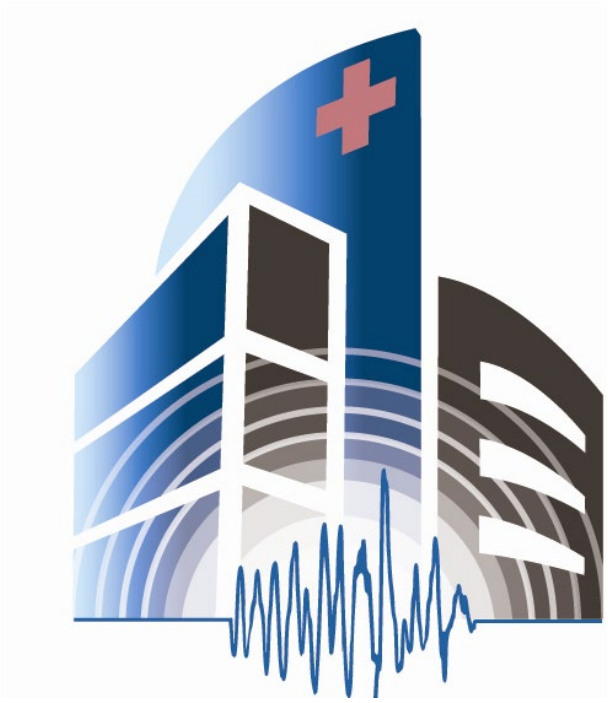
Hospital Building Safety Board

Full Board Meeting
December 7 – 8, 2022



<u>* SPECIAL NOTICE ***</u>**

This meeting will be held in-person at the Department of Health Care Access and Information (HCAI) office in Sacramento,
as well as by teleconference.

Members of the Board and members of the public may fully participate from their own locations.

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

AMENDED

***** SPECIAL NOTICE *****

This meeting will be held in-person at the location noted below, as well as by teleconference. Board members and members of the public may fully participate from their own locations.

NOTICE OF PUBLIC MEETING

HOSPITAL BUILDING SAFETY BOARD
Full Board Meeting

Appointed Members
Louise Belair, Chair
David Bliss, Vice Chair
Cody Bartley
Bruce Clark
Deepak Dandekar
Michael Foulkes
John Griffiths
Mike Hooper
Scott L. Jackson
David Khorram
Michele Lampshire
Marshall Lew
Scott Mackey
Jim O. Malley
Farzad Naeim
Bruce Rainey

Director-Appointed Ex-Officio Members
Bert Hurlbut
Michael O'Connor

Date:
Wednesday, December 7, 2022
10:00 a.m. – 4:00 p.m.

Thursday, December 8, 2022
9:00 a.m. – 3:00 p.m.

Location:
Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 900
Sacramento, CA 95833

Teleconference Meeting Access:

Day One:
HBSB Teams Full Board Meeting

Day Two:
HBSB Teams Full Board Meeting

For more detailed instructions on joining or attending the meeting, see pages 5 and 6.

Ex-Officio Members
Elizabeth Landsberg
HCAI Director

Mike Richwine
State Fire Marshal

VACANT
State Geologist
Jennifer Thornburg (Delegate)

Mia Marvelli
Building Standards Commission
Executive Director

Tomás J. Aragón, M.D., Dr. P.H.
Dept. of Public Health Director
Nathaniel Gilmore (Delegate)

Chris Tokas
Office of Statewide Hospital Planning and Development (OSHPD), HCAI
Deputy Director

Executive Director
Ken Yu

AGENDA

Item	Subject	Facilitator
1	**Call to Order and Welcome**	Louise Belair, Board Chair (or designee)

Item	Subject	Facilitator	Pg.
2	**Roll Call and Meeting Advisories/Expectations** • Determination of Quorum • Conduct of Meeting	Ken Yu, HBSB Executive Director (or designee)	

3	**Department of Health Care Access and Information (HCAI) Update**
	• Swearing-in Ceremony for new HBSB member:
	  ○ Gary Dunger, Hospital Facilities Manager Representative
	• Recognition of outgoing HBSB member:
	  ○ Bruce Rainey, Hospital Facilities Manager Representative
	• HCAI Update
	• Discussion and public input
		Elizabeth Landsberg, HCAI Director (or designee)	7

4	**Overview and approval of the August 11, 2022 Full Board draft Meeting Report/Minutes** • Discussion and public input	Louise Belair, Board Chair (or designee)	9

5	**Instrumentation Committee**
	• Overview and approval of the following draft Meeting Report/Minutes:
	  ○ July 5, 2022
	  ○ September 29, 2022
	• Overview of the October 27, 2022 meeting
	• Present final draft: *Seismic Instrumentation of Healthcare Facilities – A White Paper on the Usefulness and Benefits of Seismic Instrumentation of Healthcare Facilities*
	• Discussion and public input
		Marshall Lew, Committee Chair (or designee)	27
			33
			39

6	**Technology and Research Committee**
	• Overview and approval of the following draft Meeting Report/Minutes:
	  ○ July 27, 2022
	  ○ November 1, 2022
	• Discussion and public input
		Michael Foulkes, Committee Vice-Chair (or designee)	71
			83

7	**Education and Outreach Committee**
	• Overview and approval of the following draft Meeting Report/Minutes:
	  ○ August 17, 2022
	  ○ October 19, 2022
	• Discussion and public input
		Mike Hooper, Committee Chair (or designee)	91
			97

Item	Subject	Facilitator	Pg
8	**Energy Conservation and Management Committee** • Overview and approval of the October 4, 2022 draft Meeting Report/Minutes • Discussion and public input	Scott Jackson, Committee Chair (or designee)	103
9	**Joint Meeting of the Codes and Processes Committee, Energy Conservation and Management Committee, and Technology and Research Committee** • Overview and approval of the November 1, 2022 draft Meeting Report/Minutes • Discussion and public input	Michael O'Connor, Codes and Processes Committee Chair (or designee)	113
10	**Special Presentation: *Healthcare Delivery Quadrangle*** In its simplest form, Healthcare serves the well-being of patients, families, and communities. In reality, while the goals remain the same, real-world performance depends upon the collaboration of clinicians, facilities, regulators, and payors. Each party in this "Quadrangle" impacts both the other three participants and patients themselves. This presentation constitutes one clinician's/regulator's view of current circumstances and the implications for healthcare delivery in California and beyond. • Discussion and public input	David Bliss, Board Member (or designee)	
11	**Presentation: *Bagley-Keene Open Meeting Act and its Requirements for the Board*** • An overview of the requirements of the Act • Discussion and public input	James Yi, HCAI Attorney (or designee)	
12	**Review and Approve 2023 Committee Assignments, Goals and Meeting Calendar** • Discussion and public input	Louise Belair, Board Chair Scott Jackson, Board Vice Chair-elect (or designees)	121
13	**OSHPD (formerly the Facilities Development Division) Update** • Workload and performance • Personnel changes • Discussion and public input	Chris Tokas, OSHPD Deputy Director (or designee)	

Item	Subject	Facilitator
14	**Electronic Services Update** • Update on accomplishments in electronic services year-to-date • Discussion and public input	Rob Fisher, OSHPD Compliance Officer
15	**Inspection Services Unit Update** • Inspection Services Unit to provide an update on accomplishments year-to-date • Discussion and public input	Joe LaBrie, OSHPD Inspection Services Unit Supervisor (or designee)
16	**Building Standards Unit Update** • Building Standards Unit to provide an update on accomplishments year-to-date • Discussion and public input	Richard Tannahill, OSHPD Deputy Division Chief (or designee)
17	**Structural Services Section Update** • Structural Services Section to provide an update on accomplishments year-to-date • Discussion and public input	Roy Lobo, OSHPD Principal Structural Engineer (or designee)
18	**Fire Prevention Unit Update** • Fire Prevention Unit to provide an update on accomplishments year-to-date • Discussion and public input	Nanci Timmins, OSHPD Chief Fire Life Safety Officer (or designee)
19	**Comments from the Public/Board Members on issues not on this agenda** The Board will receive comments from the Public/Board Members. Matters raised at this time may be taken under consideration for placement on a subsequent agenda.	Louise Belair, Board Chair (or designee)

The Board may take action under any agenda item. Every effort will be made to address each agenda item as listed. However, the agenda order is tentative and subject to change without prior notice. A 30 to 60-minute lunch (if needed) may be taken some time during the day. For further information about this meeting, please contact Evett Torres at (916) 440-8453, evett.torres@hcai.ca.gov, or sending a letter to 2020 West El Camino Avenue, Suite 800, Sacramento, CA 95833. This agenda and other notices about meetings are posted on the Internet at https://hcai.ca.gov/construction-finance/hbsb/.

Individuals with disabilities may request an accommodation or modification to observe or participate in the meeting by contacting Evett Torres as stated above. Providing your request at least five (5) business days before the meeting will help ensure availability of the requested accommodation.

Board/committee members and members of the public, including HCAI staff, are encouraged to join the meeting and provide public comment virtually through Microsoft Teams.

Masks or face coverings are strongly recommended to everyone attending the meeting in person, regardless of vaccination status.

Microsoft Teams:
For best results, please use Google Chrome or Microsoft Edge browsers to join meeting.

You are NOT required to identify yourself or provide other information to attend or participate in this meeting. If Microsoft Teams requires a name, you may enter "Anonymous." You may also input fictitious information for other requested information if required to attend the meeting (e.g., anonymous@anonymous.com).

DAY ONE—December 7, 2022

Join on your computer or mobile app

- Click here to join the meeting
- Or copy and paste the following link into your browser: https://teams.microsoft.com/l/meetup-join/19%3ameeting_MmJlZWJiNzUtMzljYS00NjNiLWIzZjktOGUzMGJiMDk5YTQ4%40thread.v2/0?context=%7b%22Tid%22%3a%2228891a93-888f-489f-9930-e78b8f733ca6%22%2c%22Oid%22%3a%224afdc7d5-a51c-4637-9e27-755fa3a30732%22%7d
- Meeting ID: 261 058 389 570
- Passcode: JAdngm

Or call in (audio only)

- +1 (916) 535-0978 United States, Sacramento
- Enter Conference ID: 251 205 159#

Or join with a video conferencing device

- 576732194@t.plcm.vc
- Video Conference ID: 117 028 453 0
- Alternate VTC instructions

DAY TWO—December 8, 2022

Join on your computer or mobile app

- Click here to join the meeting

- Or copy and paste the following link into your browser: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZWM4ZGMwZjYtNDc1Mi00NDc5LWJiYjItOGU3NWZhYTIwYTRm%40thread.v2/0?context=%7b%22Tid%22%3a%2228891a93-888f-489f-9930-e78b8f733ca6%22%2c%22Oid%22%3a%224afdc7d5-a51c-4637-9e27-755fa3a30732%22%7d
- Meeting ID: 230 119 016 730
- Passcode: xKDMjD

Or call in (audio only)

- +1 (916) 535-0978 United States, Sacramento
- Enter Conference ID: 303 056 593#

Or join with a video conferencing device

- 576732194@t.plcm.vc
- Video Conference ID: 117 522 545 1
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Sacramento Office:

Free parking is available around the building. Please do not park in reserved spaces.

HCAI Update

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New HBSB Member

Hospital Facilities Manager Representative:

Gary Dunger is a certified California Building Standards Code professional with more than 30 years of experience in health facilities code development, plan review, and construction management.

Mr. Dunger is Executive Director of Facilities Planning, Design and Construction for Cedars-Sinai Health System, where he oversees the development of planning, design, and construction of healthcare facilities from inception through project close-out. He is responsible for directing and managing architectural/engineering firms, general contractors, and assigned Cedars-Sinai Medical Center staff, from initial project inception through successful project completion, with emphasis on HCAI processes, code compliance, and education.

Mr. Dunger spent 18 years with HCAI, Facilities Development Division, with progressive responsibility in healthcare construction plan review, permitting, and oversight. As the Chief Fire and Life Safety Officer, he was responsible for the development, implementation, and oversight of a comprehensive technical training program to standardize HCAI plan review and field operations. As Business Process Manager of the Electronic Services Portal Client Access program, Mr. Dunger developed and implemented policy, business strategies, plans, and procedures relating to technology and electronic services. He also developed extensive training programs that encouraged maximum performance and dedication from employees and facilitated the construction process for clients.

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Full Board

Draft Meeting Report/Minutes

August 11, 2022

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Full Board Meeting

Thursday, August 11, 2022
9:00 a.m. – 3:00 p.m.

Locations:
Department of Healthcare Care Access and Information
2020 West El Camino Avenue Suite 930
Sacramento, CA 95833

Department of Healthcare Access and Information
355 South Grand Avenue Suite 2000
Los Angeles CA 90071

Teleconference Meeting:
HBSB Teams Full Board Meeting

Appointed Members Present
Louise Belair, Chair
David Bliss, Vice Chair
Cody Bartley
Bruce Clark
Deepak Dandekar
Michael Foulkes
John Griffiths
Mike Hooper
Scott Jackson
David Khorram
Marshall Lew
Scott Mackey
Jim Malley
Farzad Naeim
Bruce Rainey

HCAI Staff Present
Elizabeth Landsberg, HCAI Director
Chris Tokas, Deputy Director
Arash Altoontash, Deputy Division Chief
Richard Tannahill, Deputy Division Chief
Joe LaBrie
Roy Lobo
Carl Scheuerman
Ali Sumer
Nanci Timmins
James Yi, HCAI Attorney
Veronica Yuke

HBSB Staff Present
Ken Yu, Executive Director
Evett Torres

Director-Appointed Ex-Officio Members Present
Bert Hurlbut
Michael O'Connor

1. Call to order and Welcome

Louise Belair, Board Chair, called the meeting to order on August 11, 2022, at 9:00 a.m., and HBSB Executive Director Ken Yu, called roll.

2. Roll Call and Meeting Advisories/Expectations

Nine members of the Board present constitutes a quorum. There being fifteen present at the time of roll, a quorum was established.

Mr. Yu read the public announcement regarding COVID-19, meeting rules and procedures.

3. Department of Health Care Access and Information (HCAI) Update

Presenter: Elizabeth Landsberg, HCAI Director

Ms. Landsberg swore in new HBSB members Cody Bartley (General Contractor Representative) and John Griffiths (Electrical Engineer Representative). She also recognized two outgoing HBSB members, Pete Kreuser (General Contract Representative) and Roy Lopez (Electrical Engineer Representative) and thanked them for their good work. Ms. Landsberg acknowledged Mr. Jackson's second-term appointment.

Ms. Landsberg stated that the proposed Office of Health Care Affordability was included in this year's budget and will be established within HCAI. She reported that HCAI will be overseeing the CalRx Biosimilar Insulin initiative. Ms. Landsberg indicated that HCAI would help support Health Care Profession Development and that HCAI has been mandated to oversee the State's Reproductive Health Care Access Initiative.

Ms. Landsberg announced that HCAI received funding for the Small and Rural Hospital Relief Program and added that HCAI is establishing the Hospital Equity Reporting Program which requires hospitals to prepare and file an annual equity report with HCAI.

Discussion and Input

Dr. Bliss and Ms. Belair thanked Pete Kreuser and Roy Lopez for their many years of great service and stated that it was a pleasure working with them on the board.

Mr. Mackey thanked and appreciated Mrs. Landsberg for the detailed report.

Informational and Action item

- None

4. Nominations for HBSB Chair and Vice-Chair Kick Off

Presenter: Michael Foulkes and Michael O'Connor, Nominating Committee

Mr. Foulkes gave out names of nominees for the positions

- Louise Belair – to continue as chair
- Scott Jackson nominated as vice-chair

Discussion and Input

Ms. Belair and Mr. Jackson thanked the board for the nominations.

Information and Action item

- None

5. Overview and Approval of the April 28, 2022 Full Board draft Meeting Report/ Minutes

Presenter: Louise Belair, Board Chair

Ms. Belair reviewed:

- HCAI program updates presented by Ms. Landsberg. The highlights were; bills and proposed budgets for the Office of Health Care Affordability, Labor Welfare Director Association, Reproductive health capital and clinical infrastructure proposal, Community- benefit funding proposal, Staffing and funding to implement SP-395, and The California Affordable Drug Manufacturing Act – Cal Rx program
- Acknowledgment of Paul Coleman's letter to the board
- Appointment of a nomination committee
- Inspection Services Unit Update on ISU activities and presentation about eTIO
- Building Standard Unit update in which Mr. Tannahill talked about the Emergency Design Guide, CDPH Coordination Approvals, and a review of upcoming webinars

- Structural Service Update on extension categories, dates and facilities-specific extension dates, description of the SSU programs, and status of OSP, OPM and OPAA
- The Fire Prevention Unit update focused on a review of the involvement of the FPU in state and local organizations.
- FDD update where Mr. Tokas discussed the transformation of OSHPD to HCAI and reviewed the goals

Discussion and Input

Ms. Belair noted the following corrections that needed to be made to the meeting report:

- Page 2, line 16: Change “SP” to “SB”
- Page 5, line 14 and Page 6, line 1: Change “2021” to “2022”
- Page 18, line 16: Change “Adornment” to “Adjournment”

Information and Action item

- None.

MOTION: [Khorram/Rainey]

The board voted to approve the April 28, 2022, Full Board draft report/minutes with corrections noted. Mr. Yu took a roll call vote.:

- David Bliss - yes
- Bruce Clark - yes
- Deepak Dandekar - yes
- Michael Foulkes - yes
- Mike Hooper - yes
- Scott Jackson - yes
- David Khorram - yes
- Marshall Lew - yes
- Roy L. Lopez - yes
- Scott Mackey - abstain
- Jim Malley - yes
- Farzad Naeim - yes

- Bruce Rainey – yes
- Cody Bartley – abstain
- John Griffiths - Yes

6. Instrumentation Committee

Presenter: Marshall Lew, Committee Chair

Mr. Lew gave an overview of the April 15, 2022 draft meeting report/minutes. The topics discussed were:

- First draft White Paper, “The Benefits of Strong Motion Instrumentation in Hospital Facilities.”
- There was general consensus that the draft White Paper should focus on non-technical communities like hospitals and decision-makers.
- The White Paper was to be put into a single coherent document and include an introduction and conclusion.

Mr. Lew gave a brief overview of the draft White Paper:

- Introduction – talks about California being a high seismic region and gives examples of past damages from major earthquakes.
- Current status of HCAI instrumentation – this section has a brief of how many hospitals are instrumented.
- Utility of hospital instrumentation – this topic briefs about updating different design codes.
- Improving the usefulness of current strong motion data and network by using new technology to improve the process.
- The role that alternative instrumentation and/or data analytics can play in the future.
- Improving community awareness of the value of strong motion instrumentation.

Discussion and input

Ms. Belair asked if the presentation of the White Paper was the less technical version of the draft. Mr. Lew answered that it was the first version of the non-technical draft but the committee is still working on tailoring it for a non-technical audience.

Mr. Khorram asked if the committee has considered sensors that do not need batteries or sources of energy; the batteries get energy through waves. Mr. Lew stated that he was not aware of the batteries. Mr. Naeim suggested that this kind of technology is not reliable because instrumentation works on measuring the vibration of the building for calibration and not only during earthquakes. Mr. Khorram explained that the system relies on microwaves and not earthquake waves and is always on. Mr. Naeim stated that a sensor needs to have gone through testing to show a range of accuracy that is needed for reliably measuring the response of the building.

Mr. Naeim said that the cost of instrumentation depends on where the sensor is used. The first class of sensors, which are expensive, are used for validity, checking structures, and learning from them in order to improve codes. The second class of sensors, which do not cost as much, are used to provide a warning immediately after an earthquake to the status of the building. Mr. Naeim suggested that this information can be used to determine the priority of hospitals' physical evaluation.

Information and Action item

- None.

MOTION: [Lew/Mackey]

The board unanimously voted to approve the April 15, 2022, Instrumentation Committee draft report/minutes.

7. Codes and Processing Committee

Presenter: Michael O'Connor, Committee Chair

Mr. O'Connor reported on the May 12, 2022, and July 14, 2022, Codes and Processing Committee meetings. Mr. O'Connor stated that the May 12, 2022, meeting had four topics:

- California Building Standards Code Revision Cycle for 2022 – the final copies had been completed and will be published in July 2022. Enforcement will begin in January 2023.
- Draft Policy Intent (PIN) / Code Application Notice (CAN) for Emergency Projects - initial development of proposed PIN 72
- Emergency Design Task Force – the task force is updating and receiving comments for the design guide.
- HCAI Pre-Approved Details (OPD)

Mr. O'Connor reported that the July 14, 2022, meeting focused on three topics:

- Draft Policy Intent (PIN) / Code Application Notice (CAN) for Emergency Projects
- California Building Standards Code Revision Cycle for 2022 and Intervening Code Cycle
- HCAI Pre-Approved Details (OPD)

Discussion and input

Mr. O'Connor noted the following corrections that needed to be made to the July 14, 2022 Codes and Processes Committee meeting report:

- Page 7, line 1: Delete and Plumbing Codes"
- Page 7, line 15: Change "Pluming" to "Plumbing"

Information and Action item

- None.

MOTION: [O'Connor/Dandekar]

The board unanimously voted to approve the May 12, 2022, and July 14, 2022, Codes and Processing Committee draft report/minutes with corrections noted.

8. Education and Outreach Committee

Presenter: Mike Hooper, Committee Chair

Mr. Hooper reported on the May 25, 2022, Education and Outreach Committee meeting. The topics discussed were:

- Webinar Topics:
  - Off-site fabrication/ pre-assembled components
  - California Administration Code
  - Policy Intent Notice (PIN) 50
  - Emergency Process Design Guide
  - Pre-approvals related to Medicine Dispensing Units and Emergency projects
  - OSHPD 3 and HCAI special seismic certification presentation

- Testing, Inspection, and Observation program
- PINs and CANs (Fire prevention unit topic)

- The 2023 seminar should be geared around HCAI publication on Tips From the Experts.

Discussion and input

- None.

Information and Action item

- None.

MOTION: [Hooper/Bliss]

The board unanimously voted to approve the May 25, 2022, Education and Outreach Committee draft report/minutes.

9. Energy and Conservation Management Committee

Presenter: Scott Jackson, Committee Chair
Mr. Jackson gave an overview of the June 14, 2022, Energy and Conservation Management Committee meeting. Topics discussed were:

- Microgrid Task Force Updates
- Resiliency for Healthcare Facilities

Mr. Jackson said the list of follow-up Microgrid information presentations are:

- CSHE California Society of Hospital Engineers Panel Presentation for SOCAL Long Beach, CA September 20, 2022
- CSHE California Society of Hospital Engineers Panel Presentation for NOCAL Fairfield, CA October 20, 2022
- Heath Facilities Symposium & Expo - Long Beach September 27th-29th 2022; Implementing Healthcare Microgrids at New/Existing Facilities
- Microgrids 2023 – Anaheim, CA May 16th & 17th 2023

Discussion and input

Dr. Bliss raised awareness of decarbonization.

Information and Action item

- None.

MOTION: [Jackson/Clark]

The board unanimously voted to approve the June 14, 2022 Energy and Conservation Management Committee draft report/minutes.

10. Structural and Nonstructural Regulations Committee

Presenter: Jim Malley, Committee Chair

Mr. Malley gave a summary of the June 22, 2022 Structural and Nonstructural Regulations Committee meeting:

- Discussion on HCAI PIN 71 “Compliance plan requirements for participants in the Small and Rural Hospital Relief Program”
- Proposed amendments to the California Existing Building Code, Title 24, Part 10
- Proposed amendments to the California Existing Building Code, Title 24, Part 2
- Updates to PIN 55, HCAI Special Seismic Certification Approval (OSP)
- Updates to PIN 58 HCAI Preapproved Agency for Structural Tests and Special Inspection

Discussion and input

- None.

Information and Action item

- None.

MOTION: [Malley/Hurlbut]

The board unanimously voted to approve the June 22, 2022 Structural and Nonstructural Regulations Committee draft report/minutes.

11. Facility Development Division

Presenter: Chris Tokas, FDD Deputy Director

Mr. Tokas gave the FDD accomplishments which were:

- Technical assistance on a variety of programs
- Electronic plan review
- Matrix Management
- Integrated plan review
- Behavioral health facilities: Building Standards, Project Streamlining, etc.
- Off-site fabrication/Modular Construction Programs
- Microgrid Initiative, pilot projects and updates to the codes

Mr. Tokas gave an overview of the advisory guide on General Acute Psychiatric Facilities:

- Applicable Codes
- Checklist
- Anti-ligature products
- Patient Risk Assessment Plan, Check List, and examples
- Sample AMCs

Mr. Tokas expressed that HCAI is in collaboration with licensing tasks groups to assist with licensing, which include:

- HCAI/CDPH/Board of Pharmacy
- HCAI/Clinic Advisory Committee (CAC)
- HCAI/CAHF Coordination

Mr. Tokas explained the requirements for HCAI/CDPH/ Board of Pharmacy.

- Rewrite Title 22
- Processes for survey discovery of unauthorized projects
- COVID Reset coordination and other emergency/disaster operations.
- Rewrite the Functional Program to improve communication. The guide has already been published and can be found on the HCAI website.

- Methods of Procedures Guidance (MOP)

Mr. Tokas stated that FDD staff will not review and/or ask for MOP for situations or conditions that fall under CDPH's jurisdiction. In actual construction, work needed to accommodate shutdowns of systems, temporary uses, and temporary services must be shown on the plans as part of the scope of a project or submitted as a “Temporary Permit" or ACD to be reviewed and permitted by FDD.

Mr. Tokas announced the Small and Rural Hospital Relief Program project timeline:

- June 2022 - Program eligibility contact form available to confirm hospital eligibility and began receiving technical assistance from HCAI’s Seismic Compliance Unit
- July to December 2022 -
    - Retailers began collecting Electronic Cigarette Excise Tax on July 1, 2022.
    - Grant application development continues.
    - Seismic Compliance Unit provides technical assistance and accepts seismic compliance plans.
    - Complete development of online application portal to accept electronic applications.
- Jan to March 2023-
    - Begin receiving program grant applications.
    - Compliance project delivery plans approved by FDD for eligible facilities.
    - Screening, scoring, and ranking of applicants.
- April 2023 and onwards –
    - Award initial round of grants based on funds available.
    - Ongoing awarding of funds as they become available, timed to meet approved compliance project schedules.

Discussion and input

Mr. Stasney gave a report on the Kaiser San Marcos hospital building project. The management teams involved in this project are HCAI, Kaiser Permanente, DPR Construction, and CO Architects. The project was to take 49 months to be completed.

