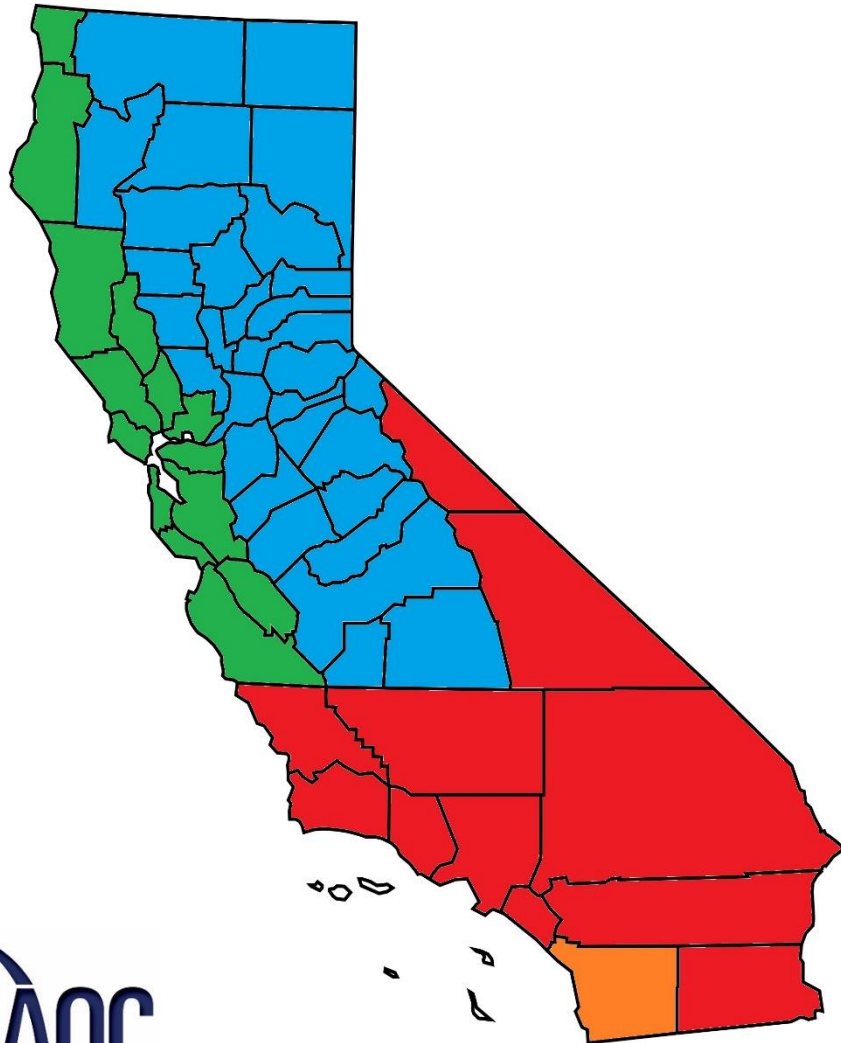
July 18, 2024

Structural Engineers Association of California



- 3,500 Structural Engineers, Professional Engineers, Engineers-in-Training, industry members, and students involved in the practice of Structural Engineering in California
- SEAOC and its members engage in professional development; continuing education; support for licensure requirements; technical advancement of codes and standards; and policy advocacy
- Policy priorities: effective building codes for safe, sustainable, and resilient communities; local retrofit ordinances; performance of schools & hospitals; structural engineering licensure & practice

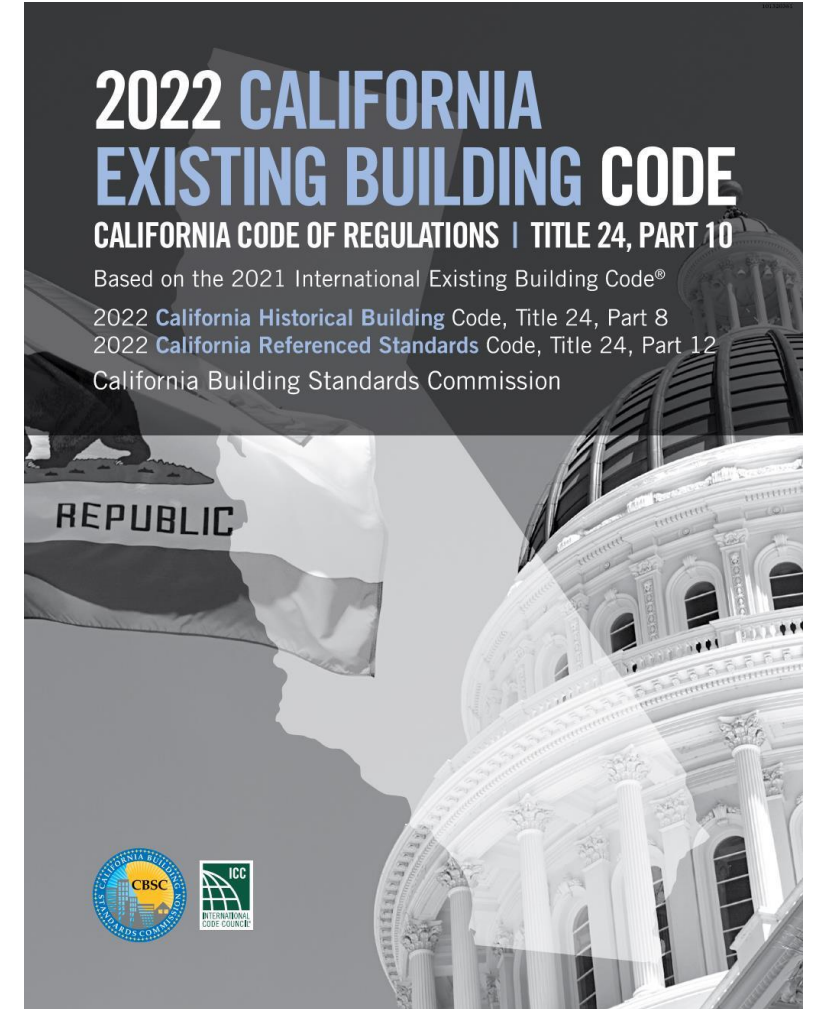
Structural Engineers Association of California



- Formed by Northern California (SEAONC) and Southern California (SEAOSC) associations in 1931
- Now comprises SEAONC, SEAOSC, SEA OCC (Central), and SEA OSD (San Diego)
- Technical activities and policy advocacy focused on effectiveness and consistency of statewide policies while also supporting modifications of model codes to address unique needs of California (statewide) and customized for the needs and priorities of our local communities

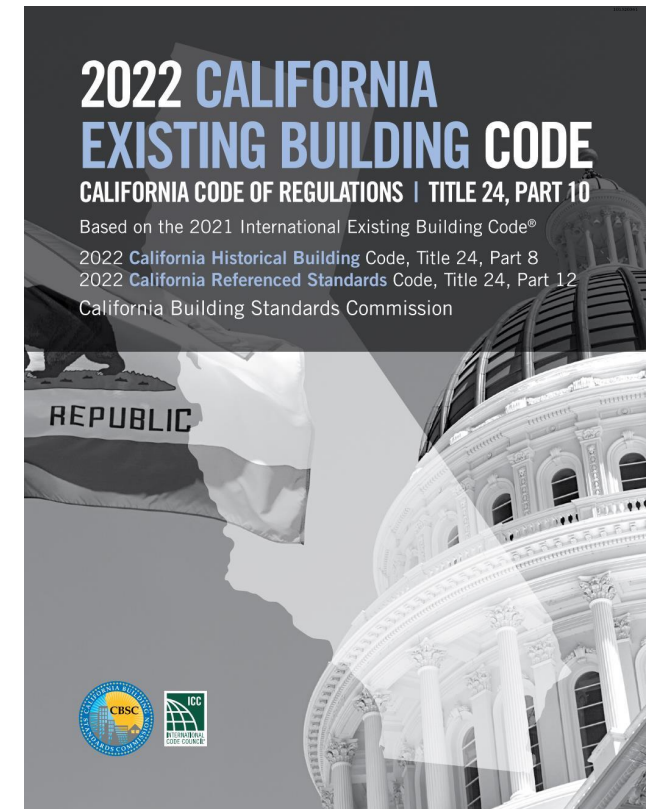
Adaptive Reuse & Building Codes

- Adaptive Reuse generally refers to conversion of an existing building to a use different than its original
- Under the California Existing Building Code (CEBC), adaptive reuse would be covered by requirements for:
 - A. Alteration of an existing building
 - B. Change of use of an existing building
 - C. Both (in most cases of adaptive reuse)
- Adaptive reuse, in most recent context, typically refers to the conversion of existing buildings from commercial (office) to residential use



