DC'S BUILDING ENERGY PERFORMANCE STANDARDS 101

January 11th, 2022
BEPS AOBA-BIA Series

DEPARTMENT OF ENERGY & ENVIRONMENT

GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

Learning objectives:

What is Benchmarking?

What are BEPS?

Pathway selection and benchmarking deadline: April 1st, 2023

Description of the four BEPS pathways

Next steps

SUSTAINABLE DC VISION

Make DC the healthiest, greenest, most livable city in the country.

GOALS: 2032

SUSTAIN ABLE DC

- ADAPT TO CLIMATE CHANGE
- CLIMATE READY BUILDINGS

- CUT ENERGY USE 50%
- 50% RENEWABLE ENERGY
- NET ZERO NEW BUILDINGS
- NET ZERO RETROFITS
- CUT GHG EMISSIONS 50%

MAYOR BOWSER: COMMITTED TO ZERO CARBON BY 2050

ENERGY USE AND EMISSIONS IN DC

MODELED PROPORTION OF GHG EMISSIONS BY SECTOR

BENCHMARKING 101

What is benchmarking?
Annual report of energy and water usage to DOEE

This is a measurement of your building's performance – There are several metrics that track performance, such as total energy usage by fuel type, energy usage per square foot, ENERGY STAR score

What does DOEE do with this data?
Data from all covered buildings is publicly disclosed (and is used to generate the BEPS)

When is it due?
April 1 of every year

BENCHMARKING 101 – Recent changes

Covered Buildings

- 2010 and on – DC-owned buildings >10,000 sq. ft.
- 2014 and on – Private buildings > 50,000 sq. ft.
- 2022 and on – Private buildings > 25,000 sq. ft.
- 2025 and on – Private buildings > 10,000 sq. ft.

Third Party Data Verification Required

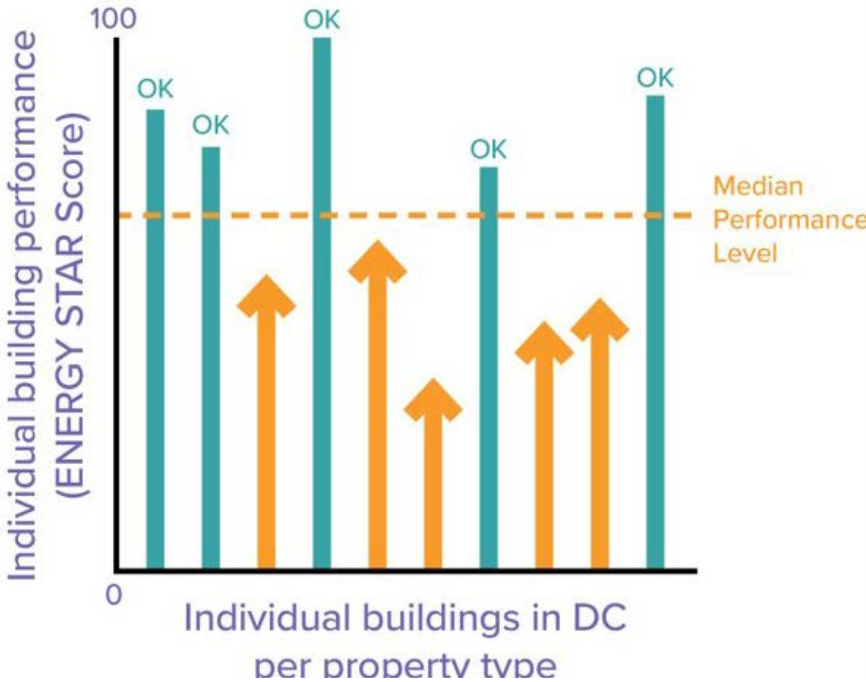
- Beginning 2024 and every three (3) years etc.

BUILDING ENERGY PERFORMANCE STANDARD 101

What are BEPS?
In a few words – minimum performance threshold for existing buildings

How does DOEE determine the minimum threshold?
DOEE uses benchmarking data to calculate the local median, for each building type

Which years did DOEE use to determine if my building meets BEPS?
The BEPS were established using CY2019 data, and buildings were evaluated based on CY2019 data



BEPS METRICS

Standard Metrics

Performance Metric

ENERGY STAR Score

a number established by US EPA that allows comparison of energy use of a property with similar properties nationwide

Important for setting the standard!

Source Energy Use Intensity (EUI)

the total amount of energy required to operate a building, plus delivery and production losses, divided by the building's gross floor area (as defined by Portfolio Manager)

Important for setting the standard!

Site Energy Use Intensity (EUI)

the annual amount of all energy a building consumes on-site, as reported on a building's utility bills, divided by the building's gross floor area (as defined by Portfolio Manager)

Important for compliance evaluation!