Mr. Tokas explained the levels of inspection required during pre-fabrication:

- Off-site construction, fabrication, pre-assembly
- During delivery
- After the fabrication has been erected in place

Mr. LaBrie stated that in on-site construction, the IOR must be present at the project site whenever a special inspector or approved agency is on-site. In off-site construction, the TIO shall include procedures that validate the acceptability of the prefabricated systems and components delivered to the on-site location.

Information and Action item

- None.

12. Inspection Service Unit

Presenter: Joe LaBrie, FDD Inspection Services Unit Supervisor

Mr. LaBrie explained the Inspection Service Unit (ISU) activities:

- Temporary Support of Field Compliance Units (South, North, Central, Coastal)
- IOR Monitoring and Enhanced Training
- Ten Minute Field Brief Advice (FBA10) (Suspended)
- ISU Field Tip of the Day
- Field Operations Manual Update
- eTIO
- ISU Preconstruction and Construction Advisory Seminars
- IOR / CHI Academy
- Field Staff Onboarding Curriculum
- Monthly Compliance Officer Training
- IOR Certification and Recertification- planned webinars and seminars for certification of IORs

Discussion and input

- None.

Information and Action item

- None.

13. Building Standards Unit Update

Presenter: Richard Tannahill, FDD Deputy Division Chief

Mr. Tannahill stated that the building code was published on July 2022 and will go into effect January 2023. He said that there is proposed language for the changes in the intervening code cycle, which is in the initial stage. Mr. Tannahill explained the coordination with CDPH which includes:

- Rewriting Title 22
- Structural Compliance Unit has been working with CDPH to review and approve the water rationing plans
- Processes for survey discovery of unauthorized projects
- Rewriting functional program
- Dietary Functional Program/Guide
- COVID Reset coordination and other emergency/disaster operations have been pushed out to align with Governor's Emergency Declaration

Coordination with the Clinic Advisory Committee (CAC)

- Quarterly meetings are ongoing
- Clinic Plan Review Checklist has been updated
- Outpatient Surgery Checklist added
- OSHPD 3 Clinic Webinars being scheduled for late 2022

Coordination with California Association of Health Facilities (CAHF)

- Reinitiating quarterly meetings
- Working with HCAI webinars
- Outreach

Mr. Tannahill mentioned upcoming webinars:

- 2022 Building Code Revisions – October 2022
- Working with OSHPD – TBD
- Integrated Review (PIN 50) – TBD
- Emergency Design Guide – TBD

- Construction Project Responsibilities - TBD

Mr. Tannahill talked about the two new PINS which are PIN 72 Emergency Work Authorization, and PIN 73 Treatment and Class 1 Imaging Rooms.

Discussion and input

Mr. Griffiths asked where to find the recent version of Title 22. Mr. Scheuerman answered that Title 22 is available online, search CCR Title 22. Mr. Tannahill iterated that the last version of Title 22 was 1972 but some minor changes have been made. Title 22 deals with operation issues while Title 24 is building standards.

Mr. O'Connor asked where to find the Dietary Guidelines update online. Mr. Tannahill answered that it is found under Training and Resources on the HCAI website.

Ms. Belair asked about the Emergency Guide publication. Mr. Tannahill replied that the guide is in its final draft. Mr. Griffiths asked if the guide refers to the office as OSHPD or HCAI. Mr. Tannahill said that the office is referred to as HCAI.

Information and Action item

- None.

14. Structural Service Section Update

Presenter: Roy Lobo, FDD Principal Structural Engineer
Mr. Lobo gave an update on the Seismic Compliance Unit. He said that SPC-5 includes buildings currently under construction and SPC is for non-building structures such as equipment yards, and cooling towers that are still under construction.

Mr. Lobo said that the reduction in SPC-1 is due to AB 2190 program which targets SPC-1 facilities. Mr. Lobo detailed that there are 166 SPC-4D projects at 69 facilities, seven buildings are being upgraded, and 24 buildings are already approved and in construction.

Discussion and input

Mr. Scheuerman explained that SB 395 is a grant program for qualified hospitals to apply and receive funding for seismic safety compliance projects. The mission of the grant is to support and enhance the effort of Small, Rural, and Critical Access Hospitals through funding and technical assistance for building safety and resiliency.

To get a grant application, Mr. Scheuerman said that the first step is to establish eligibility based on the rule of Senate Bill 395. Step two is to have a current compliance plan on file, with the Seismic Compliance Unit.

Mr. Lobo briefed on the overview topics that Structural Service Section deals with.

- HCAI preapproved programs
- Geotechnical reviews
- Structural/nonstructural California amendments
- Structural training and support to the regions
- Alternate methods of compliance
- Management of contract-out plan reviews
- Seismic instrumentation

PIN 58 has been updated to read that all applications for HCAI Preapproved Agencies have to be done online.

Mr. Mackey asked if the OPMs from April are still the same ones. Mr. Lobo answered that they are not the same ones, they just happen to be the same number.

Information and Action item

- None.

15. Fire Prevention Unit update

Presenter: Nanci Timmins, FDD Chief Fire Life Safety Officer

Ms. Timmins stated that the 2022 code changes have been submitted and are already in print. The units participated in the CAFAA event which has training for the Fire Prevention industry. Ms. Timmins mentioned that the unit also participated in the California Fire Prevention Institute and OSHPD 3 presentation. Another event the unit participated in was AIA, which was a combination with COFFMAN Engineers. The unit presented fire/life safety and HCAI 2022 code change updates. Ms. Timmins said that the unit also participated in the California Society for Healthcare Engineers presentation topics around smoke control.

Ms. Timmins gave a list of webinars to be held:

- Fire Resistance Rated Assemblies Part 1, 2 and 3.
- Engineering Judgements
- IOR Recertification
- Emergency Responder Radio Coverage

- Field visit reports
- QA/QC
- Roll down doors
- Concealed spaces
- Construction types
- Special Requirements based on Occupancy
- Occupancy Types
- Area and Height allowances
- HVAC shutdown
- Continued Academy and UC training

Ms. Timmins added a list of committees that the unit participates in:

- NFPA
- ICC Healthcare Committee
- Fire Alarm Advisory Board
- SFM

Discussion and input

Mr. Griffiths asked if there was a document that showed overlap within the jurisdiction. Ms. Timmins answered that there is a document discussing differences between NFPA 101 and the code.

Information and Action item

- None.

16. HBSB Chair and Vice Chair Elections

Presenter: Michael Foulkes and Michael O'Connor, Nominating Committee

Discussion and input

Mr. Foulkes proposed Louise Belair for chair and Scott Jackson for vice chair positions. Dr. Bliss seconded the nominations

Information and Action item

- None.

MOTION: [Foulkes/Bliss]

The board unanimously voted to appoint Louise Belair and Scott Jackson for HBSB chair and vice chair positions for the year 2023.

17. Comments from the public/committee members on issues not on this agenda

Presenter: Louise Belair, Board Chair

Discussion and input

- None.

Information and Action item

- None.

18. Adjournment

Ms. Belair adjourned the meeting on August 11, 2022, at approximately 3:25 p.m.

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Instrumentation Committee

Draft Meeting Report/Minutes

July 5, 2022
September 29, 2022

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AMENDED

HCAI Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Instrumentation Committee

Tuesday, July 5, 2022
10:00 a.m. – 4:00 p.m.

Locations:
Department of Health Care Access and Information
2020 West El Camino Avenue Suite 930
Sacramento, CA 95833

Department of Health Care Access and Information
355 South Grand Avenue Suite 2000
Los Angeles CA 90071

Teleconference Meeting Access:
HBSB Teams Instrumentation Committee
Access Code: 741-653-566

Committee Members
Marshall Lew, Chair
Bruce Clark, Vice Chair
Jim Malley
Tim McCrink
Farzad Naeim

HCAI Staff
Arash Altoontash
Richard Tannahill
Hussain Bhatia
Roy Lobo
James Yi

Consulting Members
Hamid Haddadi
Moh Huang
Tony Shakal

HBSB Staff
Ken Yu, Executive Director
Evett Torres
Veronica Yuke

1. Call to order and Welcome

Marshall Lew, Committee Chair, called the meeting to order on July 5, 2022, at 10:00 a.m., and Veronica Yuke called roll.

2. Roll Call and Meeting Advisories/Expectations

Five members of the Committee present constitute a quorum. There being eight present at the time of roll, a quorum was established.

Ms. Yuke read the public announcement regarding COVID-19, meeting rules and procedures.

3. Review and approve the draft April 15, 2022 report/minutes

Presenter: Marshall Lew, Committee Chair

Discussion and Input

Mr. Lew said that there were no corrections in the report/minutes and called for a motion to approve.

MOTION: [Malley/Naeim]

The committee voted to approve the April 15, 2022 meeting report/minutes.

Informational and Action item

- None

4. The draft White Paper on "The Benefits of Strong-motion Instrumentation in Hospital Facilities"

Presenter: Marshall Lew, Committee Chair, and Fazard Naeim, HCAI

Discussion and Input

Mr. Clark was concerned about the evaluation of whether a hospital has been damaged or not. Mr. Naeim answered that the White Paper presents some case studies where the recorded strong motion instrumentation data recorded at the site and at the building was used to estimate and confirm what happened at that particular building.

Mr. Clark talked about a deficiency in the Community Seismic Network (CSN) approach to provide seismic motions at different levels within a building. Mr. Naeim added that application of CSN is not limited to free field motions as the CSN-type instrumentation can be installed at different levels in a building. The current operational CSN network has concentrated on measuring "free-field ground motions. Mr. Naeim suggested that

the last part of the paragraph be eliminated to be clear about the CSN approach. Mr. Haddadi mentioned that it would be wise not to conclude anything on the White Paper on low resolution instruments until evaluation is complete.

Mr. Bhatia said that HCAI has provided information on the instrumented data and requested that the URLs be mentioned on the White Paper. Mr. Lew suggested that information be put in the conclusion section.

Mr. Lew asked Mr. Malley about his experience regarding low-cost instrumentation. Mr. Malley gave an example of when a building was instrumented after an earthquake and the results were analyzed fairly quickly which gave a detailed analysis of the building; an example was given for a building that was instrumented in Utah and experienced the March 18, 2020, Magma earthquake. Mr. Farzad requested if Mr. Malley could send the results for the building to be included in section three. Mr. Malley answered that he could do that.

Mr. Haddadi suggested that the White Paper be clear on the goal and application of high-resolution instrumentation and low-resolution instrumentation. Mr. Naeim said that if the White Paper gets technical into the different types of resolutions, there will be loss of audience who are not familiar with the technical terms. Mr. Naeim suggested an additional paragraph to section 5 that describes the value high resolution instrumentation post-earthquake has compared to low resolution instrumentation.

Mr. Lobo asked if the low level resolution instrumentation was cheaper in terms of maintenance and monitoring. Mr. Naeim said that low level instrumentation is cheaper than high level instrumentation.

Mr. Haddadi suggested that instead of using a black box at the building that can be damaged in case of an earthquake or loss of data due to disruption of internet services, data be gathered immediately to a cloud server. Mr. Naeim answered that the “black box” is not necessarily physical, it is a comparison to the information that can is obtained from airplane incidents and how instrumentation can work the same way. So, it is a virtual black box in the clouds.

Mr. Lew asked Mr. Malley how information about the Magma earthquake was obtained. Mr. Malley answered that the data was posted automatically on the website from a notification from the supplier, then the data is downloaded.

Mr. Clark suggested that the White Paper include a section that details how the data is obtained, processed, and stored in the event there is loss of communication or loss of Wi-Fi.

An interested party asked if the White Paper poses competition between public and private entities. Mr. Lew answered that the purpose of the White Paper is to provide information about high resolution or low resolution instrumentation and promote the use of instrumentation as a whole.

Mr. Malley pointed out specific pages that needed editing:

- Page 5 - strengthen non-structural components
- Page 8 - clarification on instrumentation on buildings that have alternate means of compliance permit
- Page 21 - paragraph 3 and 4 to be merged since they talk about the same issue
- Page 24 – clarification on evacuation process on critical care hospital buildings

On page 7, Mr. Huang suggested the White Paper use a regular hospital building as an example. On page 9, Mr. Huang suggested they use a more updated map. Mr. Lobo stated they will update a new map. Mr. Naeim suggested that on page 7, the hospital be replaced with Olive View hospital since it is already used, and the report and data is available.

Mr. Huang asked the order in which the hospital buildings are aligned in Table A1. Mr. Haddadi answered that the order of the table was by station number. Mr. Naeim suggested the table be ordered alphabetically.

Mr. Lew suggested figure 8 use a map that shows locations and that the site number be removed so as to be less confusing. Mr. Haddadi said that figure 8 would have a new map and leave out the figures.

Mr. Lobo talked about changes on:

- Page 10 - hospitals be clarified as being under HCAI jurisdiction
- He suggested a language change on page 15, paragraph 6 and on page 20. Additional language on page 24, the first paragraph.
- Mr. Lobo said that the historical hospital instrumentation projects need to be added in Page 19.

Mr. Haddadi said that using MEMS technology may be too advanced for the White Paper because the technology is still in research. Mr. Naeim said that the MEMS technology can be potentially used, and other types of technology can be used.

Information and Action item

- None.

5. Comments from the public/committee members on issues not on this agenda

Presenter: Marshall Lew, Committee Chair

Discussion and input

- None

Information and Action item

- None.

6. Adjournment

Mr. Lew adjourned the meeting on July 5, 2022, at approximately 11:39 a.m.

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HCAI Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Instrumentation Committee

Thursday, September 29, 2022
10:00 a.m. – 4:00 p.m.

Teleconference Meeting Access:
HBSB Teams Instrumentation Committee
Access Code: 643-293-31

Committee Members
Marshall Lew, Chair
Bruce Clark, Vice Chair
Jim Malley
Farzad Naeim
Jennifer Thornburg

Consulting Members
Hamid Haddadi
Moh Huang
Tony Shakal

HCAI Staff
Roy Lob
Ali Sumer
Erol Kalkan
James Yi

HBSB Staff
Veronica Yuke
Evett Torres

1. Call to order and Welcome

Marshall Lew, Committee Chair, called the meeting to order on September 29, 2022, at 10:00 a.m., and Veronica Yuke called roll.

2. Roll Call and Meeting Advisories/Expectations

Five members of the Committee present constitute a quorum. There being eight present at the time of roll, a quorum was established.

Ms. Yuke read the public announcement regarding COVID-19, meeting rules and procedures.

3. Review and approve the draft July 5, 2022 report/minutes

Presenter: Marshall Lew, Committee Chair

Discussion and Input

Mr. Lew noted that the date written in the adjournment should have been July 5, 2022.

MOTION: [Malley/Naeim]

The committee voted to approve the July 5, 2022 meeting report/minutes as corrected.

Informational and Action item

- None

4. The draft White Paper on "The Benefits of Strong-motion Instrumentation in Hospital Facilities"

Presenter: Marshall Lew, Committee Chair, and Farzad Naeim, Committee Member

Discussion and Input

Mr. Naeim commented that CGS updated the map and the table in Appendix A was updated to show hospitals that had been instrumented, based on their geographical locations and alphabetical order.

In the introduction text, Mr. Lew broke up the paragraph since the sentence was too long. Mr. Naeim recommended to take out a sentence that was referring to a companion document that is not yet available.

There were changes suggested in Chapter 2:

- First paragraph – In the last sentence, removed of the words "the" and "useful"
- Second paragraph – last sentence, changed the word "may" to "can"
- Third paragraph – Mr. Clark suggested that the last sentence be split into two

- Fourth paragraph – Mr. Lobo suggested the removal of the phrase “deemed as experimental”. Replaced the word “permitted” with “codified in”

Changes suggested in Chapter 3:

- Changed the topic to “The Benefits of Hospital Instrumentation”
- In the sentence referring to the Black Box, “concept” was changed to “that of”
- Changed internet “clouds” to “cloud”

Changes suggested in Chapter 4:

- The topic was changed to “Increasing the Usefulness of Strong Motion Data and Networks”
- In Figure 17, topic was changed to “The concept of black boxes in buildings”
- The last two sentences on page 18 indicated that software development was to be between HCAI or CSMIP and did not leave room in case of other software developers, therefore the last two sentences were eliminated.

Changes suggested in Chapter 5:

- The topic changed to “The Future of Alternative Instrumentation and Data Analytics”
- The caption on Figure 18 changed to “A typical MEMS sensor which can be used measure acceleration, tilt, pressure and humidity”
- On page 22, the first paragraph, first sentence, the word “surgeon” changed to “facility managers” since it is not the work of the surgeon to make structural decisions; also, the second sentence was deleted
- The third sentence of the first paragraph was deleted because it was repetitive on the use of MEMS.
- The first sentence of the third paragraph was deleted because ShakeMap does provide information minutes after an earthquake
- Added the words “ShakeCast” and “ShakeMap” since both can be used to provide shaking intensity information and inspection priority
- The last sentence of the third paragraph was separated into another paragraph so that the third paragraph only address ShakeMap and ShakeCast.
- The third paragraph was moved to Chapter 4.

- The California Department of Public Health (CDPH) was added to the list of agencies

Changes suggested in Chapter 6:

- The word HCAI inspectors was removed since HCAI only has engineers, not inspectors
- In the last paragraph on Page 25, Department of Conservation was changed to California Geological Survey (CGS)

Changes suggested in Chapter 7:

- Corrected the issue of using data as singular instead of plural

Mr. Lew asked if it was possible for he and Mr. Naeim to work on the final copy, then send it to committee to review before the next meeting. Mr. Yu answered that would be allowed if it is made available publicly as well.

Information and Action item

- None.

5. Committee Goals for 2023

Presenter: Marshall Lew, Committee Chair

Mr. Lew announced that the next meeting in October 2022, will be on the report from HCAI and CGS about the status of the program. There will also be a discussion on finalizing the White Paper and presenting it to the board.

Discussion and Input

Mr. Lew asked if the White Paper appendices should be published as several documents or if this remains as the final the White Paper. Mr. Naeim recommended that the committee keep this White Paper as the standard document then after the feedback, the committee could decide if there is need for additional documents to be produced.

Mr. Lew suggested the committee, in conjunction with the Education and Outreach Committee, present the White Paper webinar/seminar, targeting hospital administrators. Mr. Naeim agreed with the idea, and suggested that they include people from CSMIP and

individual instrumentation makers. Mr. Clark added that the goal for next year should be to see this White Paper published and used by HCAI and other agencies. Mr. Haddadi added a goal for next year is the major BCP upgrade at CSMIP that is in addition to instrumented hospitals.

Information and Action item

- None.

6. Comments from the public/committee members on issues not on this agenda

Presenter: Marshall Lew, Committee Chair

The next committee meeting will be on October 27, 2022.

Discussion and input

- None

Information and Action item

- None.

6. Adjournment

Mr. Lew adjourned the meeting on September 29, 2022, at approximately 12:35 p.m.

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Seismic Instrumentation of Healthcare Facilities – A White Paper on the Usefulness and Benefits of Seismic Instrumentation of Healthcare Facilities

(Final Draft)

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Seismic Instrumentation of Healthcare Facilities

A White Paper on the Usefulness and Benefits of Seismic Instrumentation of Healthcare Facilities

By the
Hospital Building Safety Board
Instrumentation Committee

Presented to
Department of Health Care Access and Information (HCAI)

2022

Contents

Acknowledgments

The Hospital Building Safety Board Instrumentation Committee of the Department of Health Care Access and Information (HCAI) acknowledges the support, encouragement, knowledge, and wisdom of individuals who contributed to the development of this white paper. These individuals are Steve Bohlen, Tim McCrink, Khalid Mossalam, Daniel Swensen, Evan Reis and Derek Skolnik. In addition, HCAI staff provided important information and data needed for this white paper, and their enthusiastic support and encouragement are gratefully appreciated.

1 - Introduction

California is a high seismic region and, over the years, California hospitals have suffered various degrees of damage and destruction because of earthquakes. Assessing the safety and functionality status of a healthcare facility by the current means of dispatching inspectors and engineers to perform visual inspections is a time-consuming process when time is of critical importance. The status of different facilities must be ascertained with sufficient accuracy as soon as possible so that the health needs of the population can be addressed, and plans be made for sending those in need of healthcare to places where such critical care can be provided at the time it is most needed.

There is no shortage of examples of California healthcare facilities suffering damage during earthquakes. A few examples of such damage and destruction are presented in Figures 1 to 5.

Figure 1. Damage to the San Jose Agnew Mental institution during the 1906 San Francisco earthquake[1]

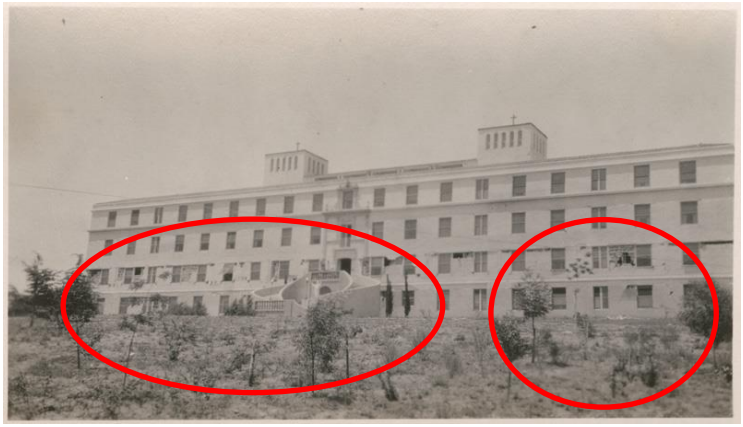


Figure 2. Damage to the Santa Barbara St. Francis hospital during the 1925 Santa Barbara earthquake[2]

[1] https://digitalcollections.detroitpubliclibrary.org/islandora/object/islandora%3A173675
[2] https://calisphere.org/item/57af5e1a488743b85ca15f26c005d972/

Figure 3. Damage to the Seaside Hospital during the 1933 Long Beach earthquake[3]

Figure 4. Damage to the original Olive View Hospital during the 1971 San Fernando earthquake[4]; this facility was demolished and replaced by a new hospital building.

[3] https://calisphere.org/item/16513a666bc7b5e32c461d7f3581a330/

[4]https://library.usgs.gov/photo/#/?category1=earthquakes&collection2=san%20fernando%20earthquake,%20februar y%201971)

Figure 5. Damage to the Kaiser Permanente clinic building in Granada Hills during the 1994 Northridge earthquake[5]

After the 1971 San Fernando earthquake, the California legislature passed the 1972 Hospital Seismic Safety Act (HSSA). This Act called for the immediate strengthening or replacement of all hospital buildings that did not meet the modern building standards. However, it was quickly realized that this was enormous financial burden and thus an economic impossibility. The proposed law was changed to apply only to new hospital buildings and existing hospital buildings undergoing substantial structural remodel or expansion and, therefore, all hospitals licensed at the time were "grandfathered" in, that is, they were not required to meet the new statewide standards. The intent was to bring any building whose useful life was being extended by a modernization program up to the modern seismic standards.

In the Northridge Earthquake of January 1994, several of these older hospitals sustained significant damage. Hospitals built in accordance with the standards of the HSSA Act resisted the Northridge earthquake with minimal structural damage, while several facilities built prior to the HSSA Act experienced major structural damage and had to be evacuated. It must be noted that certain nonstructural components did incur significant damage which resulted in evacuation of a number of these hospitals although these hospitals were HSSA Act compliant.

An important goal of hospitals is to be able to continue to operate and serve the patient community after a major earthquake. However, the building itself may have been damaged and, consequently, may pose a hazard to patients and staff. It is critical that hospital management has the tools and information necessary to make a rapid decision on whether to evacuate, reduce services, or other operation changes. Early assessment of the integrity of the hospital buildings affected by the earthquake is valuable in this decision-making process. For resilience and sustainability of

[5] https://www.latimes.com/local/lanow/la-me-ln-concrete-list-earthquake-20140121-story.html

California's hospitals, it is also necessary to assess their structural condition periodically to facilitate necessary repairs and retrofitting measures.

As it will be explained in this white paper, seismic instrumentation at a relatively modest cost (see Figures 6 to 8) has the potential of providing hospital owners, operators, and public officials with timely information regarding the post-earthquake status and vital information for assessing whether the facility is safe or unsafe, operational or not, and/or whether it should remain in service or be evacuated until repairs are made.

The target audience for this white paper is hospital owners, managers, and operators as well as public officials and the general public.

(a) examples of sensors to measure accelerations

(b) examples of sensors which can be used to directly measure displacements

Figure 6. Sensors that have been and can be installed at hospitals for seismic instrumentation and structural health monitoring.

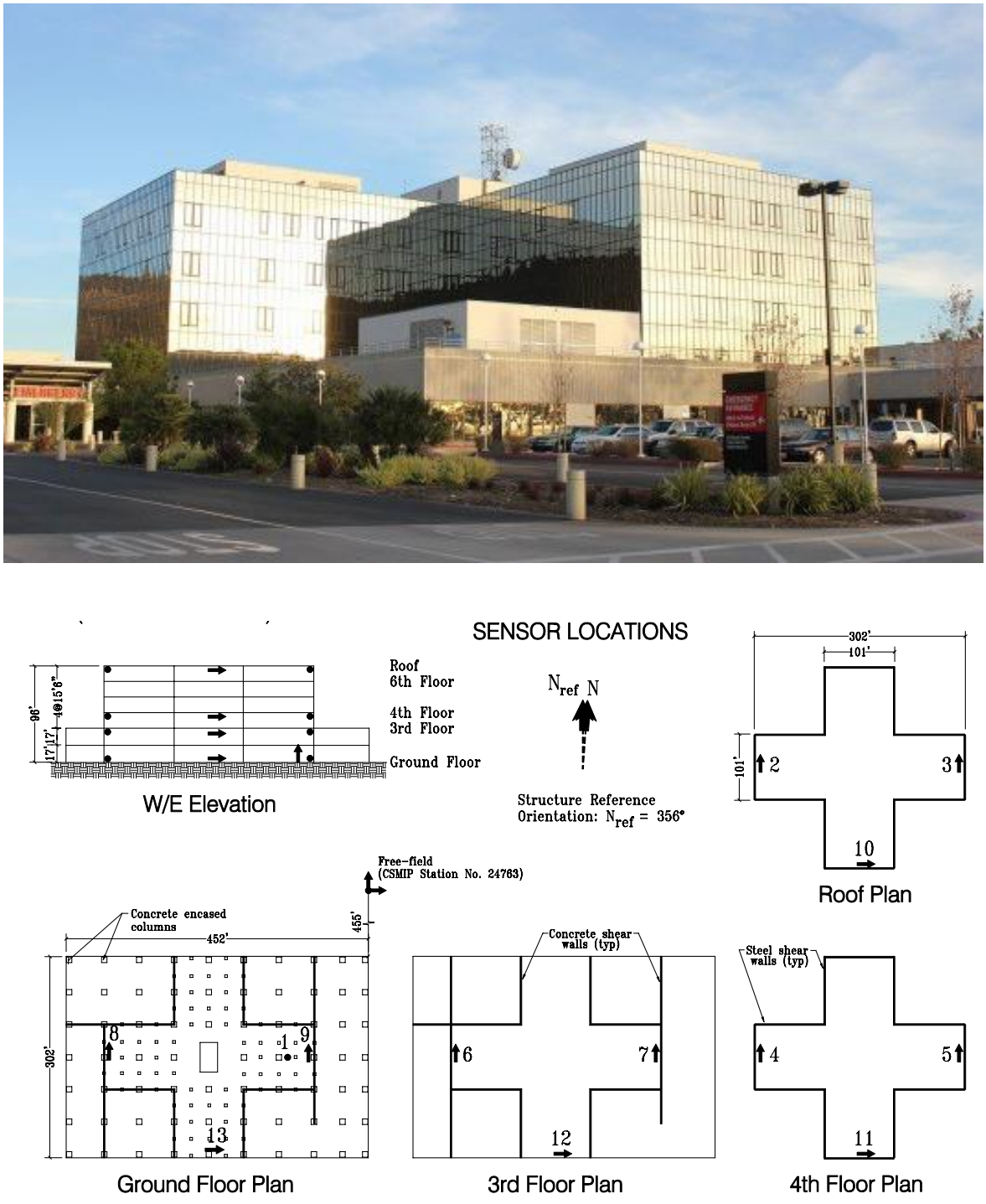


Figure 7. Photo (top) and sensor lay out diagram (bottom) of the six-story Olive View-UCLA Medical Center (New Sylmar County Hospital). Arrows in the schematic diagram show the locations and indicate the directional sensitivity of the strong-motion sensors (accelerometers). The sensors are connected to a central data acquisition system in the building[6].

