OSHPD Office of Statewide Health Planning and Development

Hospital Building Safety Board
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(916) 324-9188 Fax
www.oshpd.ca.gov/Boards/HBSB/index.html

AMENDED

***** SPECIAL NOTICE *****
Because of the COVID-19 emergency, this meeting will only be held by teleconference. Committee members and members of the public may fully participate from their own locations.

NOTICE OF PUBLIC MEETING

HOSPITAL BUILDING SAFETY BOARD
Energy Conservation and Management Committee

Date:
Thursday, January 21, 2021
9:00 a.m. – 3:00 p.m.

Teleconference Meeting Access:
HBSB GoToMeeting ECM Committee
Access Code: 605-756-949

For more detailed instructions on how to join via GoToMeeting, see page 3.

Committee Members:
Roy Lopez, Chair; Scott Jackson, Vice-Chair; David Bliss; Deepak Dandekar; Michael Foulkes; John Griffiths*; Eric Johnson*; David Khorram; Michele Lampshire; David Lockhart*; Bruce Rainey

OSHPD Staff: Bill Gow; Dave Mason; Diana Scaturro; Carl Scheuerman; Jamie Schnick; Richard Tannahill; Nanci Timmins

OSHPD Director: Elizabeth Landsberg

FDD Deputy Director: Paul Coleman

Executive Director: Ken Yu

*Consulting Member

2. **California Energy Commission (CEC) collaboration with OSHPD on energy standards for healthcare facilities**

   Facilitators: Richard Tannahill and Ryan Nelson, OSHPD; Haile Bucaneg, CEC (or designees)

   - Proposed code modification affecting healthcare
   - Discussion and public input

Summary of 2022 Energy Code Updates

January 21, 2021 HBSB Energy Conservation and Management Committee Meeting

Haile Bucaneg

2022 Standards Process

DATE	MILESTONES
August 2019 to October 2020	CASE reports submitted to the CEC
August 2019 to October 2020	Stakeholder meeting/workshop & final staff workshop
February 2021	45-day language hearings
July 2021	Adoption of 2022 standards at a Business Meeting
July 2021 to November 2021	Staff wok on software, compliance manuals, electronic documents available to industry
December 2021	Approval of the manuals
January 2022	Software, compliance manuals, electronic documents available to industry
January 1, 2023	Effective date

Types of Updates to Energy Code

- Updates to requirements that already apply to healthcare facilities.
- New requirements for healthcare facilities.
- Updates to requirements that do not apply to healthcare facilities.

***Note that updates discussed today are not final and there may be changes between now and what is released in 45-day draft language.**

Subchapter 2: Sections 110

SECTION 110.2 – MADATORY REQUIREMENTS FOR SPACE-CONDITIONING EQUIPMENT

- Minimum Efficiency Requirements in Table 110.2-A through Table 110.2-K.

SECTION 110.12 – MANDATORY REQUIREMENTS FOR DEMAND MANAGEMENT

- Healthcare facilities are not required to meet Section 110.12.
- Minor cleanup language to demand responsive controls in Section 110.12(a).
- Revision to demand responsive lighting requirement thresholds in Section 110.12(c) based on general lighting.

Subchapter 3: Sections 120

SECTION 120.1 – REQUIREMENTS FOR VENTILATION AND INDOOR AIR QUALITY

- Healthcare facilities must be ventilated in accordance with Chapter 4 of the California Mechanical Code per Section 120.1(a)1.
- Revisions to mechanical ventilation requirements in Section 120.1(c)3 were revised for clarity.
- Associated Table 120.1-A was also revised to remove column for Demand Control Ventilation minimum airflow rate.

Subchapter 3: Sections 120

SECTION 120.6 – MANDATORY REQUIREMENTS FOR COVERED PROCESSES

- Refrigerated warehouse requirements for transcritical refrigeration systems and automatic door closers added into Section 120.6(a).
- Commercial refrigeration requirements for transcritical refrigeration systems added into Section 120.6(b).
- Healthcare facility exception in Section 120.6(e) revised for clarity.
- Requirements for compressed air system monitoring, leak testing, and pipe sizing added into Section 120.6(e).
- Requirements for lighting and space conditioning for controlled environmental horticulture was added into Section 120.6(h).

Subchapter 3: Sections 120

SECTION 120.6 – MANDATORY REQUIREMENTS FOR COVERED PROCESSES (cont'd)

- Steam trap monitoring and installation requirements added into Section 120.6(i).
- Computer room space conditioning system requirements for reheat, humidification and fan control added into Section 120.6(j).