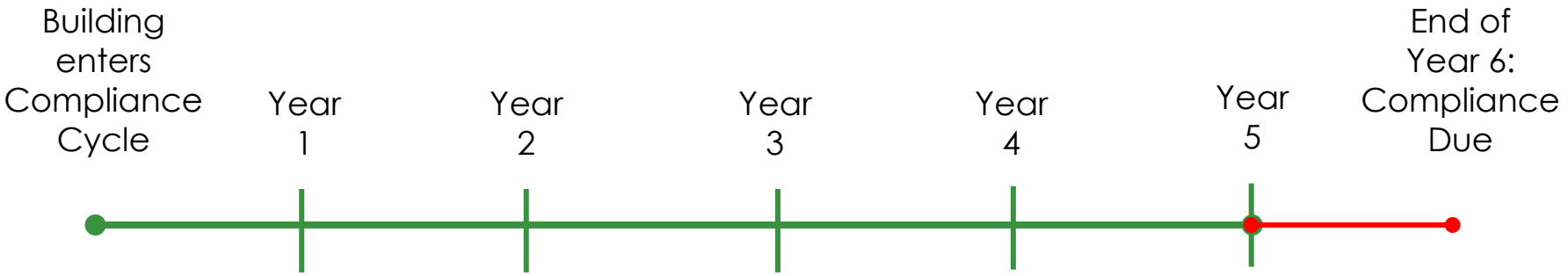
STANDARD TABLE EXAMPLE

There are almost 40 different property types present in DC buildings over 50K SF!

Property Type	Metric	Standard Level	Standard
Multifamily Housing	ENERGY STAR Score	Local Median	66
Office	ENERGY STAR Score	Local Median	71
K-12 School	ENERGY STAR Score	Local Median	36
Hotel	ENERGY STAR Score	Local Median	54
Other - Public Services	Source EUI	Local Median	229.4
Residence Hall/Dormitory	ENERGY STAR Score	Local Median	56
Non-Refrigerated Warehouse	ENERGY STAR Score	Local Median	19
Retail Store	ENERGY STAR Score	Local Median	64
Self-Storage Facility	Source EUI	Local Median	21.2
Worship Facility	ENERGY STAR Score	Local Median	17
Medical Office	ENERGY STAR Score	Local Median	62
Fitness Center/Health Club/Gym	Source EUI	National Median	206.6
Hospitals	ENERGY STAR Score	National Median	50

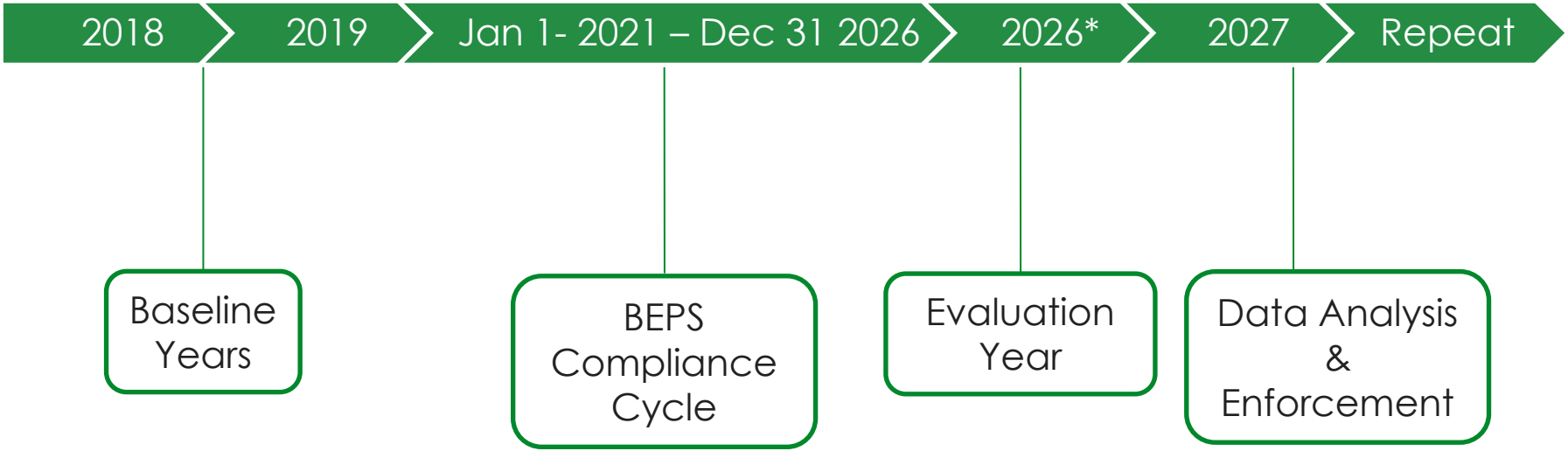
BEPS Timeline

Buildings that do not meet the Standard for a BEPS period will be placed in a 5-year compliance cycle. The building owner has until the end of the cycle to bring their building into compliance.

