



Environmental Advisory Board

Meeting Agenda

September 25, 2024 3:00 P.M.

City Hall Room 115

801 Plum Street, Cincinnati, Ohio 45202

Virtual Attendance through Microsoft Teams

Order of Business

- I. Public Comment**
- II. Call to Order**
- III. Administrative Action***
 - Approval of August 28, 2024 – Meeting minutes

- IV. Office of Environment and Sustainability Comments**

- V. Information/Updates**
 - Update from Nathan Alley – EAB Comment on Futures Commission Recommendations
 - Energy Benchmarking & RECI Grant Presentation – Amanda Webb & Rob McCracken
 - Environment & Sustainability Sub-committees report out – Priority GCP Actions with policy aspects

- VI. Open Discussion**
 - Environment & Sustainability Committee break-out groups
 - i. Determine deliverables for each sub-committee

- VII. Items for Vote***

- VIII. Next Meeting**
 - The next EAB meeting is scheduled for Wednesday, October 30, 2024 at 3:00 PM.
- IX. Adjournment**

**Board Action Requested*

Agenda Packet Materials:

- Draft meeting minutes from 8/28/24
- Report to Council – Energy Benchmarking & Building Performance Standards

Environmental Advisory Board

Minutes of August 28, 2024

Members Present:

- **In person:** Dave Schmitt, Kylie Johnson; Savannah Sullivan; Susan Sprigg
- **Virtual:** Andrew Musgrave; Ericka Copeland; Nathan Alley

Members Absent: Ashlee Young; Chad Day; Diana Hodge; Julie Shifman; Rico Blackman; Tanner Yess

Staff Present: Oliver Kroner; Amanda Testerman

Meeting: A meeting of the Environmental Advisory Board was held on August 28, 2024 at 3:00 PM at Centennial II HR Conference Room A, 805 Central Avenue, Cincinnati, Ohio 45202.

Meeting Agenda:

- I. **Public Comment**
- II. **Call to Order at 3:04 PM**
- III. **Administrative Action***
 - Approval of July 31, 2024 Meeting minutes with amendment to show Kylie Johnson as attending meeting in-person.
- IV. **Office of Environment and Sustainability Comments**
 - Bloomberg Youth Climate Action Fund Grant – closed 7/15/24, awards to be announced in September
 - Climate Pollution Reduction Grant – Cincinnati MSA application not awarded
 - Bloomberg I-team Update – Director and Civic Designer in place and beginning innovation process
 - Green Infrastructure Accelerator – City of Cincinnati and non-profit partners was accepted into the Center for Regenerative Solutions Green Infrastructure Accelerator to learn as a team about how to successfully implement green infrastructure in urban areas.
 - DOE – \$10M grant for four Ohio Cities to implement a Building Performance Standard (BPS) for the most recent building codes. Project is designed to address major barriers to BPS in Ohio by providing direct implementation resources to cities, aligning with energy equity goals, and creating Ohio’s first statewide building resource hub.
 - Federal Highway Administration - \$850K for EV charging in LMI communities
 - i. Sites were determined based on a 2022 study completed by an Environmental Defense Fund fellow.
- V. **Information/Updates**
 - Savannah Sullivan will be absent from the September and October meetings, returning in November. Vice Chair Kylie Johnson will lead these meetings.
 - Futures Commission Report – discussion lead by Nathan Alley
- VI. **Open Discussion**
 - Environment & Sustainability Committee discussion and break-out groups. The board separated into two working groups to continue to discuss GCP actions with a policy-focus which could be visited first for policy recommendations.
 - i. Environment Group (Natural Environment, Resilience & Climate Adaptation, Zero Waste): Actions NE.4/NE.13/NE.15: Engage non-traditional groups in ; Draft comment with policy recommendations on co-benefits. ZW 8: Draft comment for futures commission, determine how to build off of futures commission comment to address zero waste.

- ii. Sustainability Group (Buildings & Energy, City Operations, Community Activation, Food, Mobility): Action BE.1: Energy benchmarking, Building Performance Standards, Electrification Tax Incentives; RECI grant presentation would be helpful for team. Action CA 3: “Support codification of climate justice and racial equity in City decision-making mechanisms.” Determine what are the steps that need to happen to codify climate equity, bringing NCAAP into conversation.

VII. Action Items*

I. Next Meeting

- Wednesday, September 25, 2024 at 3:00 PM

II. Adjournment at 4:30 PM

DRAFT

April 24, 2024

To: Mayor and Members of City Council
From: Sheryl M.M. Long, City Manager
Subject: Energy Benchmarking & Building Performance Standards

202401247

Reference Document #202400225

The Climate, Environment, & Infrastructure Committee at its session on January 10, 2024, referred the following item for review and report.

MOTION, WE MOVE that the Administration compile a report back to Council within sixty (60) days on the use of “energy benchmarking” practices and building performance standards in other cities and their effectiveness on reducing energy consumption and carbon emissions from residential, commercial, and industrial buildings.

WE MOVE, that the Administration share as a part of this report any learning as a result of the energy benchmarking involving companies in the 2030 District.

WE FURTHER MOVE, that the report contains a list of existing incentives, programs, and/or financing tools at the Federal, State and Municipal level that can be utilized to improve the energy efficiency of residential, commercial, and industrial buildings.