[6] https://www.strongmotioncenter.org/cgi-bin/CESMD/stationhtml.pl?staID=CE24514&network=CGS

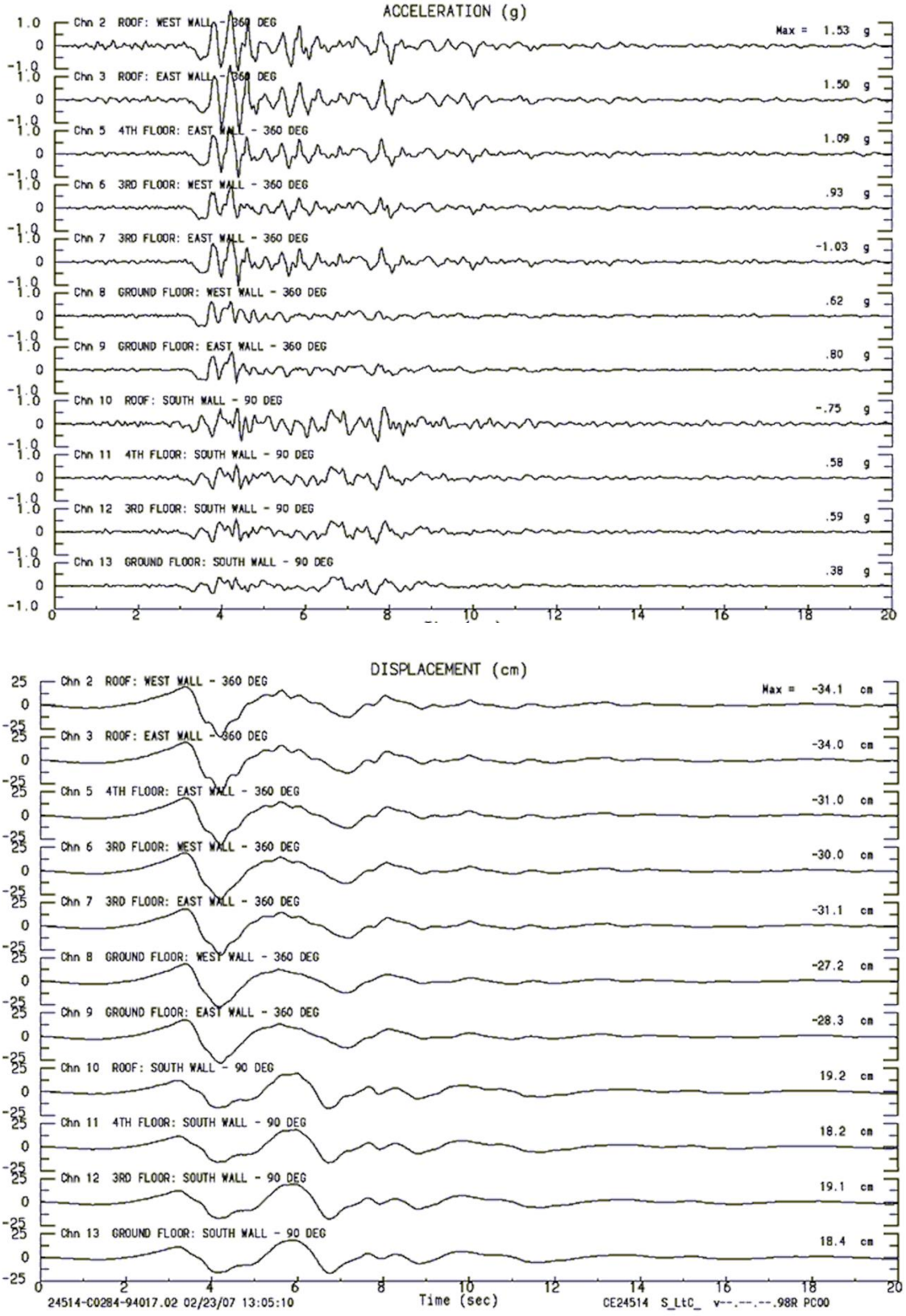


Figure 8. Structural responses (accelerations at the top and displacements at the bottom) recorded by seismic instrumentation system installed at the new Sylmar County Hospital during the 1994 Northridge earthquake[6].

2 – Current Status of HCAI Instrumentation

In response to these needs explained in the previous section, for almost 40 years the Department of Health Care Access and Information (HCAI – formerly the Office of Statewide Health Planning and Development or OSHPD) has long supported and continues to support hospital instrumentation in collaboration with the California Strong Motion Instrumentation Program (CSMIP) of the California Geological Survey (CGS - https://www.conservation.ca.gov/cgs/smip). These instruments record motions in hospital buildings when earthquakes occur and are essential in understanding the behavior of these hospital buildings due to and during the earthquakes.

The records obtained from the sensors in instrumented buildings can also provide the basic source data to improve understanding of the behavior and potential for damage of such structures under the forces generated and imposed by strong earthquakes. As a result of this understanding, design and construction practices can be and have been modified so that future earthquake damage is minimized and the objective of maintaining continuous operation can be met as explained in the next section of this white paper.

CSMIP has been instrumental in performing installation, maintenance, and data recovery from seismic instrumentation in hospitals through an interagency agreement (IAA) with HCAI since 1984. Currently, close to 90 hospital buildings across the state have been instrumented under this IAA under HCAI jurisdiction (see Figure 9 and Appendix A Table). It should be noted that 90 instrumented hospital buildings represent a very small percentage of total hospital buildings in California. Therefore, more widespread instrumentation of hospitals is needed in order to rapidly assess the status of most, if not all, hospital buildings in California following a major earthquake.

Hospital Buildings with seismic isolation and or passive energy dissipation systems are required by the California Building Code (CBC) to be instrumented. Different types of applications of such systems will perform differently. Instrumentation provides the opportunity to reveal which type of such systems is more effective than others. HCAI promotes construction of buildings with new and innovative seismic resistant systems with predictable and improved seismic response and behavior. However, designs of hospitals buildings submitted for review that use such seismic resistance systems which may not yet be codified in the CBC because the building code has not caught up with the latest technology. In those cases, HCAI under the "alternate means of compliance" provisions for lateral force resisting systems permits such systems for hospital construction provided that such buildings are instrumented prior to the issuance of the certificate of occupancy. In such cases, the owner is responsible for the cost of the instrumentation and installation with HCAI being responsible for the maintenance of the instrumentation and data retrieval through CSMIP.

Each year, HCAI provides funding for instrumentation of selected existing hospital buildings. Most hospital buildings are instrumented with accelerometers. Most of the instrumented hospital buildings are in regions of high or very high seismic hazard. With the assistance of the Hospital Building Safety Board (HBSB) Instrumentation Committee, HCAI may select two existing hospital buildings per year to be instrumented with a sufficient array of sensors in addition to any buildings required to be instrumented as required by the CBC. The cost of instrumentation of these buildings selected for instrumentation by the HBSB Instrumentation Committee is paid for by

HCAI. Each such instrumented building has a well optimized number of sensors placed at critical locations to generate meaningful data that characterize the response of the subject buildings. The data that have been collected from instrumented hospital buildings are freely available to the public online from the HCAI sites[7,8] or website of the Center for Engineering Strong Motion Data[9].

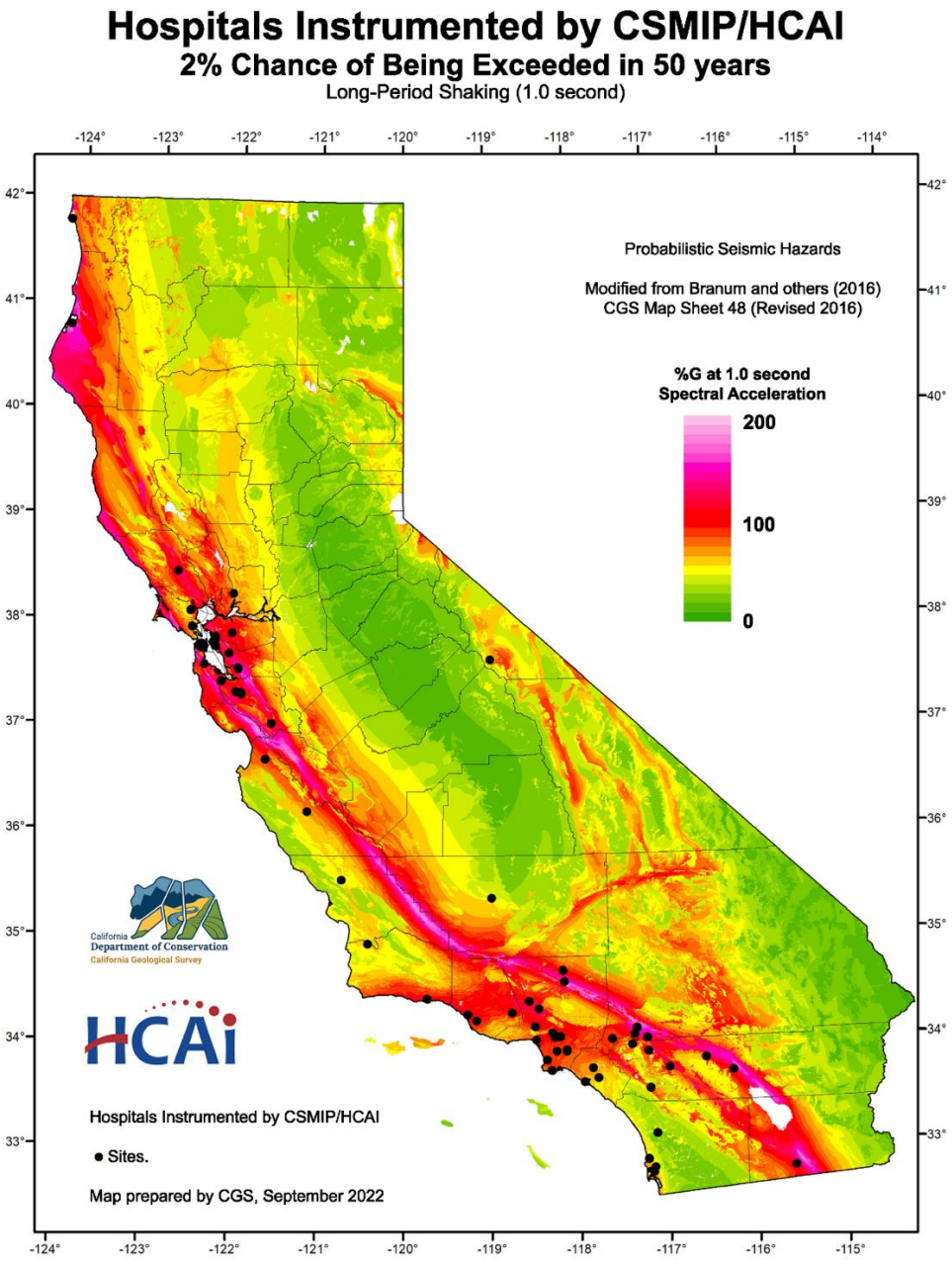


Figure 9. Locations of the instrumented hospital buildings (black dots). The base map is the seismic hazard map of the California. Colors on this map display the levels of horizontal shaking that have a 2 percent probability of exceedance in a 50-year period.

[7] https://hcai.ca.gov/construction-finance/facility-detail/
[8] https://hcai.ca.gov/construction-finance/seismic-compliance-and-safety/emergency-response-operations/
[9] https://www.strongmotioncenter.org/

3 – Benefits of Hospital Instrumentation

There are two distinct benefits which can be obtained by seismic instrumentation of hospital buildings. The first is understanding building seismic responses and improving hospital design codes and practices. This objective can only be achieved by installation of high-resolution sensors and recording equipment of the type CSMIP utilizes for instrumentation of a selected number of hospital buildings. Currently, there are about 90 hospital buildings which are instrumented in such a manner in California. The second, which is the primary focus of this white paper, is that seismic instrumentation combined with adaptation of existing hardware/software/Internet technologies can make the instrumented data recorded during earthquakes, by either high-resolution or low-resolution sensors, almost immediately available for safety assessment of hospital buildings and their content. Ideally with cooperation of hospital owners and managers, design professionals, and private sector sensor manufacturers and service providers, all California hospitals can be instrumented to achieve this second and extremely important objective.

The utilization of seismic instrumentation for identifying and understanding structural damage to hospital buildings from an earthquake or its aftershocks have been demonstrated for a period of more than 20 years by various researchers. Furthermore, the importance and value of instrumentation for identifying the hazards from nonstructural building elements (such as partitions, hung ceilings, and piping), as well as stationary and movable equipment inside and outside of the hospital buildings have been demonstrated by several investigators.

The following simple example of such utility illustrates the need for wide distribution and enhancement of seismic instrumentation of hospital buildings and integrating instrumentation into seismic health monitoring systems for California hospitals. At the time of the 1994 Northridge earthquake, the new Sylmar County Hospital (Figure 10) was one of the hospitals instrumented by CSMIP for HCAI. This hospital building replaced the earlier Sylmar County Hospital that was heavily damaged and had partial collapses by the 1971 San Fernando earthquake (see Figure 4) and had to demolished. The records obtained at this newer facility during this earthquake were presented in Figure 8. This building was specifically designed using a new structural system to resist major earthquakes without significant structural damage which was the objective of building codes enacted after the 1971 San Fernando earthquake and this objective was achieved during the Northridge earthquake. However, the damage to nonstructural components and contents was quite extensive during the Northridge earthquake and resulted in closure of this hospital for an extended period (Figure 11). The major lesson learned from the performance of this hospital was that design for structural integrity by itself does not necessarily provide for continued operation of a hospital because nonstructural elements of a hospital facility also must be designed and installed to resist earthquake forces. This lesson led to new building code regulations regarding design and installation of nonstructural elements. The records obtained from the hospital instrumentation provided valuable insight to draft these provisions.

Figure 10. An outside view of the new Sylmar County Hospital Building (now Olive View-UCLA Medical Center) the day after the 1994 Northridge earthquake.[10]

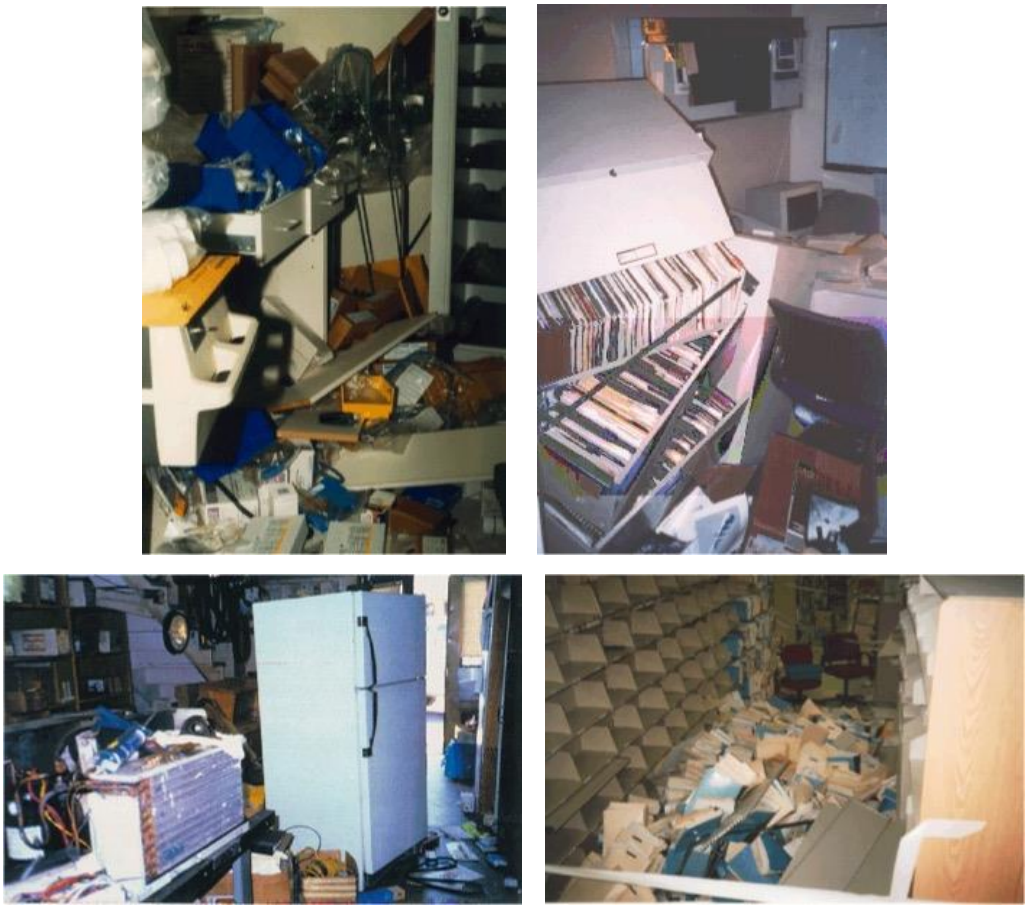


Figure 11. Examples of nonstructural damage at the new Sylmar County Hospital during the 1994 Northridge earthquake[10].

[10] Naeim, F. Hagie, S. Alimoradi, A. and Miranda, E. 2005, *Automated Post-Earthquake Damage Assessment and Safety Evaluation of Instrumented Buildings*, Proceedings of SMIP05 Seminar, Strong Motion Instrumentation Program, California Geological Survey, Sacramento, CA.

With the technology available in 1994, the recordings from the seismic instrumentation required collection and processing which was some weeks and months after the earthquake. The analysis of the data would take more time also. The maximum floor accelerations and story drifts interpreted from the instrumentation data are presented in Figure 12.

If the data summarized in Figure 12 were available immediately after the earthquake and the instrumentation system were connected to a simple application on a computer or a cell phone or tablet application, the data could be processed as shown in Figure 12. The processed data can be passed through some very basic fragility functions (that predict damage), such as those embedded in HAZUS-MH[11] or FEMA P-58[12] documents, then an estimate of the status of the building's structural and nonstructural performance would have been almost immediately available as shown in Figures 13 to 16.

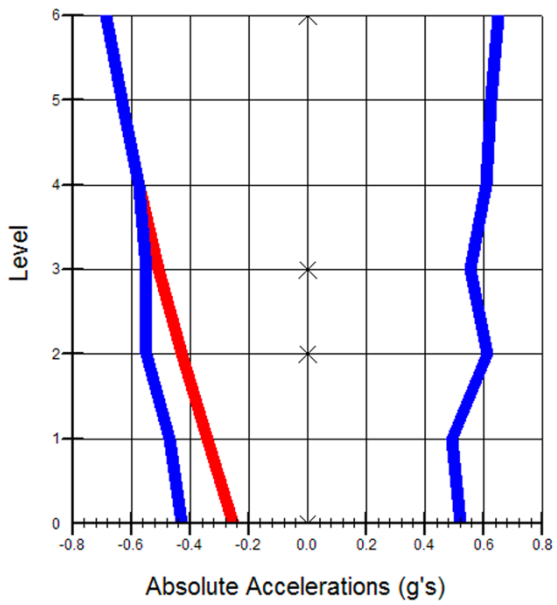
It is important to note that although the simple HAZUS-MH or FEMA-P58 fragility functions used for illustration in this paper were not specifically developed for hospitals as they were mostly generated to estimate damage to structural and nonstructural components of ordinary buildings, application of even these simple fragility functions provide very useful information. Therefore, if hospital building and content specific fragility functions are developed and utilized, an even more accurate picture of the status of the building, its structural, nonstructural, and content conditions can be obtained rapidly after an earthquake.

Applications of newer approaches and technologies have the potential of providing even more accurate, timely and useful information regarding the status of the hospital buildings and their contents. This timely and almost immediate estimation of the structural and nonstructural performance from the instrumentation data will immensely facilitate more timely and more informed post-earthquake response in hospital buildings.

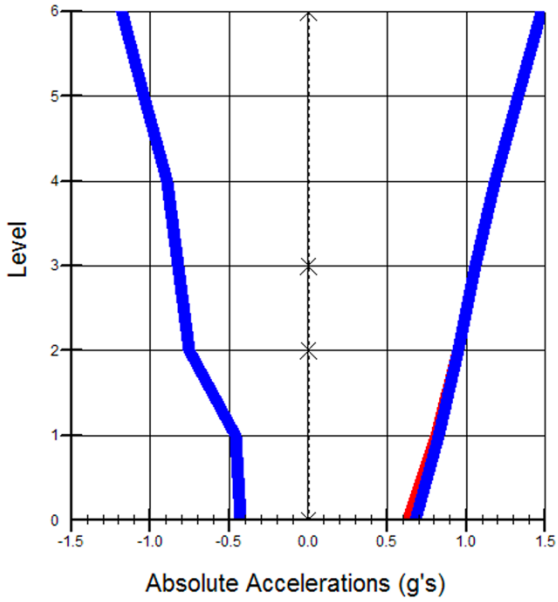
As illustrated in Figures 13 through 16, simple fragility functions which were not specifically developed for hospital buildings were able to confirm the observations of both structural and nonstructural performance of the Sylmar County Hospital in the 1994 Northridge earthquake. Therefore, utilization of newer and building-specific fragility functions and methodologies can result in even more accurate evaluation of the status of the structural and nonstructural systems and components of a properly instrumented hospital building during or rapidly after an earthquake.

[11] Federal Emergency Management Agency (FEMA) 2022, HAZUS Earthquake Model Technical Manual, Version 5.1, https://www.fema.gov/sites/default/files/documents/fema_hazus-earthquake-model-technical-manual-5-1.pdf

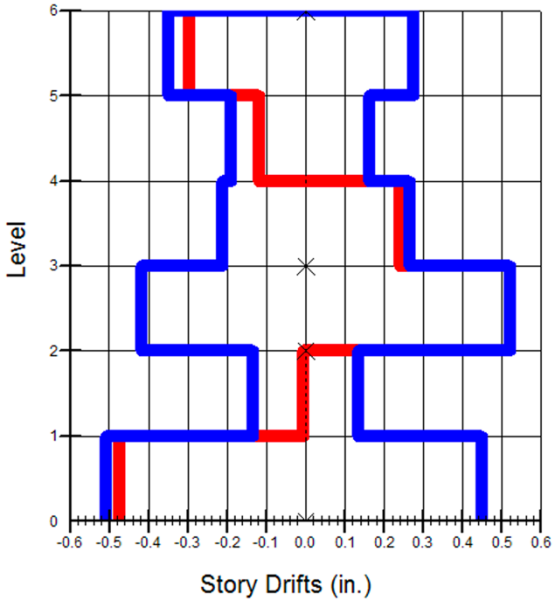
[12] Federal Emergency Management Agency (FEMA) 2018, Seismic Performance Assessment of Buildings, Volumes 1 to 7, https://femap58.atcouncil.org/reports



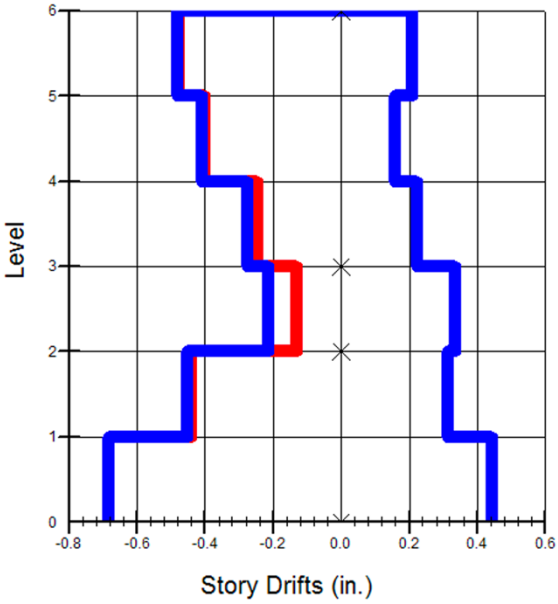
(a) Envelope of E-W floor accelerations (the maximum occurs at 7.72 seconds indicated by red line)



(b) Envelope of N-S floor accelerations (the maximum occurs at 4.22 seconds indicated by red line)



(c) Envelope of E-W story drifts (the maximum occurs at 6.78 seconds indicated by red line)



(d) Envelope of N-S story drifts (the maximum occurs at 4.24 seconds indicated by red line)

Figure 12. Structural response quantities interpreted from the sensors installed at the new Sylmar County Hospital for the 1994 Northridge earthquake[10].