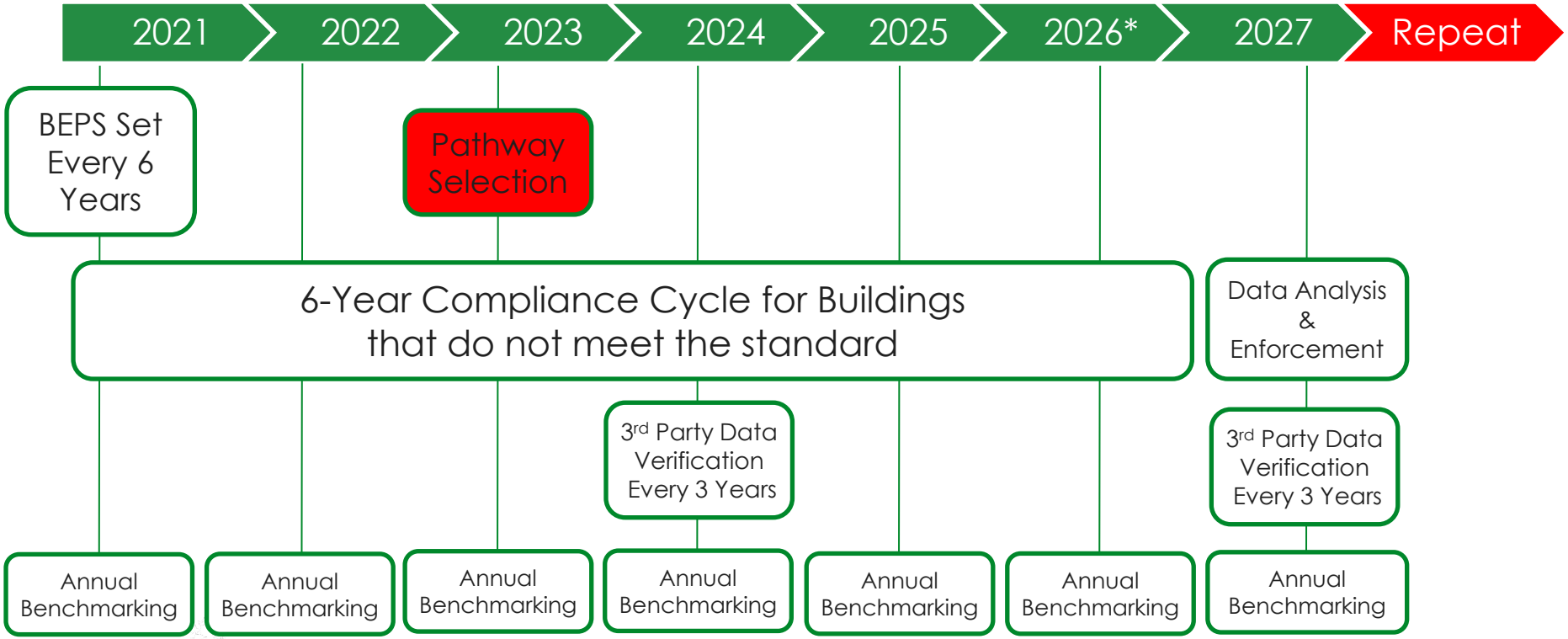


* COVID-19 PHE adjustment – automatic delay of the BEPS compliance requirement one year in the 2021 Pathways

BEPS Timeline – Abbreviated



BEPS Timeline - Extended



* COVID-19 PHE adjustment – automatic 1-year delay of BEPS compliance cycle

BEPS APPLICABILITY

As the benchmarking requirements ratchet down in square footage over time, the buildings will be required to meet the BEPS in the following periods until all buildings 10,000 sq. ft. and over are following the performance standards.

BEPS 1:
Private buildings >50,000 sq. ft.
and DC-owned >10,000 sq. ft.

BEPS 2:
Private buildings >25,000 sq. ft.
and DC-owned >10,000 sq. ft.

BEPS 3:
Private buildings and
DC-owned >10,000 sq. ft.

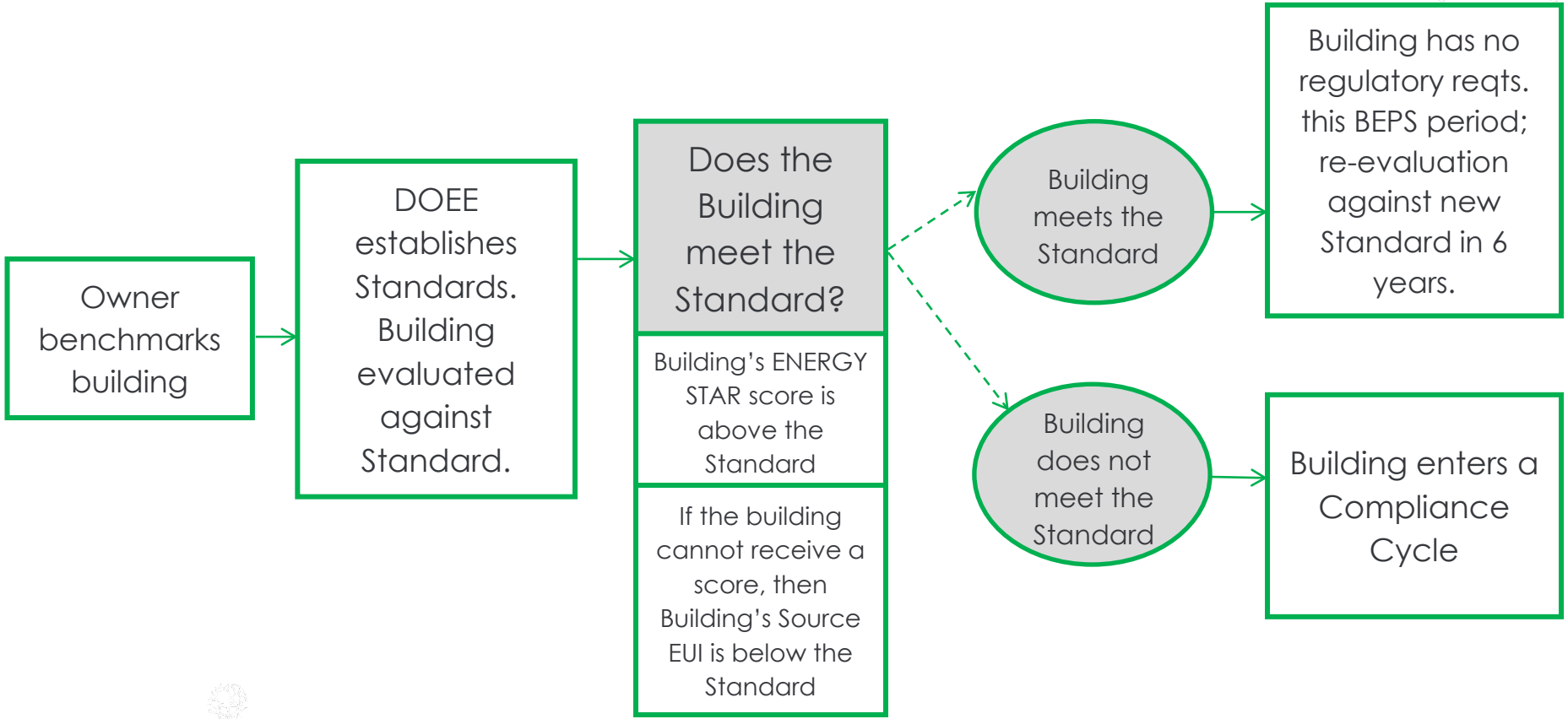
BUILDING ENERGY PERFORMANCE STANDARD 101