SECTION 120.10 – MANDATORY REQUIREMENTS FOR FANS

Fan or fan array fan energy index (FEI) requirements added into Section 120.10(a).

Subchapter 4: Sections 130

SECTION 130.1 – MANDATORY INDOOR LIGHTING CONTROLS

- Revisions to sidelit and secondary sidelit zones requirements made to Section 130.1(d).
- Requirements regarding interaction between automatic daylighting controls and occupant sensing controls added into Section 130.2(f).

Subchapter 5: Sections 140

SECTION 140.3 – PRESCRIPTIVE REQUIREMENTS FOR BUILDING ENVELOPES

- Update to building envelope requirements in Table 140.3-B and 140.3-D.
- Updates to minimum aged solar reflectance, minimum thermal emittance, and minimum solar reflectance index in Section 140.3(a)1Aib.
- Revisions to Relative Solar Heat Gain Coefficient calculations in equation 140.3-A.

Subchapter 5: Sections 140

SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS

- Revise fan power limitation to fan power budget in Section 140.4(c)1.
- Removal of exception for healthcare facilities to fractional HVAC motors for fans requirement in Section 140.4(c)3.
- Revisions to economizer requirements to increase the equipment applicable were added into Section 140.4(e).
- Dedicated outdoor air system requirements added into Section 140.4(p)
- Exhaust air heat recovery requirements added into Section 140.4(q).

Subchapter 5: Sections 140

SECTION 140.6 – PRESCRIPTIVE REQUIREMENTS FOR INDOOR LIGHTING

- Clarification language for power adjustment factors included in 140.6(a).

SECTION 140.7 – PRESCRIPTIVE REQUIREMENTS FOR OUTDOOR LIGHTING

- Updates to hardscape lighting zones and allowances in Table 140.7-A.

Subchapter 5: Sections 140

SECTION 140.9 – PRESCRIPTIVE REQUIREMENTS FOR COVERED PROCESSES

- Removal of exception language for healthcare facilities to computer room economizer requirements in Section 140.9(a).
- Requirement for air economizers, water economizer and refrigerant economizers serving computer room in Section 140.9(a).
- Efficiency requirements for alternating current-output uninterruptible power supplies in Section 140.9(a).

Subchapter 5: Sections 140

SECTION 140.10 – PRESCRIPTIVE REQUIREMENTS FOR PHOTOVOLTAIC AND BATTERY STORAGE SYSTEMS

- Requirements for minimum photovoltaic system capacities added into Section 140.10(a).
- Requirements for battery system energy capacity and power capacity added into Section 140.10(b).

Subchapter 6: Sections 141

SECTION 141.1 – REQUIREMENTS FOR COVERED PROCESSES IN ADDITIONS, ALTERATIONS TO EXISITNG NONRESIDENTIAL, AND HOTEL/MOTEL BUILDINGS

- Computer room equipment requirements for economizers added into Section 141.1(b).
- Controlled environment horticulture spaces requirements added into Section 141.1(c).

Subchapters 7-9: Sections 150

SECTION 150.0 – MANDATORY FEATURES AND DEVICES

- Additions and updates to various equipment requirements.

SECTION 150.1 – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR LOW-RISE RESIDENTIAL BUILDINGS

- Variable capacity heat pump compliance option added.

SECTION 150.2 – ENERGY EFFICIENCY STANDARDS FOR ADDITIONS AND ALTERATIONS TO EXISTING LOW-RISE RESIDENTIAL BUILDINGS

- Updates to envelope requirements.

Thank you!

