Smart Labs Sector Meet-up

2019 Better Buildings Summit
Wednesday, July 10th
10:30 AM – 12:30 PM

Agenda

- 10:30 am Ice Breaker / Networking Activity
- 10:45 am SLA Group Discussion
- 11:25 am Break
- 11:30 am Partner Updates
- 12:30 pm Close

Ice Breaker Activity

- Sorts and Mingle

Smart Labs Team

Izzy Ballet
RE Tech Advisors
Account Manager

Rachel Romero
NREL
Smart Labs Subject Matter Expert

Otto VanGeet
NREL
Smart Labs Subject Matter Expert

Rachel Shepherd
DOE Smart Labs Lead

Ryan Livingston
Allegheny Science and Technology
Account Manager

Smart Lab Accelerator Partners

- University of California, Irvine
- University of Illinois at Chicago
- University of Minnesota
- University of New Hampshire
- University of Colorado Boulder
- Wesleyan University
- Emory University
- University of California Irvine Health
- Los Alamos National Laboratory
- Pacific Northwest National Laboratory
- Lawrence Berkeley National Laboratory
- National Renewable Energy Laboratory
- NASA Jet Propulsion Laboratory
- Argonne National Laboratory
- USDA ARS – Edward T. Schafer Agricultural Research Center
- GSA – FDA Bothell Laboratory
- Colorado School of Mines

Smart Labs Accelerator

- Top Projects and Results
  - UCI Workshop
  - UMN Workshop
  - Partner Conference Calls
  - Monthly Webinars
  - Development of Smart Labs Toolkit
    - Including webinars and training videos
    - Partner case studies
- Upcoming:
  - National Lab meetup
  - UCI Training
  - Training at Emory
  - Prep for Conferences:
    - Energy Exchange
    - I2SL
  - Feedback on Smart Labs Toolkit
  - End of Accelerator

Partner Updates

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Around the Room

Please Share:

- *Your Name*
- *Your Organization*
- *Your Role*

- What are you working on?
- Top project and results
- What resources are you using?
- What are your barriers and how are you resolving them?

Los Alamos National Laboratory

Top Projects and Results

- My Green LANL
  - Certified the first 'Green Lab' in DOE.
  - Sparked interest throughout the lab while team is still continuously certifying labs and office spaces.
- Fume Hood PM Team
  - In one facility, able to get 10 hoods certified that have not been used for years.
  - Shut off two HV units, saving 12,000 kWh/month