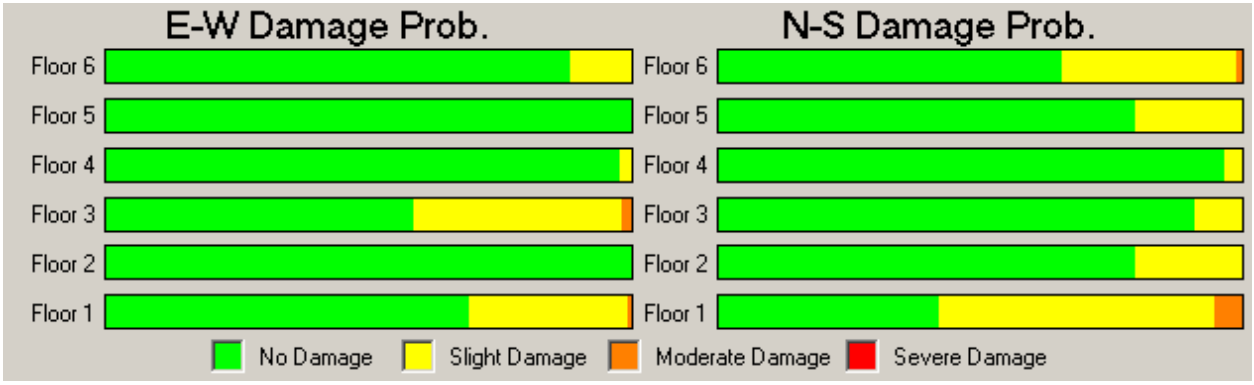


Figure 13. Instrumentation indicates no damage to slight damage status of the Sylmar County Hospital structural system following the 1994 Northridge earthquake using a relevant and readily available HAZUS-MH fragility function[13].

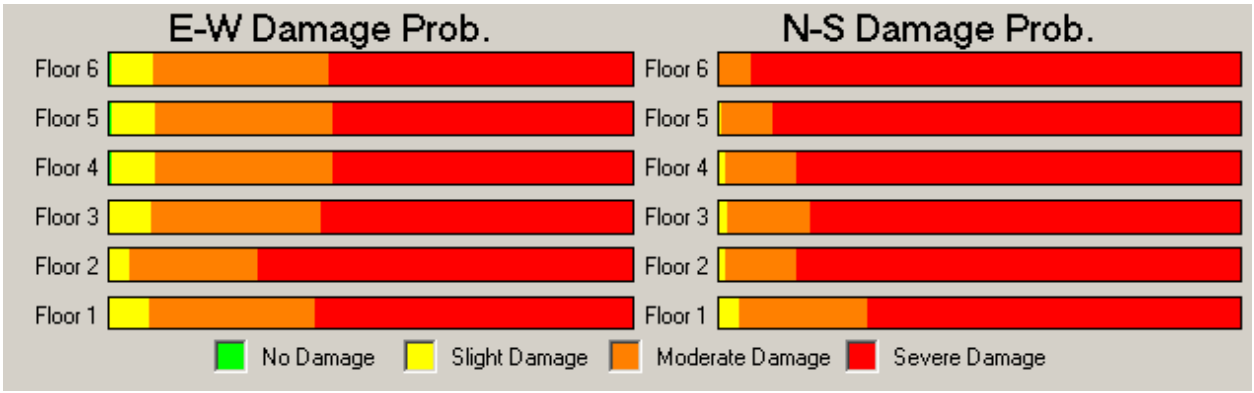


Figure 14. Instrumentation indicates moderate to severe damage status for the nonstructural systems of the new Sylmar County Hospital following the 1994 Northridge earthquake using a relevant and readily available HAZUS-MH fragility function[13].

[13] Naeim, F., Kanda, K., Ventura, C. and Biro, T. 2021, *Roadblocks and Incentives for Worldwide Adaptation and Implementation of Seismic Structural Health Monitoring (S2HM)*, Special Session at 17th World Conference on Earthquake Engineering, Sendai, Japan

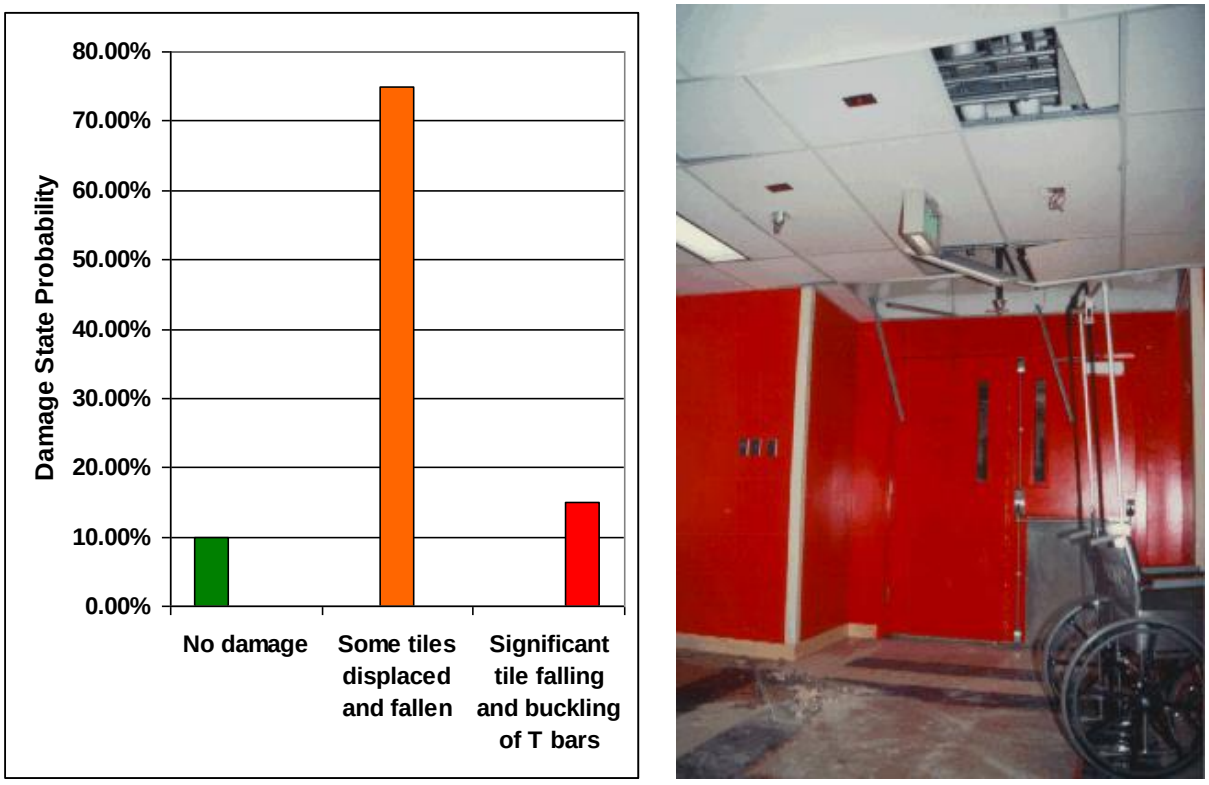


Figure 15. Instrumentation indicates displaced suspended ceiling tiles on the first floor of the new Sylmar County Hospital following the 1994 Northridge earthquake using a relevant and readily available FEMA-P58 fragility function[13].

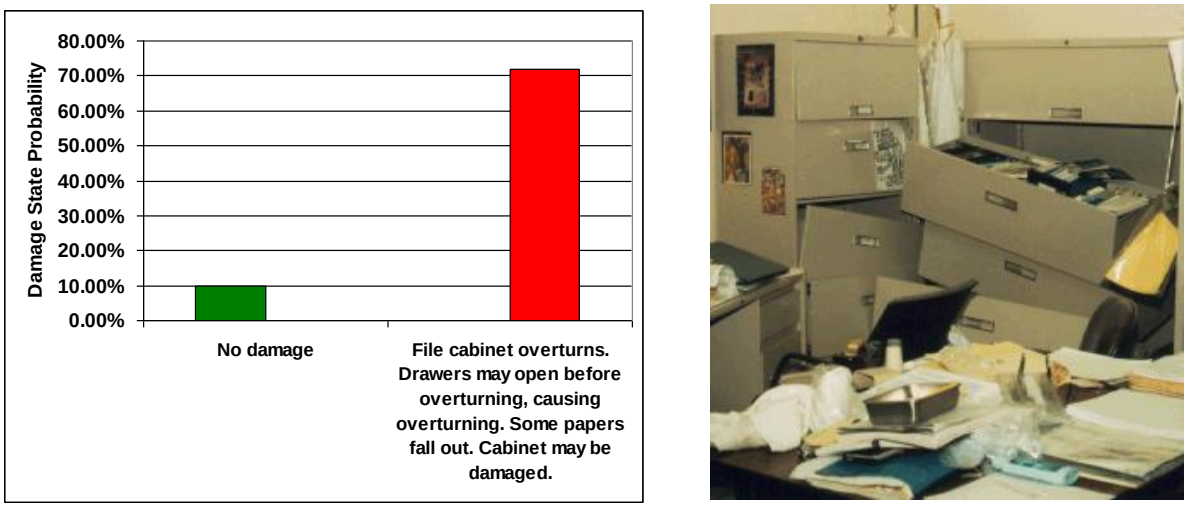


Figure 16. Instrumentation indicates overturning of file cabinets on the 6th floor of the new Sylmar County Hospital following the 1994 Northridge earthquake using a relevant and readily available FEMA-P58 fragility function[13].

4 – Increasing the Usefulness of the Strong Motion Data and Networks

As it was mentioned in Section 2, high-resolution strong motion instrumentation has been installed in about 90 hospital buildings in California. There are about 415 hospital campuses with over 3,000 hospital buildings throughout the state. The actual percentage of hospital buildings with strong motion instrumentation is less than 5 percent because most hospital campuses have multiple buildings.

As described in Section 3, advances in technology and communication now may enable strong motion instrumentation data to be available in real or near-real time which will provide more timely feedback on the structural and nonstructural performance of buildings and systems and potentially identify key indicators of distress or concern regarding the structural and nonstructural integrity of a building or facility.

The speed of transmission of the strong motion data from the various instruments will depend on the availability and capacity of the telecommunication channels which may be affected by earthquake and post-earthquake events. If the processed data can become more readily accessible in real or near-real time, the strong motion data can be used to assess damage and provide a more scientific basis for quick decision making regarding continuing occupancy and services in buildings. More rapidly available data can also be used to prioritize resources for recovery and restoration of services.

There needs to be a shift from simple instrumentation to a concept like that of a "Black Box" which is implemented in airplanes and cars (Figure 17). The "black box" could be a physical recorder located in the building or a virtual one in the Internet cloud. If the building "black box" is functional for an instrumented building at the time of an earthquake, the data from sensors are processed by the black box and results will be made available almost instantaneously. After the event, the data are transmitted to a central data center where it is received and processed and then posted to local data centers, followed by notification of the facility contact for some facilities. All the functions of data retrieval, data processing, and notification could be done on-site, very rapidly, with timely notification to key people. The black box would retain all the data from the sensors and the calculated motions and responses.

This approach would remove the vulnerability to loss or low speed of the communication between the hospital and the offsite data centers, since the information would be available either onsite and/or on the Internet cloud version of the "black box." It is likely that such a system could also be developed by and purchased from the instrumentation manufacturers.

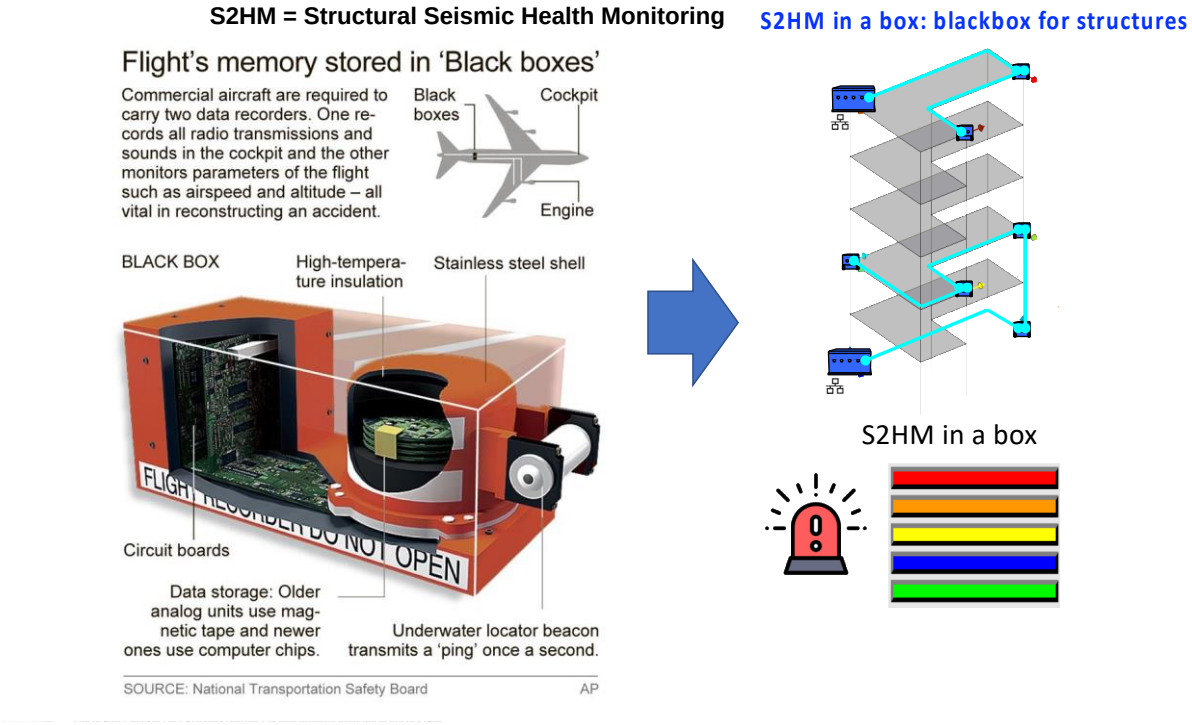


Figure 17. The concept of "black boxes" for buildings (Courtesy of Talhan Biro)[13].

There is no doubt that the existing seismic instrumentation network will record strong motion data from the inevitable future earthquakes. With advances in technology and communications, these data can be used more extensively and effectively to provide very useful information to owners and operators of hospital facilities regarding the structural health of their facilities on a timely basis and help them to make informed decisions regarding operations, occupancy, and allocation of resources after significant earthquake events.

Some facilities may need additional instrumentation to provide the necessary resolution of data to identify some key indicators of damage. However, there may also be more low-cost instrumentation that could provide these data that may be commercially available that need not be part of HCAI's instrumentation program. Individual or corporate hospital operators may find that investment in private seismic health monitoring systems will be beneficial and financially sound. If the recorded data would become available for curation and subsequent analysis by HCAI and engineering researchers, even more value and advances in understanding structural and nonstructural behavior can be learned and improvements can be made.

5 – Future of Alternative Instrumentation and Data Analytics

This section introduces the potential role that alternative instrumentation technology and the application of data analytics can play in expanding the number of instrumented hospital buildings for the purpose of determining the safety status of hospital buildings during and immediately after earthquakes.

Lower cost and lower resolution sensors such as Class C MEMS[14] (micro-electromagnetic systems) accelerometer sensors (Figure 18) are becoming widely available and could be one of the sensor types that could help more widespread instrumentation of hospital buildings for the post-earthquake safety assessment purposes. Site and building specific real time data that would be highly valuable in the post-earthquake response environment. Other technologies such as the USGS ShakeAlert Earthquake Early Warning System, Community Seismic Network (Figure 19), displacement and velocity measurement devices (Figure 6), airborne and spaceborne remote sensing devices, and artificial intelligence based tools for damage assessment (Figure 20) are all potential tools that could be implemented in hospital facilities now or in the future, once they have been studied and their ranges of accurate response and limitations are clearly established, to assist with post-earthquake status evaluation of hospital buildings.

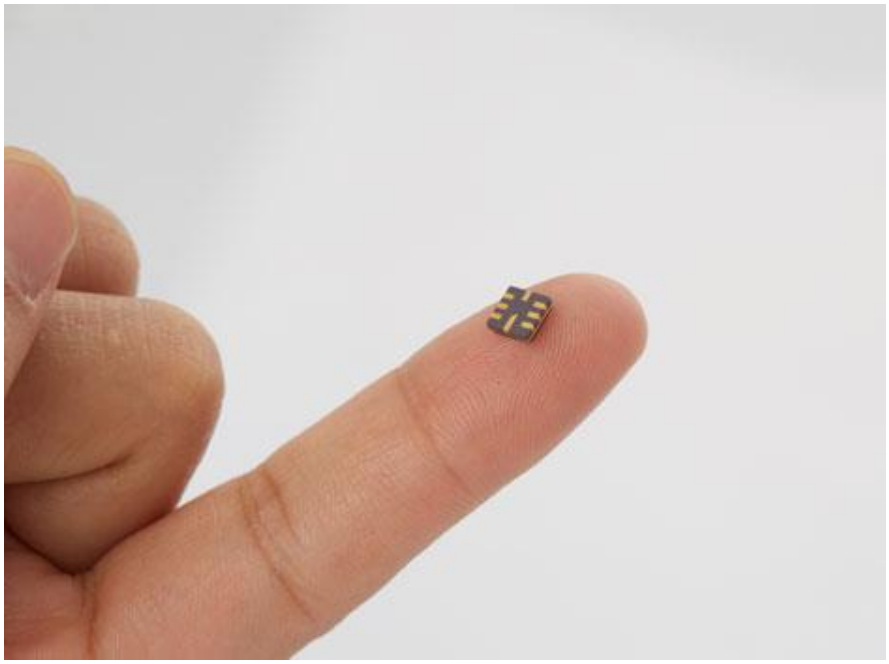


Figure 18. A typical MEMS sensor which can be used to measure acceleration, tilt, pressure, and humidity. Many of these sensors are installed in every modern cell phone in use today[15].

[14] Evans, J.R., Allen, R.M., Chung, A.I., Cochran, E.S., Guy, R., Hellweg, M. and Lawrence, J, F. (2014), *Performance of Several Low-Cost Accelerometers*, Seismological Research Letters Vol. 85, No. 1 January/February.

[15] https://www.winsen-sensor.com/sensors/mems-gas-sensor/

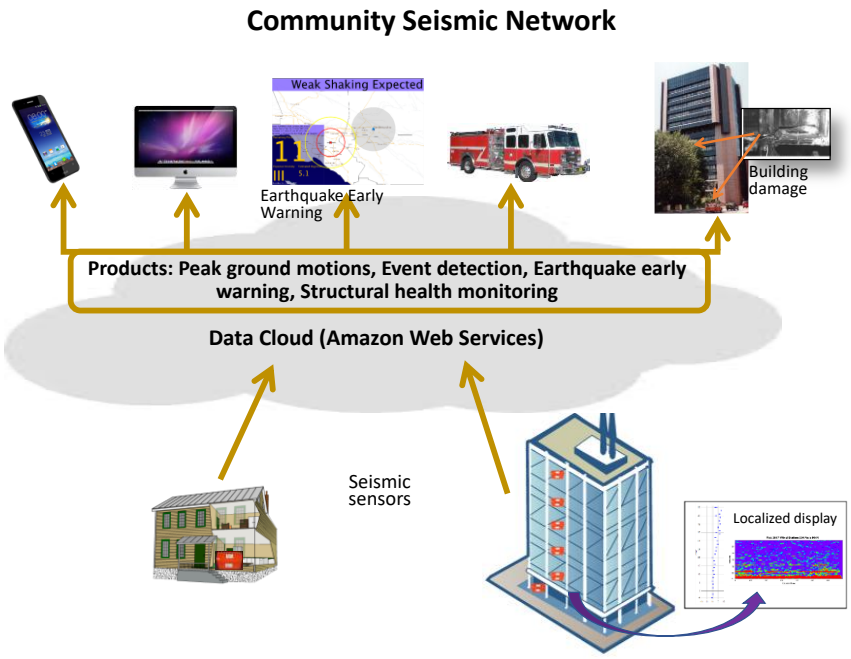


Figure 19. The Community Seismic Network implemented and managed by California Institute of Technology and UCLA provides a low-cost alternative for instrumentation of school campuses and other buildings with limited budget for instrumentation.[16]

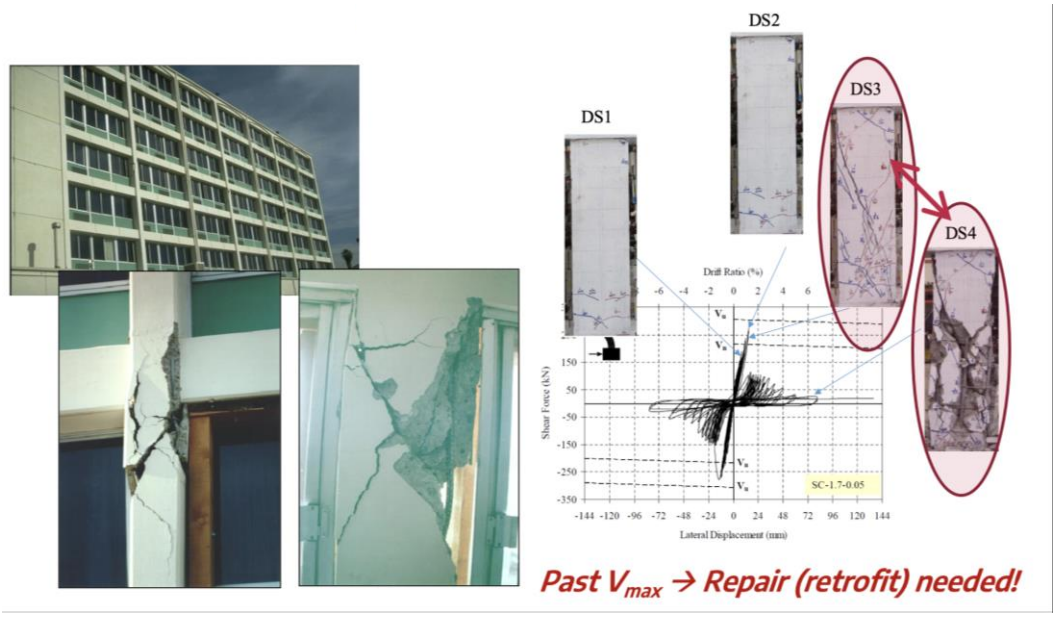


Figure 20. Integrating artificial intelligence, machine learning, and photographic tools creates yet another opportunity for immediate post-earthquake assessment of buildings as demonstrated by the ATC-145 project currently underway and sponsored jointly by FEMA and the New Zealand Earthquake Commission[17].

[16] http://csn.caltech.edu/pdf/Function_Schematic.pdf

[17] Elwood, K.J. and Moehle, J.P. (2021), *ATC-145 Update: Draft Guideline for Post-Earthquake Assessment, Repair, and Retrofit of Buildings*, Proceedings of the 2021 Los Angeles Tall Buildings Structural Design Council Conference, Pages 86-94.

Adding Class C MEMS or similar sensors to existing instrumentation of instrumented hospital buildings or installing them in the vast number of hospital buildings that are not instrumented can provide situational awareness of an earthquake within the hospital environment to facility managers,

The efficient post-earthquake operation of a hospital facility will also be dependent on the performance of the many support buildings surrounding the acute care hospital. These include central utility plants, medical office buildings, parking structures, records storage, imaging centers, etc. Use of lower cost sensors will make it more affordable for hospitals to install sensors in all important buildings on their campus.

ShakeMap and ShakeCast may provide shaking intensity information and inspection priority but are not specific to an individual structure. CSMIP waveform data may be difficult to interpret by non-technical users.

A web-based platform that gathers sensor data and puts it into context would greatly aid emergency response. The platform would:

a. be accessible to each hospital,

b. gather data from multiple building sensors (high fidelity or MEMSbased) and compare it to building specific vulnerability functions,

c. display easy-to-understand damage estimates; and

d. be available to structural engineers inspecting the buildings.

Historically, HCAI/CSMIP hospital instrumentation projects have predominantly used accelerometers, whereas displacement transducers have only been utilized in limited applications. Another alternative technology is a laser-based optical sensor for measuring building displacement that is now available (see Figure 6). This technology appears promising for obtaining direct measurements of relative displacements of the floors of buildings (story drifts) which are generally a very good indicator of the expected level of damage in various floors of the building. The optical sensors do require a clear line of sight between the laser source and position-sensitive detector.

6 – Improving Community Awareness of the Value of Strong-motion Instrumentation

It is a frequent observation that most people in the state of California have little knowledge of strong motion instruments, what they measure, or why they are important to public safety. As a result, public support for this vital element of earthquake safety may inhibit long-term funding for hospital instrumentation and maintenance. The life-safety benefit of robust hospital instrumentation is the ability to quickly identify any hidden structural problems in the affected hospitals that might make them unsafe to occupy. At the current level of hospital instrumentation, the instruments by themselves are not generally adequate to allow HCAI to fully assess damage to hospitals rapidly and accurately after a large urban event or for a large event in rural parts of the state where alternative hospital facilities are limited. HCAI engineers need to conduct an in-person assessment and review of damage at a site to evaluate whether a hospital is deemed to be fit for immediate occupancy (Green Tag), restricted occupancy (Yellow Tag), or unsafe (Red Tag). Until such evaluations are completed, the hospital facility is generally self-reliant in the determination of whether to continue or curtail health care services. In-person evaluations by qualified engineering professionals may take days to accomplish, during which time large aftershocks are likely to occur that could potentially further damage earthquake-weakened structures.

The purpose of this section is to provide HCAI with advice on how to develop and implement an effective outreach program to educate targeted audiences and promote instrumentation of acute care and skilled nursing facilities throughout the state.

HCAI should consider three audience groups for outreach and education efforts. These are:

1. Decision-makers, hospital owners, emergency responders
2. Professional engineering and scientific communities
3. Interested members of the public

Each of these groups should have a tailored informational message distributed within its ranks. The makers and users of this instrumentation should be getting regular messages that explain what is being measured, how it affects their well-being and why it is important, especially after a significant earthquake.

The first group includes elected officials, facility owners/operators, and emergency managers and responders. This group needs to have access to good explanations of the information that they are relying on to make decisions that affect the hospital community. Because of the range of specializations in this group, they may be more difficult to reach as a group and require different outreach approaches for subgroups. For example, elected officials at the state level cannot be contacted directly by unelected civil service employees. Such contacts need to be arranged by legislative liaisons at the state department or agency levels. However, state agencies such as HCAI and CSMIP need to prepare informative presentations and illustrated reports that explain what the instrumentation programs do for hospital buildings. Those reports can also form the basis for HCAI staff and their consultants to interact with city and county officials, first responders, and

emergency planning personnel, as the need for the information arises. For decision-makers, hospital building owners, and emergency responders, the message is that their building is instrumented and the strong-motion records from inside the building can go a long way toward determining whether the building remains safe to occupy after the earthquake.