Haile Bucaneg

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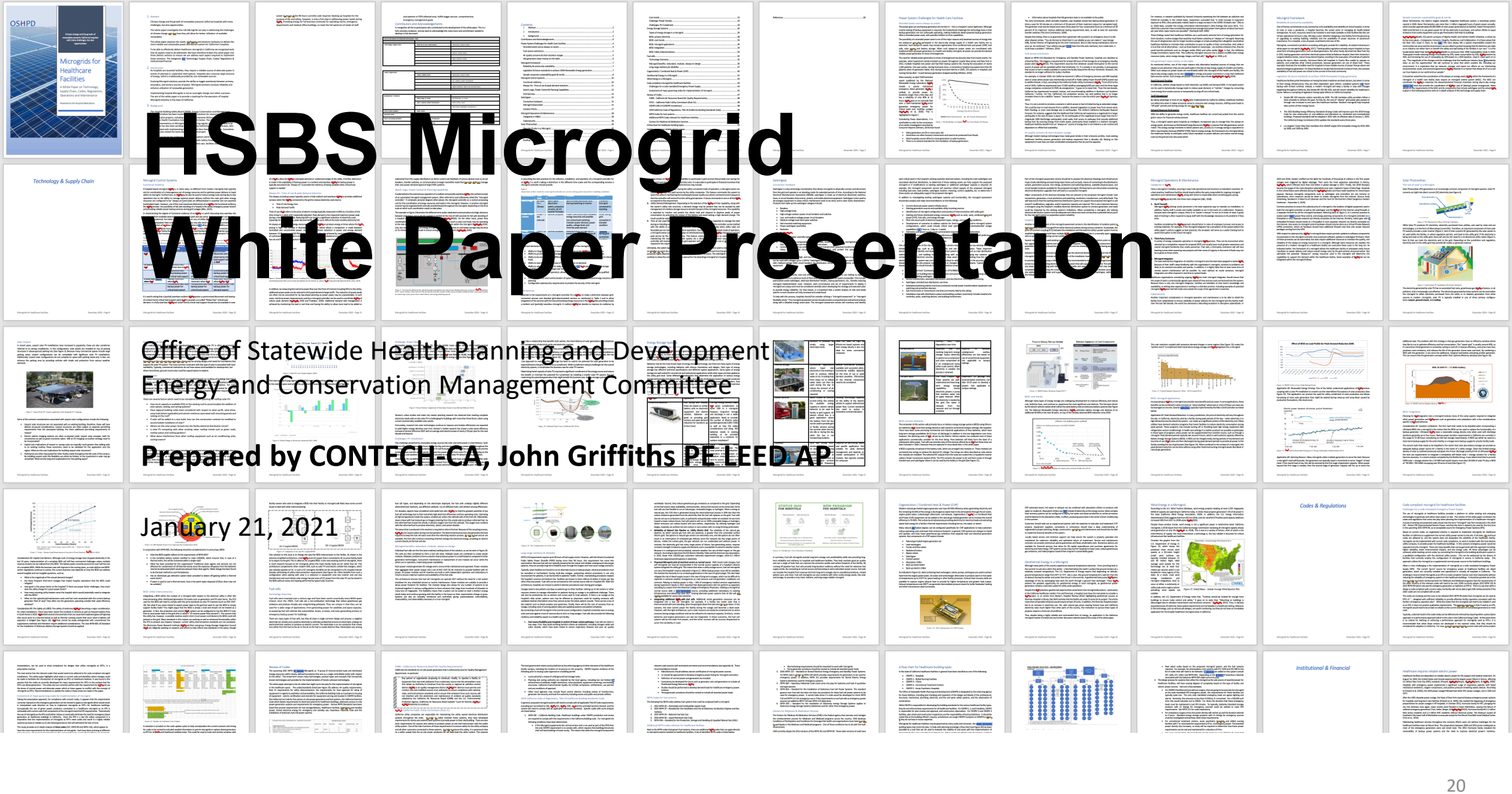
California Energy Commission

3. **Microgrid White Paper Final Draft**

   Facilitators: Louise Belair, Committee Member; John Griffiths, Committee Consulting Member (or designees)

   - *Review of the Microgrid White Paper final draft*
   - Seek Committee input
   - Next steps
   - Discussion and public input



HSBS Microgrid White Paper Presentation

Office of Statewide Health Planning and Development
Energy and Conservation Management Committee