Do BEPS scores change every year?
Each building's ENERGY STAR Score may change as it is benchmarked on an annual basis. The current BEPS are standards that were set by DOEE on January 1, 2021 and will not change throughout the first compliance cycle.

How often am I evaluated?
You are evaluated against the BEPS at the beginning of each BEPS Period. The first one began on January 1, 2021 and DOEE will set new BEPS every 6 years after.

Will the standard change?
As buildings make improvements throughout a compliance cycle, the standards for the next BEPS period will most likely change.

STANDARD EVALUATION



MEETS STANDARD EXAMPLE

My multifamily building is 150,000 sq. ft.

Does BEPS 1 Apply?

YES, so let's see if my building meets the performance standard.

My ENERGY STAR Score was a 72 in CY2019

Does my building meet the BEPS?

The BEPS for multifamily buildings was an ENERGY STAR Score of 66. My building meets the standard!

What do I need to do to comply?

Nothing for BEPS 1! But I should look ahead to BEPS 2 and make sure my building continues to meet the standard.

DOES NOT MEET STANDARD EXAMPLE

My office building is 80,000 sq. ft.

Does BEPS 1 Apply?

YES, so let's see if my building meets the performance standard.

My ENERGY STAR Score was a 40.

Does my building meet the BEPS?

The BEPS for office buildings was an ENERGY STAR Score of 71. My building does NOT meet the standard.

What do I need to do to comply?

I have options. Let's go to the next slide to learn more!

COMPLIANCE PATHWAYS PERFORMANCE REQUIRMENTS

Building owners have a variety of pathways to choose from to bring their buildings into compliance:

Performance Pathway

- Reduce site energy usage 20%
- Provides flexibility for building owner

Standard Target Pathway

- Reach the standard for your property type
- Only available for property type groups above the National median

Prescriptive Pathway

- Implement cost-effective efficiency measures
- Following a set pathway provides certainty

Alternative Compliance Pathway

- Special circumstances such as portfolios, deep retrofits, etc.
- Allows building owner to apply to follow a path with special criteria

Performance Pathway

This is the most straightforward pathway that offers the most flexibility to the building owner

- Baseline: Site EUI from 2018 and 2019
- Action: Reduce Site EUI by 20%
- Evaluation: Site EUI from 2026

Performance Pathway

Reduce site energy usage 20%

Provides flexibility for building owner

Standard Target Pathway

This pathway is designed to recognize high-performing property types and give them an option to achieve the BEPS rather than a 20% EUI reduction

- Baseline: NA
- Action: Reach Standard for property type
- Evaluation: Energy Star Score of 2026

Standard Target Pathway

Reach the standard for your property type

Only available for property type groups above the National median

Prescriptive Pathway

This pathway is the one that provides the most certainty, but also requires a large amount of documentation that will need approval from DOEE.

Compliance status is NOT measured against your benchmarking report.

- Baseline: Weather normalized Site EUI 2018-19
- Action:
  1. Energy Audit
  2. Action Plan
  3. Implementation
  4. Monitor and verify
- Evaluation: Completion and reporting milestones

Prescriptive Pathway

Implement cost-effective efficiency measures

Following a set pathway provides certainty

Alternative Compliance Pathway

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Deep energy retrofits	Accelerated Savings Recognition Extended Deep Energy Retrofit
New construction or change of property type	New Construction Option Change in Property Type Option
Baseline adjustments	Baseline Year Shift Option Baseline Site EUI Modification Option
Custom application	Addresses building-specific barriers or inequities and achieves comparable savings

Alternative Compliance Pathway

Special circumstances such as portfolios, deep retrofits, etc.

Allows building owner to apply to follow a path with special criteria

ALTERNATIVE COMPLIANCE PENALTY

- Maximum penalty based on the gross floor area of the building as reported in the building's most recent District Benchmark Results and Compliance Report.
- Adjusted proportionally based on the actual performance relative to its Pathway target.