The second group primarily includes licensed civil/geotechnical/structural engineers, seismologists, and other geoscientists who are involved in the design and review of hospital and health care delivery development and construction projects. This group also includes university researchers who advance the tools used to produce earthquake-resistant structures. The message to this group should be technical and explain in detail the benefits of seismic instrumentation, and how it can be designed, implemented, and utilized. Examples of the ability to identify potential areas of structural and nonstructural distress from earthquakes, such as those given in Section 3 of this white paper, should be showcased.

The third group, consisting of the general public, should be made aware that technology exists today that seismic instrumentation when coupled with appropriate analysis packages can provide near real-time indications of structural and nonstructural distress in the hospitals that they rely upon to be available when "The Big One" occurs. They can have some confidence that in times of need, the hospitals they go to or are taken to have been evaluated for safety with reliable data and can be a safe harbor during periods of emergency following an earthquake. The message might be that the areas of greatest damage can be identified right after the earthquake so that they can stay away from those areas and identify areas where family and friends might need help. They also should understand that strong motion data are critical to the earthquake early warning system so that it can help to identify when severe ground shaking will arrive where they are located.

In addition to HCAI, other state agencies, organizations, and entities engage in outreach efforts related to seismic safety, such as:

- The California Geological Survey Strong Motion Instrumentation Program (CSMIP)
- The California Governor's Office of Emergency Services (CalOES)
- The California Integrated Seismic Network (CISN)
- The Alfred E. Alquist Seismic Safety Commission (SSC)
- The California Department of Public Health (CDPH)

HCAI should build on partnerships with these and other state agencies and together they should engage their Public Affairs Officers to develop a coordinated outreach effort that prepares materials and strategies to send group-specific messages that remind them of the value of earthquake instrumentation and inform them about new advances in the field. Outreach can use websites, social media platforms, science podcasts, and/or traditional television, radio and print media methods. Technical staff input from HCAI and CGS will be necessary to make sure the messaging is accurate and at the right technical level for the targeted audience. HCAI should also consider setting up a partnership between the Legislative Liaison Officers from these and other agencies to develop outreach materials and strategies for engaging California legislators and local government elected officials.

Triggers for frequent, simple messaging to these groups should be identified along with prepared language so that messages can be produced and disseminated quickly. Examples of message triggers might include:

- Small but felt earthquakes anywhere in California or in bordering states.
- Damaging earthquakes anywhere in the United States or North America.
- Introduction of new instrument technologies or processing capabilities.
- Significant new instrumentation projects.

Technical staff (engineers, geologists, and seismologists) from all these agencies should identify professional organization publications and meetings and coordinate the preparation of technical papers and presentations that promote instrumentation and new applications.

7 – Summary, Recommendations and Conclusions

Seismic instrumentation of buildings, and hospitals in particular, has provided important data regarding the response and behavior of structures in earthquakes for the purpose of seismic hazard mitigation. These data have been used by HCAI along with architects, engineers and contractors that design and build health care facilities to design and construct better and safer hospitals. The data from seismic instrumentation have been used to improve the building codes as more is learned from the performance of hospital facilities and structures in general from every earthquake. The data are also useful in verifying the performance of new innovative technologies and building materials. The data have also been important in identifying potential problems in hospital construction and in the nonstructural components that are important to the continued operation of these critical facilities during and after large earthquake events. However, these benefits from seismic instrumentation are not fully realized until sometime after the earthquake occurs.

Technological advances in recent years now give us the opportunity to better use the data from seismic instrumentation to potentially provide essentially real-time understanding of the behavior of structural and nonstructural systems when strong earthquake shaking occurs. Through a combination of the seismic instrumentation, fast modern communications, efficient computing equipment, and curated software applications, we now can identify areas of concerns in the structural and nonstructural systems within a very short time after the earthquake occurs. This can be accomplished with relatively modest cost using economical Class C MEMS or similar technologies and WIFI connections, and personal computers.

Why would a hospital facility want to do this? A hospital administrator will need to make many important decisions about the operations of the facility after a strong earthquake occurs. The most important questions include but are not limited to:

- How safe is the hospital structure?
- How safe are the nonstructural componentss, such as mechanical, electrical, and plumbing systems?
- Is it safe to use medical equipment now?
- Can we continue to keep the hospital operational?
- Can we keep part of the facility operational?
- Do we need to evacuate?
- Do we need to curtail certain services?

As mentioned earlier, HCAI will send out engineers to evaluate hospital facilities after an earthquake which triggers building inspections, however, if the earthquake affects a large area, these evaluations will take time to complete. In the meantime, a hospital administrator may be forced to address the critical questions above without being a design, construction, or mechanical professional.

If the hospital facility had a seismic instrumentation system, the administrator in consultation with his or her design professionals would be able to make informed decisions and be more confident on these and other critical issues regarding the continued operation of the hospital very shortly after the earthquake occurs. It is advisable for the hospital to retain the services of a qualified engineer that can evaluate the data and output from the seismic instrumentation and provide more expert advice on those issues. There are commercial entities that can provide installation of such systems and technical support to interpret the results after an earthquake occurs. In addition, having such data and professional evaluation available will also aid HCAI in its evaluation of the facility and determination of the hazards and risks at that facility.

In conclusion, although there are some expenditures needed, a seismic instrumentation system for a hospital in California is a wise investment and provides some key insights into the structural health of the hospital structure and its supporting systems when an earthquake occurs. Hospital administrators, with the assistance of qualified experts, will have a very powerful tool that will aid in making some very important and timely judgments and decisions regarding continuing or discontinuing some or all healthcare functions at the facility. This is important for the safety of the patients and staff and the physical plant. Having such a system can also reduce the possibility of suspending health care services unnecessarily due to inadequate information and knowledge. The unnecessary loss of health care services after a major earthquake is never desirable and can cause loss of life or significant deterioration to the health of patients. Timely and wise decisions based on reliable data can avoid or minimize the financial impacts resulting from uninformed decisions and actions after an earthquake.

The Hospital Building Safety Board is encouraged by the advancements in technology and the role that increased use of seismic instrumentation beyond what is required by the Building Code can do to provide health care in times of emergency caused by earthquakes. It is our hope that hospital owners and administrators will consider seismic instrumentation as a wise investment to protect their patients and staff as well as their physical plant.

Appendix A

Table A1. List of instrumented hospital buildings under the HCAI jurisdiction

No	HCAI Region	Facility Name	Building Name	Number of Sensors
1	Central	Alameda Hospital	South Wing	12
2	Central	Alta Bates Summit Medical Center-Alta Bates Campus	1985 Building	12
3	Central	California Pacific Medical Center - Mission Bernal Campus	New Hospital	16
4	Central	California Pacific Medical Center - Van Ness Campus	New Acute Care Hospital	24
5	Central	Eden Medical Center	Replacement Hospital	19
6	Central	George L. Mee Memorial Hospital	New Hospital	10
7	Central	Good Samaritan Hospital	Main Hospital	15
8	Central	Kaiser Foundation Hospital - Fremont	Hospital Patient Wing North	3
9	Central	Kaiser Foundation Hospital - Fremont	Hospital North	12
10	Central	Kaiser Foundation Hospital - Oakland/Richmond	Hospital	18
11	Central	Kaiser Foundation Hospital - San Francisco	North Wing	18
12	Central	Kaiser Foundation Hospital - Walnut Creek	Phase II Hospital	16
13	Coastal	Kaiser Foundation Hospital-Santa Clara	Hospital - Phase I	18
14	Coastal	Kern Medical Center	Wing D	11
15	Coastal	Lucile Packard Children's Hospital Stanford	New LPCH Expansion Building	21
16	Coastal	Mammoth Hospital	New Wing	10
17	Coastal	Marian Regional Medical Center	New Hospital Expansion	12
18	Coastal	MarinHealth Medical Center	06 - West Wing	12
19	Coastal	Mills-Peninsula Medical Center	New Hospital	24
20	Coastal	Natividad Medical Center	Acute Care (Building 500)	15
21	Coastal	Northbay Medical Center	Phase 1 Replacement Building	12
22	Coastal	Novato Community Hospital	Hospital	12
23	Coastal	O'Connor Hospital	Replacement Facility	16
24	Coastal	Priscilla Chan and Mark Zuckerberg San Francisco General Hospital and Trauma Center	Replacement Hospital	24
25	Coastal	Santa Barbara Cottage Hospital	Centennial Wing (Building I) (Arlington Pavilion)	9
26	Coastal	Santa Clara Valley Medical Center	West Wing K Nursing (6006)	15
27	Coastal	Santa Clara Valley Medical Center	Replacement Bed Building (Sobrato Pavilion) (6011)	20

No	HCAI Region	Facility Name	Building Name	Number of Sensors
28	Coastal	St. Louise Regional Hospital	Hospital Building Area A	10
29	Coastal	Stanford Health Care	Diagnostic Treatment Center	12
30	Coastal	Stanford Health Care	New Stanford Hospital	36
31	Coastal	Tenet Health Central Coast Twin Cities Community Hospital	Main Hospital	9
32	Coastal	UCSF Medical Center	Long Hospital	16
33	Coastal	UCSF Medical Center at Mission Bay	UCSF Benioff Children's Hospital	18
34	Coastal	Washington Hospital	Main Building	21
35	North	Kaiser Foundation Hospital - Santa Rosa	Hospital	13
36	North	St. Joseph Hospital	Phase III Addition Building	11
37	North	Sutter Coast Hospital	Hospital Building	10
38	North Los Angeles	Adventist Health Simi Valley	Main Hospital Building	12
39	North Los Angeles	Adventist Health White Memorial	Specialty Care Tower	9
40	North Los Angeles	Antelope Valley Hospital	Hospital Tower Addition	12
41	North Los Angeles	Children's Hospital Los Angeles	Anderson Pavilion	12
42	North Los Angeles	Community Memorial Hospital - San Buenaventura	New 6 Story Hospital Tower - West	24
43	North Los Angeles	Encino Hospital Medical Center	Main Tower / Basement / Mech Building	12
44	North Los Angeles	Henry Mayo Newhall Hospital	Main Hospital - Original Building	12
45	North Los Angeles	Hollywood Presbyterian Medical Center	South Wing	12
46	North Los Angeles	Hollywood Presbyterian Medical Center	D & T Tower	15
47	North Los Angeles	Huntington Memorial Hospital	West Tower	9
48	North Los Angeles	Kaiser Foundation Hospital - Downey	Main Building	9
49	North Los Angeles	Kaiser Foundation Hospital - Los Angeles	LAMC Hospital - Phase I	9
50	North Los Angeles	Keck Hospital of USC	Main Hospital	24
51	North Los Angeles	LAC/Olive View-UCLA Medical Center	Main Hospital Building	13

No	HCAI Region	Facility Name	Building Name	Number of Sensors
52	North Los Angeles	LAC+USC Medical Center	Inpatient Tower	12
53	North Los Angeles	LAC+USC Medical Center	New Diagnostic and Treatment	20
54	North Los Angeles	Martin Luther King, Jr. Community Hospital	Trauma Center	21
55	North Los Angeles	Palmdale Regional Medical Center	Main Building	16
56	North Los Angeles	PIH Health Hospital - Downey	Original Nursing Tower	12
57	North Los Angeles	Providence Saint John's Health Center	North Pavilion Inpatient Tower	24
58	North Los Angeles	St John’s Regional Medical Center	Patient Tower	17
59	North Los Angeles	Ventura County Medical Center	Hospital Replacement Wing	24
60	North Los Angeles	Ventura County Medical Center	Fainer Wing - Building 304	12
61	South	Arrowhead Regional Medical Center	Diagnostic & Treatment Bldg.	8
62	South	Arrowhead Regional Medical Center	Nursing Tower	19
63	South	Arrowhead Regional Medical Center	Central Plant	3
64	South	Community Hospital of San Bernardino	North Hospital	12
65	South	Desert Regional Medical Center	East Tower	13
66	South	El Centro Regional Medical Center	North Wing	5
67	South	El Centro Regional Medical Center	Lab Building	7
68	South	Hemet Global Medical Center	Tower I	10
69	South	Hoag Memorial Hospital Presbyterian	East Wing	27
70	South	Hoag Memorial Hospital Presbyterian	Inpatient Tower - 1974	18
71	South	John F. Kennedy Memorial Hospital	West/South Wing	8
72	South	Kaiser Foundation Hospital - Ontario	Main Hospital	15
73	South	Kaiser Foundation Hospital - Orange County - Irvine	Main Building	15
74	South	Orange County Global Medical Center	Administration	6
75	South	Palomar Medical Center	Hospital	12
76	South	Palomar Medical Center	Central Plant	6
77	South	Providence Little Company of Mary Medical Center San Pedro	Central Wing Tower	12
78	South	Providence Little Company of Mary Medical Center San Pedro	West Wing & Entrance Canopy	12
79	South	Providence Little Company of Mary Medical Center Torrance	Original Hospital	21
80	South	Redlands Community Hospital	Radiology Addition	9
81	South	Riverside Community Hospital	Building B	12
82	South Los Angeles	Riverside University Health System - Medical Center	Ancillary Building	15
83	South Los Angeles	Scripps Memorial Hospital - La Jolla	Transition Tower (& 5A)	12

No	HCAI Region	Facility Name	Building Name	Number of Sensors
84	South Los Angeles	Sharp Memorial Hospital	South Tower	15
85	South Los Angeles	Southwest Healthcare System	Women's Center and Emergency Room	9
86	South Los Angeles	UC San Diego Health Hillcrest - Hillcrest Medical Center	Main Hospital Building	12
87	South Los Angeles	UC San Diego Health La Jolla - Jacobs Medical Center & Sulpizio Cardiovascular Center	Main Hospital	12
88	South Los Angeles	UC San Diego Health La Jolla - Jacobs Medical Center & Sulpizio Cardiovascular Center	Bed Tower	24

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Technology and Research Committee

Draft Meeting Report/Minutes

July 5, 2022
November 1, 2022

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Technology and Research Committee

Wednesday, July 27, 2022
10:00 a.m. – 4:00 p.m.

Locations:
Department of Healthcare Care Access and Information
2020 West El Camino Avenue Suite 930
Sacramento, CA 95833

Department of Healthcare Access and Information
355 South Grand Avenue Suite 2000
Los Angeles CA 90071

Teleconference Meeting Access:
HBSB Teams TAR Committee
Access Code: 677-110-790

Committee Members Present
Bruce Rainey, Chair
Michael Foulkes, Vice Chair
David Bliss
Deepak Danderkar
Bert Hurlbut
Scott Mackey
Michael O'Connor

HCAI Staff Present
Chris Tokas, FDD Deputy Director
Arash Altoontash
Richard Tannahill
Hussain Bhatia
Carl Scheuerman
Nanci Timmins
James Yi

Consulting Members Present
Gary Dunger
Eric Johnson

HBSB Staff Present
Ken Yu, Executive Director
Evett Torres
Veronica Yuke

1. Call to order and Welcome

Bruce Rainey, Committee Chair, called the meeting to order on July 27, 2022, at 10:00 a.m., and HBSB Executive Director Ken Yu, called roll.

2. Roll Call and Meeting Advisories/Expectations

Six members of the Committee present constitute a quorum. There being seven present at the time of roll, a quorum was established.

Mr. Yu read the public announcement regarding COVID-19, meeting rules and procedures.

3. Cyber Security Protection

Presenters: Gordon Lawson, CEO, and Brian Stone, Chief Revenue Officer, CONCEAL

Mr. Stone said CONCEAL provides security through obscurity. CONCEAL browser scans links then isolates the link which containerizes the browsing section hence the link can not do harm to the network.

Discussion and Input

Mr. Rainey asked Mr. Stone to talk about using CONCEAL browser from a building operation stand point. Mr. Stone said that there are two types of the CONCEAL browser and in both, in case of an attack, the containment process helps to isolate malware from the network.

Mr. O'Connor asked what the restrictive level of links is and if the links must be preapproved. Mr. Stone stated that the links are denied by default unless it is a sure safe link.

Mr. Hurlbut asked who determines if a site is good, bad or risky. Mr. Stone answered CONCEAL has subscribed to threat intelligence feeds such as Metadefender, VIRUSTOTAL and Google safe browsing. The threat intelligence feeds are different depending on specific industries, like healthcare, and have their own threat feeds. Mr. Stone added that in case of an attack on a safe site through ads, CONCEAL is able to capture that and prevent attack.

Dr. Bliss asked what gives CONCEAL the current advantage compared to other programs. Mr. Stone answered that CONCEAL works on a deny-by-default concept. If the program is unsure of a site, it sends it to an isolated browser, after verification it then passes to the next stage. By that, CONCEAL is able to learn that similar programs are safe.

Dr. Bliss asked how the structure of the firewall works. Mr. Chad stated that CONCEAL provides a picture of the actual website. In cases where the remote site is hacked, there would be a picture of the site, but the firewall will prevent codes back to the system.

Mr. Chad explained that CONCEAL is built with a policy setting that can integrate with existing threat feeds or policies. Mr. Stone added that the three feeds are used to make technical decisions, but for additional websites to be blocked, the policy settings are enforced.

Mr. Rainey asked what levels are used for whitelisting. Mr. Stone said that the cyber security team vets anything that can be added to the whitelist. Mr. Chad added that the settings and policies can only be accessed by administrators on the security teams so an end user cannot whitelist a site.

Dr. Bliss asked, in case of a log threat, if there is reporting provided to the contracted institution. Mr. Chad stated that there are reports that shows sites that have been triggered as risky and why the sites have been blocked. Also, there are plugins that feed this kind of information to current login reporting tools so that the IT security teams can find them in a centralized area.

Dr. Bliss asked how malware is reported to security/law enforcement. Mr. Chad answered that the law enforcers rely on intelligence feeds like other cooperations do.

For pricing, Mr. Stone stated that the higher the number of browsers that need to be protected, the lower the unit cost.

Dr. Bliss asked if in institutions like financial services that need to execute high speed internet connections, are the whitelisted sites such that the traffic speed of data is large or does CONCEAL slow enough to affect the speed of data. Mr. Stone stated that there are 11 patterns around the network that allow whitelisting without delaying the speed of data.

Informational and Action item

- None

4. RIB iTwo 4.0 Software

Presenters: Brian Hewgley, Strategic Accounting Executive, and Bassem Ammouri, National Association of Manufacturers Director, Schneider Electric

Mr. Ammouri stated that the goal of Schneider Electric is to empower the world to make most of energy and resources, bridging progress and sustainability. Schneider tries to prevent miscommunications among members of the value chain especially in construction through adoption of digital technology.

Mr. Ammouri talked about the Building Information Modeling (BIM). This is a visual data base process which is used to visualize and store data that will define the project itself. He added that BIM models can be used during the construction phase to layer in time and schedules of the different component of the building. Commercial information like price of switch gear and how it can be delivered can be added in the BIM and then a schedule can be extracted from that information. Mr. Ammouri said that BIM has a 6D component in which carbon footprint is attached to each component of the construction asset. The BIM model can be used as a database to store information during the operation and maintenance phase.

Mr. Ammouri stated three pillars to the RIB company:

- Cloud First – information that drives the collaboration lives in the Clouds.
- AI First – ability to use historical data from previous projects that were managed using the software to help with prediction on future projects
- Mobility First – construction projects are mobile so there is need to be a mobile access point to the BIM model.

BIM model technology captures and uses construction data.

Mr. Ammouri highlighted the different phases of complete construction cloud software

- Investment planning
- Design management
- Virtual construction
- Bidding
- Onsite construction
- Operation and maintenance

Mr. Ammouri stated that using BIM model-based quality takeoff minimizes the opportunity for human error. BIM models assist in providing accurate multiple versions of estimating management.

Discussion and Input

Dr. Bliss asked how to make an operational building carbon neutral. He also asked if building sustainably can be made more economically attractive. Mr. Tokas answered that HCAI is working with the Energy Commission and industries in order to bring code changes that can promote sustainability and also educating the building owner on different designs.

Mr. Tokas said that buildings going beyond 3D is up to the owner but once industries understand the benefits of 3D, the concept will be adopted.

Mr. Griffiths asked why would a contractor or an owner move the transition from Autodesk. Mr. Ammouri answered that there is a partnership between Schneider and Autodesk to create an advance electrical design workflow.

Mr. Griffiths asked if an owner or a client makes a transition to Autodesk, is there an additional cost to the software. Mr. Ammouri answered that since it is a separate software product, it will be an additional subscription.

Information and Action item

- None.

5. NPC-5 Water and Sewage Holding Tanks

Presenter: Bruce Rainey, Committee Chair

Mr. Hageman discussed the California Plumbing Code (CPC) 2019, NPC- 5 requirements.

- Amount of water storage should be computed based on an approved water conservation rationing plan.
- Not less than 150 gallons per licensed bed.
- Hookups that allow for the use of transportable sources to augment minimum 24 hours storage of potable and process water based on approved Water Conservation/ Water Rationing Plan (WCWRP)

Mr. Hageman talked about alternative sizing for NPC-5:

- Sizing based on meter data for existing loads:
    - Varying Flow rates on older fixtures
    - Irrigation loads my not be clear
- Not less than 150 gallons per licensed bed:
    - May not be enough for 72 hours
    - May not be enough for 24 hours with delivery option
- Hook-ups that allow for the use of transportable sources to augment minimum 24 hours storage of potable and process water based on approved (WCWRP)
    - Concerns about availability of deliveries?
    - Trucks are typically 3,400-gallon capacity

Mr. Hageman said that since water is used for waste conveyance, it is unlikely to be reduced through implementation of vacuum waste systems used for water saving. He added that most facilities, during an emergency, do not want to operate without cooling towers, which are not a code requirement, hence there will be no reduction in water usage. In Sterile Processing Department (SPD), manufactures are using technologies that are saving water. Mr. Hageman pointed out that wastewater/ stormwater treatment for potable use can reduce water usage. Challenges are that most facilities do not want to incur additional cost in the operation and the Water Resource Board will not allow another drinking water provider.

Mr. Hageman gave the difference between single verses multiple water tanks. In single water tanks:

- Downtime for cleaning- meaning no emergency water storage
- Large capacity requires stratification prevention measures.
- Single point of failure.

Whereas in multiple water tanks:

- Tanks can be sized to allow one tank to be offline and still have minimum storge
- If all tanks are online, there is increased storage
- Expensive to build and operate

Mr. Otis explained that chlorination is a chemical disinfection method that uses various types of chlorine or chlorine containing chemicals for the oxidation and disinfection of what will be the potable water source. He stated that water chlorination is the core for municipal water purification and that chlorination treats cholera, dysentery and typhoid in water.

Mr. Otis said that chlorine is a much cheaper way of water treatment, prevents reinfection in water, and removes by-products such as heavy ions and ammonia in water. The disadvantages are that chlorine is pH dependent and changes the taste and odor of water.

Mr. Otis discussed chloramine as a less volatile chemical that stays longer in water and has less disinfection by-products compared to chlorine. Chloramine can penetrate biofilm hence getting rid of harmful bacteria in water. Chloramine work better in hot water systems.

Mr. Otis talked about chlorine dioxide chemical which is highly effective at penetrating biofilm. He added that the chemical has very few disinfectant by-products and does not alter the taste and odor of water.The chemical works better in hot water system as compared to chloramine.

Mr. Otis explained that oxygenation is the chemical method of changing the oxygen atom from O2 to O3 which is the most powerful oxidizing agent. This process is done by using water, electricity, and the O3 compound. The process consumes a lot of energy and does not produce any by-products. He revealed that oxygenation destroys bio-organs and removes IONS in water.

Mr. Otis highlighted that tank mixing prevents stratification during warmer months where hot water tends to stay on top of the tank of cold water on the bottom of the tank. This promotes reinfection of bacteria in water.

Discussion and Input

Mr. Danker asked if there was a future possibility of using recycled water for non-potable use. Mr. Hageman indicated that there is a possibility for future proofing to allow a separate piping water for toilet flushing connected to potable water system to reconnect to recycled water. Mr. Tokas added that this is not doable because it is a hospital environment so it requires a closed system which requires different plumbing and different precautions.

Mr. Mackey asked if the health department recognizes chloramine or chlorine dioxide as effective treatments. Mr. Otis responded that the health department does recognize the two as effective water treatment methods, but it should be confirmed.

Mr. Rainey suggested if the board could develop this topic into a White Paper to improve expertise of water maintenance and conservation. Mr. Mackey agreed and added that water conservation is a critical issue and typical for facilities across the State of California.

Mr. Hurlbut asked if there was a need to have sewage storage tanks as well as water storage tanks to maintain NPC-5. Mr. Hageman replied that waste storage holding is required for 72 hours.

Mr. Hageman asked if the waste storage required by the code to match water storage. Mr. Bhatia disclosed that there are no minimum requirements for waste storage in the code.

Mr. Rainey asked if the committee should look at establishing a subgroup or meeting offline with experts and come up with a strategy. Mr. Mackey moved that the committee accept meeting offline with engineering firm experts, and then present back to the group at a later date.

Dr. Bliss suggested that it might be worth having committee members submit topics around water conversation, then the Chair can winnow down to something manageable, and consult engineering firm experts. Mr. Rainey agreed and asked members to forward their points. Mr. Yu urged the committee members to send their points to either him or Ms. Torres.

Mr. Hurlburt asked if fire water storage was part of NPC-5 or the Plumbing Code. Mr. Hageman answered that it is not part of NPC-5 Code.

Information and Action item

- None.

6. All-Electric Campus – A Use Case

Presenter: Becky Clift, WSP and Roger Carter, tk1sc

Mr. Carter stated that the presentation was about how the healthcare build environment fits into decarbonization.

Ms. Clift talked about a UC Irvine Campus Medical Complex case project that has:

- 354,000 square feet bed hospital
- 250,000 square feet Ambulatory Care Center
- Central utility plant

- Parking structure

Mr. Carter discussed the DPP Energy Goals for:
Acute Hospital Buildings:

- 20% better than Title 24 Energy Efficiency Standards 2019 Energy Performance Target: EUI of 160 kBtu/sf/yr
- Energy Performance Target: EUI of 160 kBtu/sf/yr

Clinics and Ambulatory Services:

- 30% better than ASHRAE 90.1-2010
- Energy Performance Target: EUI of 87 kBtu/sf/yr

On hospital electrification, Mr. Carter stated that the heating and the domestic hot water system were required to be electrified on the project. The steam system used gas.

Mr. Carter said that they proposed a distributed electric steam system. He also talked about heat recovery chillers stating that there are not many vendors available with OSP for this type of equipment, and the equipment has an option for site-specific certification.

Mr. Carter explained that air source heat pumps have limited equipment available with an OSP and there is an option for site specific certification. The pumps are loud therefore effect location siting.