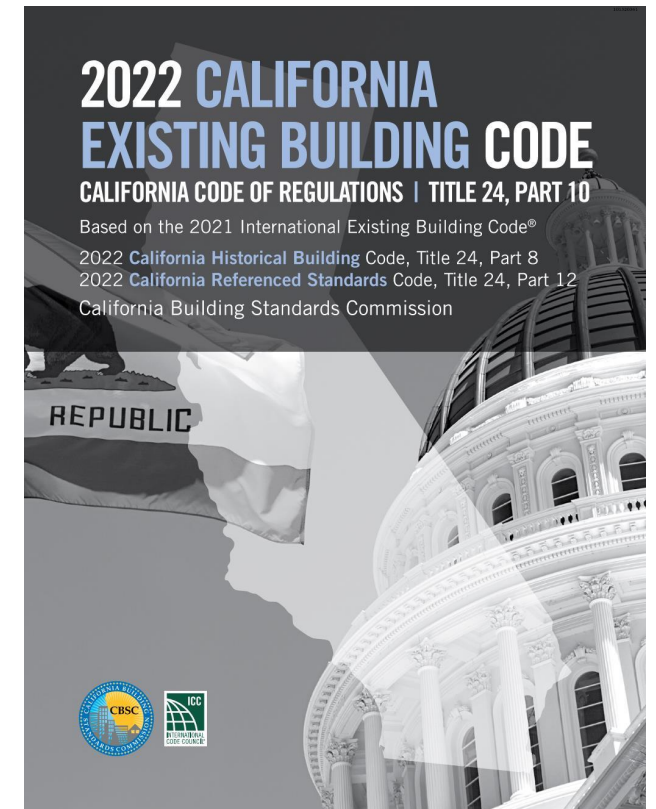
Adaptive Reuse & Building Codes

- New building codes do not automatically apply retroactively to existing buildings
- For commercial buildings, the California Existing Building Code (CEBC) requires that buildings be evaluated and strengthened for seismic effects only when an alteration, renovation, or conversion exceeds certain threshold(s):
 - Changes design loads or member capacities by more than a minor percentage (5%-10% depending on gravity or seismic)
 - Involves over 50% of floor area and “substantial” structural alterations (more than 30% of gravity framing altered)
 - Results in prohibited irregularities
 - Results in an increased risk category for the building based on a proposed change in use or occupancy



Adaptive Reuse & Building Codes

- Most buildings undergoing a conversion from commercial office to residential do not require seismic evaluation and/or retrofit based on current CEBC thresholds
 - “Risk Category” is the same for commercial office and residential occupancy types (but that doesn’t mean “risk” is the same)
 - Other thresholds are typically avoided
- Forward-thinking state agencies and local jurisdictions have effective programs to improve seismic performance of existing buildings, whether as part of conversion or as part of systematic risk mitigation program
 - Renovation construction cost thresholds
 - Mandatory programs
 - Prioritization of potentially vulnerable systems or occupants
 - Consideration of resilience in addition to minimum safety
 - Allow phasing of progress toward requirements



Adaptive Reuse - Building Code Risk Category vs. Risk Exposure

- Building Code Risk Category
 - Commercial (office) and residential uses are generally classified as the same “Risk Category” within context of building code provisions
 - Building code “Risk Category” generally provides similar protection of safety measured in terms of probability of collapse
 - “Risk Category” is not an equivalent measure of actual risk posed to occupants of buildings, in terms of exposure to (or probability of) negative impact (safety, disruption, etc.)

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of these public assembly spaces of greater than 2,500. • Buildings and other structures containing Group E or Group I-4 occupancies or combination thereof, with an occupant load greater than 250. • Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500. • Group I-2, Condition 1 occupancies with 50 or more care recipients. • Group I-2, Condition 2 occupancies not having emergency surgery or emergency treatment facilities. • <i>[OSHPD 2] Skilled nursing facilities, intermediate care facilities, Group I-2 occupancy with 50 or more care recipients.</i> • <i>[OSHPD 5] Acute psychiatric hospitals, Group I-2 occupancy with 50 or more care recipients.</i> • Group I-3 occupancies. • Any other occupancy with an occupant load greater than 5,000.^a • Power-generating stations, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that: • Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the <i>California Fire Code</i>; and • Are sufficient to pose a threat to the public if released.^b
IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities. • Ambulatory care facilities having emergency surgery or emergency treatment facilities. • Fire, rescue, ambulance and police stations and emergency vehicle garages • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: • Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the <i>California Fire Code</i>; and • Are sufficient to pose a threat to the public if released.^b • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

Adaptive Reuse - Building Code Risk Category vs. Risk Exposure

- Risk Exposure – Multi-family Residential vs Commercial Office Occupancy
 - FEMA P-58 building population models (pre-Covid-19 pandemic) quantify time spent in multi-family residential versus office buildings (considers weekday and weekends patterns)
 - FEMA P-58 population models also quantify risk to life safety during an earthquake:
Roughly 3-fold increase in risk exposure for MF residential compared to office buildings
 - Even greater increase in residential risk exposure considering post-Covid work patterns

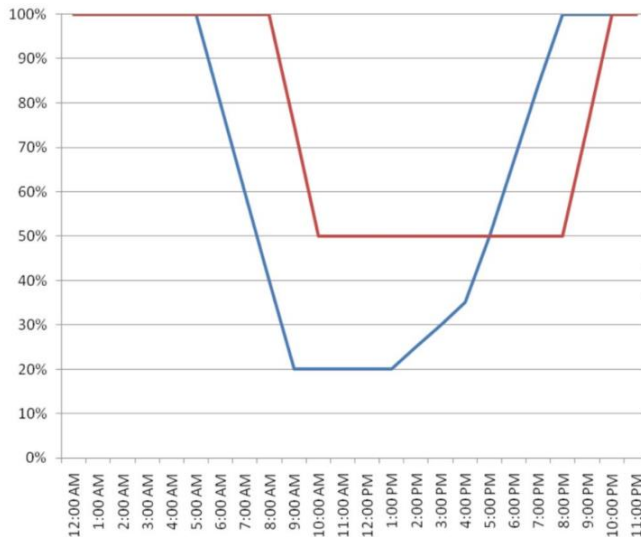


Figure 3: Population Model for a Multi-Unit Residential Building

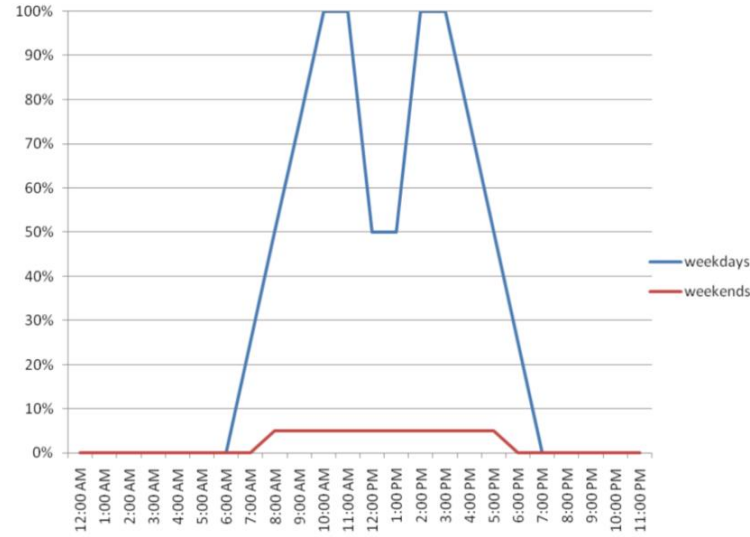
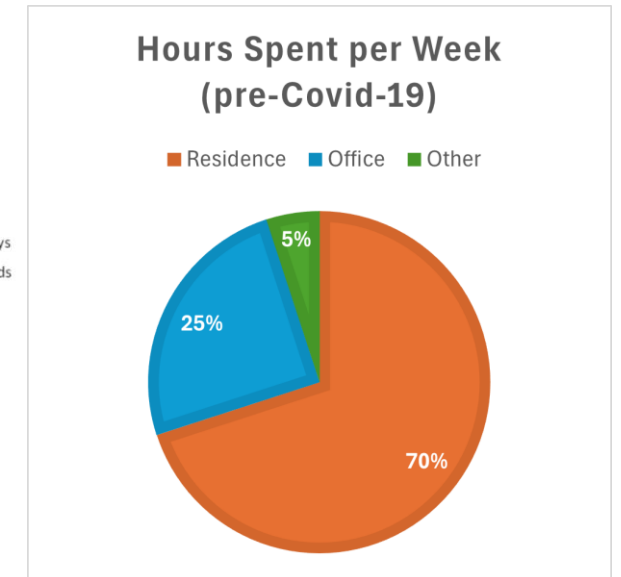


Figure 4: Population Model for an Office Building



Adaptive Reuse – Selected Local Programs

- City of Los Angeles:
 - LA Existing Building Code (LAEBC) 506.5.3:
 - All existing buildings changing from commercial to residential shall be analyzed for 75% of current seismic design forces
 - Potential Adaptive Reuse Ordinance
 - SEAOSC Board/EBC recommendations issued January 2024
- City of San Francisco
 - SF Existing Building Code 503.11.1
 - “Whenever non-structural alteration work in a building involves substantial changes to elements such as walls, partitions, or ceilings on two-thirds or more of the number of stories,” the structure be evaluated and upgraded to meet a life safety standard considering a reduced seismic hazard
 - Ongoing considerations regarding Adaptive Reuse Ordinance 122-23 (July 15, 2023)

includes review and engagement by SEAONC Board / EBC



Adaptive Reuse – SEAOC Position

The Structural Engineers Association of California (SEAOC) recognizes the vital role that adaptive reuse can play in sustaining communities and the built environment, particularly through the conversion of office spaces to residential units. The California Existing Building Code currently accommodates such changes of use or alterations.

To the extent that local jurisdictions consider amending local ordinances to encourage adaptive reuse, the changes must maintain:

- The integrity and quality of project review
- Existing mandatory and voluntary seismic retrofit programs

Additionally, SEAOC believes that adaptive reuse efforts could improve community resilience by applying standards that would help residential structures remain functional — or return to function quickly — following a major earthquake.

