

# Advanced Occupancy Sensors for Better Buildings Workshop

**July 12 – July 13, 2016**  
**Portland, OR**

User Needs Panel Discussion

Moderator: **Michelle Coates**, Booz Allen Hamilton

Panelists: **Ryan Hoest**, EcoVox

**Mark Malchiondo**, Ecobee

**Michael Rowand**, Duke Energy

**Kenneth Seeton**, CSUDH

**Michael Siemann**, Weatherbug



# PANEL DISCUSSION #1

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## OCCUPANCY SENSING OPPORTUNITIES AND OBSERVATIONS FROM THE COMMERCIAL SECTOR

**Ryan Hoest**

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# California Codes and Standards

- CA Title 24 Energy Code driving occupancy sensing in lighting
  - Many lighting retrofits are also triggering code
- Opportunity:
  - More consistent integration of occupancy controls with HVAC in commercial sector
    - Integration is typically optional except in hotel rooms/hi-rise residential
    - Usually easier in new construction
  - Possible utility incentive programs to exceed code

# Interoperability Challenges

- Silos still remain in the industry
  - Proprietary control systems / communication protocols
  - Lighting vs. HVAC controls sophistication may vary within a site
  - Lighting designer and mechanical designer
    - Potential conflict between lighting zoning and HVAC zoning
- Retrofits can be tougher than new construction
  - Still a lot of systems with pneumatic controls
  - Not always easy to modulate existing HVAC systems
  - Tenant modifications can significantly change from original design
- Network security
  - Wireless protocols vs. hardwired controls cost
  - Lighting & HVAC vs. access control/security & fire

# Savings Persistence

- Who makes it work the first time?
  - Cx agent, controls contractor, architect, design/build or ?
- Who ensures advanced occupancy strategies continue to work?
  - Building use will change over time
  - Sensors and equipment will eventually degrade in performance
- Data-driven ongoing commissioning is key



GIVE YOUR BUILDING A VOICE

Contact us at 805.540.2044

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# Residential Occupancy Sensing

- Technology
- Whole home Occupancy Sensing
- Sensing Occupancy in rooms that matter most
- Sensing more than Occupancy
- Simple and Inexpensive
- Informative