The purpose of this report is to provide City Council with the requested information on energy benchmarking and building performance standards to determine the potential implementation of benchmarking practices in Cincinnati.

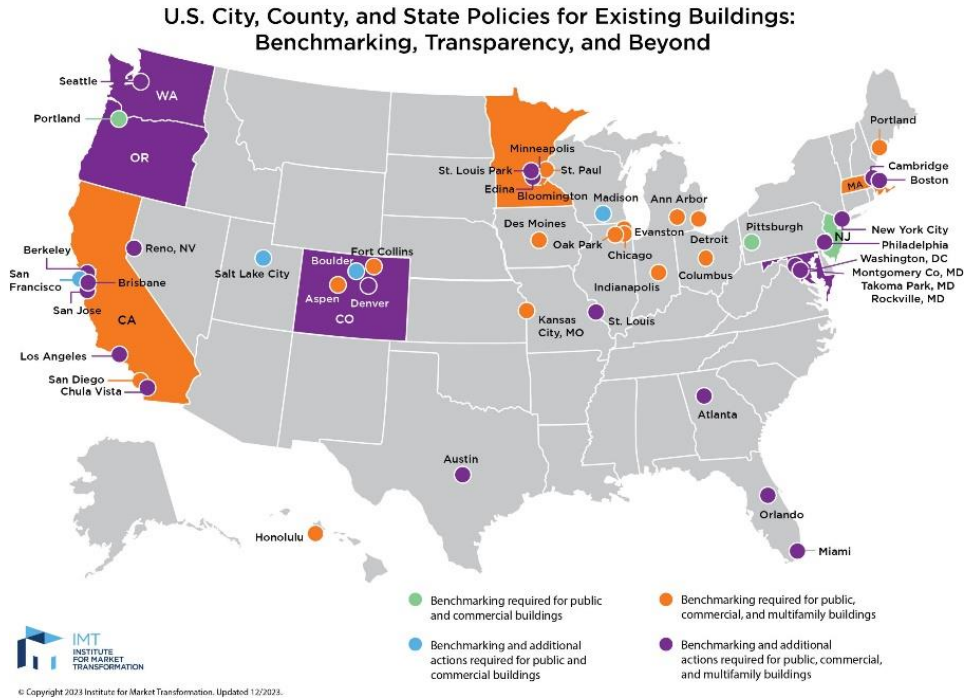
BACKGROUND

Commercial buildings currently account for more than 30% of greenhouse gas emissions in Cincinnati¹. Two strategies cities and states often employ to reduce emissions from commercial buildings include “energy benchmarking” and “building performance standards.”

Energy benchmarking refers to the practice of measuring the energy performance of a building over time. This provides owners and occupants the ability to understand their building’s energy performance relative to similar buildings and provides an easy way to understand energy use and evaluate smarter, more cost-effective operational and capital investment decisions. Performance is measured using energy usage intensity (EUI), which is the amount of energy the building uses per square foot on an annual basis (kBtu/sq.ft./year). Currently, 44 cities, 6 states, and the District of Columbia have passed benchmarking policies requiring certain types of buildings to report energy usage annually. The policies are designed to make building energy performance information available to the market, to help owners and occupants value energy performance in decision-making.

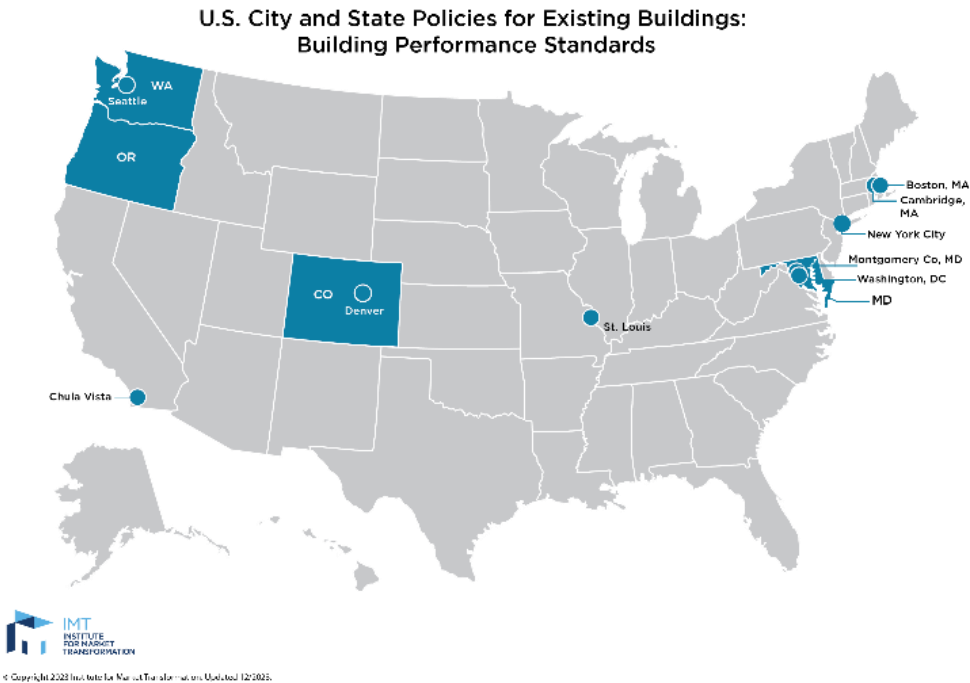
¹ 2023 Green Cincinnati Plan

Figure 1: Energy Benchmarking Policies in the United States²



Building performance standards (BPS) are an additional policy tool beyond energy benchmarking that establishes performance targets that buildings are required to achieve. BPS use reported benchmarking data to track compliance with targets such as energy use intensity (EUI) or greenhouse gas emissions (GHG). BPS often get stricter over time which ensures continuous improvement of a city’s building stock.

