



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...



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



Please let us know your questions
using the Q&A feature in the webinar tool



Everyone has been placed on mute
to avoid background noise

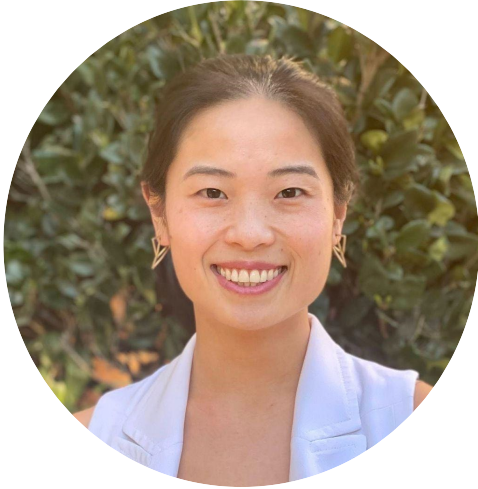


We will be recording the session
for those who couldn't attend today



We will send an email after with helpful
information on next steps

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



- Green Proving Ground Program
- How can older buildings lower energy costs?
- Introduction to Mesa
- Ideal Site Characteristics
- Audience Q&A



- 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

2022 GPG/HIT Topic: Technologies for Net-Zero Carbon Buildings



- 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 equitable and wide adoption in the U.S. marketplace. Novel financing approaches and/or business models to accelerate uptake of low-carbon technologies are encouraged and may be integrated into RFI responses.

Validate 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/gpg for more information and to access the RFI.

TARGETED TECHNOLOGIES

Technologies should be early commercial, and ready for evaluation in occupied, operational buildings.

- ▶ **High-Performance/Low-Carbon**
Electrification of major loads; large-scale heat pumps; retrofit heat recovery systems; innovative building envelope retrofits.
- ▶ **Onsite Energy Generation & Storage**
High-efficiency PV, BIPV, innovative PV and storage; solar thermal and geothermal, onsite wind, hydrogen fuel cells.
- ▶ **Greenhouse Gas/Carbon Reduction**
On-site carbon capture; technologies that use refrigerants with low or no global warming potential

▶ **Review and Complete the RFI by 12/07/21** sam.gov keyword "FY22RFI101221"

▶ **Attend the Webinar Wednesday, 11/10, 1 pm ET** register at: gsa.gov/gpg

▶ **Questions?** gpg@gsa.gov

GSA

The Green Proving Ground program leverages GSA's real estate portfolio to evaluate innovative building technologies. The program aims to drive down operational costs in federal buildings and help lead market transformation through the deployment of new technologies. gsa.gov/gpg