Prepared by CONTECH-CA, John Griffiths PE LEED AP

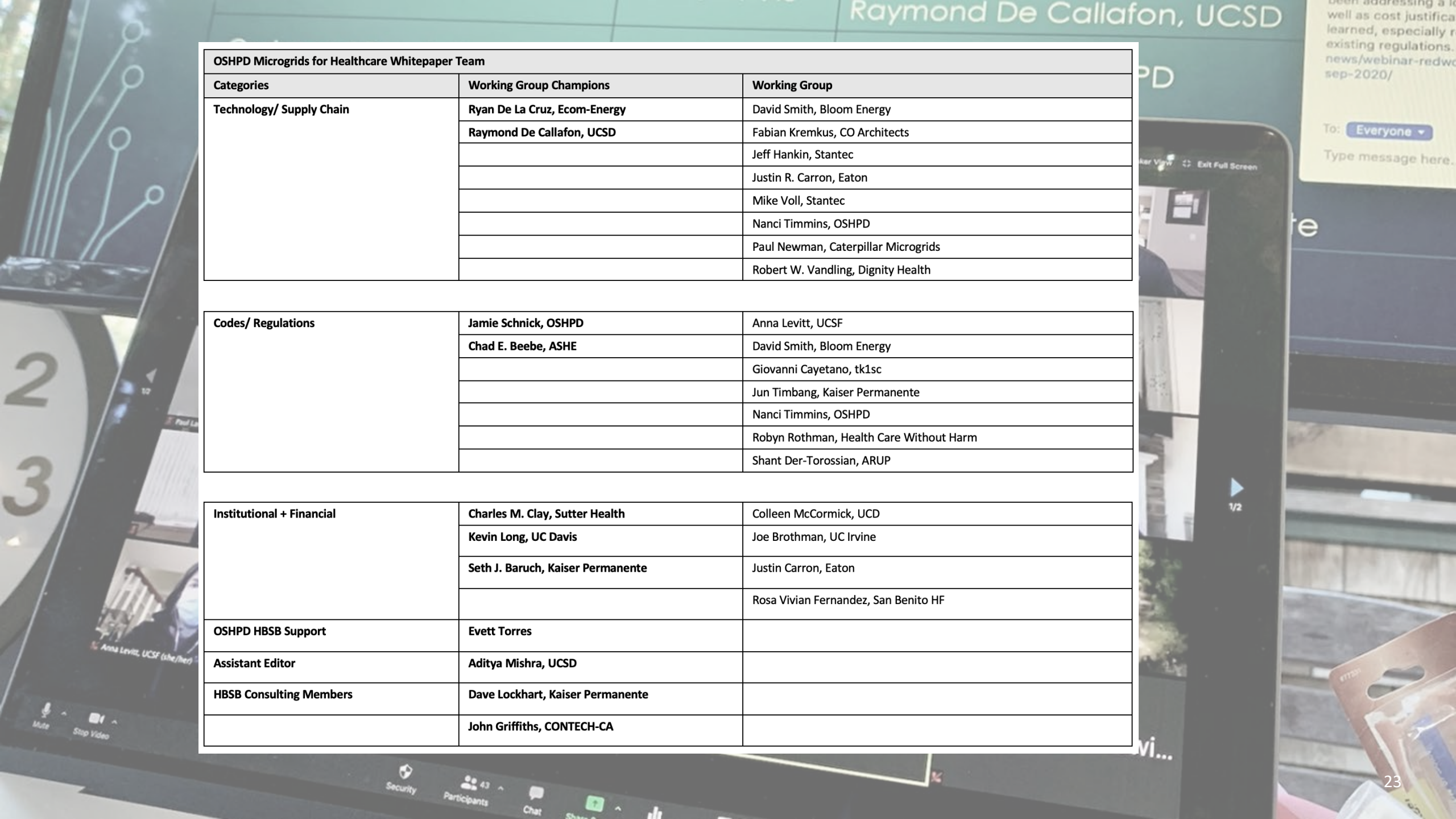
January 21, 2021

Agenda

- Whitepaper Development Update
- Review Whitepaper
- Comments & Discussion
- Committee Vote & Next Steps

What Have we Been Doing Since the Last Meeting?

Milestone	Date	Objective
Charrette:	September 23	Rapid Exchange of Ideas and Develop Work Groups
Champions meetings:	Biweekly	Progress check-ins
HBSB ECM Committee Meeting:	October 1	Presented summary of charrette, gained input on categories and review next steps
Champions meetings:	Biweekly	Progress check-ins
HBSB Full Board Meeting:	December 10	White Paper Board Update
HBSB ECM Committee Meeting	**January 21st**	**Whitepaper approval**
Implement Whitepaper Recommendations		



OSHPD Microgrids for Healthcare Whitepaper Team		
Categories	**Working Group Champions**	**Working Group**
Technology/ Supply Chain	**Ryan De La Cruz, Ecom-Energy**	David Smith, Bloom Energy
	Raymond De Callafon, UCSD	Fabian Kremkus, CO Architects
		Jeff Hankin, Stantec
		Justin R. Carron, Eaton
		Mike Voll, Stantec
		Nanci Timmins, OSHPD
		Paul Newman, Caterpillar Microgrids
		Robert W. Vandling, Dignity Health
Codes/ Regulations	**Jamie Schnick, OSHPD**	Anna Levitt, UCSF
	Chad E. Beebe, ASHE	David Smith, Bloom Energy
		Giovanni Cayetano, tk1sc
		Jun Timbang, Kaiser Permanente
		Nanci Timmins, OSHPD
		Robyn Rothman, Health Care Without Harm
		Shant Der-Torossian, ARUP
Institutional + Financial	**Charles M. Clay, Sutter Health**	Colleen McCormick, UCD
	Kevin Long, UC Davis	Joe Brothman, UC Irvine
	Seth J. Baruch, Kaiser Permanente	Justin Carron, Eaton
		Rosa Vivian Fernandez, San Benito HF
OSHPD HBSB Support	**Evett Torres**	
Assistant Editor	**Aditya Mishra, UCSD**	
HBSB Consulting Members	**Dave Lockhart, Kaiser Permanente**	
	John Griffiths, CONTECH-CA	