Figure 2: Building Performance Standards Policies in the United States³



² Institute for Market Transformation, 2023

³ Institute for Market Transformation, 2023

Most benchmarking and BPS programs utilize the Environmental Protection Agency's (EPA) free ENERGY STAR® *Portfolio Manager*® tool to track and score building energy usage. Building owners enter information for each building such as size, type of building, and occupancy information. Utility usage must be entered monthly and can be obtained from utility bills, data collected from tenants, or from master meters. Once data is entered in *Portfolio Manager*®, it will calculate the building's EUI and assign an ENERGY STAR score. Program managers can review the data for compliance with local policies. In many cities, this information is displayed on transparency maps so that the data can be viewed by the public and other interested parties.

Benchmarking policies can help reduce building energy usage. *Portfolio Manager*® conducted a study of 35,000 buildings that consistently benchmarked their energy usage for three years. The study found that, on average, benchmarking produces energy savings of 2.4% annually, and 7% over a three-year period.⁴ The savings are due to increased awareness of energy usage by building owners and increased market competition as tenants are better equipped to value energy costs in the site selection process.

EXAMPLES OF BENCHMARKING POLICIES IN THE MIDWEST

Several Midwestern cities have passed benchmarking policies, including Columbus, Chicago, Indianapolis, and St. Louis. Columbus, Indianapolis, and Chicago have adopted benchmarking ordinances while St. Louis has adopted benchmarking as well as building performance standards. All four cities require benchmarking on commercial buildings measuring 50,000 square feet and larger.

Columbus

The City of Columbus measures energy use intensity (EUI) through *Portfolio Manager*®. Under Columbus City Code Title 41 - Building Code Chapter 4117, public, commercial, and multifamily buildings over 50,000 square feet must report their energy usage.⁵ Based on 2023 reporting, 39.94% of applicable buildings were in compliance with the ordinance.⁶ The average EUI for buildings required to benchmark their data was 84.6 kBtu/sq.ft./year during the 2023 reporting year.⁷ Over three years, Columbus saw an 11.04% decrease in average energy usage.⁸ Under Section 4117.15 of the benchmarking ordinance, failure to comply results in a notice of the violation after 60 days and potential fines or late fees.⁹

Chicago

Chicago requires residential, commercial, and multifamily buildings to report energy data to benchmark EUI and GHG emissions. The city's benchmarking policy is outlined under Municipal Code Chapter 18-14.¹⁰ Based on 2020 reporting, 85% of required buildings were in compliance.¹¹ Chicago's benchmarking ordinance charges a fee of up to \$100.00 for an initial violation, with an additional penalty of \$25.00 for each day that a building fails to report.¹² The city reports that GHG intensity decreased 25% from 2016 to 2020 while EUI decreased by 9% over the same time period.¹³ In 2019, the city implemented the Chicago Energy Rating System, which requires buildings to place a placard indicating their energy performance in public view.

⁴ https://www.energystar.gov/sites/default/files/buildings/tools/DataTrends_Savings_20121002.pdf

⁵ <https://www.columbus.gov/sustainable/benchmarking/>

⁶ <https://maps.touchstoneiq.com/columbus/>

⁷ Data cited from Sustainable Columbus Initiative's Columbus Compliance Report

⁸ Data cited from Sustainable Columbus Initiative's Columbus Compliance Report

⁹ <https://www.columbus.gov/sustainable/benchmarking/>

¹⁰ https://codelibrary.amlegal.com/codes/chicago/latest/chicago_il/0-0-0-2685180

¹¹ https://www.chicago.gov/content/dam/city/progs/env/EnergyBenchmark/2020_Chicago_Energy_Benchmarking_Report.pdf

¹² https://codelibrary.amlegal.com/codes/chicago/latest/chicago_il/0-0-0-2685180

¹³ https://www.chicago.gov/content/dam/city/progs/env/EnergyBenchmark/2020_Chicago_Energy_Benchmarking_Report.pdf

St. Louis

St. Louis passed building performance standards in addition to its benchmarking policies. The original ordinance, #70474, was passed in 2017, mandating the reporting of energy usage.¹⁴ In 2021, the city reported an average EUI of 81.2 kBtu/sq.ft./year, a decrease of 14.9 kBtu/sq.ft. from 2017.¹⁵ In the same year, 76.1% of buildings were in compliance, an increase of over 20% from 2017.¹⁶ In 2020, the city became the first in the Midwest to enact building performance standards.¹⁷ The St. Louis BPS include EUI requirements for different types of buildings. For example, education buildings must achieve an EUI of 80.1 kBtu/sq.ft./year, while hospitals must achieve an EUI of 259.9 kBtu/sq.ft./year. [08]

Indianapolis

Indianapolis passed its Benchmarking and Transparency Ordinance in July of 2021. The policy requires commercial buildings larger than 50,000 sq. ft. and public buildings 25,000 sq. ft. and larger to report their energy usage.¹⁸ As of 2022, 83 total buildings had reported their energy usage through *Portfolio Manager*®, 66 of which were privately-owned.¹⁹ Under Section 710-109 of Chapter 710 of the Revised Code of the Consolidated City and County, buildings that do not report their energy usage will be subject to fines after 30 days past the initial notice of violation.²⁰ There is currently no published data for energy savings under the ordinance.