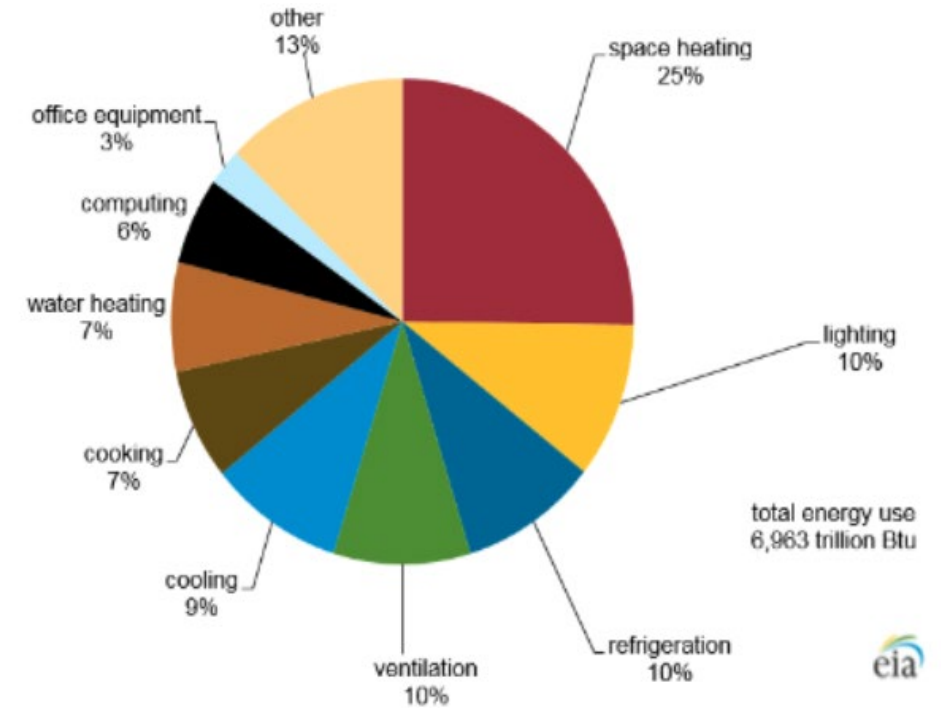
U.S. DEPARTMENT OF ENERGY

The mission of DOE's Office of Energy Efficiency and Renewable Energy (EERE) is to accelerate the research, development, demonstration, and deployment of technologies and solutions to equitably transition America to net-zero greenhouse gas emissions economy-wide by no later than 2050, and ensure the clean energy economy benefits all Americans, creating good paying jobs for the American people—especially workers and communities impacted by the energy transition and those historically underserved by the energy system and overburdened by pollution. energy.gov/eere/office-energy-efficiency-renewable-energy

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



Source: U.S. Energy Information Administration, 2012 Commercial Buildings Energy Consumption Survey.

Saving energy contributes to other hidden benefits - better tenant satisfaction, lower carbon emissions and higher renewal rates



>50%

More than 50% of commercial buildings in operation today were built before 1970

Issues contributing to poor efficiency in older buildings:

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



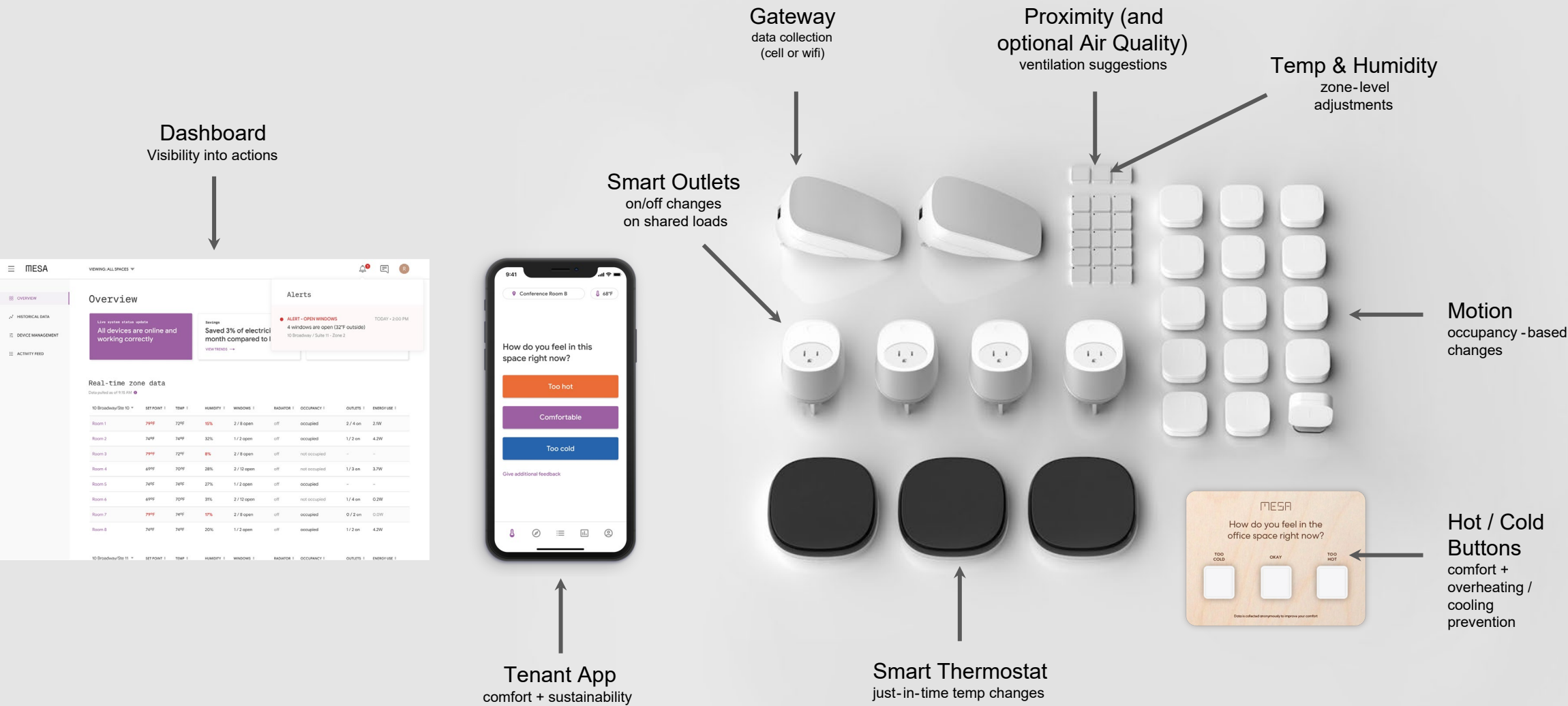
What Is Mesa?



