## SESSION 1 (8:30 am - 10:00 am) - Shanti Pless

### Decarbonizing Existing Buildings

**Automated Anomaly Detection and Diagnosis for Real Time Carbon Minimization**  
Presented by: Craig Roussac, Buildings Alive  
(Lead Author: Hao Huang, Buildings Alive)

**Decarbonization Training for Facility Managers**  
Jillian Winterkorn and Jason Strano, Eversource

**Can Electrification Find a Sweet Spot? Summarizing Field Data from Electrification Audits in Commercial and Industrial Buildings.**  
Carl Samuelson, Michaels Energy

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

### What's after Zero: Net Zero Energy Buildings and Beyond

**Challenges and Lessons Learned from an Analysis of Three Zero Energy Buildings**  
Kate Hickcox, Pacific Northwest National Laboratory

**Competition Between Ventilation and Cooling in Commercial Buildings and Implications for Energy Flexibility**  
Caitlin McMahon, Stanford University

**Cutting Carbon with Codes: Reducing the Worst Climate Impacts of Construction**  
Webly Bowles, New Buildings Institute & Courtney Anderson, City & County of Denver

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**SESSION TO BE BROADCASTED**

### The Healthy Buildings and Energy Nexus

**How Does Lighting for Wellness Affect Energy Use? Results from Simulation and Laboratory Studies, and a Look Ahead.**  
Jordan Shackelford, Lawrence Berkeley National Laboratory

**Energy Implications of Using Germicidal Ultraviolet Radiation to Combat SARS-CoV-2**  
Belal Abboushi, Pacific Northwest National Laboratory

**Energy Efficiency Measures to Improve Indoor Air Quality and Reduce the Spread of the SARS-CoV-2 Virus**  
Robert Mowris, Verified Inc.

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

### Taking Electrification to Scale - Cities, States, and Beyond

**Audit Template Tool: Facilitating Data Driven Decision Making for Jurisdictions**  
Supriya Goel, Pacific Northwest National Laboratory

William Prindle, ICF

**Cold Climate Packaged Heat Pumps – Resistance is Futile**  
Presented by Joshua Butzbaugh, Pacific Northwest National Laboratory  
(Lead: Christian Valoria, Pacific Northwest National Laboratory)
# PANEL 3: COMMERCIAL BUILDINGS: TECHNOLOGIES, DESIGN, OPERATIONS, AND INDUSTRY TRENDS
(Meeting Room: Oak Shelter)
Panel Leaders: Alexi Miller and Shanti Pless

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<td>High Performance HVAC Opportunities</td>
<td>Cooking and Cultivation: (de)Carbonizing Comestibles and Consumables</td>
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| *Heat Pump Controls: Decarbonizing Buildings While Avoiding Electric Resistance Heating and Higher Net Peak Demand*  
  Jonathan McHugh, McHugh Energy Consultants |  
  *Data-Driven Energy Efficiency in Controlled Environment Agriculture*  
  Jennifer Amann, ACEEE |
| *Including Economizer Efficiency in the Unitary Next Generation Test Procedure Standards*  
  Robert Mowris, Verified |  
  *The Nexus of Energy Efficiency and Low GWP Refrigerants; Can We Meet Our Greenhouse Gas Emission Goals in Commercial Refrigeration?*  
  Jim Kelsey, kW Engineering |
| *DO AS We Say (and As We Do): Maximizing HVAC Efficiency, Flexibility and Resiliency with High Efficiency Dedicated Outdoor Air Systems*  
  Jordan Pratt, Energy 350 |  
  *Cooking Up Carbon Reductions: Equipment Upgrades and Fuel Switching Strategies to Reduce Emissions from Commercial Kitchens*  
  Adam Spitz, ICF |

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<td>Can We Control It?</td>
<td>Smart Controls and Big Data</td>
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| *Towards a Digital and Performance-Based Control Delivery Process*  
  Amir Roth, US Department of Energy |  
  *Existing Wireless Infrastructure is a Low-cost Path to Occupancy-based Commercial Building Control*  
  Cecil Scheib, New York University |
| *Hot Mess or Cool Tech? Secrets to Success for Advanced Building Controls Integration*  
  Nathan Hinkle, Cadmus |  
  *Qualitative Evaluation of Barriers, Awareness, and Adoption of LLLC Technologies*  
  Shelby Ruiz, Washington State University |
| *A Demonstration and Evaluation of Commercial Building Occupancy Sensing Using Wi-Fi Location-Based Services (LBS)*  
  Presented by Matt Kirk, Design.Garden and Alex Haynor, CEE  
  (Lead: Lester Shen, Center for Energy and Environment) |  
  *Network Lighting Controls (NLC) 2.0*  
  Welsey Whited, DNV |
### SESSION 1 (8:30 am - 10:00 am) - Alexi Miller

#### Modeling EE, DR, and DERs in Commercial Buildings

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

Presented by Dr. Xin Jin, National Renewable Energy Laboratory  
(Lead: Rawad El Kontar, National Renewable Energy Laboratory)

*Informed Retrofit Prioritization with Random Forest Regression*

Presented by Supriya Goel, Pacific Northwest National Laboratory  
(Lead: Juan Gonzalez, Pacific Northwest National Laboratory)

*Peak Demand in the Brave New World of Building Decarbonization and Distributed Energy Resources*

Randall Higa, Southern California Edison

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

#### 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*

Presented by Jessica Granderson, Lawrence Berkeley National Laboratory  
(Lead: Eliot Crowe, Lawrence Berkeley National Laboratory)