Table 1: Summary of Benchmarking Requirements in Midwest Cities

	Building Size	Measurement	Participation	Enforcement	Energy Savings	BPS in Place
Columbus, OH	≥ 50,000 sq ft	EUI, Energy Star Score	39.94% (2023)	60 days past notice, fee of up to \$1000	11.04% average energy usage decrease from 2021 to 2023	No
Chicago, IL	≥ 50,000 sq ft	GHG, EUI, Energy Star Score	85% (2020)	First violation results in fine ≥ \$100, + \$25 for each additional day	GHG: decrease of 25% since 2016; EUI: 9% decrease since 2016	No
St. Louis, MO	≥ 50,000 sq ft	EUI, Energy Star Score	76.1% (2021)	60 days past notice, fine ≤ \$50 - \$200 ≥, cumulative fine not exceeding \$1000 annually	15.50% average EUI decrease over 4 years (2021)	Yes
Indianapolis, IN	≥ 50,000 sq ft ≥ 25,000 sq ft (city buildings)	EUI, Energy Star Score	66 privately-owned buildings, 17 city buildings (2022)	30 days past notice results in issuance of fine, not in effect until January 1, 2026	Pending	No

BENCHMARKING IN THE CINCINNATI 2030 DISTRICT

The 2030 District Network includes 24 cities across the United States and Canada, encompassing 1,650 organizational members and 618 million square feet of commercial building space.²¹ As a registered 501(c)(3) nonprofit, the 2030 District aims to “establish a global network of thriving high-performance

¹⁴ <https://www.stlouis-mo.gov/government/city-laws/upload/legislative//Ordinances/BOAPdf/BB205CSAA-wd7--Ord.%2070474.pdf>

¹⁵ <https://www.stlbenchmarking.com/Resources#Training104>

¹⁶ <https://www.stlbenchmarking.com/Resources#Training104>

¹⁷ <https://www.imt.org/news/st-louis-passes-first-building-performance-standard-in-the-midwest/>

¹⁸ <https://www.indy.gov/activity/benchmarking-and-transparency>

¹⁹ https://static1.squarespace.com/static/5fd7a2f03c3ad531f41de6bb/t/644173908021bb51b8c3df6d/1682011040412/ThriveAnnualReport2022_FINAL.pdf

²⁰ https://library.municode.com/in/indianapolis_-_marion_county/codes/code_of_ordinances?nodeId=TITHIPUHEWE_CH710ENBETR_S710-109EN

²¹ <https://2030districts.org/>

building districts and cities, uniting communities to catalyze transformation in the built environment and its role in mitigating and adapting to climate change.”²²

The Cincinnati 2030 District was established in 2018 as a program run by Green Umbrella. It includes 321 buildings that have committed to reducing their energy, water, and transportation emissions 50-60% by 2030.²³ There are 50 building owners participating in the Cincinnati 2030 District representing over 28 million sq. ft.²⁴

Cincinnati’s 2030 District collects building data from its members to track progress towards its goals. The 2030 District uses ENERGY STAR® *Portfolio Manager*® to track energy usage data, which it compares against baseline data from the 2003 Commercial Building Energy Consumption Survey (CBECS). At the conclusion of 2021, the 2030 District reported a 31.5% decrease in energy usage.²⁵ They have also reported a 31.3% reduction in water usage and a 20.8% decline in transportation emissions.²⁶ It is important to note that benchmarking data for members of the 2030 District is confidential so the only data available to the public is aggregate data for the district as a whole.

The Cincinnati 2030 District has identified several challenges related to benchmarking since its creation. Small building owners often do not have a dedicated energy team to assist with reporting data. Large building owners can have difficulty obtaining energy data if portions of the property are leased and tenants do not share data in a timely manner.

INCENTIVES, PROGRAMS, AND FINANCING TOOLS

While benchmarking ordinances can help identify how much energy buildings are using, many building owners lack access to funding that can be used to implement energy saving improvements. There are several local, state, and federal programs available to help buildings reduce their energy consumption.

Property Assessed Clean Energy (PACE): Through PACE, the costs of implementing energy improvement projects are paid for by a lender. The property owner repays the loan through a special assessment on the building’s property tax bill.²⁷ PACE features 15- to 30-year terms, no down payment, no personal guarantees, fixed rates, and set payment schedules.²⁸ PACE financing is active in Cincinnati and can be used to fund energy saving improvements.

Green and Resilient Retrofit Program (GRRP): The U.S. Department of Housing and Urban Development (HUD) offers GRRP which provides funding for direct loans and grants to projects that improve energy or water efficiency, enhance indoor air quality or sustainability, install renewable energy, or utilize low-emission building materials, energy storage, or electrification strategies in eligible HUD-assisted multifamily properties.²⁹ GRRP also provides funding to support benchmarking at assisted properties.