Adaptive Reuse – Additional Considerations

- Community Resilience requires timely recovery of safe and functional housing
 - Safety must be provided as a minimum, BUT that level of performance will fall short of providing adequate near-term and long-term functional recovery that supports return to normal and overall community resilience
 - Focus on total cost of recovery, measured at least partially by emergency response to address disruption caused by displacement and downtime associated with unoccupiable homes
 - Consider enhanced standards for recovery-critical housing, particularly vulnerable populations
- Mandatory universal programs are more effective than avoidable thresholds
 - Prioritization and phasing of mitigations efforts will likely be necessary
- Local programs and best practices should inform future statewide building code provisions for consistent and effective risk mitigation statewide

Adaptive Reuse – Q&A





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OF EMERGENCY SERVICES



**ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: San Francisco Concrete Building Safety Program

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the presentation.

Background:

The City and County of San Francisco (SF) is developing a program to identify and strengthen vulnerable concrete buildings. SF put together a working group representing potentially impacted stakeholders to highlight top concerns and make recommendations for implementing a Concrete Building Safety Program (CBSP).

The CBSP Stakeholder Engagement Report details the working group's engagement activities, reviews technical criteria, and recommends developing the Concrete Building Safety Program. Link to the report dated April 2024:

[DRAFT CBSP Final Report Final edits \(last edited March 2024\).docx \(onesanfrancisco.org\).](#)

Brian Strong, SF's Chief Resilience Officer and Director, will provide an overview of the efforts.

Concrete Buildings Safety Program

California Seismic Safety Commission

July 18, 2024

Office of Resilience and Capital Planning

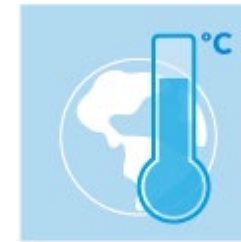
The mission of the Office of Resilience & Capital Planning (ORCP) is to promote the preservation and long-term sustainability of the City's capital assets and its resilience as a whole no matter the acute shocks and chronic stresses it experiences.

- Lead strategic planning and work with other departments to make the San Francisco community more resilient
- Responsible for:
 - Hazards and Climate Resilience Plan
 - 10-Year Capital Plan

Interconnected challenges:



EARTHQUAKES



CLIMATE CHANGE



SEA LEVEL RISE



INFRASTRUCTURE



SOCIAL INEQUITY



UNAFFORDABILITY

Concrete Building Safety Program Overview

Earthquake Safety Implementation Program

- 30-year, 50-task strategy to improve seismic safety of buildings
- Developed out of 10-year community action plan for seismic safety

	1990	1995	2000	2005	2010	2015	2020	2025 and beyond
Unreinforced Masonry Retrofit	★							
Soft-Story Retrofit					★			
Private Schools Evaluation					★			
Façade Maintenance						★		
Concrete and concrete tilt-up								
Vulnerable steel buildings								

★ Date of ordinance

Refresher: Concrete Building Safety Program

Program Goal: Identify, evaluate, and retrofit the most vulnerable concrete buildings to protect against major structural failure.

Context	Building types affected	
This program is part of the Earthquake Safety Implementation Program, the City's 30-year, 50-task strategy to improve seismic safety of buildings.	Concrete Tilt-up <i>(technical term: rigid-wall-flexible-diaphragm)</i> Non-Ductile Concrete	Project team • SF Office of Resilience and Capital Planning • SF Department of Building Inspection • Applied Technology Council • Civicmakers Stakeholder Working Group Executive Panel

Concrete Building Safety Program



Damage to CTV building following Christchurch earthquake. Source: 1 NEWS

Non-Ductile Concrete

- ▷ Typically housing, industrial, commercial, and offices
- ▷ Retrofit expensive and complex



1994 Northridge (*EERI in FEMA P-1026*)

Concrete Tilt-up (aka Rigid-wall-flexible-diaphragm)

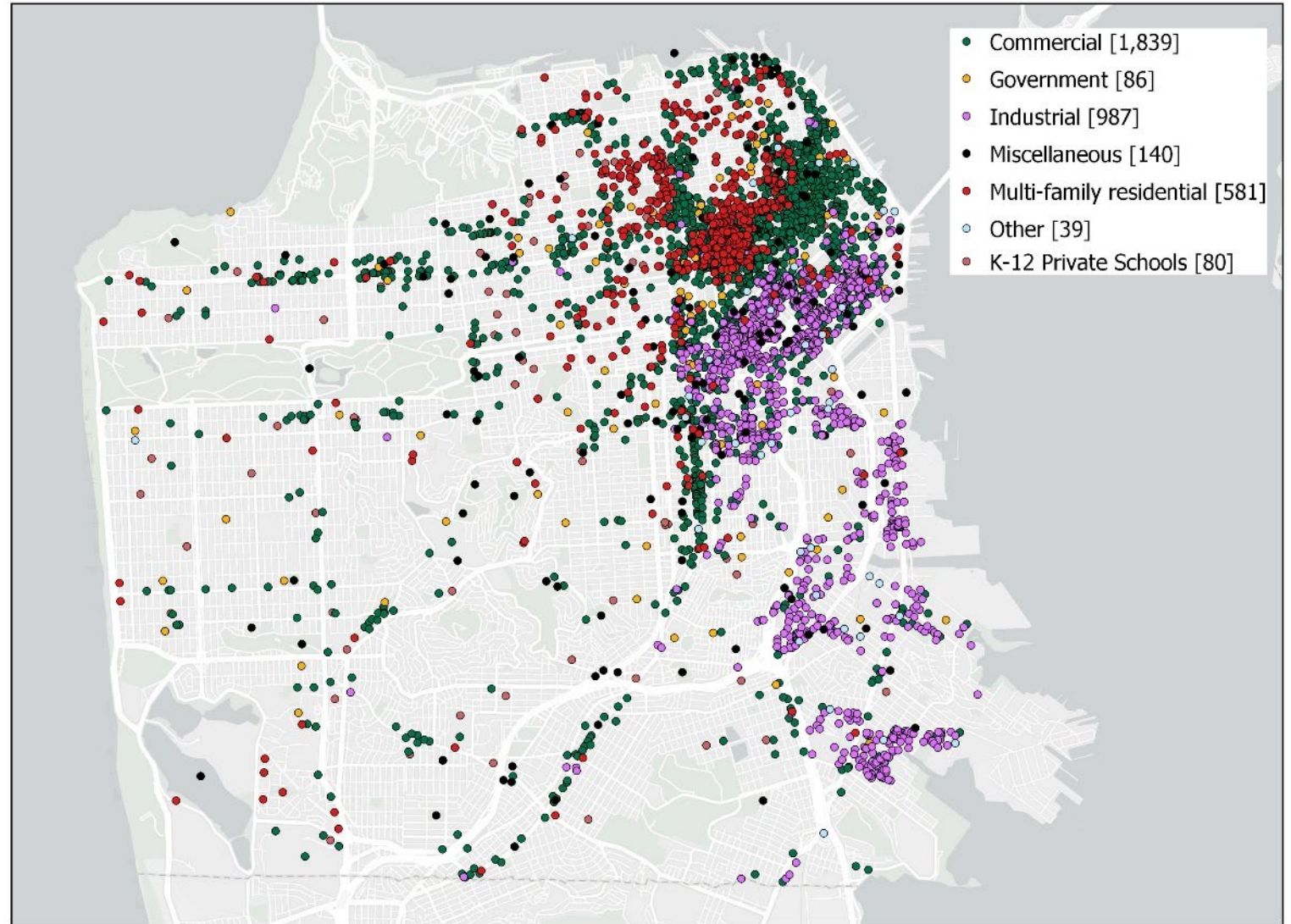
- ▷ Typically grocery stores, warehouses, auto-body shops
- ▷ Retrofit more straightforward

Inventory

Map of Possible Concrete Buildings

By Use Type:

- Commercial
- Government
- Industrial
- Miscellaneous
- Multi-family residential
- Other
- K-12 Private Schools



Concrete Buildings

Illustrated here are all concrete buildings in the city except: Post 1995 construction, public schools, colleges and universities, hospitals, SF Port Buildings, State and Federal Buildings and 1-4 unit residential buildings

3,752 Buildings Total

Inventory Challenges

- Purpose of the inventory: Understand general trends in the City's concrete building stock to inform program design.
- Challenges:
 - Several years of work and technical expertise to compile inventory of possible concrete buildings from public sources like Sanborn insurance maps and windshield surveys.
 - Uncertainty remains; Can't definitively identify concrete buildings from the street or from public records. A structural engineer still needs to do a walk-through or review building drawings.
 - Risk of inventory being released prior to stage where building composition has been verified by structural engineers.
 - Developing an inventory can increase public perception of the risk in one city over others.

Stakeholder Working Group

Stakeholder Working Group

Met eight times October 2022-September 2023



Composition:

- City and County Staff
- Technical Experts
- Residential Building owners
- Commercial Building owners
- Tenant Representatives
- Business Representatives
- Labor Representatives
- Builders and Developers

Role:

- Represent the concerns of stakeholders, including vulnerable communities
- Provide recommendations for program policy and design
- Ensure program products are usable

Stakeholder Engagement Report



- ▶ Stakeholder working group developed 9 recommendations to the City about the development of this program, summarized in report released April 2024
- ▶ The report also summarizes technical recommendations for recommended timeline, retrofit standards, eligibility criteria of a potential future mandatory program

High Consensus Stakeholder Recommendations

Developed based on the premise of a future mandatory retrofit program

Financing:

1. Develop a **financing plan** which includes a repository of funding options for residential and commercial buildings before an ordinance is introduced.
2. Pursue Federal and State grants to **create grants to support property owners** in doing retrofits.