Ms. Clift added that the electrical service for hot water had an impact in the CUP, service infrastructure, and generator capacity. Electrical for steam, impact was on hospital and ACC, service infrastructure, and generator capacity.

Ms. Clift talked about electrical system impact on heating/domestic hot water:

- CUP electrical infrastructure was greatly impacted
- Electric heating/hot water resulted in a 20.6 VA/SF impact over the entire project or a total of 1,329kVa
- CUP service infrastructure grew by approximately 1,600 A
- CUP generator system grew by approximately 1,400kVa

Electrical system impact on humidifier/ sterilization:

- The ACC and the hospital electrical infrastructure were greatly impacted
- In the ACC, the electric humidification resulted in a 1.67 VA/SF impact or 418 kVa. The ACC service infrastructure grew by approximately 500A.

- In the hospital, the electric humidification/ sterilization resulted in a 13.7VA/SF impact of 485kV. The ACC service infrastructure grew by approximately 582A
- The CUP generator system grew by approximately 903kVa.

The overall electrical system impact:

- Across the entire square footage of the hospital and ACC, the total electrical heating, humidification, and steam load came in around 3.55 VA/SF.
- The CUP/ hospital/ ACC service infrastructure grew by 2,682A.
- The CUP generator system grew by approximately 2,303kVa.
- The requirement for PV energy to offset at least 10%of the facilities energy consumption per LEED for healthcare increased as well.

Ms. Clift highlighted on electrification of hospitals impact on electric utility grid:

- The electric grid is already being pushed to its current capacity with the overall trend to decarbonization/electrification and EV charging.
- The project required a dedicated 12Kv circuit from SCE which should take approximately two to three years for SCE to accommodate.
- The additional circuit required to accommodate the future phase of the UCI ICMC project will not be ready for six to eight years.

Mr. Carter explained the various energy efficiencies on:

- Natural gas fired boilers are 90-95 % efficient (COP 0.9 to 0.95)
- Electrical resistant boilers are 100% efficiency (COP 0.1)
- Heat pump boilers have an efficiency of COP 2.0 to 3.0

Mr. Carter stated that natural gas was a relatively low-cost utility in California compared to electric heat.

Discussion and input

Mr. Danderkar asked what happens in case of a power outage. Ms. Clift answered that project is still required to be backed up by a generator.

Dr. Bliss asked how the load stack, which might have skyrocketed demand cost, was mitigated. Ms. Clift answered that there was no implementation of load stack on the electrical system. Mr. Carter added that heat recovery chillers had a positive effect on reducing demand.

Information and Action item

- None.

7. Comments from the public/committee members on issues not on this agenda

Presenter: Bruce Rainey, Committee Chair

Discussion and input

Mr. Tannahill suggested that a topic on developing technology in which many vendors are requesting that their services reside in the Cloud and not in the hospital building be discussed on future meetings. This may affect patient records, nurse call systems, PBX services. He also asked what allowances should be made for Cloud-based services. Mr. Rainey answered that the committee can have that conversation.

The future Technology and Research Committee meeting is to be held on 1st November 2022.

Information and Action item

- None.

8. Adjournment

Mr. Rainey adjourned the meeting on July 27, 2022, at approximately 2:14 p.m.

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HCAI Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Technology and Research Committee

Tuesday, November 1, 2022
9:00 a.m. – 12:00 p.m.

Teleconference Meeting Access:
Access Code: 459-705-747

Committee Members Present	HCAI Staff Present
Bruce Rainey, Chair	Arash Altoontash
Michael Foulkes, Vice Chair	Richard Tannahill
David Bliss	Hussain Bhatia
Bert Hurlbut	Larry Enright
Michael O'Connor	Carl Scheuerman
Deepak Dandekar	Jamie Schnick
	Nanci Timmins
	James Yi

Consulting Members Present	HBSB Staff Present
Benjamin Broder	Ken Yu, Executive Director
Gary Dunger	Evett Torres
Eric Johnson	Veronica Yuke

1. Call to order and Welcome

Bruce Rainey, Committee Chair, called the meeting to order on November 1, 2022, at 9:00 a.m., and HBSB Executive Director Ken Yu, called roll.

2. Roll Call and Meeting Advisories/Expectations

Six members of the Committee present constitute a quorum. There being nine present at the time of roll, a quorum was established.

Mr. Yu read the public announcement regarding COVID-19, meeting rules and procedures.

3. Review and approve the draft July 27, 2022 meeting report/minutes

Presenter: Bruce Rainey, Committee Chair

Discussion and Input

- None

Informational and Action item

- None

MOTION: [Foulkes/O'Connor]

The board unanimously voted to approve the July 27, 2022, meeting report/minutes.

4. Presentation: The Inflation Reduction Act: What is in it for me?

Presenter: Anne Andrew, Tax Partner, and Wendy Punches, Tax Managing Director, PriceWaterhouseCoopers

Ms. Andrew stated that the Inflation Reduction Act (IRA) was the largest federal investment in clean energy in the U.S. IRA reinstates and significantly expands current incentives, providing an estimated $370 billion of energy related tax credits. She added that IRA, in addition to significant energy provision, aimed to advance the economy, further social and government space by promoting growth in targeted areas.

Ms. Andrew mentioned that IRA was enacted to achieve:

- Decarbonized power generation and transportation
- Promote lower carbon manufacturing
- Build energy efficacy
- Promote jobs
- Generate options for financing

Ms. Andrew said investment tax credit was a one-time credit using a certain percentage, multiplied by the amount of capital spent on qualified property. Ms. Andrew mentioned that production tax credit was a stream of credits over ten years based on an amount multiplied by the kilowatt hours produced and sold.

Ms. Andrew explained that IRA created a situation where companies, who are tax-exempted, and in certain circumstances companies who are not tax-exempted but were

not paying taxes, had ability to elect to get some of the credits as a refundable credit irrespective of whether they are tax payers or not.

Ms. Andrew mentioned the highlights of energy credits and incentives

- Decarbonizing power generation and transportation – extended income and excise tax credits for biodiesel, renewable diesel
- Promoting lower-carbon manufacturing
- Building energy efficiency
- Promoting US Jobs
- Creating options for financing

Ms. Andrew indicated that in direct pay, taxpayers that were tax-exempted entities, state, and local government, could elect to make payments of tax equal to the value of the credit they were eligible for.

Ms. Andrew said that the limitations on applicable entities did not apply to credits for:

- Carbon capture and sequestration (Section 45Q)
- Clean hydrogen (Section 45V)
- Advanced manufacturing production credit (Section 45X)

Ms. Andrew added that for transferability, entities that are not applicable entities under the direct rules, may transfer tax credit to third parties.

Ms. Andrew reported that on October 5th, 2022, treasury listed six notices on IRA's incentives for the public to give guidance:

- Energy Generation Incentives: Production Tax Credit, Investment Tax Credit, ZeroEmission Nuclear Credit, Clean Electricity Production Credit, Clean Electricity Investment Credit, Low Income Community Adder to Investment Tax Credit
- Credit Enhancements: Prevailing Wage, Apprenticeship, Domestic Content, Energy Communities provisions that increase the value of multiple credits
- Incentives for Homes and Buildings: Energy Efficient Home Improvement Credit, Residential Clean Energy Credit, New Energy Efficient Home Credit, Energy Efficient Commercial Building Deduction
- Consumer Vehicle Credits: Clean Vehicle Credit, Credit for Pre-Owned Clean Vehicles

- Manufacturing Credits: Advanced Energy Project Credit, Advanced Manufacturing Production Tax Credit
- Credit Monetization: Direct Pay, Transfer of Certain Credits

Ms. Andrew talked about section 45, which entails resources like renewable electricity, geothermal, hydropower, and marine and hydrokinetic energy. She added that the Act, extended the current law for facilities that had begun construction before January 1st, 2025, and extended the provision to solar facilities.

Ms. Andrew explained that section 48, allowed taxpayers to claim tax credit based on eligibility cost energy property. She added that 6% to 30% bonus rate would be provided for solar energy, geothermal property, fiber-optic solar property, fuel cell property, and microturbine property.

Discussion and Input

Mr. Rainey asked what G in ESG component meant. Ms. Andrew answered that G stood for governance.

Mr. Schnick asked if there was a minimum and maximum in the tiered credit system. Ms. Andrew said that the system has a maximum based on the prevailing wage of apprenticeship. There are projects that meet automatically, while others must be proven. There could be an increase of about 10% if certain requirements were met, such as the domestic content requirement.

Mr. Schnick asked in case of production and consumption onsite, if a company could get credit for what was put back on the grid or get credit for what was consumed as well. Ms. Andrew answered that the company would get credit for what was consumed.

Dr. Bliss asked if there were implementations on any potential state income tax. Ms. Andrew said that the transferability was a onetime sale, but treasury was to offer guidance on that.

Dr. Bliss asked if a project developer builder, that could not lease a project to a non-profit entity, must have a power purchase agreement for making the project eligible under tax equity. Ms. Andrew stated that was the case under the old regime, but tax-exempt entities can now get credit.

Mr. Johnson asked if the IRA time deadlines could be extended. Ms. Andrew answered that the guidelines and rules could not be extended. She explained that the phrase

'began construction' meant that the company had began physical work in terms of construction or the company had incurred 5% of the cost of the entire project.

Information and Action item

- None.

5. Microsoft HoloLens 2

Presenter: Todd Van Nurden, Principal Cloud Architect, Microsoft
Mr. Nurden talked about mixed reality or metaverse (the fourth wave of computing) which is the blending of the physical and digital world.

Mr. Nurden gave an example in the construction and real estate development areas, where metaverse was used in green building to design infrastructure of a particular building. Metaverse helped visualize data in 3D, which entailed smart buildings, visualized power systems, build a digital twin of a facility before construction began to see how components could be integrated into the physical building. Drones could be used to inspect virtually.

Mr. Nurden stated that mixed reality had given opportunity for:

- Remote expertise- interaction with an expert without the need to travel via HoloLens.
- Training and learning
- Immersive meetups
- On-site information
- Design together
- Connect and create

Mr. Nurden disclosed that HoloLens could be used to locate underground utilities during construction process. He talked about Microsoft Mesh, which is an engine enabling creators, brands, and enterprises to build immersive worlds to drive customer and employee connection.

Discussion and Input

Mr. Rainey asked if the applications were built by a third party to implement 3D modeling. Mr. Nurden said that there was a need for a third-party tool to be acquired or licensed.

Dr. Bliss asked if Microsoft had pre-programmed complex operations, like liver tumor operations, to be used in medicine for developing worlds. Mr. Nurden said that holograms are used for guided surgery, collaboration simulated in preparation for surgery, and used in medical schools for teaching anatomy.

Mr. Dandekar asked how information on underground utilities were updated. Mr. Nurden answered that there was a kit to update that information which was part of workflow that could be rendered in the future.

Mr. O'Connor asked what was the best approach in terms of showing mark-ups in architectural field. Mr. Nurden answered that HoloLens could be zoomed to be able to give the accurate room layout.

Mr. Hurlbut asked for the cost of the HoloLens. Mr. Nurden said that it cost $3,500.

An interested party asked about safety while using the HoloLens outdoors. Mr. Nurden said that HoloLens was fully transparent and they pay attention to surrounding physical environment.

An interested party asked what Wi-Fi speed was needed by the HoloLens. Mr. Nurden said that the HoloLens needed 5 megabits per second for call for remote assistance and 4G overall. He also stated that the HoloLens can be used offline where the user can record and upload to the cloud.

An interested party asked how the software was maintained. Mr. Nurden said that the devices have 6 years before they are rendered obsolete.

Information and Action item

- None.

6. Technology and Research Committee Goals for 2023

Presenter: Bruce Rainey, Committee Chair

Discussion and input

Mr. Tannahill suggested that the committee in future could address remote services for patient records, options for nurses' call going web-based, and off-site base for supporting medical records.

Mr. Johnson said that the committee could invite experts in industries like fire alarm systems and energy monitoring systems to talk more about their industries and how reliable they are incase of lost internet connectivity.

Information and Action item

- None.

7. Comments from the public/committee members on issues not on this agenda

Presenter: Bruce Rainey, Committee Chair

Discussion and input

Information and Action item

- None.

8. Adjournment

Mr. Rainey adjourned the meeting on Nov 1, 2022, at approximately 11:49 a.m.

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Education and Outreach Committee

Draft Meeting Report/Minutes

August 17, 2022
October 19, 2022

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Education and Outreach Committee

Wednesday, August 17, 2022
10:00 a.m. – 4:00 p.m.

Teleconference Meeting Access:
HBSB Teams EO Committee
Access Code: 589-645-35

Committee Members Present
Mike Hooper, Chair
VACANT, Vice Chair
Louise Belair
Deepak Dandekar
Bert Hurlbut
David Khorram
Scott Mackey
Bruce Rainey

HCAI Staff Present
Joe LaBrie
Cesar Ponce
Nanci Timmins
James Yi

HBSB Staff Present
Ken Yu, Executive Director
Evett Torres

Consulting Members Present
John Donelan
Gary Dunger
Bill Zellmer

1. Welcome and introductions

Mike Hooper, Chair, called the meeting to order on August 17, 2022, at 10:00 a.m., and HCAI Executive Director, Ken Yu called roll.

2. Roll Call And Meeting Advisories/Expectations

Six members of the Committee present constitute a quorum. There being ten present at the time of roll, a quorum was established.

Mr. Yu read the meeting rules and procedures.

3. Planning, Development and Update of Education Webinars

Presenter: Mike Hooper, Chair

Mr. Hooper gave an update on topics of the education webinars.

Discussion and Input

Offsite fabrication/pre-assembled components (possible date October 2022) - Mr. Mackey said that the outreach for offsite fabrication components was ongoing and there was a search for example projects or case studies to be highlighted and used in the webinar. He added that there was a challenge with the example projects being too far away to be used and suggested the webinar be pushed to the spring of 2023. Mr. Mackey anticipated that by that time there would be more example projects to use for the webinar. Mr. Hooper suggested the use of modular construction, medical gas systems, and plumbing systems as examples of offsite fabrication components. Mr. Mackey stated that those were part of the offsite fabrication components, but they are far-reaching. Mr. Mackey referenced a modular construction project in the Inland Empire but still echoed that the project cannot be used as an example in the webinar by October 2022. Mr. Hooper asked if HCAI was reaching out to the facility to get more information about the project or if the webinar topic can be put on hold for some time.

Ms. Belair advised Mr. Mackey to include the process of the pre-assembled components in the presentation. Mr. Mackey agreed to that. Ms. Belair asked if Mr. Mackey was leading the process of putting the webinar presentations together. Mr. Mackey stated that he was working with Mr. Tokas and HCAI staff on the webinar.

Mr. Hooper asked if the available examples of pre-assembled components, like the bathroom units, had already been presented to HCAI. Mr. Mackey answered that they are looking to get more projects to present to HCAI for the webinar. Ms. Belair asked if Mr. Mackey would be able to present at the next committee meeting. Mr. Mackey answered that he would present.

Mr. LaBrie commented that the topic of Testing, Inspection and Observation process (TIO) be integrated into the overall presentation.

California Administrative Code (Possible date August 2022) - Mr. LaBrie suggested the date of the webinar presentation be pushed till the end of the year. Mr. LaBrie stated that the focus of this topic would be on the most current revisions of the 2022 Administrative Code. Mr. Mackey mentioned that this topic would also include

references to HCAI and OSHPD, and how the two acronyms are used within the code language.

Mr. Hooper asked about the meaning and the conduct of the lead IOR in terms of what HCAI expects. Mr. Hooper suggested that the topic of IOR be included in the webinar. Mr. LaBrie answered that there were specific responsibilities for the lead IOR so the team would be working on getting definitions as part of the regulation changes. Mr. Rainey added that the topic of lead IOR should address how IOR relates to special inspections. Mr. Zellmer suggested that this topic use real-life examples to demonstrate points in the presentation. Mr. LaBrie said that there would be examples in the presentation.

Policy Intent Notice (PIN) 50: Integrated reviews – Mr. LaBrie suggested that HCAI input on the topic would be appropriate. Mr. Hooper asked Mr. Dunger if he had examples of projects to be used on the topic. Mr. Dunger gave an example of the Marina del Rey project for integrated review.

Emergency Process Design Guide – Mr. Dunger reported that the draft is completed and ready for presentation. Ms. Belair asked if the Emergency Design Guide was published. Mr. Dunger answered that the guide was in the reviewing process. Mr. Hooper asked if the date for the webinar should be changed or remain the same. Mr. Dunger said that it should remain the same, November 2022.

Pre-approvals related to Medicine Dispensing Units and Emergency projects – Mr. Hooper indicated that the webinar was on hold and decided to take the topic off of the agenda.

OSHPD 3 Clinics – Mr. Dunger stated that the draft for the presentation was underway. He communicated that since there were many topics, the team suggested to have two separate webinars. The first section was categorized as “fire-heavy” and the second section was about architectural and engineering topics. Mr. Khorram suggested the webinar be a two-day presentation.

Mr. Hooper asked if the topic could be listed as a webinar or a seminar for next year. Mr. Dunger answered that seminars are more limited compared to webinars and suggested the topic remain a webinar. Mr. Zellmer also suggested having a two-day webinar on the topic. Mr. Khorram echoed the same on having a two-day, four-hour webinar. Mr. Mackey suggested that the team do the webinars and a follow-up seminar. Mr. Dunger said that having a follow-up seminar was a good idea.

.Ms. Belair asked if a refresher on this topic would be timely. Mr. Hooper answered that the intent was to do the two-day, four-hour webinars and then do training on OSHPD 3 Clinics. .Ms. Belair asked if the presentation was geared towards fire life safety. Mr. Hooper answered that fire life safety topic was part of the presentation, but the whole presentation is not geared around fire life safety.

Testing, Inspection, and Observation program- Mr. LaBrie updated that the final draft for the presentation was almost complete. Mr. Hooper asked the team if there would be a topic on IOR. Mr. Hurlbut stated that there was a topic on quality control and quality assurance with the help of the IORs. Mr. Mackey mentioned that once the table of content was out, it would disseminate the information to be presented on the webinar.

PINs and Codes Application Notices (CANs) – Ms. Timmins expressed the Fire Resistance Assembly presentation was extended and divided into two. The first one was already done. The topics that followed were:

- CAN 2-703.3 Engineering Judgments
- PIN 69 Automated Guided Vehicle Systems (AGVS)
- CAN 2-508 Construction Separation of Emergency Vehicle and Passenger Drop-off and Loading Zones.

Mr. Donelan mentioned that ICC had changed CAN 2-703.3 Engineering Judgment section number, so he suggested a rework of the CAN in anticipation of the adoption of the 2022 CBC. Ms. Timmins suggested holding off on the topic for that reason.

Informational and Action item

- None

4. Planning and Development of the 2023 Seminar: Guide for Working on HCAI Projects- Tips from the Experts

Presenter: Mike Hooper, Committee Chair

Discussion and Input

Mr. Hooper asked if the committee was still moving forward with the seminar based on Tips from the Experts and scheduling an additional committee meeting in September 2022.

Ms. Belair said that the extra meeting date was intended to target and plan a seminar for 2023. She suggested the next committee meeting in October 2022, be expanded to accommodate a discussion on the seminar instead of an additional meeting.

Mr. Hurlbut asked when lastly HCAI put up a seminar on Tips from the Experts.
Ms. Torres replied that the seminar was in 2013.

Mr. Dandekar commented that the committee should look into modular construction since there is an example of a hospital in Montreal which was built in less than 12 months using modular construction.

Informational and Action item

- None.

5. Comments from the public/committee members on issues not on this agenda

Presenter: Mike Hooper, Committee Vice Chair

Mr. Hooper thanked the committee members for their input.

The next committee meeting is scheduled for October 19, 2022.

Discussion and input

- None.

Informational and Action item

- None.

6. Adjournment

Mr. Hooper adjourned the meeting on August 17, 2022, at approximately 11:39 a.m.

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Education and Outreach Committee

Wednesday, October 19, 2022
10:00 a.m. – 4:00 p.m.

Teleconference Meeting Access:
HBSB Teams EO Committee
Access Code: 375-972-865

Committee Members Present
Mike Hooper, Chair
Scott Mackey, Vice Chair
Cody Bartley
Louise Belair
Deepak Dandekar
Bert Hurlbut
David Khorram
Bruce Rainey

Consulting Members Present
John Donelan
Gary Dunger
Bill Zellmer

HCAI Staff Present
Richard Tannahill
Joe LaBrie
Cesar Ponce
Jamie Schnick
Nanci Timmins
James Yi

HBSB Staff Present
Ken Yu, Executive Director
Evett Torres
Paul Doyle

1. Welcome and introductions

Mike Hooper, Chair, called the meeting to order on October 19, 2022, at 10:00 a.m., and HBSB Executive Director, Ken Yu called roll.

2. Roll Call And Meeting Advisories/Expectations

Six members of the Committee present constitute a quorum. There being eleven present at the time of roll, a quorum was established.

Mr. Yu read the meeting rules and procedures.

3. Review and approve the August 17, 2022 meeting reports/minutes

Presenter: Mike Hooper, Chair

Discussion and Input

- None

Informational and Action item

- None

MOTION: [Zellmer/Hurlbut]

The board unanimously voted to approve the August 17, 2022, meeting report/minutes.

4. Planning, Development and Update of Education Webinars

Presenter: Mike Hooper, Committee Chair

Discussion and Input

The webinar topics were

A. **Offsite Fabrication/Pre-assembled Components (Possible date: Spring 2023)-** Current participants: Scott Mackey
Kelly Martinez, public member, and Cody Bartley volunteered to participate.

B. **California Administrative Code (Possible date: Fourth Quarter of 2022)-** Current participants: Joe LaBrie and Scott Mackey
Mr. Tannahill volunteered to participate, and Ms. Timmins will provide the PowerPoint presentation slides.

C. **Policy Intent Notice (PIN) 50: Integrated Review (Date: Pending) -** Current Participants: Gary Dunger and HCAI Staff
The possible date of presentation was projected for Spring 2023.

D. Emergency Process Design Guide (Possible date: November 2022)- Current participants: Gary Dunger and HCAI Staff
Mr. Tannahill requested that Teresa Andres, public member, be added as a participant. The possible date of presentation has been moved to early 2023.

E. OSGPD 3 Clinics (possible date: Early 2023) – Current participants: Gary Dunger and David Khorram
Mr. Tannahill asked Mr. Dunger and Mr. Khorram if they would be ready to present the OSHPD 3 clinics by January 2023. Mr. Khorram said that they could deliver by February 2023.

F. Testing, inspection, and observation program- possible participants: Chris Davis, Bert Hurlbut, Joe LaBrie, and Scott Mackey
Mr. Khorram said that there were webinars scheduled for November 9th and 17th. The presenters for the webinars are Mr. Hurlbut, Mr. LaBrie, and various ISU staff.

G. PINs and Code Application Notices (CAN) – Ms. Timmins briefed that CAN 2-508 should be ready by the first quarter of the 2023, and PIN 69 should be ready by the beginning of next year.

Mr. Hooper asked the committee if there were any other topics that they could recommend a webinar on. Mr. Tannahill suggested the topic on what to do on a construction site for IORs and processes.

Mr. Dunger suggested giving overviews of the changes made to fire related CANs from code cycle to code cycle. He also added that fire alarm testing and inspection could be tied to one of the CANs that deals with testing of notification appliances.

Mr. Hooper suggested that some of the topics could be done as field brief advice rather than webinars. Mr. Tannahill stated that the Office would look at options to facilitate that.

Informational and Action item

- None.

5. Planning and Development of the 2023 seminar: Guide for working on HCAI projects – Tips from experts

Presenter: Mike Hooper, Committee Chair

Discussion and Input

Mr. Dunger pointed out that the guide needed to be updated. Ms. Belair said that HCAI would be updating the guide.

Mr. Tannahill briefed that the committee could take the lead to update the guide in January 2023, then send out copies to get feedback.

Mr. Hooper asked Mr. Tannahill if the last presentation on tips from experts was available to be used as a baseline in terms of the actual presentation. Mr. Tannahill answered that the presentation was available and could be sent out to the committee members.

Ms. Belair asked if there would be a benefit to going over the table of content and identifying where there would be a need to provide support. Mr. Hooper said that it would be possible in the next committee meeting to see who would be comfortable dealing with which specific topic and then start putting it together. Ms. Belair suggested that the picking topics relevant to modern-day case studies, based on experience, would be more beneficial than covering the whole guide.

Informational and Action item

- None.

6. Committee goals for 2023

Presenter: Mike Hooper, Committee Chair

Committee Goals for 2023:

Webinars:

- Offsite Fabrication/Pre-assembled components
- PINs and CANs related to Fire Life Safety, Pre-approvals, medicine dispensing units and emergency projects
- Emergency Design Guide
- Develop a regular curriculum and predictable calendar for webinars

Engage volunteers based on webinar list presented at last committee meetings:

- California Administrative Code – 1Q2022
- PIN 50 – 2Q2022
- Emergency Design Guide – 3Q2022

Prepare for 2023 Seminar.

Discussion and input

Mr. Hooper asked Ms. Belair if she needed more input from the committee to put the goals together. Ms. Belair asked if there was anything the committee members would like to add. She said that the planning meeting in November 2022, would be to solidify the goals for 2023. Mr. Mackey recommended adding a bullet on outreach, and underneath the bullet, adding "to develop a curriculum and predictable calendar for webinars and seminars in 2023." Mr. Hooper and Ms. Belair both agreed.

Mr. Tannahill suggested that when looking at meetings for 2023, the committee take into account the increase in the number of meetings needed when planning an in-person seminar. Ms. Belair agreed.

MOTION: [Mackey/Zellmer]

The board unanimously voted to accept goals for 2023.

Informational and Action item

- None.

7. Comments from the public/committee members on issues not on this agenda

Presenter: Mike Hooper, Committee Vice Chair

Mr. Hooper thanked the committee members for their input.

There were no further Education and Outreach Committee meetings.

Discussion and input

- None.

Informational and Action item

- None.

8. Adjournment

Mr. Hooper adjourned the meeting on October 19, 2022, at approximately 11:03 a.m.

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Energy Conservation and Management Committee

Draft Meeting Report/Minutes

October 4, 2022

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Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD
Energy Conservation and Management Committee

Tuesday, October 4, 2022
10:00 a.m. – 4:00 p.m.