Federal tax credits: The Inflation Reduction Act offers tax credits for the installation of qualifying energy saving technologies. These credits are also available to nonprofits as a direct pay benefit from the Internal Revenue Service (IRS). The most common technologies supported through this program are solar energy and battery storage. However, there are also benefits available for other sources of clean energy production.

²² <https://2030districts.org/about/>

²³ <https://2030districts.org/>

²⁴ <https://www.dropbox.com/s/uk3zgyalxvxz95/Cincinnati%202030%20District%202021%20Progress%20Report.pdf?e=1&dl=0>

²⁵ <https://www.dropbox.com/s/uk3zgyalxvxz95/Cincinnati%202030%20District%202021%20Progress%20Report.pdf?e=1&dl=0>

²⁶ <https://www.dropbox.com/s/uk3zgyalxvxz95/Cincinnati%202030%20District%202021%20Progress%20Report.pdf?e=1&dl=0>

²⁷ https://www.brickergaydon.com/assets/htmldocuments/Documents/Resources/OH_PACE-Financing_WhitePaper.pdf

²⁸ <https://www.cincinnati-oh.gov/oes/energy/pace-financing1/>

²⁹ <https://www.hud.gov/GRRP/Benchmarking>

Section 179D commercial buildings energy efficiency tax deduction: This tax deduction enables building owners to claim a tax deduction for installing qualifying energy saving systems in buildings. A deduction of up to \$1.88 per square foot is available for interior lighting, building envelope, or heating, cooling, ventilation, or hot water systems that reduce the energy consumption by 50% or more in comparison to a building meeting minimum requirements set by ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) Standard 90.1.³⁰

U.S. Department of Energy Rebate Programs: The Inflation Reduction Act created the HOMES and HEERA Rebate programs which provide grants to State Energy Offices for rebate programs to reduce the costs of energy efficiency retrofits that are modeled to achieve or have achieved verifiable minimum energy use reductions. These rebates are available to owners of multifamily buildings that house low- to moderate-income residents and qualifying homeowners.

Greenhouse Gas Reduction Fund: The U.S. EPA offers several programs under the Greenhouse Gas Reduction Fund (GGRF) – a program created by the Inflation Reduction Act. The first of these is the National Clean Investment Fund (NCIF) which recently awarded \$14 billion in competitive grants to three national nonprofit financing institutions with a focus on clean energy.³¹ These financing institutions will partner with the private sector to fund and secure clean energy projects.³² Eligible projects must meet a six-part definition that requires each project to reduce greenhouse gas emissions; reduce other air pollutants; deliver benefits to communities; meet the requirement that it may not have otherwise been financed; mobilize private capital; and support only commercial technologies. The Clean Communities Investment Accelerator (CCIA) is a similar program offering \$6 billion to five national nonprofits to provide funding and technical assistance to community lenders in low-income neighborhoods to support clean energy projects and activities.³³ These nonprofits can lend to many public, quasi-public, not-for-profit, and non-profit community lenders in community development financial institutions, credit unions, green banks, housing finance agencies, minority depository institutions, and more.

Ohio Air Quality Development Authority (OAQDA): The OAQDA is an independent state agency that funds projects that improve air quality, offer significant public health savings, and foster a strong economy. Through its Clean Air Improvement Program, it provides businesses with access to financing through OAQDA issued bonds. Eligible projects may also be able to leverage Green Bonds which can provide access to additional capital from the investment community. The program supports energy conservation measures on new and existing buildings, renewable energy, clean transportation infrastructure, and other projects that improve air quality.

Ohio Department of Development (ODOD): Through its various energy programs, the ODOD helps building owners identify and implement energy efficiency improvements. The Energy Efficiency Program connects commercial buildings and manufacturing facilities to certified energy auditors who will review energy usage and identify energy saving measures. Once building owners have completed an energy audit, the Energy Loan Fund provides eligible projects with access to low interest financing to install efficiency measures that reduce energy by at least 15%.³⁴

³⁰ <https://www.irs.gov/credits-deductions/energy-efficient-commercial-buildings-deduction>

³¹ <https://www.epa.gov/greenhouse-gas-reduction-fund/national-clean-investment-fund>

³² <https://www.epa.gov/greenhouse-gas-reduction-fund/national-clean-investment-fund>

³³ <https://www.epa.gov/greenhouse-gas-reduction-fund/clean-communities-investment-accelerator>

³⁴ <https://development.ohio.gov/community/redevelopment/energy-efficiency-program>

Conclusion

Energy Benchmarking and Building Performance Standards are established policies currently used by cities and states across the United States. Both policies have been proven to effectively reduce building energy usage and carbon emissions. These policies are most effective when local context is carefully considered, and stakeholders are engaged in program development.

cc: Virginia Tallent, Assistant City Manager
Oliver Kroner, Director, Office of Environment Sustainability



Environmental Advisory Board

September 25, 2024





Environmental Advisory Board

Agenda

1. Public Comment

2. Call to Order

3. Administrative Action

- Approval of August 28, 2024 – Meeting Minutes

4. Office of Environment and Sustainability Updates

5. Information/Updates

- Update from Nathan Alley – EAB Comment on Futures Commission Report
- Energy Benchmarking & RECI grant presentation – Amanda Webb & Rob McCracken
- Environment and Sustainability Sub-committees report out