Stake Holder Representation

Technology/Supply Chain

- Bloom Energy
- Caterpillar Microgrid
- CO Architects
- Dignity Health
- Ecom-Energy
- Eaton
- OSHPD
- UC San Diego
- Stantec

Codes/Regulations

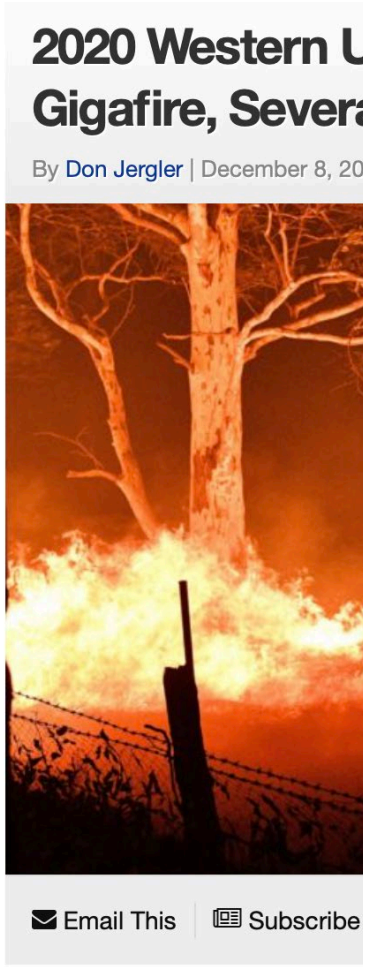
- ARUP Energy
- ASHE
- Bloom Energy
- Kaiser Permanente
- OSHPD
- tk1sc
- UC San Francisco Health

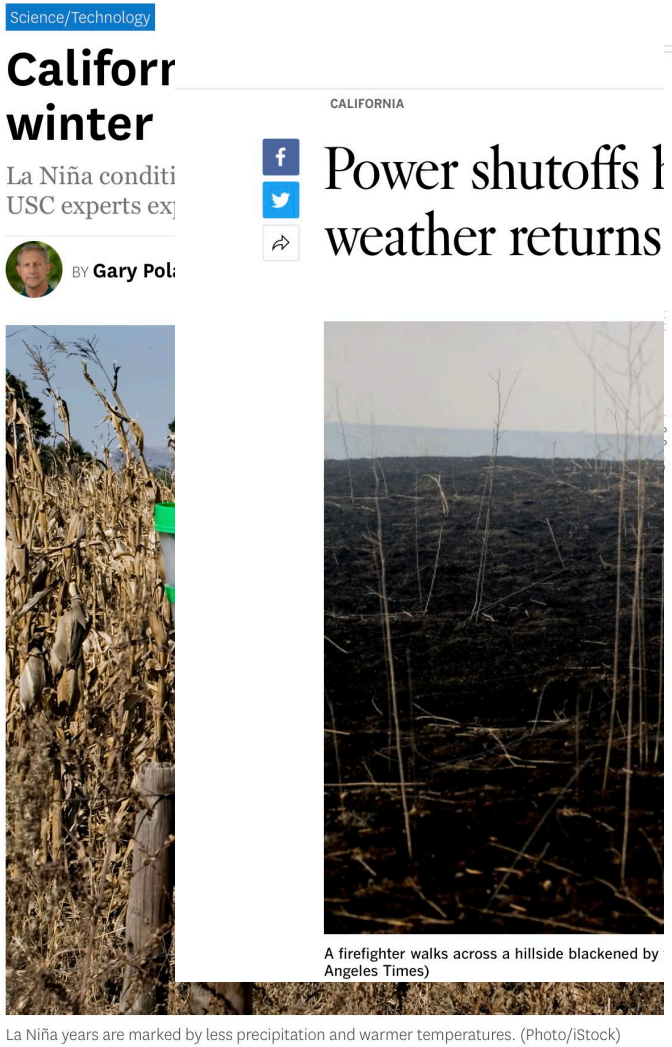
Institutional + Financial

- Eaton
- Kaiser Permanente
- San Benito Health Foundation
- Sutter Health
- UC Davis
- UC Irvine

What Else Has Happened Since the Last Meeting?