Communications:

3. Create a **Communications Plan** similar to the Soft Story Program that aligns with the CBSP timelines and process, before and after an ordinance is passed.
4. **Create a notification process** that ensures residents and tenants are notified about potential retrofit construction before work begins, and includes information about retrofit timelines, tenant support, and tenant rights.

Temporary Tenant Relocation:

5. **Provide guidance and informational resources** for building owners and residents to understand processes and rights related to relocating to temporary housing.
6. Provide a communications packet helping building owners **communicate with their tenants about earthquake risks**.

Process Streamlining:

7. Include funding in legislation for dedicated, **full-time Department of Building Inspection staff** to support the administration of this program.
8. **Coordinate requirements**, timelines, and communications for alarms, sprinklers, and facade repairs.
9. **Streamline small sidewalk encroachment permits** as a means of reducing administrative burden to departments and making it easier for building owners to comply.

Executive Directive 24-01

Executive Directive 24-01

Issued April 16, 2024

OFFICE OF THE MAYOR
SAN FRANCISCO



LONDON N. BREED
MAYOR

Executive Directive 24-01

Evaluating and Addressing Seismic Vulnerability in San Francisco's Concrete Buildings *April 16, 2024*

According to the U.S. Geological Survey (USGS), San Francisco has a 72 percent chance of experiencing a 6.7 magnitude or greater earthquake before 2043. The City and County of San Francisco is dedicated to ensuring infrastructure, neighborhoods, and residents are ready to withstand the next major earthquake. After a year-long stakeholder engagement process, the City and County of San Francisco is implementing the first phase of the Concrete Building Safety Program (CBSP).

The Concrete Building Safety Program aims to strengthen the resilience of the City's infrastructure, neighborhoods, and building stock. The need for the CBSP is identified in the San Francisco Earthquake Safety Implementation Program (ESIP), San Francisco's 30-year plan for improving seismic safety. Prior seismic resilience programs identified in ESIP include the Soft Story Retrofit program, which has resulted in the strengthening of more than 4,500 multifamily residential buildings in San Francisco to date, and the Unreinforced Masonry Program, which facilitated the retrofit of nearly 2,000 masonry buildings.

The Office of Resiliency and Capital Planning (ORCP) has released the "Stakeholder Engagement for Concrete Building Safety Program" report, which summarizes a stakeholder engagement process that identified technical, economic, and social considerations and consequences of a seismic retrofit program for concrete buildings in San Francisco. Meaningful engagement has allowed the City to better understand the challenges impacted stakeholders will face, while underscoring the need for action given the likelihood of a major earthquake in the

As a first step, Mayor Breed directed DBI and ORCP staff to complete the following by October 16, 2024:

- Draft legislation mandating completion of screening checklist
- Publish retrofit standards in SFEBBC

Draft legislation for mandatory screening

Executive Directive Part 1

▷ **Goal:**

- Improve inventories of concrete and tilt-up buildings
- Give owners who are incorrectly included on the published inventory an opportunity to remove themselves

▷ **Process:**

- Owner hires licensed engineer to complete and submit short checklist to specify building composition.
- DBI reviews submitted checklists, tracks compliance

Publish retrofit standards

Executive Directive Part 2

- ▷ **Goal:** Publish technical retrofit criteria in the building code to support “early adopters” and provide a pathway to owners who choose to retrofit

Takeaways

- ▷ Financing concrete retrofits is a huge challenge.
- ▷ Resources are needed to develop and improve inventories.
- ▷ Ongoing stakeholder engagement, coordination, and communication is necessary.
- ▷ Development and implementation of retrofit programs span multiple election cycles; need to be shielded from politics.

Thank you



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**ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Earthquake, Climate, Fire, Water – California's Needs

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the presentation.

Background:

Dr. Scawthorn, UC Berkeley, is a structural engineer and retired Professor from Kyoto University. He is recognized as a leading expert on fire-following earthquakes and advises Global 1000 corporations, government agencies, and the World Bank on natural hazards risk management. He also is the author or co-editor of several books and technical papers.

Dr. Scawthorn has worked with the SSC on prior projects and will provide an overview of recent developments in fire-following earthquake research and risk assessment. In recent years, fire-following earthquakes have been a concern for the public, local and state governments, and the insurance industry. Dr. Scawthorn's presentation will focus on his thoughts on improving the situation, including an overview of firefighting water supply, seismic gas shutoff devices, and the recommended next steps.



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SEISMIC SAFETY COMMISSION MEETING**

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Fire Following Earthquake

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the presentation.

Background:

The City of San Francisco has been making significant progress on fire-following earthquake preparations and response. Deputy Chief Luttrupp from the San Francisco Fire Department will provide an overview of the efforts.

Fire Following Earthquake

San Francisco Fire
Department



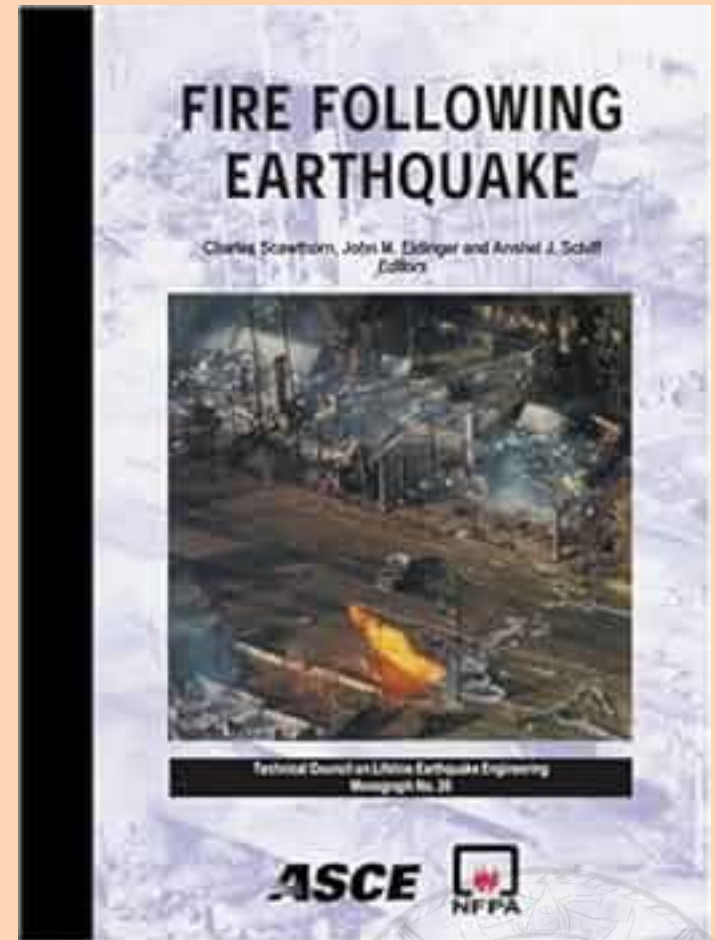
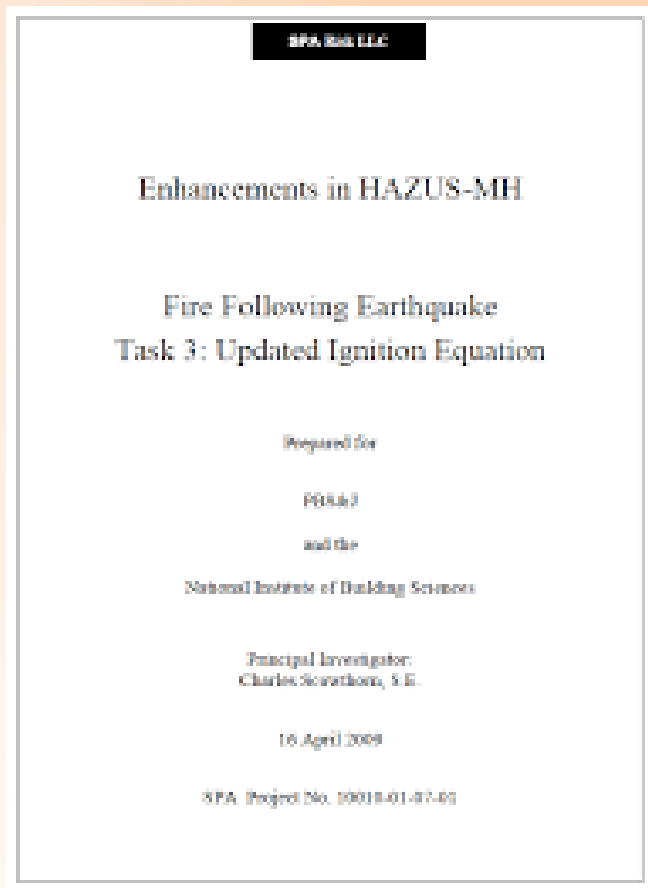