6. Open Discussion

- Environment and Sustainability Committee discussion and break-out groups

7. Items for Vote

8. Adjournment



Public Comment

- Members of the public may provide comments to the Board or its committees in writing to OES staff or in person at a public meeting.
- Written comments shall be submitted to OES no later than 4:00p.m. on the business day before the meeting, and shall be distributed by OES to all Board or committee members.
- Comments made during a public meeting are referred to as “Public Comment”. A person providing Public Comment is limited to **two minutes**.
- Public Comment shall be limited to items of interest before the Board, and shall only be permitted prior to the commencement of the business portion of the meeting.

Public Comment Open:

- In-person Attendees
- Online Attendees



Administrative Action

- Approval of August 28, 2024 Meeting Minutes



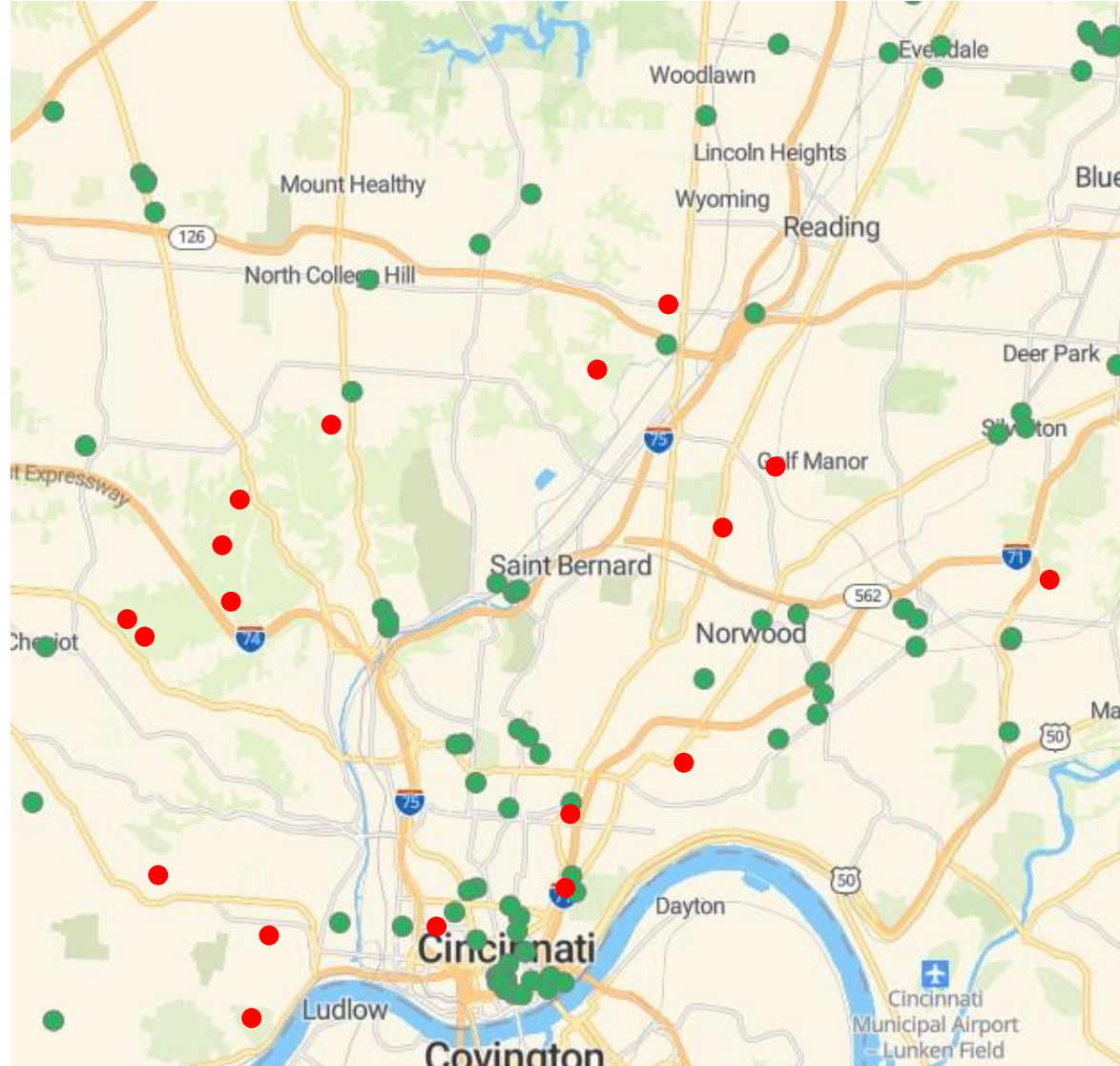
OES Updates

- Bloomberg Youth Climate Action Fund Grant – awards announced August 2024
- Resilience Hub Grant Awarded - \$30,000 from USDN
- New OES Team Members – Public Allies