Mesa is
affordable,
easy-install
building
controls



Mesa offers controls that understand your building





With intelligence that saves energy, automatically

Automated savings

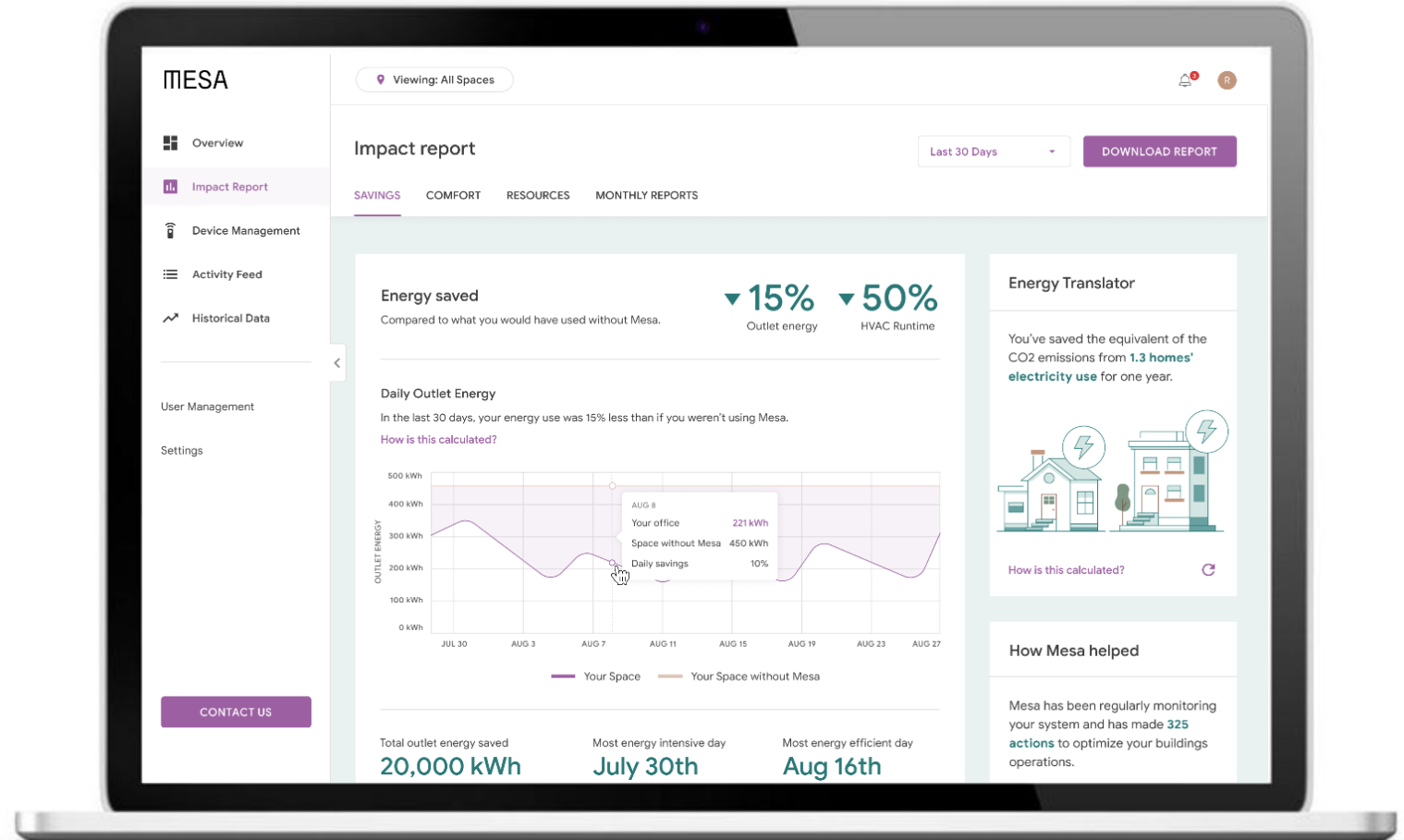
- Machine learning algorithms automatically adjust heating, air conditioning, ventilation, and outlets .