The Problem

80% of damage to San Francisco
caused by fire following earthquake



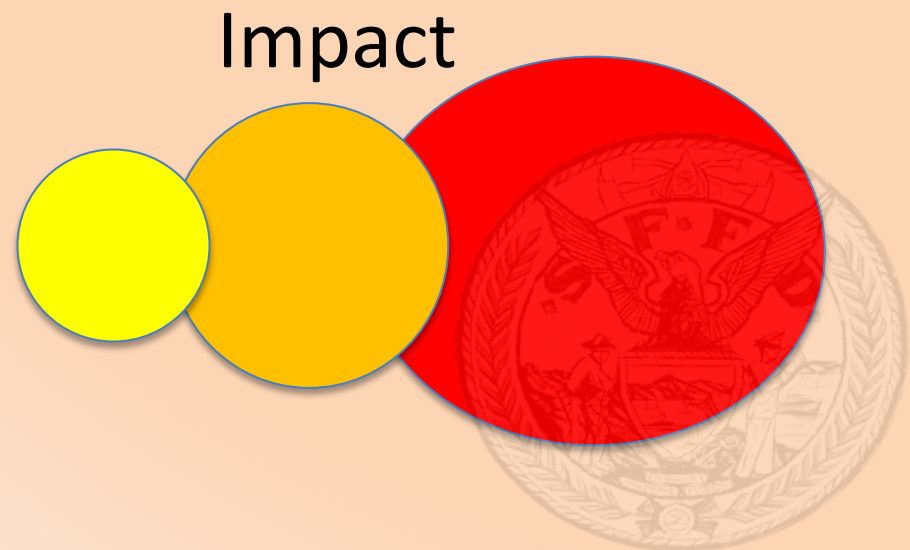
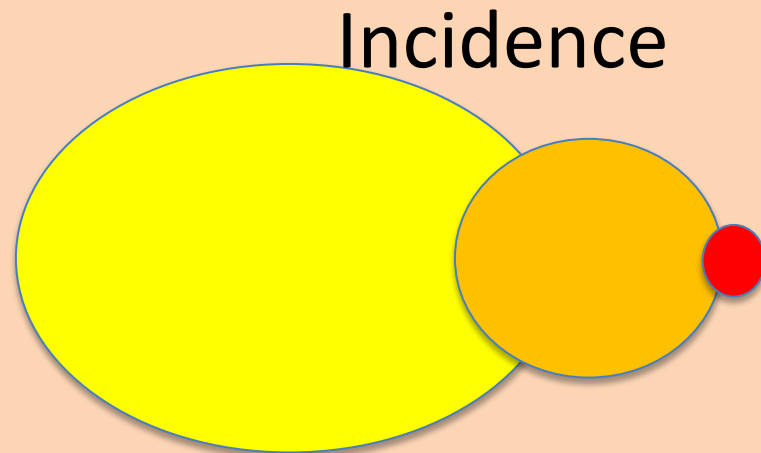
Charles Scawthorn



Threat of conflagration.