CHANGING WHAT'S POSSIBLE

# Michael Rowand

Duke Energy

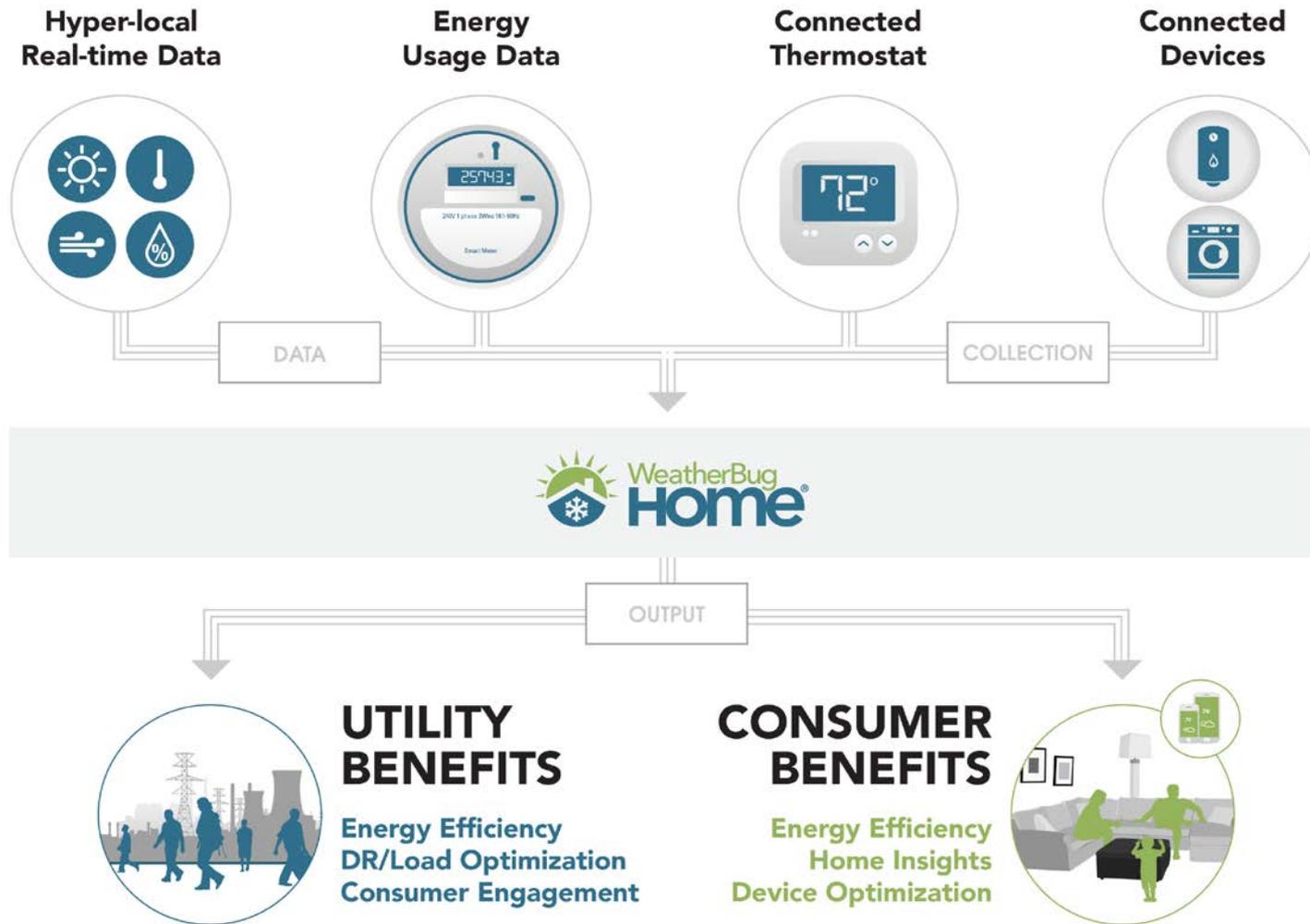


CHANGING WHAT'S POSSIBLE

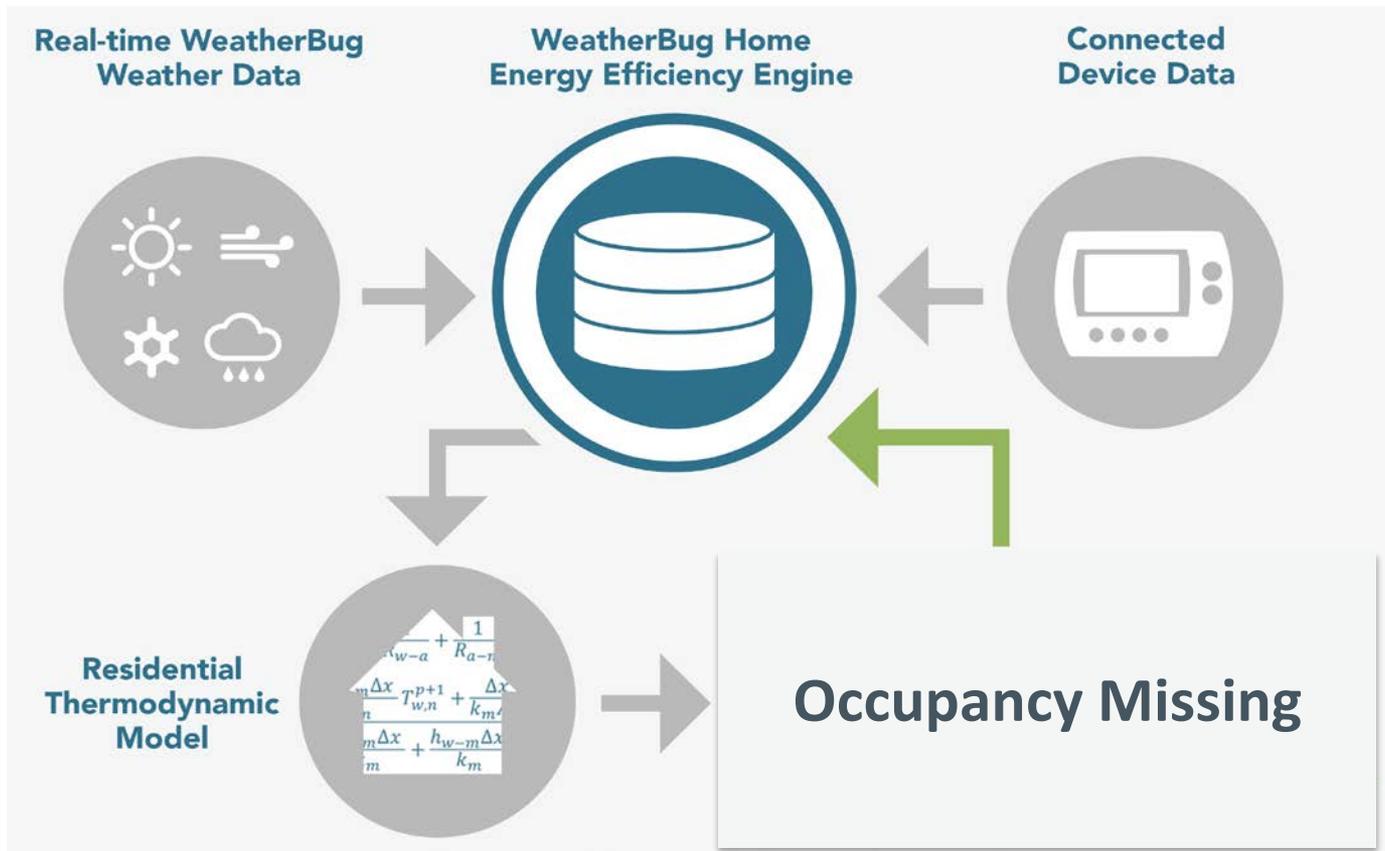
# **Kenny Seeton**

California State University, Dominguez Hills (CSUDH)

# Energy Intelligence for the Connected Home



# Intelligent Learning for EE & DR Optimization



- Currently work within the boundaries given by customers
- Occupancy status can drive decisions that impact energy and comfort

## Energy Efficiency

- Push deeper and longer setbacks
- Learn the ideal setpoint schedule, no programming required

## Demand Response

- Informed decision about what setpoint strategy makes sense for that customer on that day
- Capacity increases by 20% if opt-outs decrease by 50%

# The Challenge & Opportunity of the IOT



What if we used the IOT to inform itself?

- Thermostat
- House alarm and camera
- Geofencing on mobile device
- Electric car charging
- Energy consumption
- Internet bandwidth
- TV and channels
- Weather
- Traffic

# Panel Discussion #1

## User Needs

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Tuesday, July 12<sup>th</sup>

2:40-3:30pm

### Moderator Follow-up Questions:

- ▶ What markets/ building types are most ripe for commercial adoption of advanced occupancy sensor systems to save energy? What are the key various market drivers and barriers? Who are the customers?
- ▶ Do you foresee other benefits beyond energy savings that will motivate owners and operators to adopt occupancy sensing products?
  - If so, which are most critical for allowing this technology to achieve scale throughout the building stock?
  - How critical is it to consider Indoor Air Quality (IAQ)? How could this be leveraged together into an offering? What additional value would it bring?
- ▶ What level of validation/ product prerequisites are needed for technology deployment? What are there common avenues used for proof-of-concept, (e.g. testing for industry standards, certain product certification)?