

Panel 3: Commercial Buildings: Technologies, Design, Operations, and Industry Trends

Panel Leaders: Alexi Miller & Shanti Pless

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| MONDAY, AUGUST 22 | SESSION 1 (8:30 am - 10:00 am) |
| | The Healthy Buildings and Energy Nexus |
| | <i>How Does Lighting for Wellness Affect Energy Use? Results from Simulation and Laboratory Studies, and a Look Ahead.</i> Jordan Shackelford, Lawrence Berkeley National Laboratory |
| | <i>Energy Implications of Using Germicidal Ultraviolet Radiation to Combat SARS-CoV-2</i> Gabe Arnold, Pacific Northwest National Laboratory |
| | <i>Energy Efficiency Measures to Improve Indoor Air Quality and Reduce the Spread of the SARS-CoV-2 Virus</i> Robert Mowris, Verified Inc. |
| | SESSION 2 (10:30 am - 12:00 pm) |
| What's after Zero: Net Zero Energy Buildings and Beyond | |
| <i>Challenges and Lessons Learned from an Analysis of Three Zero Energy Buildings</i> Kate Hickox, Pacific Northwest National Laboratory | |
| <i>Competition Between Ventilation and Cooling in Commercial Buildings and Implications for Energy Flexibility</i> Caitlin McMahon, Stanford University | |
| <i>Cutting Carbon with Codes: Reducing the Worst Climate Impacts of Construction</i> Webly Bowles, New Buildings Institute | |

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| WEDNESDAY, AUGUST 24 | SESSION 1 (8:30 am - 10:00 am) |
| | High Performance HVAC Opportunities |
| | <i>Heat Pump Controls: Decarbonizing Buildings While Avoiding Electric Resistance Heating and Higher Net Peak Demand</i> Jonathan McHugh, McHugh Energy Consultants |
| | <i>Including Economizer Efficiency in the Unitary Next Generation Test Procedure Standards</i> Robert Mowris, Verified |
| | <i>DO AS We Say (and As We Do): Maximizing HVAC Efficiency, Flexibility and Resiliency with High Efficiency Dedicated Outdoor Air Systems</i> Jordan Pratt, Energy 350 |
| | SESSION 2 (10:30 am - 12:00 pm) |
| Can We Control It? | |
| <i>Towards a Digital and Performance-Based Control Delivery Process</i> Amir Roth, US Department of Energy | |
| <i>Hot Mess or Cool Tech? Secrets to Success for Advanced Building Controls Integration</i> Nathan Hinkle, Cadmus | |
| <i>A Demonstration and Evaluation of Commercial Building Occupancy Sensing Using Wi-Fi Location-Based Services (LBS)</i> Lester Shen, Center for Energy and Environment. | |

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| TUESDAY, AUGUST 23 | SESSION 1 (8:30 am - 10:00 am) |
| | Decarbonizing Existing Buildings |
| | <i>Automated Anomaly Detection and Diagnosis for Real Time Carbon Minimization</i> Hao Huang, Buildings Alive |
| | <i>Decarbonization Training for Facility Managers</i> Jillian Winterkorn, Eversource |
| | <i>Can Electrification Find a Sweet Spot? Summarizing Field Data from Electrification Audits in Commercial and Industrial Buildings.</i> Carl Samuelson, Michaels Energy |
| | SESSION 2 (10:30 am - 12:00 pm) |
| Taking Electrification to Scale - Cities, States, and Beyond | |
| <i>Audit Template Tool: Facilitating Data Driven Decision Making for Jurisdictions</i> Supriya Goel, Pacific Northwest National Laboratory | |
| <i>What's in Stock: Integrated Modeling of Building Electrification, Energy Efficiency, and Stock Turnover for New York City</i> William Prindle, ICF | |
| <i>Cold Climate Packaged Heat Pumps – Finding Sasquatch</i> Evan Hallas, Taitem Engineering | |

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| THURSDAY, AUGUST 25 | SESSION 1 (8:30 am - 10:00 am) |
| | Cooking and Cultivation: (de)Carbonizing Comestibles and Consumables |
| | <i>Data-Driven Energy Efficiency in Controlled Environment Agriculture</i> Jennifer Amann, ACEEE |
| | <i>The Nexus of Energy Efficiency and Low GWP Refrigerants; Can We Meet Our Greenhouse Gas Emission Goals in Commercial Refrigeration?</i> Jim Kelsey, kW Engineering |
| | <i>Cooking Up Carbon Reductions: Equipment Upgrades and Fuel Switching Strategies to Reduce Emissions from Commercial Kitchens</i> Adam Spitz, ICF |
| | SESSION 2 (10:30 am - 12:00 pm) |
| Smart Controls and Big Data | |
| <i>Existing Wireless Infrastructure is a Low-cost Path to Occupancy-based Commercial Building Control</i> Cecil Scheib, New York University | |
| <i>Qualitative Evaluation of Barriers, Awareness, and Adoption of LLLC Technologies</i> Shelby Ruiz, Washington State University | |
| <i>Network Lighting Controls (NLC) 2.0</i> Welsey Whited, DNV | |

Panel 3 continued

SESSION 1 (8:30 am - 10:00 am)

Modeling EE, DR, and DERs in Commercial Buildings

Probabilistic Modeling of Commercial Building Occupancy and Electric Vehicle Charging Behavior Using Location-Based Map Data

Rawad El Kontar, National Renewable Energy Laboratory

Incorporating the Impacts of Climate Change in a Typical Weather Year

Anna Kelly, Power TakeOff

Calibration of Building Energy Model to Determine Load Flexibility Potential

Tanushree Charan, National Renewable Energy Laboratory

SESSION 2 (10:30 am - 12:00 pm)

Energy Design in Commercial Buildings

Measuring and Benchmarking Demand Flexibility in Commercial Buildings and Flattening the Duck – Addressing Baseline and Commissioning Challenges

Jingjing Liu, Lawrence Berkeley National Laboratory

Integrating Embodied Carbon Knowledge for Design Decisions

Heather Goetsch, National Renewable Energy Laboratory

What We Learned From Analyzing 15 Millions Rows of Commercial Buildings' HVAC Fault Data

HVAC Fault Data

Eliot Crowe, Lawrence Berkeley National Laboratory

FRIDAY, AUGUST 26