EV Charging Grant Locations

- Bond Hill Business District
- Caldwell Nature Center
- College Hill Recreation Center
- Evanston Recreation Center
- Hartwell Community Center
- Hauck Botanical Garden
- Johnston Park
- Lincoln Recreation Center
- Madisonville Recreation Center
- Mt Airy Disc Golf Course
- Mt Airy Dog Park
- Mt Airy Forest Entrance
- Mt. Airy Maple Ridge Lodge
- Mt Airy Mountain Bike Trailhead
- Mt Echo Park



Legend

- Proposed EV Charging Sites
- Current Public EV Charging Sites

An introduction to benchmarking and building performance standards

Amanda Webb, PhD

Department of Civil and Architectural Engineering and
Construction Management

University of Cincinnati

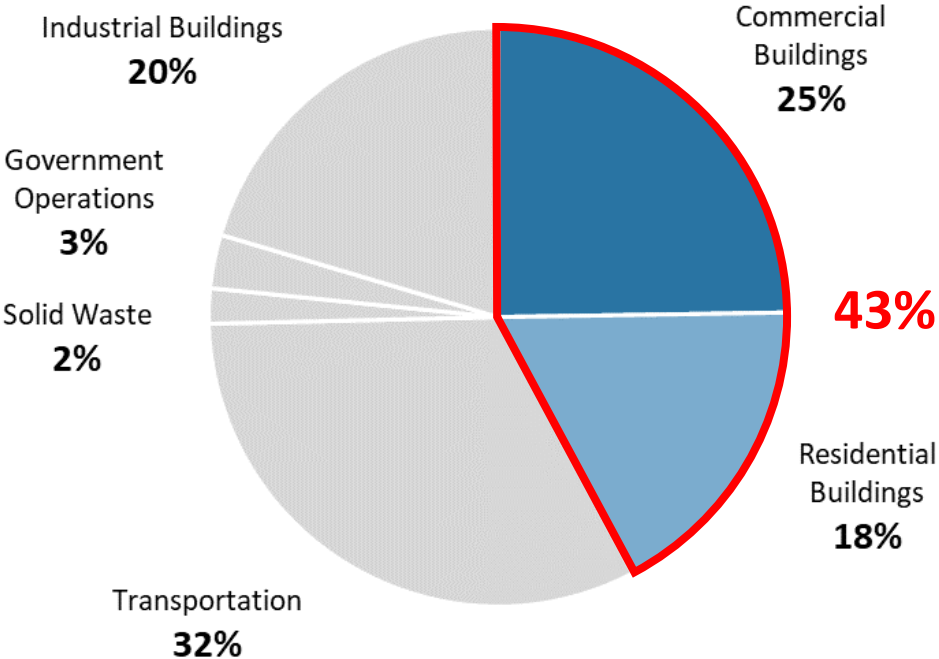
Cincinnati Environmental Advisory Board
September 25, 2024

Agenda

1. **Explain the difference** between a building energy benchmarking policy and a building performance standard (BPS)
2. Explain the **key design elements** of a benchmarking policy and a BPS policy
3. Describe how the **OH RECI project** and the **IRA Codes project** are working to develop and implement BPS in Ohio
4. Discuss considerations for **policy action** on benchmarking and BPS in Cincinnati

Addressing existing buildings is critical to meeting the 2023 GCP climate goals

2022 Cincinnati Carbon Emissions¹



2023 Green Cincinnati Plan (GCP) goals¹

50% carbon emissions reduction by 2030

100% carbon emissions reduction by 2050

There is an urgent need for policies that address **existing buildings** in order to meet our goals

¹2023 Green Cincinnati Plan: <https://www.cincinnati-oh.gov/oes/climate/climate-protection-green-cincinnati-plan/>

The existing building decarbonization policy spectrum

**Energy codes only address new construction and major renovations*

You can't improve what you don't measure!