Teleconference Meeting Access:
HBSB Teams ECM Committee
Access Code: 411-125-179

Committee Members Present
Scott Jackson, Chair
Louise Belair
David Bliss
Deepak Dandekar
Michael Foulkes
John Griffiths
David Khorram
Michele Lampshire

HCAI Staff Present
Jamie Schnick
Nanci Timmins
James Yi

HBSB Staff Present
Ken Yu, Executive Director
Paul Doyle
Evett Torres

Consulting Members Present
Eric Johnson
David Lockhart

1. Welcome and introductions

Scott Jackson, Chair, called the meeting to order on October 4, 2022, at 10:00 a.m., and HBSB Executive Director, Ken Yu called roll.

2. Roll Call And Meeting Advisories/Expectations

Seven members of the Committee present constitute a quorum. There being ten present at the time of roll, a quorum was established.

Mr. Yu read the meeting rules and procedures.

3. Review and correct the June 14, 2022 Energy Conversation and Management Committee meeting report that was previously approved at the August 11, Full Board Meeting

Presenter: Scott Jackson, Chair

Discussion and Input

Mr. Schnick noted correction in page 3 of 4, line 20, and suggested that the line be struck out since HCAI does not have preference on fuel source for the fuel cells.

Mr. Griffiths noted that on page 4 of 4, line 20, the percentage of methene gas used by Bloom Energy is 3% at the moment.

MOTION: [Bliss/Khorram]

The board unanimously voted to approve the changes of the June 14, 2022, committee report/minutes.

Informational and Action item

- None

4. Microgrid Taskforce

Presenter: Jamie Schnick, HCAI

Mr. Schnick stated that HCAI's mission in regard to the microgrid taskforce is to help simplify the processing of new healthcare microgrid projects and to get the word out that microgrids can be implemented now, and to help with the process of delivering microgrids as Emergency Power Sources.

Mr. Schnick mentioned the importance of healthcare microgrids:

- Opportunity for operations cost savings to owners
- Increased resilience
- Increased sustainability

Mr. Schnick talked about the microgrid presentations that had taken place:

- CSHE Southern California, which took place on September 15, 2022 at Long Beach, California.
- Healthcare Facility Symposium and Expo, which was on September 27, 2022 at Long Beach, California.

There will be a CSHE Northern California presentation on October 20, 2022 in Fairfield, California.

Mr. Schnick talked about the potential upcoming code changes that have been presented for the 2021 California Electric Code Intervening code updates. These are:

- CEC 210 – revised demand factors
- CEC 517.30 – microgrids as EPS for hospitals
- CEC 517.42 – microgrids as EPS for SNF's and Limited Care Facilities

These codes would be adapted in California on January 1, 2026 as new codes.

Mr. Schnick mentioned the revision on the code on receptacle loads. This revision takes loads of Volt-Amperes (VA) between 5,000 to 10,000 at 50%, and over 10,000 VA at 20%. Mr. Schnick pointed out that this was specific to plug load in Patient Care Spaces. The goal was to lower the demand for plug load, so that the smaller the demand, the smaller the microgrid, the less amount of fuel to be stored onsite.

Mr. Schnick said that the definition of Health Care Microgrid Control System was a system including health care microgrids with functions that can manage itself, operate autonomously, and connect and disconnect itself from the utility for the exchange of power and the supply of ancillary services (ELS).

Essential electrical systems (EES) shall have two or more independent sources (or sets of sources). One on-site source (or sets of sources) shall be sized to supply the entire EES. The other independent source (or sets of sources) shall be sized to supply the entire EES and shall be permitted to be located on-site or off-site. Additional sources other than the first independent sources shall be permitted to be sized to supply the intended load.

Mr. Schnick talked about the changes in power sources in code 517.30 B1 shall be:

- Battery system
- Fuel cell system
- Health Care Microgrid

Mr. Schnick said that code 517.41 changed to code 517.41 (A1) which included generating units, fuel cells, and batteries as additional power sources.

Mr. Schnick talked about the next steps on the microgrids as emergency power sources:

- CMS has been approached to allow alternatives to Generators for EPS
- Special Seismic Certification for DER's and Components
- Use of Listed Products – UL 3001 (controllers)
- HCAI Review of DER's
- Solve ½/4/6/72 hours of on-site fuel storage for DER's challenge
- Commissioning/Retro Commissioning Requirements defined

He added that the microgrids can at this time be designed/built to provide 100% back up of normal approach for SNFs and MOB in a code compliant manner.

Discussion and Input

An interested party asked if the committee was factoring in the new 2511 language that is going to require 96 hours of fuel for SNFs. Mr. Schnick answered that there would be updates on that.

Mr. Griffiths asked if the microgrid definition would be in the definitions when the code was updated. Mr. Schnick answered that yes, the definition with some modification would be included in the CEC code.

Mr. Griffiths asked about ELS at the end of the definition. Mr. Schnick stated that those notes referred to where the code was coming from.

Mr. Griffith asked if the Healthcare Facility Symposium and Expo was receptive. Mr. Schnick answered that the presentation was well received and had good feedback.

Mr. Yu announced that Mr. Yi had posted the link to AB2511 in the chat box. Mr. Yu said that an interested party asked if HCAI anticipated working with the legislature to offset the final law in regard to AB2511. Mr. Schnick said that that was yet to be determined.

Informational and Action item

- None.

5. Introduction to the Innovus Power and Microgrid Solutions

Presenter: Marc Hoffman, Innovus Power

Mr. Hoffman stated that Innovus is a microgrid designer and the company provides delivery of microgrids of any range or configuration. He defined a microgrid as a local energy grid with control capability, which means it can disconnect from the traditional grid and operate autonomously.

Mr. Hoffman said that every definition of a microgrid should contain:

- Be less than 10kW to greater than 10MW able to power a single home up to medium size communities, large commercial and industrial applications
- Must be able to run independent from utility grids for sustainable period
- Must be dispatchable - Available when needed

Mr. Hoffman discussed on what makes islanded microgrids different from utility grids:

- Load profiles – the smaller the grid the more the grid changes.
- Addition of Renewable supply volatility - Dispatchable power must offset renewable supply volatility at same speed while controlling power quality

Mr. Hoffman stated that the ramp up speed of the prime mover must match the load ramp rates. When Prime Mover cannot meet load ramp-rates, black-outs, brown-outs, and poor power quality will occur increasing energy consumed end causing early device failures. He said that the recently introduced battery-centric microgrids have addressed the load response issues but created major “cost of power” challenges.

Mr. Hoffman discussed that Energy Management Centric (EMC) power solves the major microgrid challenges facilitating growth for the 21st century. Innovus EMC system features:

- Power electronics and software managed and controlled power assuring speed of load response, volume of power, and power quality
- Cleaner more efficient Prime Movers can be used on any application
- 35% reduced fuel consumption when diesel is unavoidable results driven by EMCP enabled variable speed engine operation
- Solar and wind penetration maximized without curtailment
- Stored energy optimized at minimal cost
- High power quality in all applications improving device effectiveness
- Technology and OEM agnostic platform embraced new capabilities
- Can be purchased as turnkey microgrid or upfitted to existing microgrids

Mr. Hoffman briefed that by decoupling the Prime Mover from controlling power:

- The cleanest, most cost-effective energy sources can be deployed in any application

- Renewable power was maximized in CO2 and cost reductions
- The system can be technology and OEM agnostic so microgrids can be improved as greener more efficient technologies emerge

When EMCP is added, genset capacity can be reduced by 38% with power quality now inside critical power quality specifications.

Discussion and Input

Mr. Pumphrey explained that Cummins offers different power systems:

- Mobile/ industry power
- Stationary power
- Integrated power systems solutions
- Unmatched support – Support customers in the most demanding of applications and locations

Mr. Pumphrey mentioned that Cummins involvement in healthcare power systems:

- Completed Hundreds of Healthcare projects across the U.S.
- All California Projects Have Complied with HCAI (OSHPD)
- Most Cummins Products Have OSPs

Mr. Hoffman talked about how Innovus Power provided services to customers. They offered:

- Firm understanding of their power demands with the granularity required to see savings opportunities today, and in the future
- Performance modeling and simulations that assure each configuration will always meet operational needs
- Capability to objectively evaluate the benefits and drawbacks of any OEM and relevant technologies that can be applied
- Financial modeling providing where microgrid design trade-offs on capital, operating costs, and environmental objectives could be weighed

Mr. Hoffman summarized Innovus Power modeling process:

- First process- gain customer alignment on energy project objectives that is power cost savings, emissions, capital spend, resilience, and power quality.
- Second - quantified the load profile in annual, daily, minutes, second increments
- Third process - created microgrid design options that met all performance requirements including resilience and power quality.
- Fourth - Performed financial analysis providing ROI's, LCOEs, required capital for customer decision making.
- Last process – Presented microgrid design options for project justification and go forward decision.

An interested party asked how easy it was going to be to scale up load requirement for electricity for parking systems or would there be a need when determining additional load requirement or redesigning the entire system. Mr. Hoffman answered that the system is scalable so it could accommodate additional load requirement for different options.

Mr. Griffiths asked what were the average lifespan of the systems that Innovus Power installs. Mr. Hoffman answered that it varies depending on the configuration, but most components are designed to last at least 20years.

Mr. Griffiths asked how Innovus Power planned to get to the VNE goal. Mr. Hoffman answered that have a road map on that to know how to get to the VNE goals within the timeframe.

Dr. Bliss asked about what was the future fuel taking the place of diesel that is going to meet the objectives of cost, CO2 emissions, and environmental considerations. Mr. Hoffman said that diesel would be replace by natural gas. Mr. Pumphrey argued that the challenge of natural gas in California was on-site fuel storage. He suggested that natural gas would not be the future because of seismic shut off concerns. Mr. Pumphrey said that the use of renewable diesel would be better since it is carbon neutral.

Informational and Action item

- None.

6. Introduction to HOMER Energy by UL (Underwriters' Laboratory)

Presenter: Peter Lilienthal & Eduardo Guerra Homer Energy

Mr. Lilienthal said that HOMER Energy originally worked with remote microgrids.

Discussion and Input

Mr. Guerra talked about how HOMER Energy did an advisory project where they provided impact of what it would take to electrify some of their ambulance fleet. HOMER Energy did that through modeling.

Mr. Guerra demonstrated how HOMER Grid works. HOMER grid can provide resources needed to calculate generation needed from different technologies. The grid can import the electrical load of a facility to give the average consumption and load, peak load and load factor of the given facility. Mr. Guerra added that the grid can be used with utility to define what utility rate is subject to the given facility. Mr. Guerra said that HOMER grid was flexible to evaluate the impact of future load.

Dr. Bliss asked if HOMER's platform could operate on non-windows based devices and also if HOMER's current model was on subscription mode. Mr. Lilienthal answered that HOMER Pro and Homer Grid were Windows apps and HOMER Front was a web app. He added that HOMER had an advisory team hence they do a lot of advisory work.

Informational and Action item

- None.

7. Energy management during unprecedented heatwave of September 2022

Presenter: Noella Tabladillo, Kaiser Permanente

Discussion and input

Mr. Hemstreet briefed that Kaiser Permanente had rapidly increased the percentage of its electricity which was generated onsite. Mr. Hemstreet said that due to the extraordinary heatwave in September, Kaiser Permanente had a demand response plan which was to run emergency generators in medical centers during the afternoons, in order to reduce demand on the grid. These prevented rolling blackouts during the recent heatwave. Kaiser Permanente generated 30 megawatts of power from diesel generators.

Mr. Hemstreet said that Kaiser Permanente met with the California Energy Commission representatives on September 2022, and Kaiser Permanente

- Seeking Reimbursement from Emergency Load Reduction Program
- Highlighted need for better alignment across all Utility Providers

For future considerations

- Health Care Resiliency extends beyond Medical Treatment Facilities. Losing power disproportionately affects at-risk individuals and communities
- Power Outages add demand and costs for Health Care providers that are already stressed during extreme weather events
- SOP for Hospitals and others during Flex Alerts.
- Capital Improvements to enable E-Generators to feed the grid. Kaiser Permanente alone has 120 Megawatts power generator capacity.

Mr. David commented that he had the idea that Kaiser Permanente could not deliver demand response in California using diesel generators, so he wanted to know how they tackled this during the September emergency. Mr. Hemstreet answered that MQAD restrictions were waved during the heatwave hence Kaiser Permanente was able to deliver.

Mr. David asked if Kaiser Permanente were allowed to reverse power into the grid. Mr. Hemstreet said that Kaiser Permanente did not have the equipment to reverse power and that limited the amount of demand response that was provided.

Mr. Dandekar asked if the State can facilitate resources for healthcare facilities to look for mega power facilities for emergencies. Mr. Hemstreet answered that the State has allowed Kaiser Permanente to install a lot of behind the meter energy storage to add to the resiliency of the overall grid.

Ms. Tabladillo asked if the committee considered to put the topic into the next committee meeting as continuation for this agenda. Mr. Jackson agreed to that stating that the topic was worthy to have as a follow up agenda.

Informational and Action item

- None.

8. Committee Goals for 2023

Presenter: Scott Jackson, Committee Chair

Discussion and input

Mr. Jackson announced that he would be stepping down as the committee chair but more to be discussed in the next meeting in November 2022.

Informational and Action item

- None.

9. Comments from the public/committee members on issues not on this agenda

Presenter: Scott Jackson, Committee Chair

Mr. Jackson thanked the committee members for their input.

Discussion and input

Dr. Bliss asked if there was a committee in HCAI that looked at water usage in healthcare facilities. Mr. Yu said that water usage was related to energy and conservation, but it is something that HCAI should consider. Ms. Belair also suggested that it can be discussed in the planning committee.

Informational and Action item

- None.

10. Adjournment

Mr. Jackson adjourned the meeting on October 4, 2022, at approximately 1:29 p.m.

Joint Meeting of the Codes and Processes Committee, Energy Conservation and Management Committee, and Technology and Research Committee

Draft Meeting Report/Minutes

November 1, 2022

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HCAI Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

HOSPITAL BUILDING SAFETY BOARD

Joint Committee Meeting:

Codes and Process Committee
Energy Conservation and Management Committee
Technology and Research Committee

Tuesday, November 1, 2022
1:00 p.m. – 4:00 p.m.

Teleconference Meeting Access:
Access Code: 755-694-74

Codes and Processes Committee Members Present
Michael O'Connor, Chair
Cody Bartley
Louise Belair
John Griffiths
Scott Jackson
Michele Lampshire
Farzad Naeim
Scott Mackey

Consulting Members Present
John Donelan
Gary Dunger
Mark Hershberg

HBSB Staff Present
Ken Yu, Executive Director
Paul Doyle
Evett Torres

Energy Conservation and Management Committee Members Present
Scott Jackson, Chair
VACANT, Vice Chair
Louise Belair
Deepak Dandekar
John Griffiths
Michele Lampshire
Bruce Rainey

Consulting Members Present
Eric Johnson
David Lockhart

Technology and Research Committee Members Present
Bruce Rainey, Chair
David Bliss
Deepak Dandekar
John Griffiths
Bert Hurlbut
Michael O'Connor
Scott Mackey

Consulting Members Present
Gary Dunger
Eric Johnson

HCAI Staff Present
Chris Tokas, FDD Deputy Director
Arash Altoontash
Richard Tannahill
Brett Beekman
Hussain Bhatia
Larry Enright
Roy Lobo
Diana Navarro
Carl Scheuerman
Jamie Schnick
Nanci Timmins
James Yi

1. Call to order and Welcome

Michael O'Connor, Codes and Processes Committee Chair, called the meeting to order on November 1, 2022, at 1:00 p.m., and HBSB Executive Director, Ken Yu called roll.

2. Roll Call and Meeting Advisories/Expectations

In the Codes and Processing Committee, six members of the Committee present constitutes a quorum. There being eleven present at the time of roll, a quorum was established.

In the Energy Conservation and Management Committee, six members of the Committee present constitutes a quorum. There being eight present at the time of roll, a quorum was established.

In the Technology and Research Committee, six members of the Committee present constitute a quorum. There being nine present at the time of roll, a quorum was established

Mr. Yu read the public announcement regarding COVID-19, meeting rules and procedures.

3. HCAI Policy Intent Notice (PIN) "Skilled nursing facilities: backup power source"

Presenter: Chris Tokas, Ali Sumer, HCAI

Discussion and Input

Mr. Tokas stated that the purpose of PIN 74 was to add code to meet the new AB2511 requirements for Skilled Nursing Facilities (SNFs) to have an alternate source of power located on site to provide for no fewer than 96 hours of alternate power to maintain safe temperatures, maintain availability of life-saving equipment, and maintain oxygen-generating devices in the event of a power outage. He added that Assembly Bill (AB) 2511 composed specific requirements based on whether a SNF used a generator, batteries, or renewable electrical generation facilities as an alternate source of power. The bill requires facilities to comply with these new requirements by January 2024. Mr. Tokas said that HCAI is developing PIN 74 and guidelines to address code requirements and present possible design solutions to meet the new statutory requirements.

Mr. Tannahill said that SNFs were previously required to provide six hours of on-site fuel storage for emergency power storage such as emergency generators, and AB 2511 requires SNFs to have an alternate source of power to protect resident health and safety for no fewer than 96 hours for power outages resulting from public safety power shutoff, an emergency, a natural disaster, or other causes.

Mr. Tannahill defined an alternate source of power as a source of electricity that is not received through an electric utility, but it is generated or stored onsite, which may include but not limited to, emergency generators using fuel, large capacity batteries, and renewable electrical generation facilities.

Mr. Tannahill stated that HCAI will clarify the technical basis from which a SNF creates a plan for identifying existing conditions that are already in compliance with the statute, identifies existing conditions that are not incompliance, so that this can be submitted with construction projects developed to achieve a compliant condition as required for acceptance by California Department of Public Health (CDPH). Mr. Tannahill disclosed that the methods outlined and details in PIN74 indicated acceptable methods which may be provided to HCAI.

Mr. Tannahill described safe temperate as 71 to 81 degrees Fahrenheit.

Mr. Tannahill mentioned that all facilities were required to provide an assessment for their facilities. He added that any new or existing on-site essential and an alternate power source shall conform to one or more of the following requirements as applicable:

- Title 24, California Electrical Code, Part 3, ARTICLE 517.29 through 517.30 for SNF and Subacute units
- Title 24, California Electrical Code, Part 3, ARTICLE 517.40 and 517.41, Essential Electrical Systems for Nursing Homes and Limited Care Facilities
- Title 24, California Electrical Code, Part 3, ARTICLE 701 for legally required standby systems
- Title 24, California Electrical Code, Part 3, ARTICLE 705, Interconnected Electric Power Production Sources
- Special seismic certification of equipment, Title 24, California Building Code, Part 2, Volume 2, Section 1705
- 96 hours of on-site fuel storage (or an approved Emergency Preparedness plan).

Mr. Tannahill indicated that where generators are used as an alternate source of power, sufficient fuel shall be maintained to sustain generator operation for no less than 96 hours or contract arrangements shall be made for fuel delivery for an emergency event. If fuel was to be delivered during an emergency event, the facility shall have at least 6 hours of fuel on site and shall ensure that fuel would be available with no delays.

For facilities that used batteries or a combination of batteries in tandem with a renewable electrical generation as their alternate source of power, Mr. Tannahill stated that they shall have sufficient storage or generation capacity to maintain operation for no fewer than 96 hours. The facilities should also make arrangements for delivery of a generator and fuel in the event power is not restored within 96 hours and the generation capacity of the renewable electrical generation facility was unable to provide sufficient power to comply with state requirements for long-term care facilities.

Mr. Schnick provided three scenarios/examples of how an existing SNF facilities' electrical system could be modified to meet the code requirements:

- Option 1 – Expand on existing electrical system -Add new loads to existing or replacement emergency generator where they meet Title 24, California Electrical Code, Part 3, ARTICLE 517 (Health Care Facilities) requirements and have adequate capacity to support the loads required to maintain 96 hours of operation. Mr. Schnick added that for standard SNF and subacute SNF, existing generators would need to have adequate capacity and provisions for 96 hours of fuel and that in many cases recircuiting of HVAC loads would be required.
- Option 2 - new alternate generator and associated equipment - could be introduced into the system to feed new or additional loads necessary to meet requirements. The new generator and equipment should meet Title 24, California Electrical Code, Part 3, ARTICLE 701 (Legally Required Standby Systems) requirements, have special seismic certification, and fulfill the 96-hour on-site fuel requirements. The new standby system would need to feed the cooling equipment, life-saving equipment, and oxygen-generating devices.
- Option 3 - A new healthcare microgrid - could be introduced to the system with any combination of generators, turbines, fuel cells, photovoltaics, battery storage system, or other on-site Distributed Energy Resources (DERs), and be configured to parallel with a normal distribution board at the facility. The new system components need to meet requirements of Title 24, California Electrical Code, Part 3, ARTICLE 705 (Interconnected Electric Power Production Sources), have special seismic certification, and fulfill the 96-hour fuel requirement.

Mr. Tannahill communicated that SNF should submit an evaluation of on-site sources of power under the provision of Health and Safety Code (HSC) 1418.22. The assessment report should include existing conditions and describe proposed changes that would result in a SNFs compliance with HSC 1418.22. The Assessment Report shall be submitted electronically using the eServices Portal on the HCAI website.

Mr. Hurlbut asked about the number of SNFs in California, and what was the average size bed capacity of SNFs. Mr. Tannahill answered that there were 1,208 SFNs, and an average of 50 beds capacity. Mr. Hurlbut asked the size of the equipment. Mr. Tannahill said that would vary by location, number of beds, and by existing facilities. Mr. Schnick added that the the SNF's he has worked on are typically single story buildings 20,000-30,00 square feet and the total power load ranged from 60kwm to 120kwm.

Dr. Bliss asked if fuel must be on-site where fuel cells are used since majority ran off of natural gas. Mr. Schnick answered that the solution could use microgrids made up of DERs, batteries, or a single gas turbine that can operate on natural gas or propane. The requirement is that the facility maintain a minimum of 6-hours of on-site fuel with capability to get to the 96 hours. Dr. Bliss asked if the backup system would be used on a routine basis or must maintain its capacity at all times and remain in backup mode. Mr. Schnick said that microgrids that used batteries to offset peak loads are code complaint but batteries used for on-site stored power need to have a minimum of 6 hours of stored fuel.

An interested party asked if the requirements for interrupted power was 10 seconds regardless of energy sources for a power interruption. Mr. Schnick stated that the requirement for 10 seconds was for life safety loads so there are no restrictions on timing. Mr. Tannahill added that if the were a subacute facility the 10 seconds requirement would apply. An interested party asked how they would handle fuel suppliers to guarantee fuel delivery. Mr. Tannahill stated that it was CDPH who approves the fuel suppliers.

An interested party asked if there was a way of getting an emergency generator for SNFs before the 2024 deadline. Mr. Tokas did not comment on feasibility but did say that this is a newly adopted law.

Mr. Donelan asked if the fuel requirements have been moved from CEC 700 to CEC 701. Mr. Schnick answered that the requirements had not been moved, the idea was to comply with CEC 701, in addition comply with seismic requirements.

An interested party asked if SNFs or subacute facilities that have been permitted under the code can be assumed that they met the life safety equipment in law. Mr. Schnick said that there was a new language in the code to say life saving equipment, so the facility would fill an assessment to show they have life saving equipment connected to the alternate source, or existing generator with 96 hours of back-up fuel met.

Mr. Johnson asked how emergency food provision and refrigeration were addressed in the code. Mr. Tannahill said that it was not addressed in PIN 74.

Mr. Griffiths asked if life saving definition has been developed or if it was already in the PIN. Mr. Schnick said that the definition was already addressed in PIN 74. Mr. Griffiths asked on how facilities would get load shedding requirements met. Mr. Tokas answered that the designers would have to come up with a plan in order to meet the requirements for review and approval. Mr. Griffiths asked if the document would have the standard for the review. Mr. Tannahill answered that there would be parameters on things like temperatures for a certain amount of time, so they designer has to prove how the parameters will be met.

An interested party asked if there was an opportunity to influence demand response legislation to include fossil generation so that the added cost of the standby protection can be indirectly funded by GR participation. Mr. Tokas said that the best way would be to approach the branch of legislative government.

Dr. Bliss asked if the legislature had given any thought to how Air Resources Board air quality management districts would respond to the implementation of fossil fuel generation. Mr. Tokas answered that they did not know how that board would respond.

Mr. Dandekar asked if there could be a hybrid solution for the 96 hours, where the first 48 hour would rely on battery power then the rest relay on fuel. Mr. Schnick said that current code requirement for SFNs is 6 hours, and that they hybrid approach would be acceptable.

Ms. Belair asked how temperature in facilities with no emergency power to feed HVAC equipment would be maintained so that there would be no need for additional power generation to be implemented. Mr. Tannahill said that there were options to include additional generators where there was an existing generator. Mr. Schnick added that solutions required to follow code 517 for existing generators, 701 for the introduction of a new generator, and 705 for microgrids.

Dr. Bliss asked if the PINs came out with explanatory notes of issues that are unclear or unresolved. Mr. Tannahill said that the board could do FAQ on HCAI's website. Mr. Tokas expressed that there would be an approach in order to respond to all kinds of questions.

Mr. O'Connor asked if the assessment form would be part of the PIN or a separate document. Mr. Tannahill answered that the assessment would be an appendix to the PIN.

MOTION: [Bliss/Naeim]

The committees unanimously voted to endorse the guide with a margin for some modifications.

Informational and Action item

- None

4. Comments] from the public/committee members on issues not on this agenda

Presenter: Michael O'Connor, Code and Process Committee Chair

Discussion and input

Mr. Griffiths asked how can members of the industries like fuel suppliers contribute to the guide. Mr. Tokas stated that they can participate through forums like the meetings.

Mr. Griffiths suggested that newsletters for the code be sent using the email list to engage input.

Mr. Griffiths asked if other states were invoking the same type of legislation. Mr. Tokas answered that they were not aware of any.

Ms. Belair suggested that PIN 74 be put as a webinar. Mr. Tokas said that the webinar has already been planned for Jan 2023. Dr. Bliss added that they could invite technology providers such as prime movers suppliers and DER suppliers to the webinar.

Mr. O'Connor asked for the best means of communication relevant to PIN 74. Mr. Tokas answered that they could send an email.

Information and Action item

- None.

6. Adjournment

Mr. O'Connor adjourned the meeting on Nov 1, 2022, at approximately 2:39 p.m.