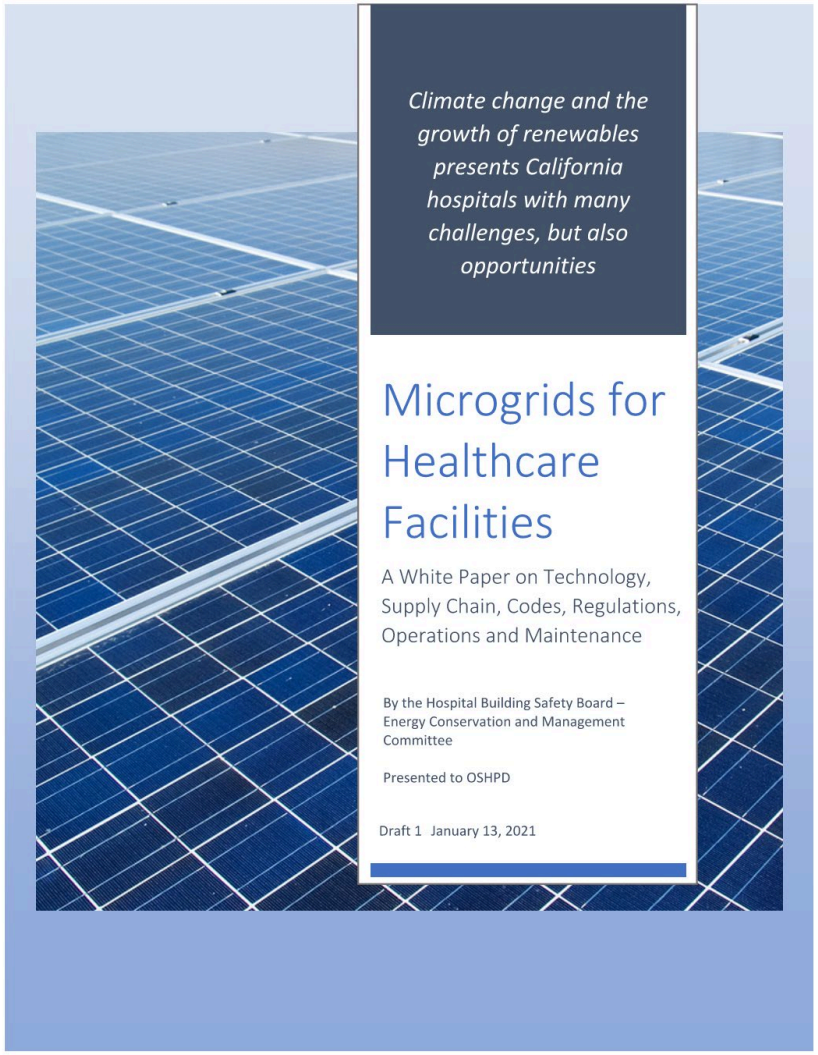
Milestone
Charrette:
Champions me
HBSB ECM Com
Champions up
HBSB Full Board
EE&E Meeting





La Niña years are marked by less precipitation and warmer temperatures. (Photo/iStock)

White Paper – Chapters /Content



Contents

Background 1
Abstract 1
Introduction 2
Contributors and Acknowledgements 3
Power System Challenges for Health Care Facilities 6
Stranded assets versus always-on assets 6
Fuel access restrictions 6
Air quality improvement and short-duration outage 7
Advantage of Always on Systems 7
Chapter 1 - Technology and Supply Chain 9
What is a Microgrid? 10
Microgrid Characteristics 10
A microgrid is local 10
A microgrid is independent 10
Microgrid Controller 10
Microgrid Energy Resources 11
What a microgrid is not 11
The Department of Energy formal definition for a microgrid 11
Microgrid Control Systems 11
Functional resiliency 11
Always-On –Time of use and peak demand reduction 12
Switch Logic, Power Control and Planning Capabilities 13
Grid Services 15
Switchgear 16
Connection hardware 16
Microgrid Assessment 16
Isolation Points 18
Microgrid Operations and Maintenance 19
Categories in O&M 19
Cybersecurity 19
Solar Photovoltaic 20
The role of solar in a Microgrid 20

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Power System Challenges for Health Care Facilities

- Stranded assets versus always-on assets
- Fuel access restrictions
- Air quality concerns & short-duration outage
- Advantage of Always On System

Technology & Supply Chain

- Microgrid Control Systems
- Switchgear
- Microgrid Operations & Maintenance
- Solar Photovoltaic
- Energy Storage Systems
- Fuel cells
- Cogeneration / Combined Heat & Power (CHP)
- Geothermal Energy in a Microgrid
- Wind Energy in a Microgrid