- **EXAMPLE:**
  - Building A is 100,000 square feet and does not meet the 2021 BEPS
  - Maximum penalty = 100,000 sf x $10/sf = $1,000,000
  - April 1, 2023 - Building A selects the Performance Pathway on April 1, 2023
  - April 1, 2027 - Building A reports a Site EUI for CY2026 that is 10% lower than its baseline performance
  - Maximum penalty adjusted by 50% = $500,000

Summary:

- Benchmarking – if you are having issues contact DOEE at building.performance@dc.gov
- BEPS – Pathway selection and benchmarking deadline
- Get an energy audit
- Work with DOEE and its energy partners

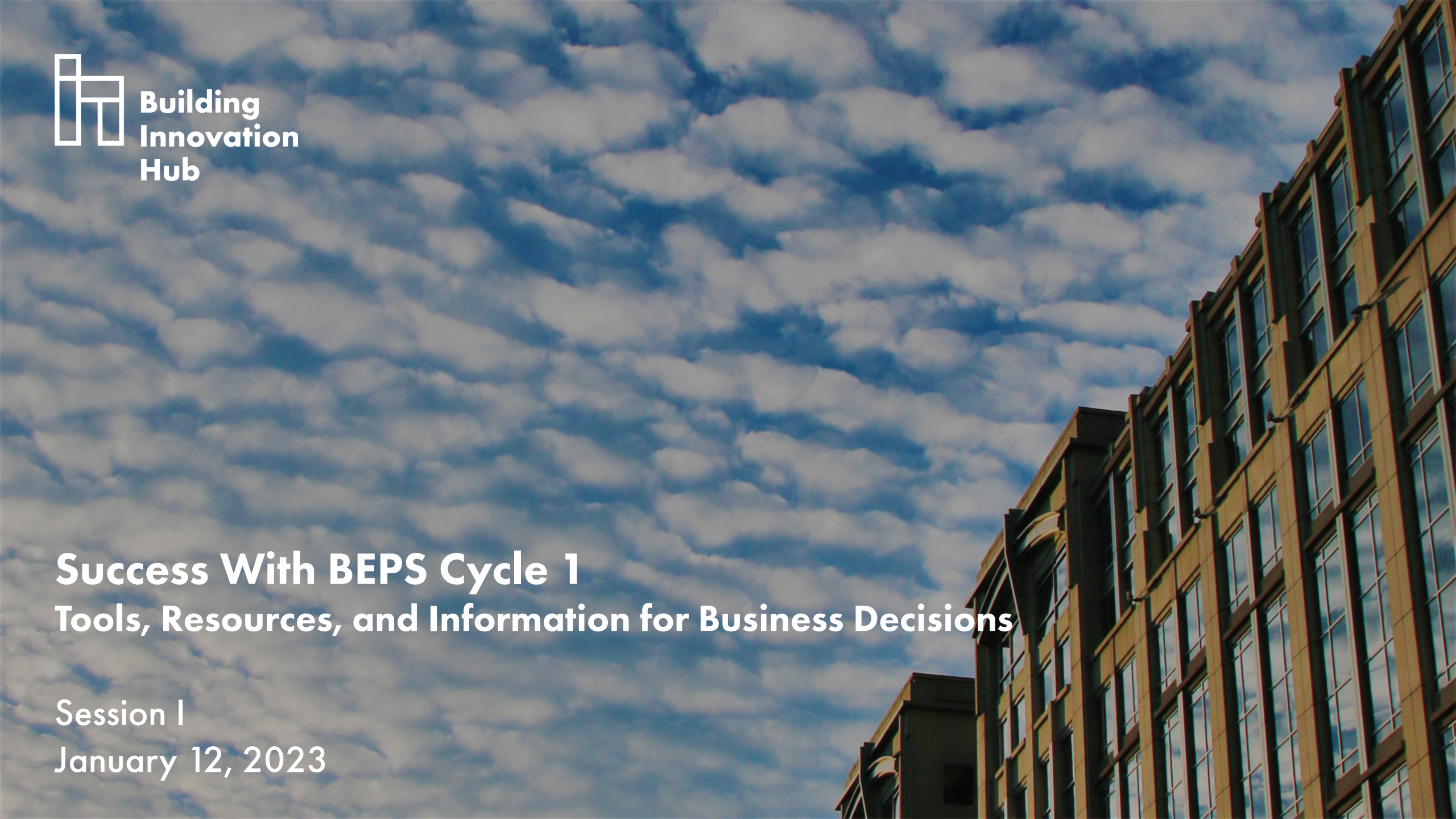
DEPARTMENT OF ENERGY & ENVIRONMENT

Contact the Building Performance and Enforcement Branch:

Website: dc.beam-portal.org/helpdesk

Email: building.performance@dc.gov

Antonio Yaquian: antonio.yaquian@dc.gov



Success With BEPS Cycle 1

Tools, Resources, and Information for Business Decisions

Session I

January 12, 2023

Speakers

Who's here with us today.

Theresa Backhus

Director

Building Innovation Hub

Theresa@buildinginnovationhub.org

About us

Who we are.

The Building Innovation Hub helps building industry professionals in and around Washington, DC create and operate high-performing buildings. The Hub connects professionals and provides information and programming.

The goal of the Hub is to meet the current needs of the building industry while simultaneously pushing the industry towards the innovative solutions that we will need to build and operate high-performing buildings.

IMT
INSTITUTE
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Building
Innovation
Hub

Building Innovation Hub

Thank you to our supporting members!

Sponsored by generous funding provided by

DEPARTMENT OF ENERGY & ENVIRONMENT
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Transformer

ARUP

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PULSEIQ! Your building. Smarter.

