Energy Efficiency Pilot Program for Older Commercial Buildings

September 8, 2022
Welcome!

Before we get started, here are some helpful tips

- **We will start the session at 1 pm EST.** Starting soon...
- **Everyone has been placed on mute to avoid background noise**
- **You can use your computer audio to listen or call in to the following number to listen in:**
  - US: +1 646 931 3860
  - (Webinar ID: 881 0226 4257)
  - Passcode: 111438
- **We will be recording the session for those who couldn’t attend today**
- **We will send an email after with helpful information on next steps**
- **Please let us know your questions using the Q&A feature in the webinar tool**
Today’s Speakers

Shaina Li
Head of Growth,
Mesa (part of Google)

Jeff Wanner
Project Manager,
Contractor to the U.S. Department of Energy

Nikitha Radhakrishnan
Research Engineer,
Pacific Northwest National Laboratory
Agenda

• Green Proving Ground Program

• How can older buildings lower energy costs?

• Introduction to Mesa

• Ideal Site Characteristics

• Audience Q&A
Green Proving Ground / DOE – High Impact Technologies

• Annual RFI seeking technologies with broad benefits
  • Help meet energy and decarb targets
  • Promise positive return on investment
  • Have broad deployment potential

• Joint GSA/DOE Field Validations of Early and Pre-commercial technologies
  • M&V in broader set of buildings /conditions improves confidence in replicability of results & accelerates market transformation
  • Shared reporting improves information accessibility, saves taxpayer money and streamlines development of specifications and incentives
  • Independent validations produce case studies of real-world performance of the technologies conducted by National Lab
GPG & High Impact Technologies Program: Technology Field Validations

What: An annual call for novel deployment-ready, energy-efficient technologies in partnership with the US General Services Administration (GSA).

Who: DOE seeks leading owner/operator partners to act as host sites for validating each technology.

How: 3rd party performance measurement and verification (M&V) is funded by DOE and performed by National Lab experts.
  - Evaluations may last a few months to a full year, depending on technology
  - Procurement (purchase agreement) for the technology will be negotiated between the vendor and facility owner.

Why: DOE publishes and disseminates results as a case study, providing real-world evidence of technology performance

- 78 submissions
- Program finalists
  - 6 selected for joint GPG/HIT evaluation
  - 3 selected for DOE-HIT focused evaluations
    - BMS
    - EV Charging
    - CO2 Heat Pump
    - Carbon Capture
    - Novel window film

GSA & DOE Seek Technologies for Net-Zero Carbon Buildings

Joint Request for Information Closes On
TUESDAY, DECEMBER 7, 2021

The U.S. General Services Administration (GSA), working with the U.S. Department of Energy (DOE), has issued a Request for Information (RFI) for technologies that help reduce greenhouse gas emissions from commercial buildings. Technologies will be evaluated under dynamic, real-world conditions in federally or privately owned commercial buildings. Responses to this RFI will be evaluated based on the technology’s potential for replicable and widespread adoption in the U.S. marketplaces. Novel financing approaches or other business models to accelerate uptake of low-carbon technologies are encouraged and may be integrated into RFI responses.

Valideate Real-World Performance
Participation can increase market acceptance of your technology by validating real-world performance. Technology evaluations help inform public- and private-sector investment decisions, accelerating commercialization as well as adoption within the federal government and the commercial building industry.

Visit gsa.gov for more information and to access the RFI.

Review and Complete the RFI by 12/07/21. gsa.gov/keyword "FY22RFO1221"

Attend the Webinar Wednesday, 12/15, 1pm ET. Register at: gsa.gov/gpg

Questions? gpg@gsa.gov

The Energy Department's Better Buildings and Energy Efficiency Program is a portfolio of innovative building technologies that reduce energy consumption and greenhouse gas emissions, while also lowering costs for businesses and organizations. The program aims to drive down energy costs for businesses by providing practical, actionable information and resources that help them make cost-effective energy-saving improvements. By reducing energy consumption, the program helps to create a cleaner, more sustainable future for all Americans.
30% of energy used in commercial buildings is wasted

- HVAC accounts for 44% of all energy use in commercial buildings
- Office equipment (includes computing) represent 10% of all energy use
- Lighting is another low hanging fruit that can be reduced with LED bulbs

Saving energy contributes to other hidden benefits - better tenant satisfaction, lower carbon emissions and higher renewal rates
## Problems plaguing efficiency in older buildings

### Issues contributing to poor efficiency in older buildings:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
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<tr>
<td>Little to no manual adjustments to heating and cooling</td>
<td>Smart thermostats that account for building occupancy and automate heating and cooling</td>
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<td>Lack of feedback from all stakeholders leads to poor air quality and hot/cold complaints</td>
<td>Gather tenant feedback and building performance with inexpensive sensors and buttons</td>
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<td>Lack of building controls to determine if equipment is functioning efficiently</td>
<td>Affordable, cloud-based controls that share alerts and reliable insights on equipment runtime</td>
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>50%

More than 50% of commercial buildings in operation today were built before 1970
What Is Mesa?

Mesa is affordable, easy-install building controls
Mesa offers controls that understand your building:

- **Dashboard**: Visibility into actions
- **Gateway**: Data collection (cell or wifi)
- **Proximity (and optional Air Quality)**: Ventilation suggestions
- **Temp & Humidity**: Zone-level adjustments
- **Motion**: Occupancy-based changes
- **Smart Outlets**: On/off changes on shared loads
- **Tenant App**: Comfort + sustainability
- **Smart Thermostat**: Just-in-time temp changes
- **Hot / Cold Buttons**: Comfort + overheating / cooling prevention

Energy Efficiency Pilot Program for Older Commercial Buildings
With intelligence that saves energy, automatically

Automated savings
- Machine learning algorithms automatically adjust heating, air conditioning, ventilation, and outlets.

Remote device management
- Access outlets and thermostats from anywhere.

Real-time data and trends
- Visibility into all your spaces and your emissions reduction.
Don’t heat and cool empty spaces

Mesa can predict when occupants will be in a given space and only heats or cools that space based on actual and predicted occupancy, saving money.

43% Savings
63% Unoccupied

Runtime savings by adjusting zone-level set points during unoccupied times
OPTIMIZING OUTLETS AT HINES HUDSON SQUARE PROPERTIES

Turning off plugs when no one is around

Mesa can disable the use of high-draw and continuous power loads but is also intelligent enough to re-enable them when it knows people will arrive.

41% Savings
6.7 Hours / Day
Runtime Reduced

Mesa’s machine learning adjusts HVAC systems and outlets based on occupancy comfort and more.
Ideal Site Characteristics

- Office, school, and retail buildings
- **NO** building automation system (BAS)
- Uses forced air HVAC system (natural gas or electric)
- Equipped with a 24V thermostat
- Existing meter dedicated to pilot space

### Site Benefits

- Discounted Mesa system
- Installation complete in 1 day
  - **NO** disruptions
- FREE measurement and verification
  - TEMPORARY meters
- Independently verified savings

Project Timeline: < 9 months for baselines + < 6 months for technology validation

*Exact timeline depends on individual site*
Q&A

We will be answering questions during the webinar.

Please use the Q&A feature to add your questions.
For More Information

Contact our team to discuss participation

Reach us via email mesa@pnnl.gov

Learn about Mesa: http://sidewalklabs.com/mesa