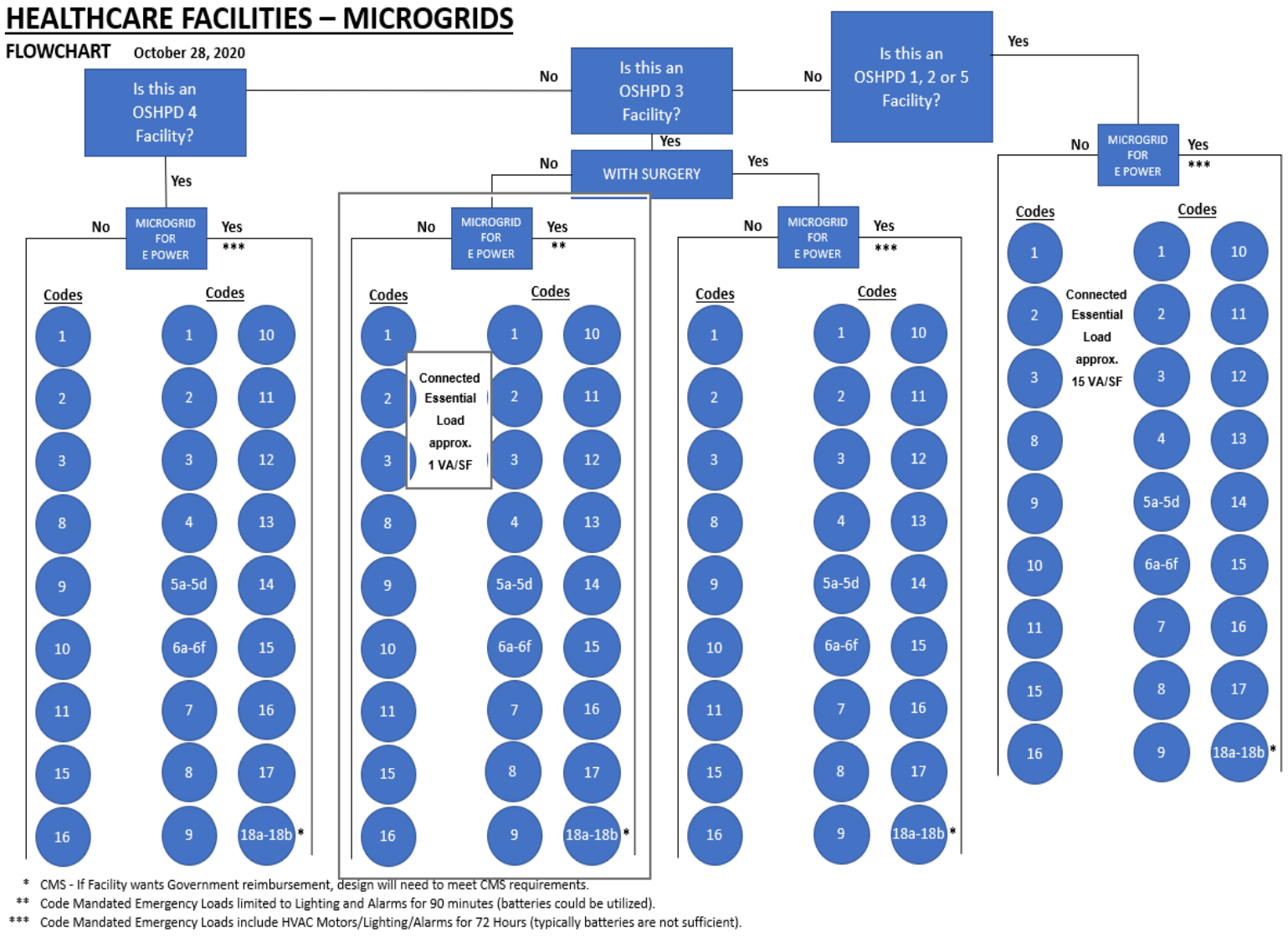
Codes and Regulations

- Evolving Codes
- Microgrid Implementation Flow Chart
- Microgrids for Hospitals