SB SUSTAINABLE BUILDING PARTNERS

WSP

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TOWER EST. 1947

Friend

AEG

Preservation Trades 50

NAPE EDUCATIONAL FOUNDATION HANDS-ON EDUCATION FOR BUILDING ENGINEERS

USGBC NATIONAL CAPITAL REGION

What you should do now.

Before April 1 and beyond

Actions to take

How to start (continue?) the process.

Data Verification

Check to ensure your benchmarking data is accurate

- We recommend everyone verify this annually
- Mandated third-party data verification to occur in 2024 for data submitted for CY 2023

Understand How Your Building Uses Energy

Conduct an energy audit

Understand Compliance Pathway Options

Start making your long-term plan

- Select a compliance pathway no later than April 1 (April 3), 2023
- Align Compliance Pathway milestones + capital improvement cycle

Available Resources

What's around to help

DOEE Resources

Available support and tools.

Building Performance Knowledgebase. Read relevant articles, watch past presentations, and .

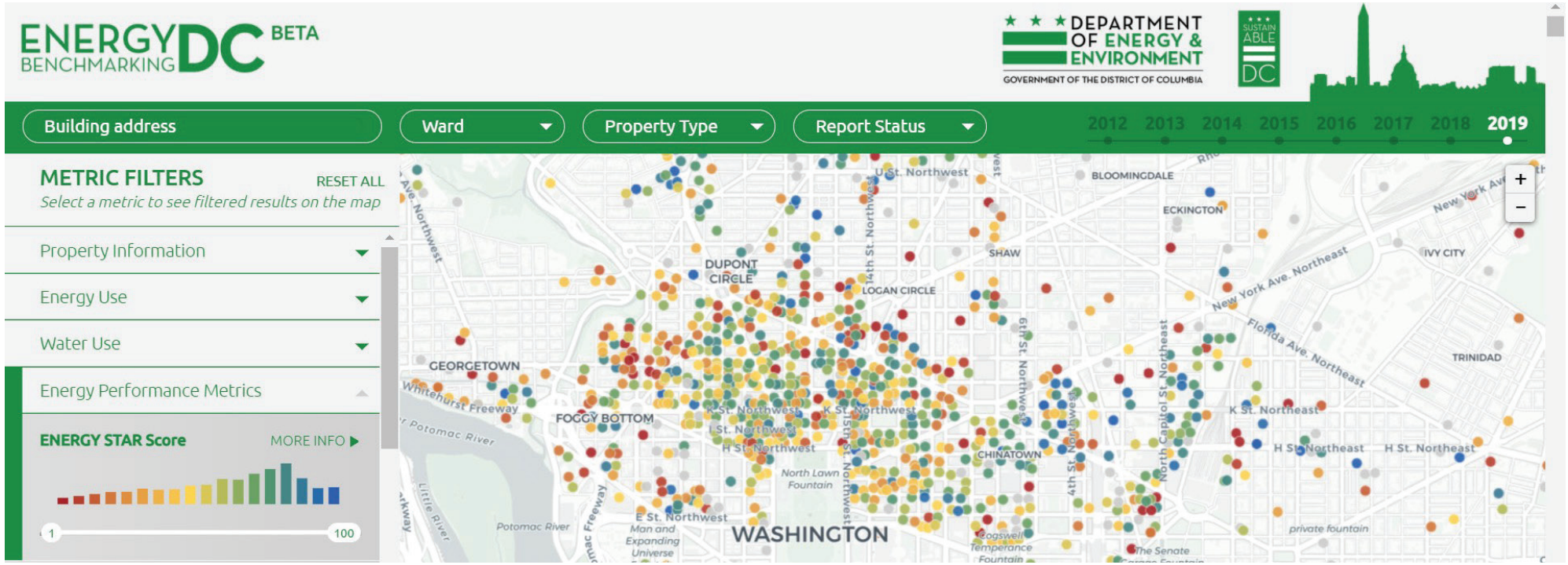
Helpdesk. Submit tickets or email building.performance@dc.gov.

Building Owner Portal (BEAM). A web-based platform for building owners to view the status of any submitted reports, previous compliance data, and correspondence with DOEE related to the Benchmarking and BEPS Programs.

Energy Audit Report Help and Tools. Information and tools to help conduct an energy audit that meets the requirements of the Prescriptive Pathway. Link to DC Energy Audit Report Template.

Check performance

Check BEPS Disclosure and see how your work stacks up.



Check your projects' 2019 scores here:
http://energybenchmarkingdc.org/

Check if your building meets BEPS:
https://opendata.dc.gov/

Hub Resources

Understand DC regulations and how they overlap.

BEPS

- Basic overview of BEPS program
- Regulations and Guidebook in “plain speak”
- Hub Ambassador presentations

Benchmarking

- Overview of the benchmarking regulations
- Common Errors in DC Energy Benchmarking

Building Codes

- Changes in the 2017 DC ECC updates
- Where code meets BEPS
- Cx requirements and how to comply

Hub Resources

Facilitating partner conversations.

Working with Tenants

- Commercial Tenant's Playbook
- Tenant Broker's Playbook
- Green leasing in DC

Contracting and Procurement

- Procurement Roadmap and guides
- High-Road Contracting templates

O&M Best Practices

- Operations and maintenance guides
- Case studies
- Predictive modeling and retro Cx considerations

Hub Resources

Preparing for April 1 and beyond.

What's Due April 1 (3)?