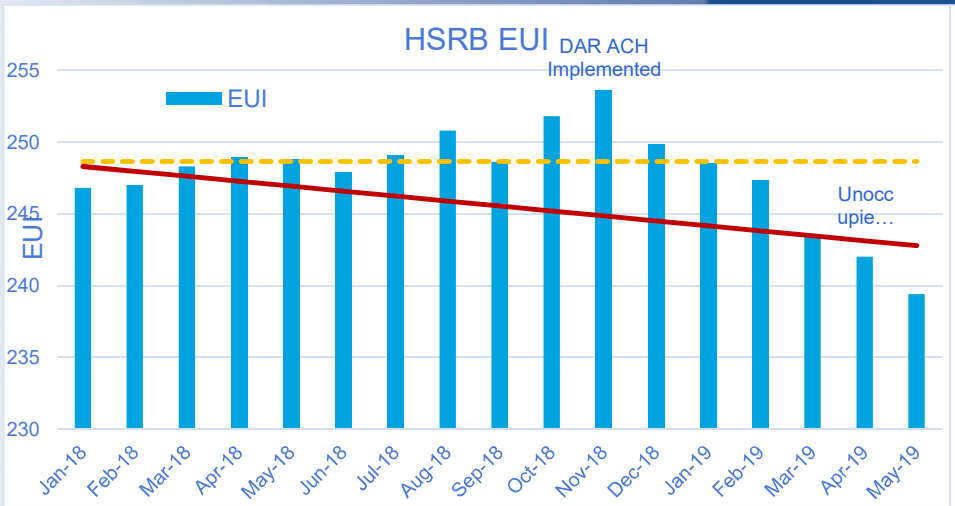
Barriers

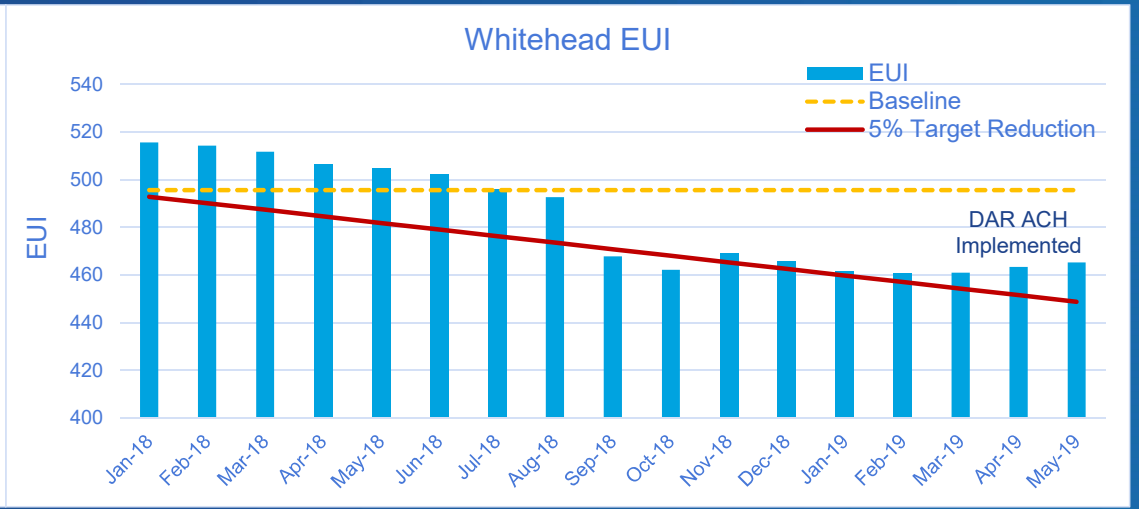
- Ancient facilities with aging equipment
- Teaming with other organizations
- Changing operational practices

Resources

- 3Flow
- LANL ESH for RCB
- Engineering and Commissioning Team for PMs and BAS projects
- Maintenance and Craft for PMs
- BB Program for peer sharing

Emory Smart Labs Snapshot July 2019





In Process

- HSRB to have occupancy sensors online 7/23/19
- OWR lab 1023, 7 fume hoods to VAV online 7/12/19
- WMRB DAR air changes

Awaiting Funding Approval

- Outsourcing Plume Height studies all labs postponed till 9/15/19
- OWR, Emerson and WMRB ERU's in process
- ECC occupancy sensors in process
- Whitehead control and CNR controls upgrades in process.

Completed

- HSRB reprogramming
- HSRB and Whitehead animal quarters ventilated cage racks to 8 ach.
- HSRB ventilated cage racks to 8 ach

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UC Irvine

A Decade of “Smart Labs” Results and Conclusions…

1. The cost/benefit value proposition was far better than we anticipated!
2. “Information layer” provides real-time commissioning and fault-detection = key success factor
3. No degradation in performance or savings
4. Co-benefits greater, with higher economic value, than anticipated:
   - Labs are safer
   - Central plant capital savings, e.g., central chillers and CHP
   - Reduced H2O consumption and treatment
   - HVAC and exhaust equipment life extended 4-8X
   - Cleaner indoor air
   - Improved airborne pathogen prevention
   - Deferred maintenance funded by energy savings
   - Reduced maintenance expense
   - No periodic recommissioning expense
   - Overall more reliable research environment
5. Other Smart Labs programs may generate even better economics:
   - Our average prior ACH was 8.2
   - Our average cost of electricity past 10 years: 7 cents/kWh
   - Many climates more severe than Irvine, CA

National Renewable Energy Laboratory (NREL)