Applicable Codes Matrix

	Microgrid White Paper Codes/Regulations - Applicable Codes Matrix	Microgrid Power Source					
		Solar (PV's)	Wind	Fuel Cells	Cogen	Energy Storage	UPS
	Codes/Requirements						
1	CARB - California Air Resources Board - Air Quality Requirements				x		
2	CPUC - California Public Utility Comission (Rule 21)	maybe	maybe	x	x	maybe	no
3	OSHPD CAN 2-0 Local Approval	x	x	x	x	maybe	no
4	2019 CBC - California Building Code	Only if in OSHPD building and/or serving as alternate source					
5	2019 CFC - California Fire Code						
5a	1206 Electrical Energy Storage Systems					x	x
5b	1206.2 Stationary Storage Battery Systems					x	x
5c	1204 Photo Voltaics	x				x	
5d	1205 Fuel Cell (NFPA 53 addopted by reference)			x			
6	2019 CEC - California Electrical Code						
6a	517 Healthcare Facilities	Only if in OSHPD building and/or serving as alternate source					
6b	690 PV Systems	x				x	
6c	692 Fuel Cell Systems			x		x	
6d	694 Wind Electric Systems		x			x	
6e	700 Emergency power					x	x
6f	705 Interconnected Electric Power Production Sources	x	x	x	x	x	
7	2018 NFPA 30 - Flammable and Combustible Liquids Code			x	x		
8	2015 NFPA 37 - Stationary Combustion Engines and Gas Turbines			x	x		
9	2015 NFPA 54 - National Fuel Gas Code			x	x		
10	2017 NFPA 58 - Liquid Petroleum Gas Code			x	x		
11	2016 NFPA 59A - Production/Storage/Handling of Liquified Natural Gas LNG			x	x		
12	2018 NFPA 99 - Healthcare Facilities Code	x	x	x	x	x	
13	2016 NFPA 110 - Emergency and Standby Power	x	x	x	x	x	
14	2016 NFPA 111 - Stored Electrical Energy Emergency and Standby Power Systems					x	
15	2016 NFPA 400 - Hazardous Materials Code			x	x	x	
16	NFPA 853 - Installation of Stationary Fuel Cell Power Systems			x			
17	NFPA 855 -Standard for the Installation of Stationary Energy Storage Systems					x	
18	Centers for Medicare & Medicaid Services (CMS)	x	x	x	x	x	
18a	2012 NFPA 99 - Healthcare Facilities Code						
18b	2012 NFPA 101 - Life Safety Code						

Microgrid Implementation Flow Chart



Permitting of Microgrids is Achievable for OSHPD Facilities

- Dozens of projects are installed with Microgrid as alternate source of power for Normal Power in CA
- MOB’s & SNF’s could implement microgrids now to eliminate emergency generators

Microgrids for Hospitals

- Normal Power back-up – Just need to comply with local ordinances and design so failure of system cannot affect the Hospital electrical system.
- Essential Power – Will need to meet Seismic requirements, equipment and controls listed for emergency power, 72 hrs of on-site fuel storage

** CMS currently requires generators for Emergency Power Source (EPS)

Path forward for Microgrids as EPS's

- Continued evolution of codes
- Vendors to get Special Seismic Certifications
- 72/96 hrs of on-site fuel storage
- UL listing of microgrid controllers for EPS
- Encourage CMS to allow products other then generators for EPS

** Use of Microgrids as EPS should be at least as reliable as current standard (Diesel Generators)

Institutional & Financing Microgrids for Healthcare Facilities

- Healthcare Requires Reliable Electric Power
- Public Safety Power Shut Off
- Financing Microgrids for Healthcare Facilities
- Corporate Sustainability Goals and Trends.
- The Value of Resiliency

Summary & Next Steps

- Whitepaper Review
- Questions & Discussion
- **Committee Vote & Next Steps**

Questions?

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CONTECH-CA

4. **Presentation suggestions for 2021**

   Facilitators: Roy Lopez, Committee Chair (or designee)

   - Review Committee Goals for 2021
   - Possible presentations for future Committee meetings
   - Discussion and public input

ENERGY CONSERVATION AND MANAGEMENT COMMITTEE

Committee Members:	**OSHPD Representatives:**
Roy Lopez, Chair	Bill Gow
Scott Jackson, Vice-Chair	Dave Mason
Louise Belair	Diana Scaturro
David Bliss	Carl Scheuerman
Deepak Dandekar	Jamie Schnick
Michael Foulkes	Richard Tannahill
David Khorram	Nanci Timmins
Michele Lampshire	
Bruce Rainey	
Consulting Members:	**Meeting Dates:**
John Griffiths	January 21
Eric Johnson	June 10
David Lockhart	October 7

Focus/Goals:

- Work with CEC to develop mutually agreeable standards for hospital building energy efficiency in 2022 code cycle
- Identify OSHPD 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 OSHPD to address microgrids, distributed energy resources, and interconnection to normal power versus emergency power

5. **Comments from the Public/Committee Members on issues not on this agenda**

   Facilitator: Roy Lopez, Committee Chair (or designee)

   The Committee will receive comments from the Public/Committee Members. Matters raised at this time may be taken under consideration for placement on a subsequent agenda.