2023 Committee Assignments, Goals and Meeting Calendar

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HOSPITAL BUILDING SAFETY BOARD
2023 COMMITTEES

BOARD PROCEDURES COMMITTEE (AD HOC)

Committee Members:	**HCAI Representatives:**
Michael Foulkes, Chair	Joe LaBrie
Scott Jackson, Vice-Chair	Carl Scheuerman
Louise Belair	**Meeting Dates:**

Focus/Goals:

- Meet as needed for:
  - Policies and Procedures updates
  - Nominating committee, training/onboarding members

CODES AND PROCESSES COMMITTEE

Committee Members:	**HCAI Representatives:**
Michael O'Connor, Chair	Brett Beekman
Jim Malley, Vice-Chair	Larry Enright
Cody Bartley	Roy Lobo
Louise Belair	Diana Navarro
John Griffiths	Carl Scheuerman
Mike Hooper	Jamie Schnick
Scott Jackson	Nanci Timmins
Michele Lampshire	
Scott Mackey	**Meeting Dates:**
Farzad Naeim	February 7
Consulting Members:	May 9
John Donelan	August 1
Mark Hershberg	October 17
Kelly Martinez	
Belinda Young	

Focus/Goals:

- Update CANs and PINs to code (ongoing)
- eTIO Program
- Evaluate standard details for SNFs
- Title 24, Part 3, 4, and 5
  - Identify code modifications to support Part 6 implementation of energy savings measures

EDUCATION AND OUTREACH COMMITTEE

Committee Members:	HCAI Representatives:
Mike Hooper, Chair	Hussain Bhatia
Scott Mackey, Vice-Chair	Monica Colosi
Cody Bartley	Joe LaBrie
Louise Belair	Cesar Ponce
Deepak Dandekar	Jamie Schnick
Gary Dunger	Nanci Timmins
Bert Hurlbut	**Meeting Dates:**
David Khorram	January 18
	March 8
Consulting Members:	May 24
John Donelan	July 26
Kelly Martinez	August 23
Bruce Rainey	September 20
Bill Zellmer	October 11
	November 1

Focus/Goals:

- Prepare for 2023 Seminar: Tips from The Experts
- Support the development of webinars
- Develop a regular curriculum and predictable calendar for webinars

ENERGY CONSERVATION AND MANAGEMENT COMMITTEE

Committee Members:	HCAI Representatives:
Scott Jackson, Chair	Larry Enright
John Griffiths, Vice-Chair	Carl Scheuerman
Louise Belair	Jamie Schnick
David Bliss	Nanci Timmins
Deepak Dandekar	
Gary Dunger	**Meeting Dates:**
Michael Foulkes	March 16
David Khorram	June 22
Michele Lampshire	October 5
Consulting Members:	
Eric Johnson	
David Lockhart	

Focus/Goals:

- Work with CEC to develop mutually agreeable standards for hospital building energy efficiency in 2025 code cycle
- Identify HCAI research projects for energy conservation, reduction of carbon footprint, and cost savings while maintaining health and safety
- Identify how to collaborate with CMS for implementation Microgrid demonstration project
- Pursue indoor air quality at a lesser energy cost for healthcare
- Water usage in healthcare environments. Efficiency/Sustainability

INSTRUMENTATION COMMITTEE

Committee Members:	**HCAI Representatives:**
Marshall Lew, Chair	Hussain Bhatia
Bruce Clark, Vice-Chair	Erol Kalkan
Scott Jackson	Roy Lobo
Jim Malley	Ali Sumer
Farzad Naeim	
Jennifer Thornburg	**Meeting Dates:**
Consulting Members:	February 16
Hamid Haddadi	June 1
Moh Huang	October 26
Tony Shakal	

Focus/Goals:

- Continue working with HCAI staff on scheduled instrumentation installations
- Consider other systems and monitoring devices
- Roll out white paper and identify areas for implementation
- Collaborate with CGS on prioritizing upgrades to existing instrumentation
- Work with EO Committee regarding webinar/seminar on instrumentation/white paper

STRUCTURAL AND NON-STRUCTURAL REGULATIONS COMMITTEE

Committee Members:	**HCAI Representatives:**
Jim Malley, Chair	Joe LaBrie
Farzad Naeim, Vice-Chair	Roy Lobo
Cody Bartley	David Neou
Louise Belair	Carl Scheuerman
Bruce Clark	Jamie Schnick
Mike Hooper	Ali Sumer
David Khorram	
Marshall Lew	**Meeting Dates:**
Jennifer Thornburg	January 24
Consulting Member:	April 11
Mark Hershberg	August 29
	November 7

Focus/Goals:

- Support HCAI with review of code changes (ongoing)
- Support HCAI with review of new/revised PINs, CANs, and OPDs (ongoing)
- Implementation of SPC-4D and NPC-4D
- Develop pre-approved details
- Seismic compliance issues related to NPC-3, NPC-4D, and NPC-5. Streamlining the process for compliance to meet the statutory and regulatory deadline.
- Review of Code amendments that are now obsolete as those issues have been addressed in model code
- Develop and implement procedures and enforceable building standards to ensure safe and sustainable healthcare facilities.
- New products, materials and methods that would benefit the public by early adoption rather than waiting for their incorporation in the building code.

Structural and Non-Structural Regulations Committee (cont'd)

- Increase IOR competency, is adequate testing and inspection happening in the field? Roles and responsibilities of the design professional and HCAI.
- Implementation of small and rural hospital relief program, increase technical assistance and awareness
- Implementation of AB 1882 requirements. Reach out to stakeholders via seminars and webinars to raise awareness.

TECHNOLOGY AND RESEARCH COMMITTEE

Committee Members:	**HCAI Representatives:**
Michael Foulkes, Chair	Hussain Bhatia
Gary Dunger, Vice-Chair	Larry Enright
David Bliss	Joe LaBrie
Deepak Dandekar	Carl Scheuerman
John Griffiths	Jamie Schnick
Bert Hurlbut	Nanci Timmins
Scott Jackson	
Scott Mackey	
Michael O'Connor	**Meeting Dates:**
Consulting Members:	April 26
Benjamin Broder	September 13
Eric Johnson	
Belinda Young	

Focus/Goals:

- Explore subjects of telemedicine and robotics
- Discuss the effect of technologies on healthcare equity
- Explore emerging technologies that help reduce the carbon footprint for healthcare facilities and implementation relative to code implementation of emerging tools relative to the code.
- Address how to regulate remote services (e.g., medical records, web-based nurse call, off-site server farms, etc.)
  - Define what is a medical record
  - Monitor CDPH electronic health records redundancy issues in the event of power failure and watch for potential effects to code
  - Invite industry members to address/inform the committee on the reliability of cloud-based systems (fire alarm, energy monitoring, etc.)
- Explore wastewater solutions

FULL BOARD MEETING DATES

April 20 – Virtual + Sacramento and Los Angeles
August 17 – Sacramento
December 6 and 7 – Los Angeles

HCAI Department of Health Care Access and Information
2020 West El Camino Avenue, Suite 800
Sacramento, CA 95833
hcai.ca.gov

November 23, 2022

To: Members, Hospital Building Safety Board
From: Ken Yu, Executive Director
Subject: Upcoming Meeting Dates

Please make note of the following meeting dates. Agendas will be sent out separately.

DATE	MEETING	LOCATION
January 18, 2023 10 am – 4 pm	**Education and Outreach Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 223 824 851 725 Passcode: RHAmaT **Or call:** +1 916-535-0978 **Phone Conf ID:** 171 107 436# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

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DATE	MEETING	LOCATION
January 24, 2023 10 am – 4 pm	**Structural and Nonstructural Regulations Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 239 491 645 237 Passcode: Lushrc **Or call:** +1 916-535-0978 Phone Conf ID: 762 176 753# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833
February 7, 2023 10 am – 4 pm	**Codes and Processes Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 212 454 972 973 Passcode: 46Pf9L **Or call:** +1 916-535-0978 Phone Conf ID: 597 136 63# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

DATE	MEETING	LOCATION
February 16, 2023 10 am – 4 pm	**Instrumentation Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 232 109 070 01 Passcode: nj9Hp8 **Or call:** +1 916-535-0978 Phone Conf ID: 761 775 023# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 1901 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833
March 8, 2022 10 am – 4 pm	**Education and Outreach Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 291 479 651 347 Passcode: 5UrPLT **Or call:** +1 916-535-0978 **Phone Conf ID:** 514 530 453# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

DATE	MEETING	LOCATION
March 16, 2023 10 am – 4 pm	**Energy Conservation and Management Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 215 021 235 716 Passcode: XXATVD **Or call:** +1 916-535-0978 Phone Conf ID: 481 147 085# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 1901 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833
April 11, 2023 10 am – 4 pm	**Structural and Nonstructural Regulations Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 292 684 543 991 Passcode: TdJiU9 **Or call:** +1 916-535-0978 Phone Conf ID: 285 913 771# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 1901 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

DATE	MEETING	LOCATION
April 20, 2023 10 am – 4 pm	**Full Board**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 257 934 993 830 Passcode: osFNed **Or call:** +1 916-535-0978 Phone Conf ID: 229 968 008# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 900 Sacramento, CA 95833
April 26, 2023 10 am – 4 pm	**Technology and Research Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 230 546 562 103 Passcode: uRgXD5 **Or call:** +1 916-535-0978 Phone Conf ID: 751 975 811# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 900 Sacramento, CA 95833

DATE	MEETING	LOCATION
May 9, 2023 10 am – 4 pm	**Codes and Processes Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 260 667 884 822 Passcode: AqcV9f **Or call:** +1 916-535-0978 Phone Conf ID: 493 134 277# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833
May 24, 2023 10 am – 4 pm	**Education and Outreach Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 222 245 177 483 Passcode: bwvkdx **Or call:** +1 916-535-0978 Phone Conf ID: 221 890 890# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

DATE	MEETING	LOCATION
June 1, 2023 10 am – 4 pm	**Instrumentation Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 288 265 514 900 Passcode: rGJoNS **Or call:** +1 916-535-0978 Phone Conf ID: 485 334 57# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 1901 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833
June 22, 2023 10 am – 4 pm	**Energy Conservation and Management Committee**	**Microsoft Teams:** Click here to join the meeting Meeting ID: 221 018 181 042 Passcode: ZDnuzj **Or call:** +1 916-535-0978 Phone Conf ID: 399 542 438# **In Person:** **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071 **HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833

DATE	MEETING	LOCATION
July 26, 2023 **10 am – 4 pm**	**Education and Outreach Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
August 1, 2023 10 am – 4 pm	**Codes and Processes Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
August 17, 2023 10 am – 4 pm	**Full Board**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 900 Sacramento, CA 95833
August 23, 2023 10 am – 4 pm	**Education and Outreach Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
August 29, 2023 10 am – 4 pm	**Structural and Nonstructural Regulations Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
September 13, 2023 10 am – 4 pm	**Technology and Research Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071

DATE	MEETING	LOCATION
September 20, 2023 10 am – 4 pm	**Education and Outreach Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
October 5, 2023 10 am – 4 pm	**Energy Conservation and Management Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
October 11, 2023 **10 am – 4 pm**	**Education and Outreach Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
October 17, 2023 10 am – 4 pm	**Codes and Processes Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
October 26, 2023 10 am – 4 pm	**Instrumentation Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 1901 Los Angeles, California 90071

DATE	MEETING	LOCATION
November 1, 2023 10 am – 4 pm	**Education and Outreach Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
November 7, 2023 10 am – 4 pm	**Structural and Nonstructural Regulations Committee**	**HCAI Sacramento** 2020 West El Camino Ave, Ste. 930 Sacramento, CA 95833 **HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
December 6, 2023 10 am – 4 pm	**Two-day Full Board (Day 1)**	**HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071
December 7, 2023 9 am – 3 pm	**Two-day Full Board (Day 2)**	**HCAI Los Angeles** 355 S. Grand Ave, Ste. 2000 Los Angeles, California 90071

NOTE: Individuals with disabilities may request an accommodation or modification to observe or participate in the meetings by contacting Evett Torres at (916) 440-8453, evett.torres@hcai.ca.gov or by sending a letter to 2020 West El Camino Avenue, Suite 800, Sacramento, CA 95833. Providing your request at least five (5) business days before the meeting will help ensure availability of the requested accommodation

Board Rosters

2022

- MEETING ATTENDANCE
- COMMITTEE LIST
- BOARD MEMBERSHIP
- CONSULTING COMMITTEE MEMBERS

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HBSB Attendance 2021-2022

	12-08-21 Full Board	12-09-21 Full Board	01-13-22 Structural and Non-Structural	01-26-22 Board Procedures (Ad Hoc)	01-27-22 Instrumentation	02-10-22 Codes and Processes	02-23-22 Education and Outreach	03-15-22 Energy and Conservation	04-15-22 Instrumentation	04-28-22 Full Board	05-12-22 Codes and Processes	05-25-22 Education and Outreach	05-27-22 Instrumentation	06-14-22 Energy Conservation	06-22-22 Structural and Non-Structural	07-05-22 Instrumentation	07-14-22 Codes and Processes	07-27-22 Technology and Research	08-11-22 Full Board	08-17-22 Education and Outreach	09-29-22 Instrumentation	10-04-22 Energy Conservation and Management	10-13-22 Codes and Processes	10-19-22 Education and Outreach	10-27-22 Instrumentation	11-01-22 Technology and Research	11-07-22 Structural and Non-Structural	11-18-22 Board Procedures (Ad hoc)
Bartley, Cody																			X				X	X			X	
Belair, Louise	X	X		X	X		X	X		X		X		X			X	X	X	X		X	X	X		X		X
Bliss, David	X	X						X		X				X				X	X			X				X		
Clark, Bruce	X	X	X		X				X	X			X		X	X			X		X				X		X	
Dandekar, Deepak	X	X					X	X		X		X		X				X	X	X		X		X		X		
Foulkes, Michael	X	X		X				X		X				X				X	X			X				X		X
John Griffiths								X											X			X				X		
Hooper, Mike	X	X	X			X	X			X	X						X		X	X			X	X			X	
Hurlbut, Bert	X	X					X			X		X						X	X	X				X		X		
Jackson, Scott	X	X				X		X		X	X			X				X	X			X						X
Khorram, David	X	X								X		X							X	X		X		X				
Lampshire, Michele	X	X								X												X						
Lew, Marshall	X	X	X		X				X	X			X		X	X			X		X				X		X	
Mackey, Scott	X	X				X	X			X	X	X						X	X	X			X	X				
Malley, Jim	X	X	X			X			X	X	X				X	X		X		X			X		X		X	
O'Connor, Michael	X	X	X			X				X	X						X	X	X				X		X			
Naeim, Farzad	X	X	X		X	X			X	X			X		X	X	X		X		X			X		X		
Rainey, Bruce	X	X		X			X	X				X		X				X	X	X						X		X
Thornburg, Jennifer	X		X		X					X					X				X		X				X			
CONSULTING MEMBERS:																												
Broder, Benjamin																										X		
Donelan, John	X	X				X	X													X			X	X				
Dunger, Gary	X	X				X	X				X	X					X	X		X			X	X		X		
Haddadi, Hamid					X				X	X			X			X					X				X			
Hershberg, Mark	X	X	X							X	X						X											
Huang, Moh					X				X				X			X					X				X			
Johnson, Eric								X		X				X				X				X				X		
Lockhart, David								X		X				X								X						
Malone, Michelle															X													
Shakal, Tony									X				X			X					X				X			
Zellmer, Bill																				X				X				

Legend

Columns: HBSB Meeting Name and Dates

Rows: HBSB Members

Shaded cell with "X": Member attended required meeting

Shaded cell without "X": Member absent

Non-shaded cell with "X": Member attended meeting that was NOT required

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HOSPITAL BUILDING SAFETY BOARD
2022 COMMITTEES

BOARD PROCEDURES COMMITTEE (AD HOC)

Committee Members:	**HCAI Representatives:**
Michael Foulkes, Chair	Joe LaBrie
Scott Jackson, Vice-Chair	Carl Scheuerman
Louise Belair	**Meeting Dates:**
Bruce Rainey	January 26
	November 18

Focus/Goals:

- Meet as needed for:
  - Policies and Procedures updates
  - Nominating committee, training/onboarding members

CODES AND PROCESSES COMMITTEE

Committee Members:	**HCAI Representatives:**
Michael O'Connor, Chair	Brett Beekman
Jim Malley, Vice-Chair	Larry Enright
Cody Bartley	Roy Lobo
Louise Belair	Diana Navarro
John Griffiths	Carl Scheuerman
Mike Hooper	Jamie Schnick
Scott Jackson	Nanci Timmins
Michele Lampshire	
Scott Mackey	**Meeting Dates:**
Farzad Naeim	February 10
	May 12
Consulting Members:	July 14
John Donelan	October 13
Gary Dunger	November 1 (Joint meeting)
Mark Hershberg	

Focus/Goals:

- Update CANs and PINs to code (ongoing)
- Mental health jurisdiction flowchart and guide
- TIO Program: virtual/offsite inspections
- Develop standards for a behavioral health observation unit
- Evaluate and articulate detailed building standards for SNFs
- Emergency Design Guide
- Title 24, Part 3, 4, and 5
  - NPC-5 Water, Sewer storage requirements
  - Identify code modifications to support Part 6 implementation of energy savings measures
  - Revisit MEP systems Inspections requirements
  - Revisit Fire Protection drawing stamping requirements per MEOR
  - Ventilation Table Standard Format

EDUCATION AND OUTREACH COMMITTEE

Committee Members:
Mike Hooper, Chair
Scott Mackey, Vice-Chair
Cody Bartley
Louise Belair
Deepak Dandekar
Bert Hurlbut
David Khorram
Scott Mackey
Bruce Rainey

Consulting Members:
John Donelan
Gary Dunger
Bill Zellmer

HCAI Representatives:
Hussain Bhatia
Monica Colosi
Joe LaBrie
Cesar Ponce
Jamie Schnick
Nanci Timmins

Meeting Dates:
February 23
May 25
August 17
October 19

Focus/Goals:

- Webinars:
  - Offsite Fabrication/Pre-assembled components
  - PINs and CANs related to Fire Life Safety, Pre-approvals, medicine dispensing units and emergency projects
  - Emergency Design Guide
  - Develop a regular curriculum and predictable calendar for webinars
- Engage volunteers based on webinar list presented at last committee meetings:
  - California Administrative Code – 1Q2022
  - PIN 50 – 2Q2022
  - Emergency Design Guide – 3Q2022
- Prepare for 2023 Seminar
- Define outreach process
  - Contact licensing boards to get the word out about Ed Opp/listserv subscription and promote HCAI data sharing

ENERGY CONSERVATION AND MANAGEMENT COMMITTEE

Committee Members:	**HCAI Representatives:**
Scott Jackson, Chair	Larry Enright
VACANT, Vice-Chair	Carl Scheuerman
Louise Belair	Jamie Schnick
David Bliss	Nanci Timmins
Deepak Dandekar	
Michael Foulkes	**Meeting Dates:**
John Griffiths	March 15
David Khorram	June 14
Michele Lampshire	~~September 13~~ RESCHEDULED
Bruce Rainey	October 4
	November 1 (Joint meeting)
Consulting Members:	
Eric Johnson	
David Lockhart	

Focus/Goals:

- Work with CEC to develop mutually agreeable standards for hospital building energy efficiency in 2025 code cycle
- Identify HCAI research projects for energy conservation, reduction of carbon footprint, and cost savings while maintaining health and safety
- Conclusion: Develop recommendations for the next code cycle modification for HCAI to address microgrids, distributed energy resources, and interconnection to normal power versus emergency power. Identify how to overcome CMS for implementation. Microgrid demonstration project

INSTRUMENTATION COMMITTEE

Committee Members:	**HCAI Representatives:**
Marshall Lew, Chair	Hussain Bhatia
Bruce Clark, Vice-Chair	Erol Kalkan
Jim Malley	Roy Lobo
Farzad Naeim	Ali Sumer
Jennifer Thornburg	
Consulting Members:	**Meeting Dates:**
Hamid Haddadi	January 27
Moh Huang	April 15
Tony Shakal	~~May 27~~ RESCHEDULED
	July 5
	September 29
	October 27

Focus/Goals:

- Continue working with HCAI staff on scheduled instrumentation installations
- Develop white paper for monitoring earthquake recovery
- Consider other systems and monitoring devices

STRUCTURAL AND NON-STRUCTURAL REGULATIONS COMMITTEE

Committee Members:	**HCAI Representatives:**
Jim Malley, Chair	Joe LaBrie
Farzad Naeim, Vice-Chair	Roy Lobo
Cody Bartley	David Neou
Bruce Clark	Carl Scheuerman
Mike Hooper	Jamie Schnick
David Khorram	Ali Sumer
Marshall Lew	
Jennifer Thornburg	**Meeting Dates:**
	January 13
Consulting Member:	June 22
Mark Hershberg	~~September 22~~ CANCELED
Michelle Malone	November 7

Focus/Goals:

- Support HCAI with review of code changes (ongoing)
- Support HCAI with review of new/revised PINs, CANs, and OPDs (ongoing)
- Implementation of SPC-4D and NPC-4D
- Issues regarding repurposing hospital buildings (ongoing)
- Develop pre-approved details
- Revisit NPC-5 requirements (in progress)

TECHNOLOGY AND RESEARCH COMMITTEE

Committee Members:	**HCAI Representatives:**
Bruce Rainey, Chair	Hussain Bhatia
Michael Foulkes, Vice-Chair	Larry Enright
David Bliss	Joe LaBrie
Deepak Dandekar	Carl Scheuerman
John Griffiths	Jamie Schnick
Bert Hurlbut	Nanci Timmins
Scott Mackey	
Michael O'Connor	**Meeting Dates:**
Consulting Member:	~~March 23~~ CANCELLED
Benjamin Broder	July 27
Gary Dunger	November 1 (Joint meeting)
Eric Johnson	

Focus/Goals:

- Explore subjects of telemedicine and robotics
- Discuss the effect of technologies on healthcare equity
- Monitor CDPH electronic health records redundancy issues in the event of power failure and watch for potential effects to code
- Emerging tools
  - Technologies that help reduce the carbon footprint for healthcare facilities and implementation relative to code implementation of emerging tools relative to the code.

FULL BOARD MEETING DATES

April 28 – Virtual + Sacramento and Los Angeles
August 11 – Virtual + Sacramento and Los Angeles
December 7 and 8 – Virtual + Sacramento

HOSPITAL BUILDING SAFETY BOARD MEMBERSHIP

Appointed Members (Appointed by HCAI Director)

MEMBERSHIP CATEGORIES	NAMES	APPNTMNT DATE	TERM EXP DATE	TERM OF SERVICE
2 structural engineers	James O. Malley Farzad Naeim	8/2020 8/2021	8/2024 8/2025	1st term 1st term
2 architects	Deepak Dandekar Scott Mackey	5/2015 8/2021	5/2023 8/2025	2nd term 1st term
1 engineering geologist	Bruce Clark	12/2019	12/2023	1st term
1 geotechnical engineer	Marshall Lew	5/2015	5/2023	2nd term
1 mechanical engineer	Louise Belair	6/2017	6/2025	2nd term
1 electrical engineer	John Griffiths	8/2022	8/2026	1st term
1 hospital facilities manager	Bruce A. Rainey	12/2018	12/2022	1st term
1 local building official	David Khorram	6/2019	6/2023	1st term
1 general contractor	Cody Bartley	8/2022	8/2026	1st term
1 fire/life safety representative	Scott L. Jackson	6/2018	6/2026	2nd term
1 hospital inspector of record	Mike Hooper	5/2015	5/2023	2nd term
3 public members	Michele Lampshire David Bliss D. Michael Foulkes	12/2019 5/2016 6/2017	12/2023 5/2024 6/2025	1st term 2nd term 2nd term
TOTAL	**16**			

Ex-Officio Members		
HCAI, Director	Elizabeth Landsberg	No Term of Office Stipulated
State Fire Marshal	Mike Richwine	
State Geologist	VACANT Jennifer Thornburg (Delegates)	
Building Standards Commission, Executive Director	Mia Marvelli	
Department of Public Health, Director	Tomás J. Aragón, M.D., Dr. P.H. Nathaniel Gilmore (Delegate)	
Office of Statewide Hospital Planning and Development, (OSHPD) Deputy Director	Chris Tokas	
TOTAL	**6**	

Director Appointed Ex-Officio Members (Serve at pleasure of Director)		
2 members	Bert Hurlbut Michael O'Connor	No Term of Office Stipulated
TOTAL	**2**	

TOTAL HBSB Members	**24**	

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2022 CONSULTING COMMITTEE MEMBERS

Benjamin Broder, MD, PhD, CPPS KAISER PERMANENTE/SO. CALIFORNIA 393 E. Walnut St. 3rd Floor NW Pasadena, CA 91188-8034 **(626) 405-2501** Benjamin.I.Broder@kp.org • Technology and Research Committee	**John Donelan** HCAI/ FDD 355 S. Grand Avenue, 19th Floor Los Angeles, CA 90071 **(916) 284-2235** John.Donelan@hcai.ca.gov • Codes and Processes Committee • Education and Outreach Committee
Gary Dunger Executive Director, Facilities Design and Construction Cedars-Sinai Health System 6500 Wilshire Blvd, 20th Floor Los Angeles, CA 90048 **(323) 866-6537** Gary.Dunger@cshs.org • Codes and Processes Committee • Education and Outreach Committee • Technology and Research Committee	**Hamid Haddadi** California Geological Survey 801 K Street, MS 13-35 Sacramento, CA 95814 **(916) 322-9304** *FAX: (916) 323-7778* Hamid.Haddadi@consrvation.ca.gov Instrumentation Committee
Mark Hershberg, SE KPFF Consulting Engineers 6080 Center Drive, Suite 300 Los Angeles, California 90045 **(310) 665-1536** MHershberg@kpff-la.com Codes and Processes Committee	**Moh Huang** California Geological Survey Moh.Huang@gmail.com • Instrumentation Committee
Eric C. Johnson, PE President ECOM Engineering, Inc. 1796 Tribute Road, Suite 100 Sacramento, CA 95815 **(916) 641-5600** ECJ@ecomeng.com • Energy Conservation and Management Committee • Technology and Research Committee	**David Lockhart CHFM, CEM** National Facilities Services Kaiser Permanente 1600 Eureka Road Roseville, CA 95661 **(916) 784-5280; tie-line (8-514)** Dave.Lockhart@kp.org • Energy Conservation and Management Committee

2022 CONSULTING COMMITTEE MEMBERS

Michelle Malone, MPA Chief Executive Officer/Owner TruNrth, Inc. **(831)809-9596 (cell)** Michellejm284@gmail.com • Structural and Nonstructural Regulations Committee	**Tony Shakal** California Geological Survey Tshakal@pacbell.net • Instrumentation Committee
Bill Zellmer, AIA, CASp Program Manager—Physical Access Compliance and Regulatory Affairs Sutter Health **(916) 216-3491 (cell)** Zellmeb@sutterhealth.org • Education and Outreach Committee	