

## Industry Advisory Board Meeting: October 21-22, 2021

**Thursday, October 21, 8:15 am-4:45 pm PDT**

**Pauley Ballroom East, UC Berkeley: 2495 Bancroft Way and also Virtual via Zoom**

Open to Industry Partners, Invited Research Affiliates, and Guests

**8:15 am Registration and Breakfast**

Join us for breakfast on the patio.

**9:00 am – 10:30 am: Morning Session: HVAC Innovations**

HYBRID

**9:00 am Welcome and Logistics**

**9:20 am**



**Digitizing Buildings with BRICK to Enable Portable Analytics, Modeling and Controls**

Carlos Duarte, PhD, and Ruiji Sun, PhD Student

Learn about Brick, a metadata schema to standardize semantic descriptions of the physical, logical and virtual assets in buildings and the relationships between them. We will also showcase example applications, including a controls application in a real building, facilitated with Brick.

**9:50 am**



**Using Infrared Sensors to Measure and Improve Thermal Comfort**  
Hui Zhang, PhD

We are investigating how to save energy and improve comfort using smart sensors to detect skin temperatures to inform HVAC operation. This presentation will show results for closed-loop HVAC controls in human subject tests, and preliminary insights from field studies.

**10:05 am**



**Designer Interviews: Boiler Retrofits and Electrification in Existing Buildings**

Emily Lamon, MS Student

With the rapidly growing interest in building electrification, we investigated the challenges posed by existing buildings to this goal. Interviews with mechanical designers help us understand heating hot water retrofits in existing commercial buildings and the challenges and opportunities they offer.

**10:30 am Break**

**11:00 am – 12:15 pm: Mid-Morning Session: New Guidance and Tools**

HYBRID

11:05 am



**Overcooling of Offices Reveals Gender Inequality in Thermal Comfort**  
Thomas Parkinson, PhD

We used two large datasets — the CBE Occupant Survey and Twitter — from U.S. office buildings to learn that overcooling is a widespread issue that disproportionately affects women.

11:30 am



**Cal-EPE Hub: Laboratory Testing of PCS and Advanced Thermostats**  
Fred Bauman, PE, FASHRAE

Update on laboratory testing program to provide practical performance data for inclusion in an online buyer's guide for energy efficient technologies. Results will be shown for personal comfort systems (PCS) and advanced thermostats.

11:55 am



**CBE Tool Development**  
Paul Raftery, PhD

Over the years the CBE research team has developed a number of useful online tools for indoor environmental analysis and system design. We will present updates on new features, how to access and utilize these resources, and describe benefits offered by our most-used tools.

12:15 pm **Lunch**

We encourage you to enjoy lunch outdoors and explore the nearby campus grounds.

**1:30 pm – 3:30 pm: Keynote and Afternoon Session: Workplace Performance**

HYBRID

1:30 pm



**Keynote: Power for the People: The Next Wave of Clean Energy**  
Michelle Malanca Frey, Executive Director, Urban Land Institute San Francisco  
Michelle also launched Housing the Bay, a collaborative initiative to advance solutions to the Bay Area's housing crisis. She serves on the Executive Steering Committee of the Mayor of San Francisco's Zero Emission Building Task Force. Previously, Michelle was Vice President at the World Green Building Council and Technical Director at the Green Building Council of Australia.

2:20 pm



**View Access Index Development: An Experiment Using Virtual Reality**  
Won Hee Ko, PhD

We assessed the effects of window view variables on workplace satisfaction using a virtual reality environment. Window-to-wall ratio and the visual field occupied by window view are the primary variables for satisfaction of view access. We will present a view access index and further study needs.

2:40 pm



**The Effect of Indoor Temperature on Office Work Performance:  
A Meta-analysis of 35 Studies**

Stefano Schiavon, PhD

We reviewed the literature and found 35 studies on the effects of temperature on office work performance. We did not find a relationship between them, and therefore we do not recommend the use of such models in practice.

3:05 pm



**Acoustical Intervention Study in Wurster Hall**

Diego Hernandez, Salter

This presentation will include a live audio demonstration (also available to online participants via recording) from a speech intelligibility field study. These findings are valuable for informing the design of teleconferencing spaces.

3:30 pm **Break**

**4:00 pm – 4:45 pm: Breakout Table Topics** HYBRID

**4:00 pm Breakout Table Topics and Technical Advisory Committee (TAC) Meetings**

Small group discussions about specific topic areas and TACs.

**4:35 pm Closing Remarks**

**4:45 pm End of Thursday session**

**5:00 pm Cocktail Hour and Dinner at the Berkeley City Club**

2315 Durant Avenue, Berkeley

**Friday, October 22, 10:00 am-11:30 am PDT  
Executive Session, Virtual Only**

Open to Industry Partner Representatives (two per supporting firm or team; one for small business partners)

**10:00 am Welcome and Announcements**

- Director's message
- Overview of 2022-23 new research directions
- Remarks from Partner Chair and Vice-Chair

**10:30 am Focus Groups to Discuss New Research Ideas**

- Energy and HVAC Systems
- The Building Envelope and Beyond
- Indoor Environment and Occupant Interactions

**11:15 am Recap of Focus Groups and Closing Statements**

**11:30 am Conclude**