What you need to submit and why the deadline matters

BEPS Compliance Pathway Wizard

Understand which Compliance Pathway is most appropriate for you

BEPS Compliance Pathway Timelines

Interim deadlines and major milestones

Energy Audit Scopes of Work

To help you take action in your building

Find-A-Vendor Portal

Connect building projects to local expertise

Funding and Financing Resources

Help paying for upgrades.

Building Innovation Hub

The Hub's Funding and Financing Map

A searchable database of all available incentives and financing available to support building improvement projects

DC SUSTAINABLE ENERGY UTILITY

DC Sustainable Energy Utility (DCSEU)

Financial incentives and technical assistance to improve building performance

DC GREEN BANK

DC Green Bank

Provides financing and access to capital to enable deep energy retrofits

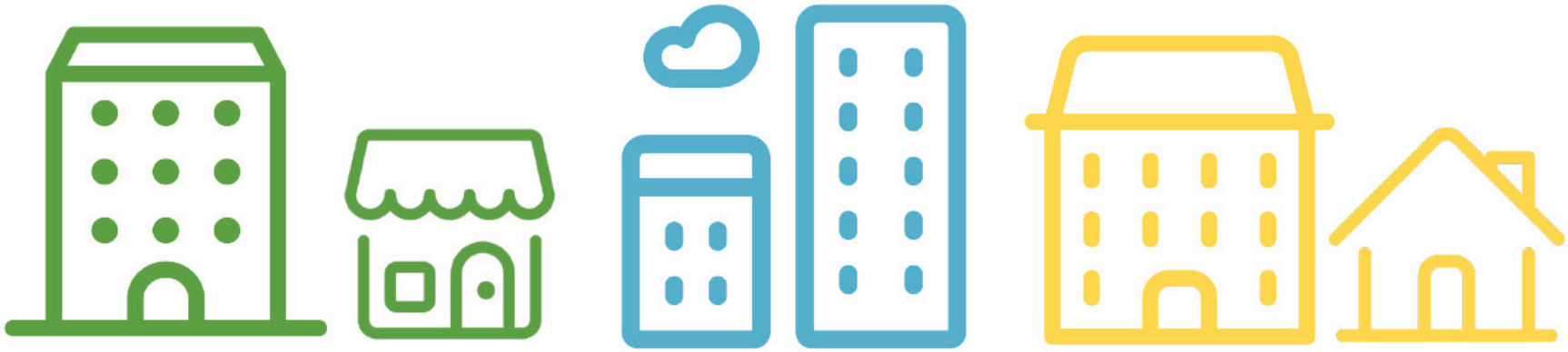
DCSEU Resources

Incentives and implementation assistance.

DCSEU – Standard Offerings

Who has taken advantage of the DCSEU's:

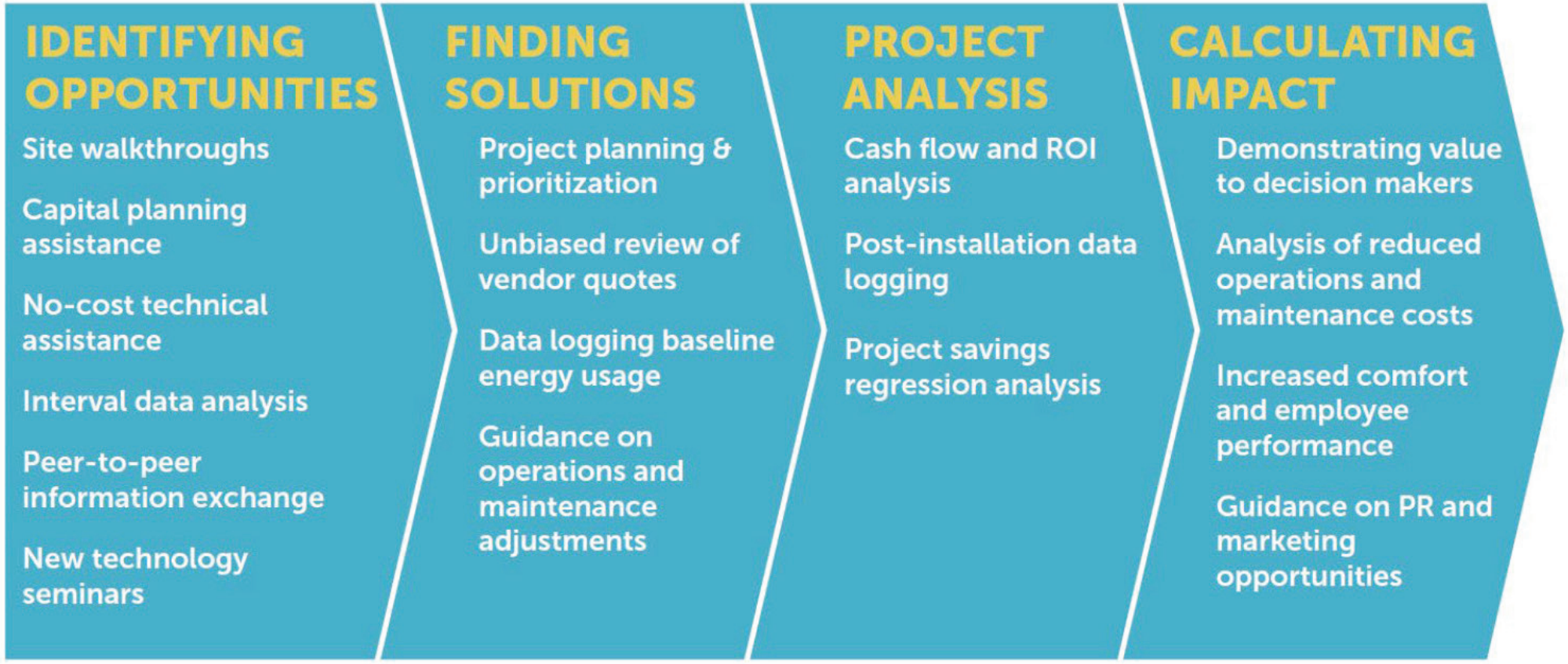
- Prescriptive Rebates
- Custom Incentives
- Technical Assistance
- Workforce Development
- Pay for Performance



DCSEU Resources

Incentives and implementation assistance.