- Top Projects and Results
  - ASHRAE 110 test for every fume hood and rebalanced to lowest face velocity (~80 fpm) = results
  - New analytics for new ESIF lab
  - Found significant exhaust fan energy savings by implementing wind-responsive controls
- Barriers
  - New management and staff changeover- opportunity for new training and champion

Engage with the Technology Research Teams

Plug and Process Loads Team

- Covers best practices and innovative technologies for controlling these loads in commercial buildings. PPLs are expected to increase with respect to the other building end use energy loads, and now is a great time to get involved.
- Lead: Kim Trenbath: kim.trenbath@nrel.gov

Smart Energy Analytics Campaign

- Look for Eliot Crowe to talk about the Energy Information System (EIS) or Fault Detection and Diagnostics (FDD) tools you have implemented in your buildings, and how you can get started with a monitoring-based commissioning process.
- Lead: Eliot Crowe**: ecrowe@lbl.gov

Envelope Tech Research Team

- Air infiltration accounts for 20% of primary energy consumption in buildings. Learn more about advanced window, wall, and roof technologies to improve your building enclosure.
- Lead: Melissa Lapsa: lapsamv@ornl.gov

Contact your Account Manager for Introductions!

**These staff are at the Summit. Find them at ask-an-expert tables during networking breaks.

Engage with the Technology Research Teams

Interior Lighting Campaign

- Facility owners and managers can receive guidance and recognition for lighting upgrade or new installation of high efficiency interior lighting solutions.
- Lead: Michael Myer**: Michael.Myer@pnnl.gov

IoT Lighting Challenge

- Facility owners and managers can help define the performance characteristics of a competitively priced new-to-market light fixture that will be easily upgradable to provide for internet connectivity. Connect to learn more or participate in the IoT Lighting Challenge.
- Lead: Michael Myer**: Michael.Myer@pnnl.gov

Space Conditioning Team

- Commercial HVAC accounts for about 40% of total commercial energy use in the US. Through the Space Conditioning Technology Research Team, partners work to deploy energy-saving space-conditioning strategies by partnering with industry, coordinating real world building demonstrations, and generating tools.
- Lead: Miles Hayes**: Miles.Hayes@nrel.gov

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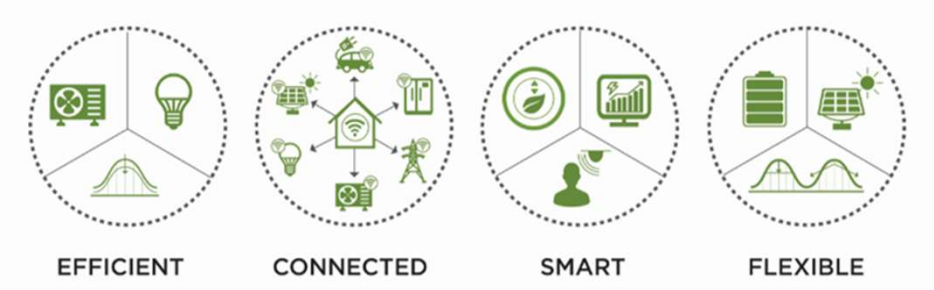
Join us!

Better Buildings Alliance *Renewables Integration* Team

Buildings-to-Grid Working Group

FOCUS AREAS:

- Strategic integration of renewables
- Energy storage
- Building load flexibility
- Grid coordination



- **Bimonthly, 1-hour conference calls**
- **Kick-off meeting in early August**
- **Also looking for participants for two studies:**
  - **Portfolio analysis:** understand potential for load flexibility (optimized demand management)
  - **Field study:** implementing building load flexibility solutions

Interested? *Email us!*

Rois Langner: Rois.Langner@NREL.gov

Selam Haile: Selam.Haile@NREL.gov

Group Discussion

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Group Discussion Questions

- What do Partners need after the accelerator is finished to continue on?
- What do Partners need to continue the momentum?
- What do you need for success?
- What else can DOE do?
- What are your plans to make the 20% reduction?
- Do we need to continue to provide trainings? What is helpful about these trainings?
- How valuable are the webinars? Would you prefer more discussion?
- Would somebody like us to record more videos of partner projects? Would you be willing to participate?

Thank You

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