Modeling

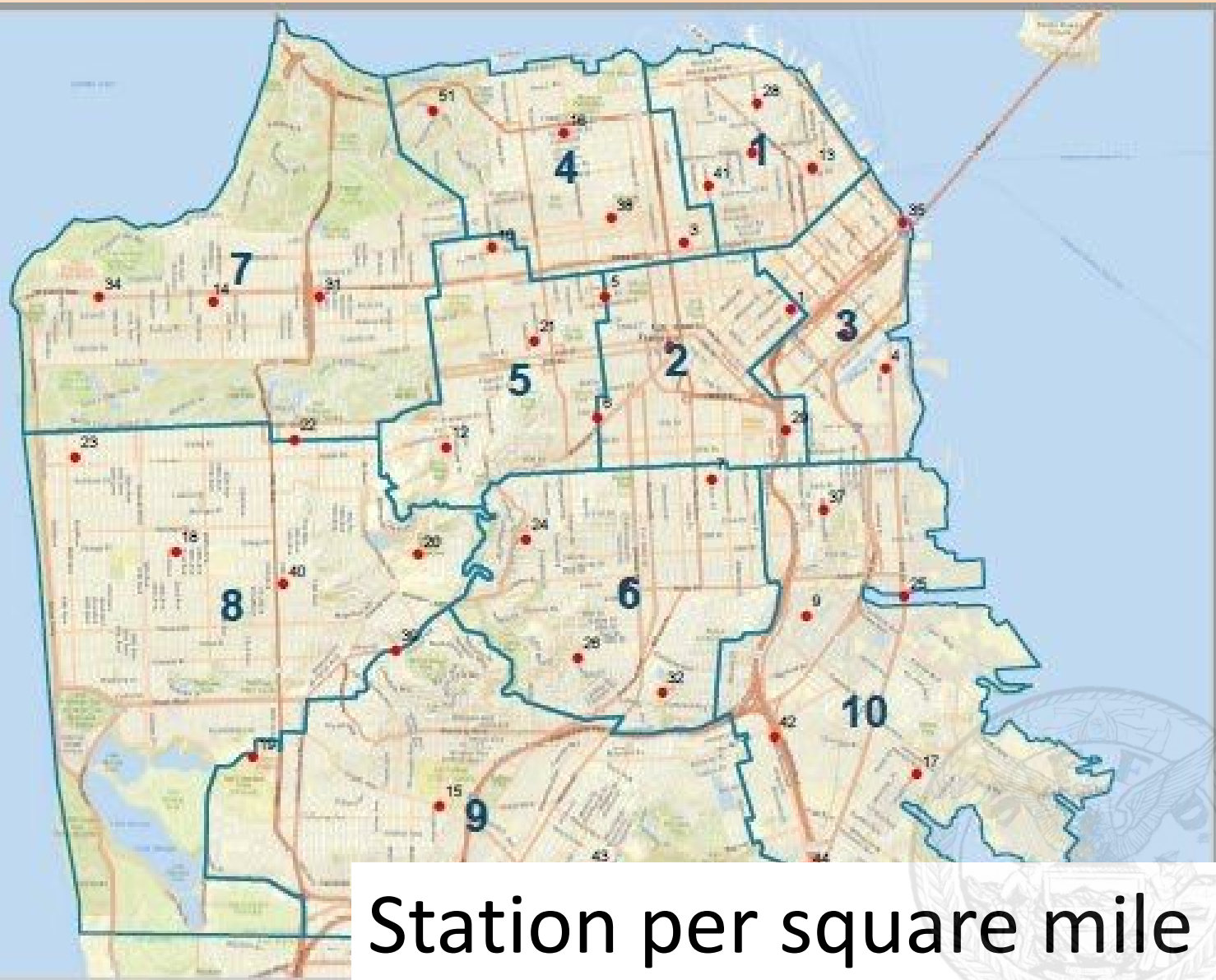
- Starts
- Large Fires
- Conflagrations



Tradition



Purpose



Station per square mile

Equipment



Staffing



Ignition

Still likely from gas and electric utilities

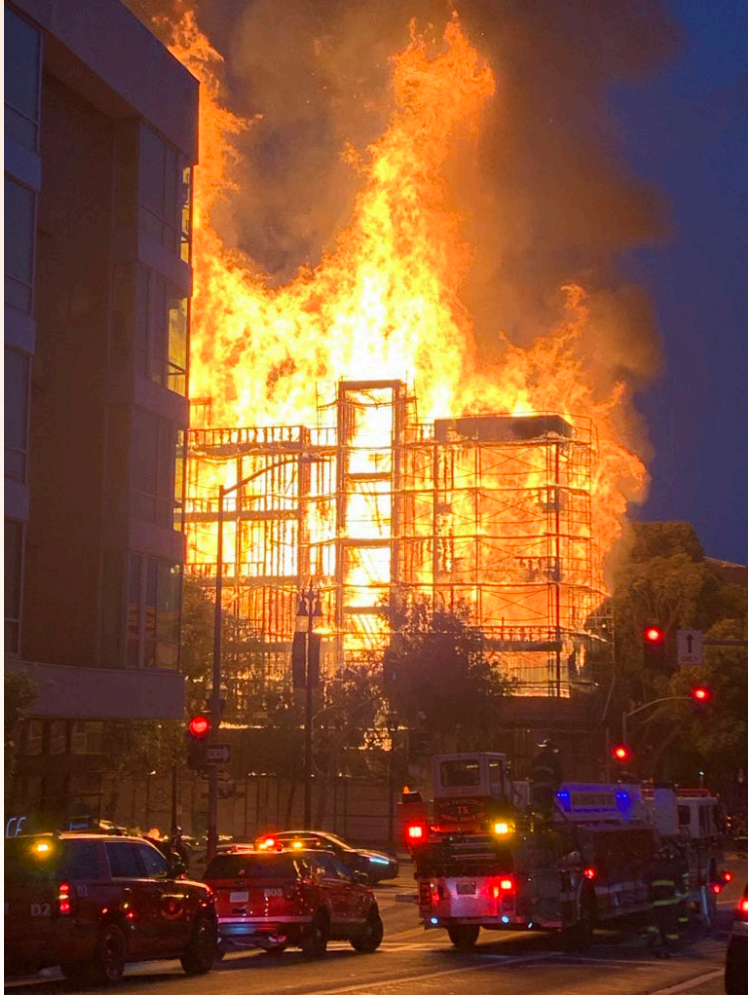


Much safer now and do include seismic protections

Ignition

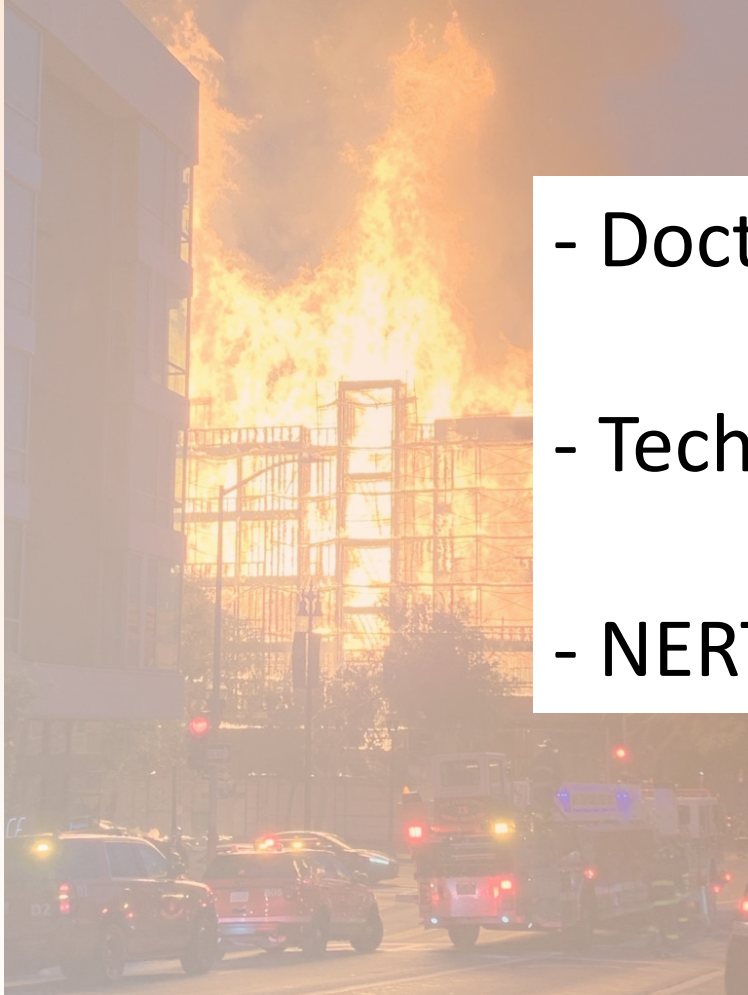


Discovery



Discovery

- Doctrine Change
- Technology
- NERT



Report



- Technology

- NERT



Response



- Branch
- Battalion Control
- Company Initiative

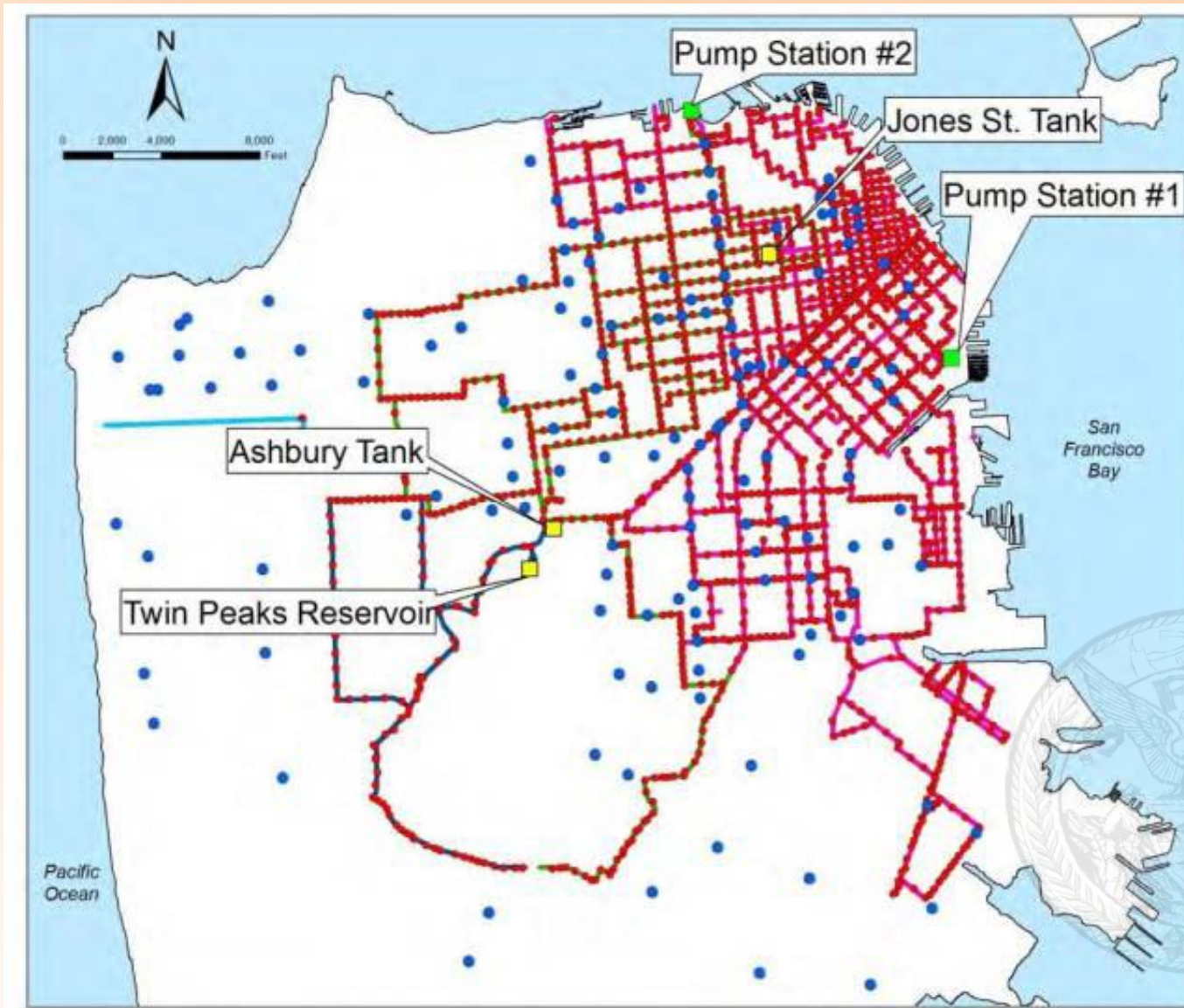
Suppression



M



AWSS/EFWS



Static Sources



Cisterns

- 11 million gallons total
- Smallest 10,000 and Largest 243,000
- Average 75,000
- Approximately 200