No-Cost Technical Support



DCSEU Resources

Incentives and implementation assistance.

Commercial Rebates

Standard Rebates

- Lighting
- Motors
- HVAC
- Refrigeration
- Food Service & Vending

Instant Rebates

- Lighting

Custom Rebates

Any measure or operational improvement you are making in your District-based building that provides cost-effective electric or natural gas savings is potentially eligible to receive technical assistance and rebates from the DCSEU.

Pay for Performance

Designed for commercial, and institutional (C&I) building larger that ~100,000 square feet, the program offers incentives for energy conservation measures based on pre- and post-project metered data that determines actual energy saved.

DCSEU Resources

Incentives and implementation assistance.

Refrigeration Campaign

Is Refrigeration Running Up Your Energy Costs?

For a limited time only the DCSEU is offering to cover **100% material costs** for qualifying refrigeration equipment.

Electronically Commutated Motors (ECMS)

- Between now and September 30, 2022, the DCSEU will pay **up to $200 per ECM installed**.
- Making this change could save your business **up to $800 in lifetime energy cost savings** per motor replaced.

Door Heater Controls

- Between now and September 15, 2022, the DCSEU will pay **up to $1,000 for door heater controls** (minimum 2 doors for freezers, 8 doors for refrigerated cases)
- Making this change could save your business **up to $3,400 over the lifetime of the equipment**.

DC Green Bank Resources

Financing programs.

DC Green Bank Resources

Financing programs.

CLEER. Launched with Sandy Spring Bank (modeled after Montgomery County), finances clean energy projects in existing buildings.

DC Pace. Enhanced and expanded access.

Navigator. Pre-development energy loan as a simple line of credit. Applies to both existing and new buildings.

Open Solicitation. Propose creative transactions for energy improvements, clean energy, and resiliency.

Community Impact. Open to small businesses and community-serving organizations.

IMT Resources

What else is available to help.

National BPS Coalition website

A nationwide group of state and local governments that have committed to inclusively implement a BPS.

Building Performance Partnership

A network of support Hubs across the country.

Community engagement resources

Connecting all stakeholders to the process and ensuring that community is involved.

Building Innovation Hub

Sign up for our newsletter to stay informed!
All resources are linked above and can be found on our website:

http://buildinginnovationhub.org

Constellation’s Efficiency Made Easy (EME) Highlights

Constellation®

Efficiency Case Study

Industry: Hospitality
Details: 23 Story Hotel built in 2000, consisting of 500 car parking garage, 350 guest rooms, 3 floors of high-end meeting & Banquet space as well as restaurants and bars along the riverfront
Total Project Savings:
Savings post monthly payback of EME funding = $53,000
1,000,000 kWh reduction to electric footprint (~20% reduction)
42,000 therms/yr. (~18% reduction)
$23,000 in reduced annual maintenance
Overview: Constellation, Broker & EME Partner work together to **help customer meet their goals**:

- ✓ Improve customer experience at hotel (i.e. comfort)
- ✓ Align with corporate goals to increase efficiency, reduce energy and water consumption
- ✓ Capital constraints

Project #1 – Full LED lighting upgrade
Project Scope details
Back of house, common areas & guest rooms - providing standardization of lighting equipment from a maintenance perspective and resulted in improved customer experience (2700+ individual fixtures)

Project #1 Financial Details

- 51 monthly payments of $4,292 to pay project back ($51,500/yr.)
- **Project saved 400,000 kWh/yr.**
- **Annual Maintenance savings over $9,000/yr.**
- **Power & Project Contracts resulted in annual savings of $100,000+**

Project #2 – Building Automation, Boiler and domestic water pump replacement
Project Scope Details

- VFDs for twelve (12) existing Air Handling Units, two (2) existing cooling tower fans, two (2) existing chilled water pumps, two (2) existing hot water pumps
- Building Automation System & Retro Commissioning to optimize existing HVAC systems
- New High Efficiency gas fired boiler
- New Domestic Water Booster Pump package

- **Project #2 Financial Details**
- 60 monthly payments of $6,259 to pay project back ($75,116/yr.)
- **Project saved 655,000 kWh/yr. & 42,000 therms/yr.**
- **Annual Maintenance savings over $14,000/yr.**
- **Power & Project Contracts resulted in additional annual savings of $80,000+**

Constellation

What Are My Next Steps!?

- Double-check your benchmarking data.
- Compare your scores to your industry median to get a sense of how your building is performing.
- Get an on-site energy audit to understand building characteristics, equipment, and energy use.
- Identify energy conservation measures.
- Engage with building tenants.
- Create your team to start aligning actions.
- Develop a strategic energy management plan.

Constellation