Remote device management

- Access outlets and thermostats from anywhere.

Real-time data and trends

- Visibility into all your spaces and your emissions reduction.



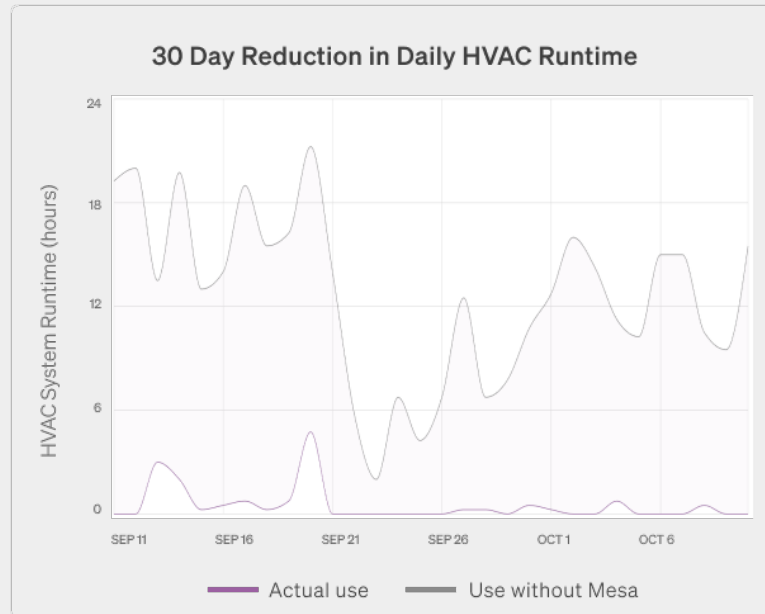
Don't heat and cool empty spaces

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



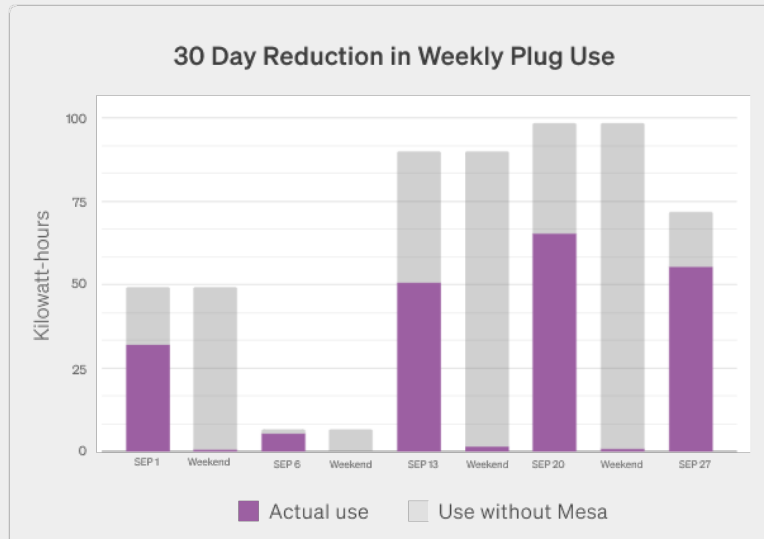
Turning off plugs when no one is around

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>