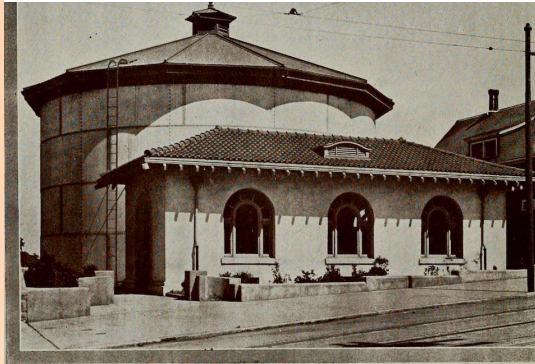


High Pressure Hydrant System



Twin Peaks 10,500,000 gallons

Ashbury Tank 500,000 gallons



- Gravity System
- Reservoir and two tanks



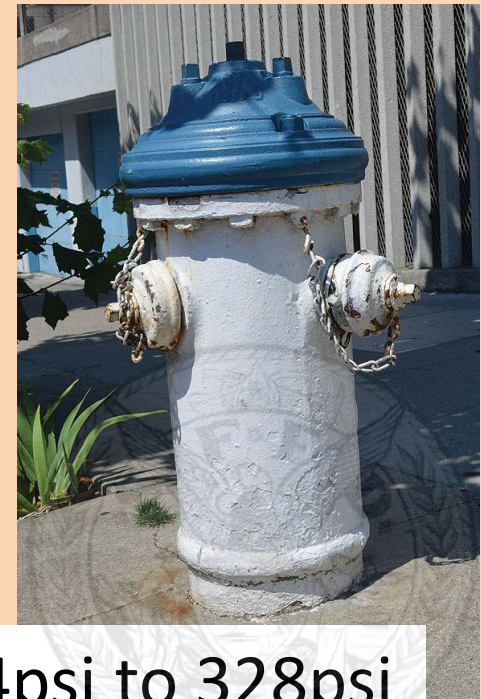
Jones St Tank 750,000 gallons

High Pressure Hydrant System



West of Twin Peaks 140psi

Ashbury Tank 143psi



Jones St Tank 130psi to 214psi to 328psi

Pumps and Manifolds

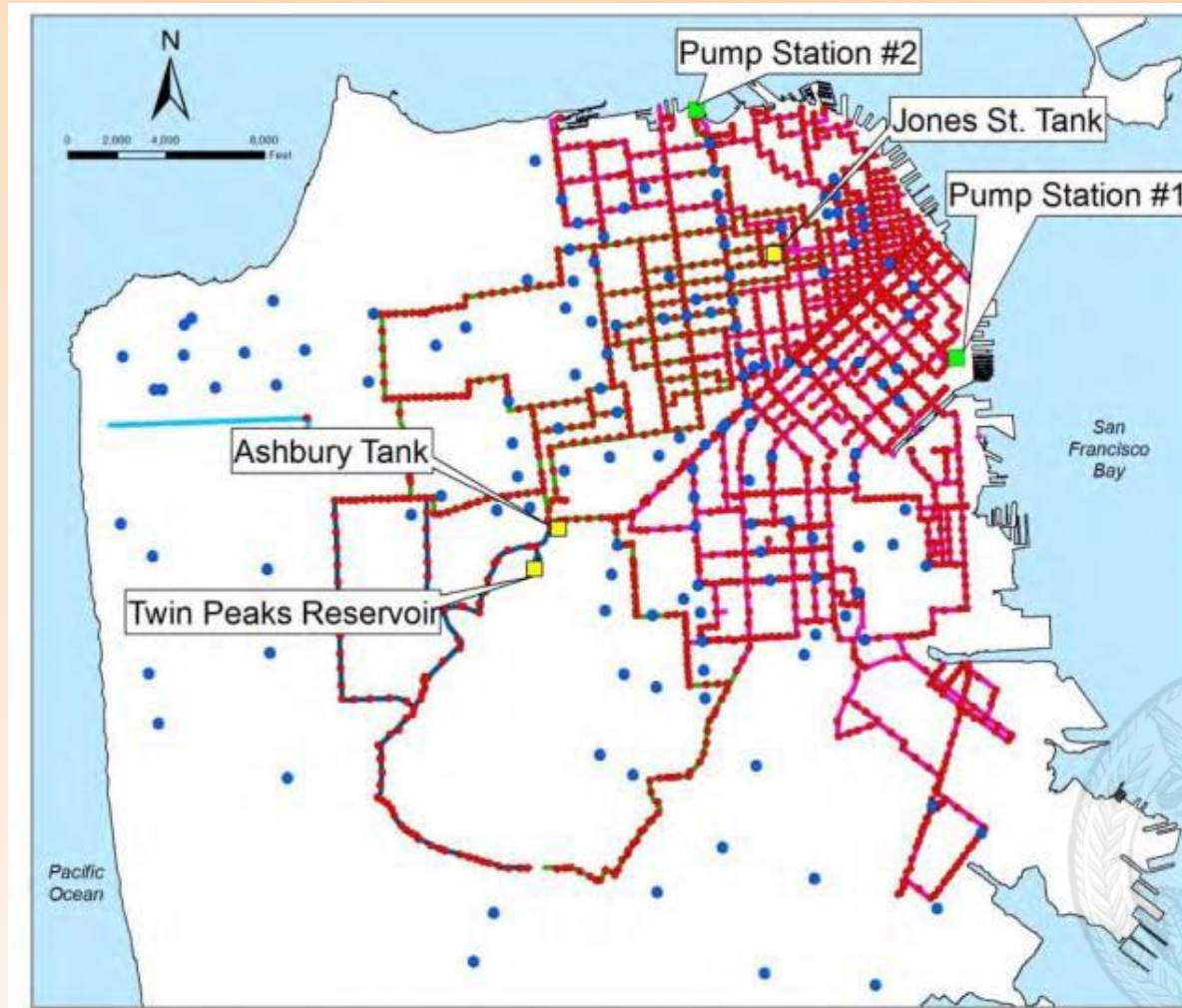


Two pump stations
10,000 gpm at 300psi

Five manifold inlets for use with



Expansion of EFWS



Expansion of EFWS

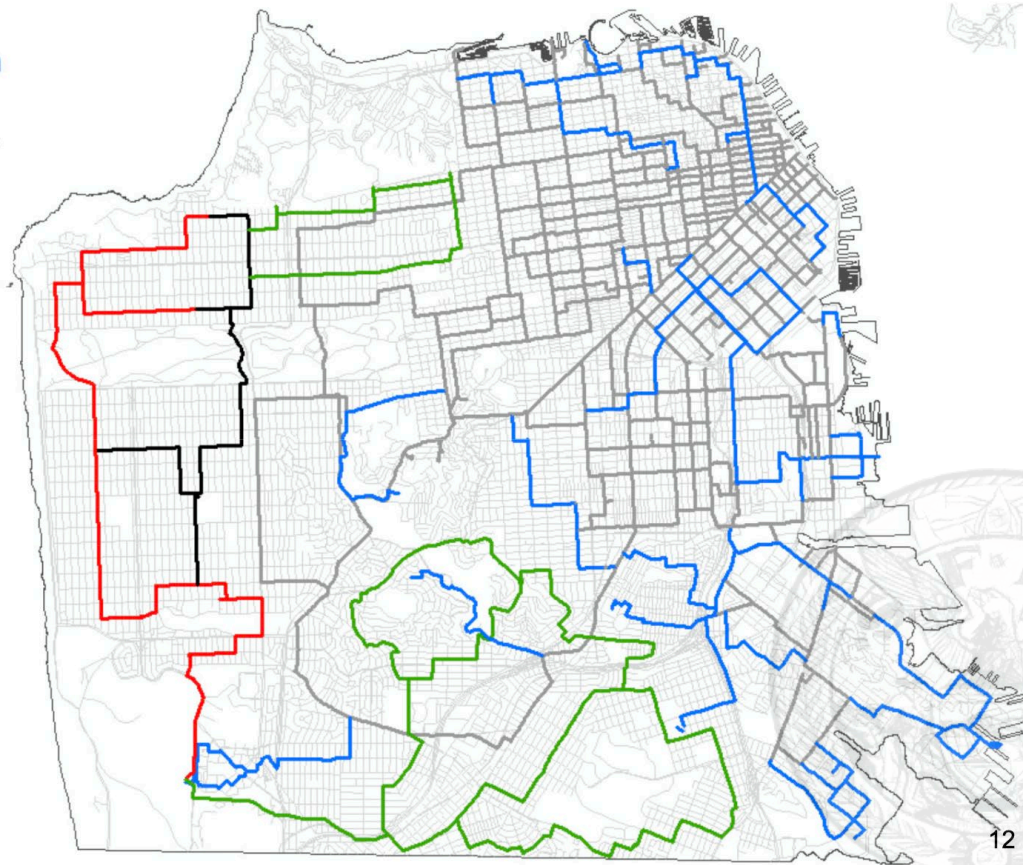


Potential System Improvements - Pipelines (Map)

Legend

EFWS and PEFWS Pipe Configuration

- Existing Conventional EFWS
- Future Conventional EFWS (unfunded)
- PEFWS Phase 1 (funded)
- PEFWS Phase 2 (unfunded)
- PEFWS Future Phases (unfunded)



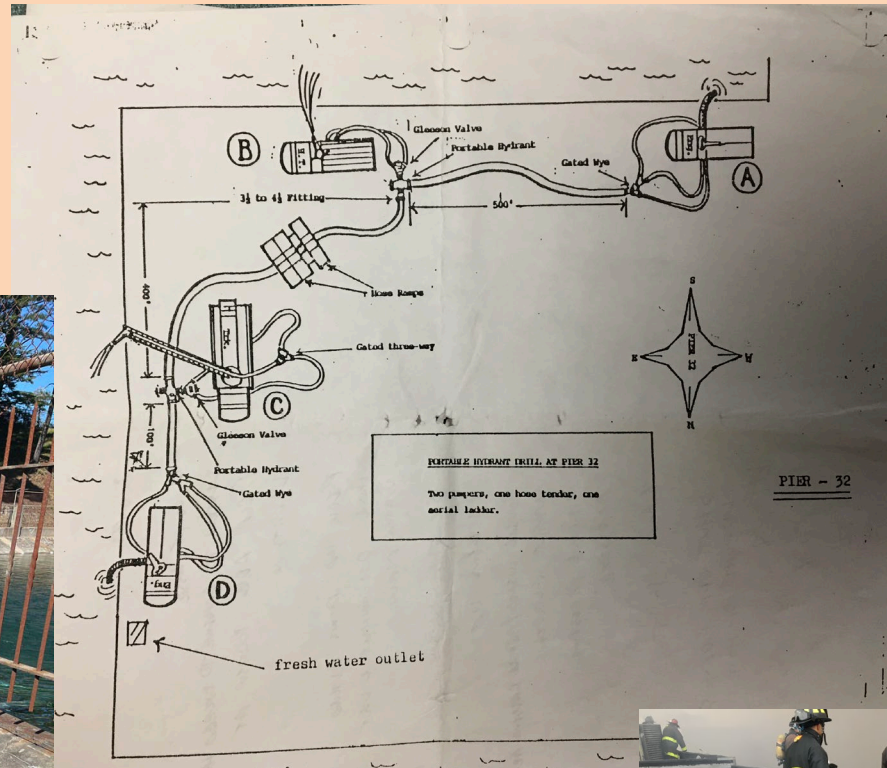
PWSS



Filling the gap and the flexible future



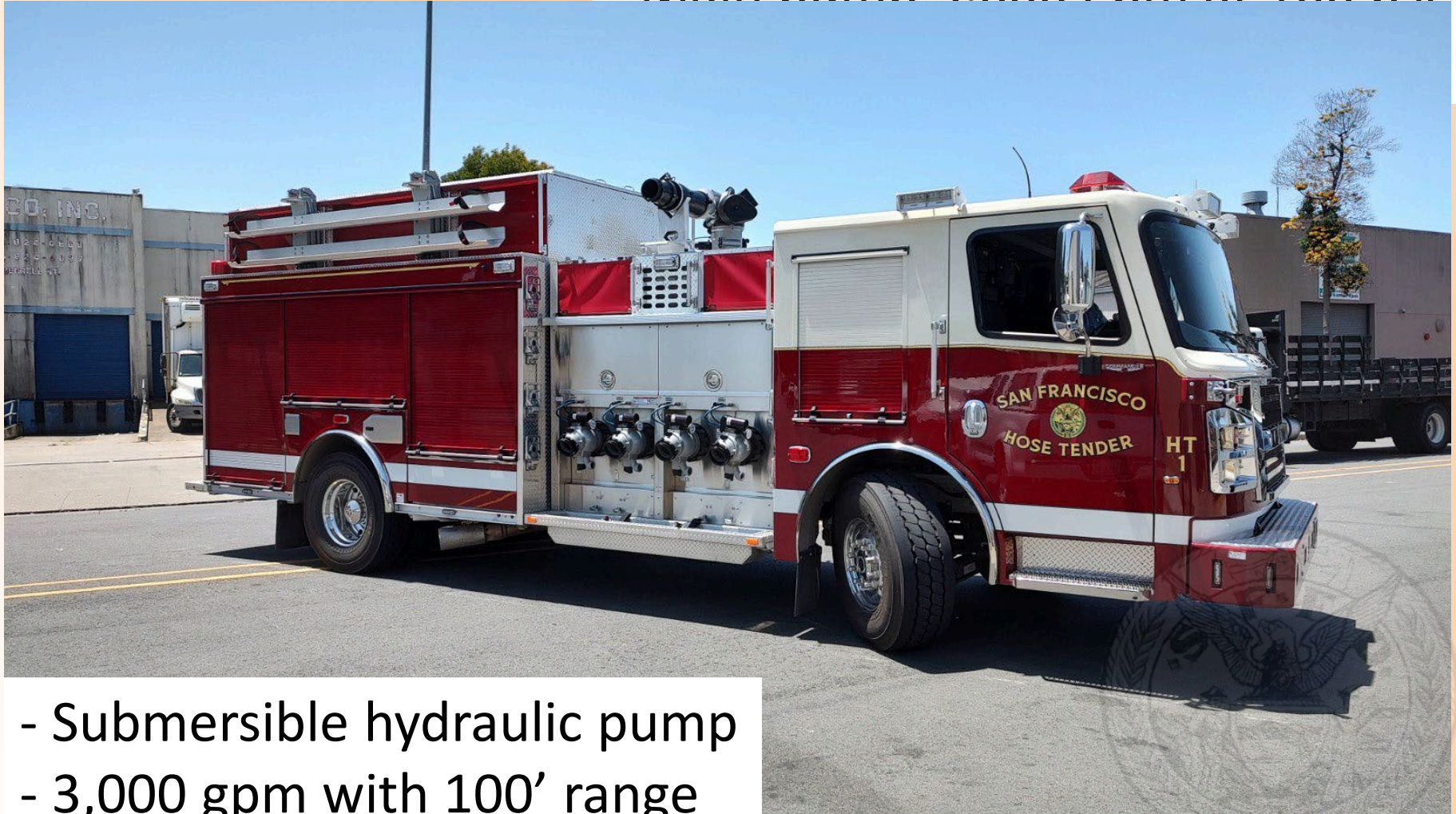
PWSS



Filling the gap and the flexible future

Rosenbauer

- Main pump 5 600 gpm at 100 psi



- Submersible hydraulic pump
- 3,000 gpm with 100' range

Rosenbauer

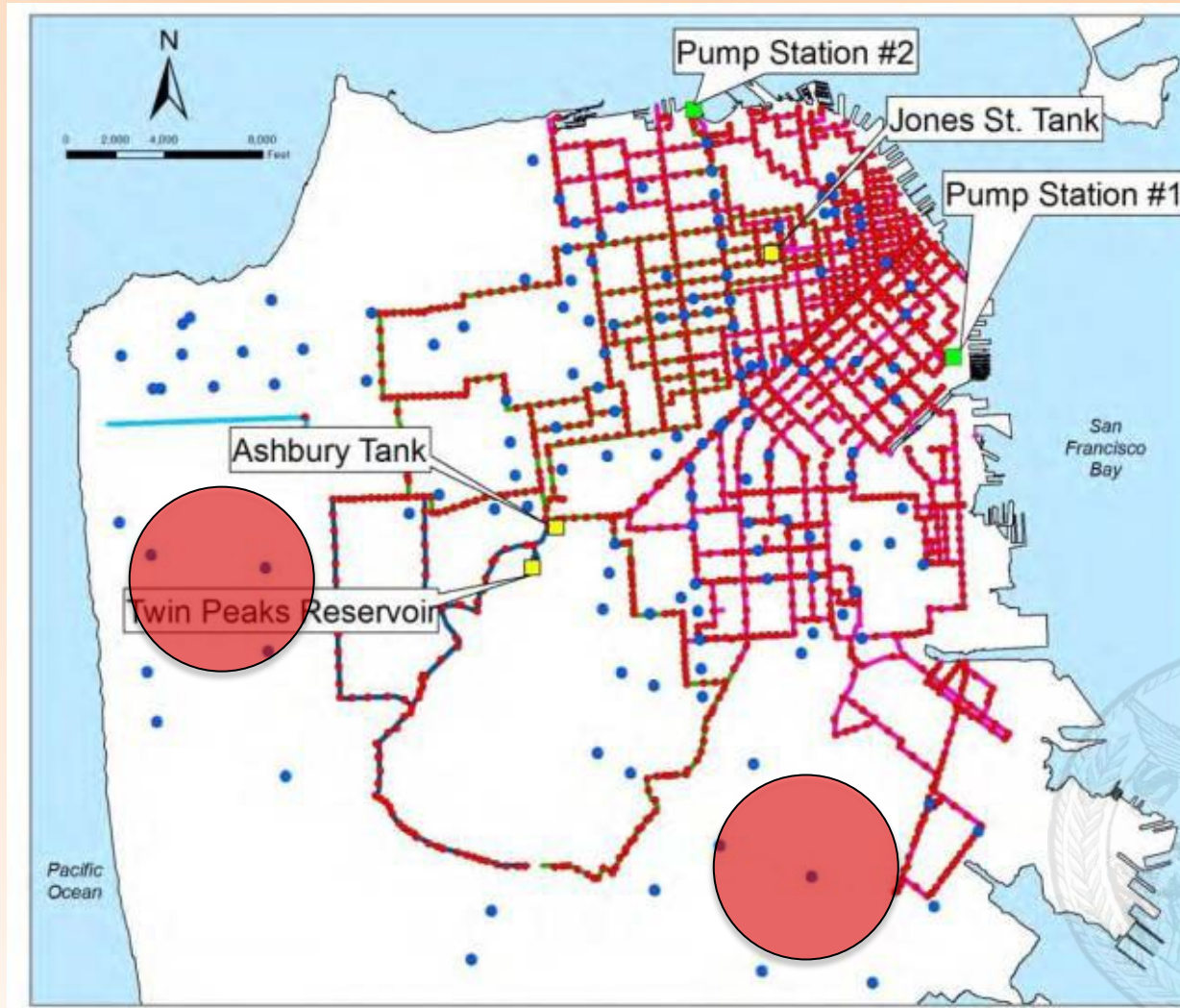


Land Fireboat

- 6,000' of 5" hose
- Monitor designed to flow 8,000 gpm



Expands system throughout city



The missing pieces



Gorter Nozzle



One hydrant = three fire engines



We are prepared

because we haven't forgotten



Questions?





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ALFRED E. ALQUIST
SEISMIC SAFETY COMMISSION MEETING

Memorandum

To: Seismic Safety Commissioners
From: Annde Ewertsen, Executive Director
Date: July 18, 2024
Subject: Project Updates

Recommendation:

Staff recommends Commissioners review the background information and be prepared to provide comments/questions on the project updates.

Background:

SSC Executive Director Annde Ewertsen will update the SSC on the status of the following projects:

- **Ferndale and Türkiye** - A three-part project encompassing: (1) a report on the impediments to recovery for Rio Dell; (2) data on tectonics/triggered events, similar to Türkiye, with Pacific Earthquake Engineering Research (PEER), modeling locations in Northern and Southern California; and (3) recovery simulations provided by the Interdependent Networked-Community Resilience Modeling Environment (IN-CORE), which will include four scenarios and framework for different communities (building, functionality by building, dislocation by household, change in household income by income group, change in gross domestic product, change in tax revenue, etc.).

(1) The report has been approved and published on the SSC website. Next steps are underway.

(2) PEER conducted a kickoff and began coordination with USGS, Southern California Edison Co (SCE), and the Department of Health Care Access and Information (HCAI) to begin regional modeling aimed at quantifying losses (i.e., fatalities, collapses, repair costs, etc.). The PEER methodology utilizes HAZUS and will provide data like what was published in the HayWired Study but in a limited capacity. The first deliverable is a report on recent earthquake sequences worldwide and the physics-based ground motion modeling of selected scenarios.

The second deliverable will be the regional scale assessments (NorCal—M7.21 Hayward/M7.23 Calaveras; SoCal—M7.25 Newport-Inglewood/M7.05 Palos Verdes). The reports have been delayed and will be provided to the commission at a later meeting.

(3) The IN-CORE contract was recently approved, the kickoff meeting has been completed, and the work is ongoing. The contract will be extended through March 31, 2025. A draft report is scheduled to be presented to the SSC at the January 2025 meeting.

- **CA Fire Station Seismic Vulnerabilities Survey and Risk Assessment Project -**

This project includes a statewide survey of CA Fire Stations to determine seismic vulnerabilities to help inform mitigation strategies and learn about potential funding sources and related barriers. The survey has collected approximately 430 responses. The collection is being extended to maximize the number of fire stations available for analysis. An initial run of HAZUS 6.1 Advanced Engineering Building Module (AEBM) for select fire stations was conducted and reviewed in conjunction with the BCA Toolkit EQ Structural Model to develop an initial assessment and understanding using FEMA's current HAZUS database of all CA fire stations. The survey submissions will be used to update this database, and an additional risk assessment will be conducted during the project's next phase.

- **Northridge Anniversary, Quake Heroes** - The Statewide California Earthquake Center (SCEC) requested funding to administer a Northridge Anniversary Outreach and Education Campaign. Funding was approved during the July 2023 Commission meeting. After significant delays, DGS has approved the contract, and a kick-off meeting has been completed.

- **Earthquakes and Climate Change Workshop** - At the April 11, 2024 meeting, the SSC approved moving forward, in collaboration with the USGS and California Geological Survey (CGS), to develop a workshop facilitating knowledge exchange among earthquake and climate scientists/researchers, including exploring collaborative opportunities for the improvement of the multi-hazard resilience of our communities. On May 2, 2024, SSC and all stakeholders met for the first time to discuss workshop topics and potential timelines. A second meeting was held on July 10, 2024. Subsequent meetings will be held to finalize topics and details.

- **Shake Table** - At the April 11, 2024 meeting, the SSC received an update on the UC San Diego (UCSD) shake table project. Later this summer, SSC staff will meet with UCSD to obtain project updates.