Data

*Benchmarking
(Voluntary)*

**Gather data
and compare
to peers**

*Benchmarking
(Mandatory)*

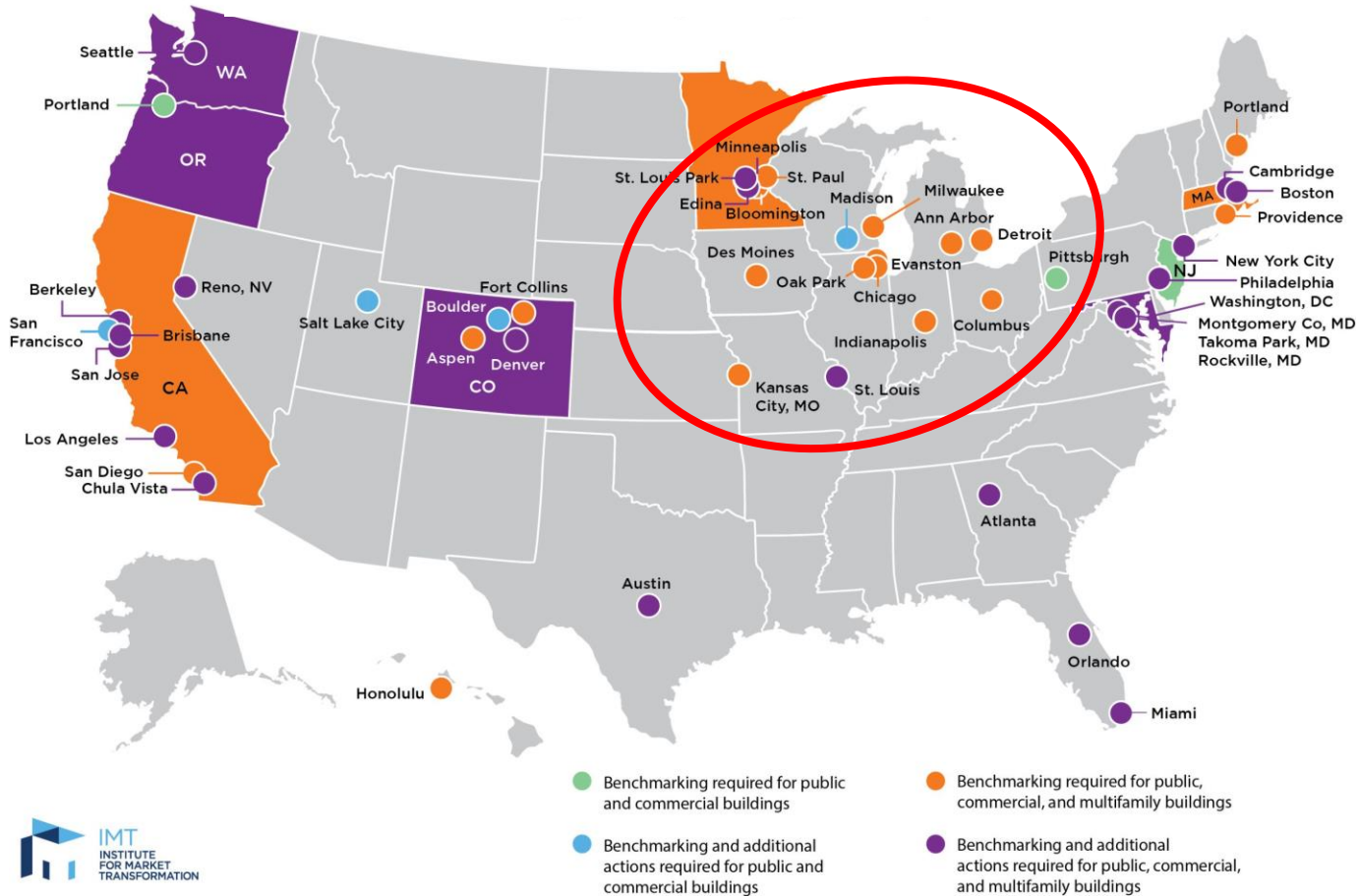
**Gather data
and compare
to peers and
publicly
disclose
~3-8% savings¹**

Audits / Tune-Ups

**Gather more detailed
data, suggest retrofits,
and require low-
hanging fruit action
~3-5% savings**

¹N. Mims, S. R. Schiller, E. Stuart, L. Schwartz, C. Kramer, and R. Faesy, "Evaluation of U.S. Building Energy Benchmarking and Transparency Programs: Attributes, Impacts, and Best Practices," Lawrence Berkeley National Lab. 2017. <https://doi.org/10.2172/1393621>

Mandatory benchmarking and disclosure policies are now common across the U.S.



Common features:

- **Scope:** Large existing commercial and multifamily
- **Data:** Annual metered energy
- **Tools:** ENERGY STAR Portfolio Mgr.
- **Transparency:** Public disclosure to inform the market

15 jurisdictions with audit/tune-up requirement



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Benchmarking policy design considerations include scope, penalties, and transparency

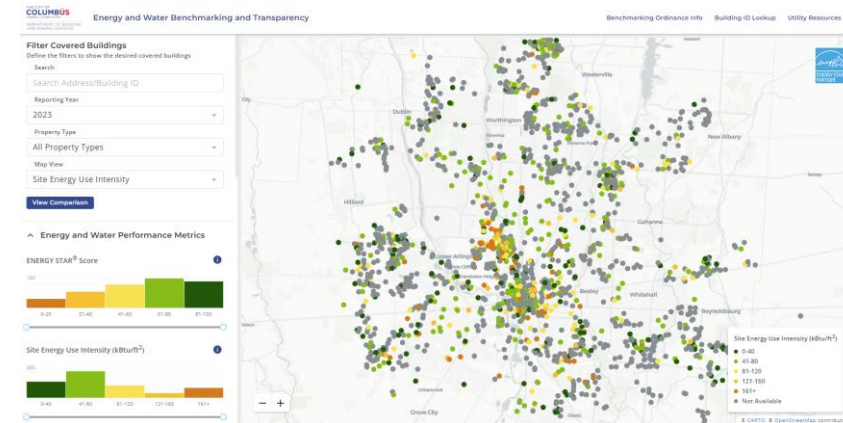
Benchmarking scope examples¹

Jurisdiction	Covered Buildings
Columbus, OH	Public/Government $\geq 25k$ ft ² Commercial and Multifamily $\geq 50k$ ft ²
Indianapolis, IN	Public/Government $\geq 25k$ ft ² Commercial and Multifamily $\geq 50k$ ft ²
Seattle, WA	Public/Government Commercial and Multifamily $\geq 20k$ ft ²
St. Louis, MO	Public/Government $\geq 50k$ ft ² Commercial and Multifamily $\geq 50k$ ft ²

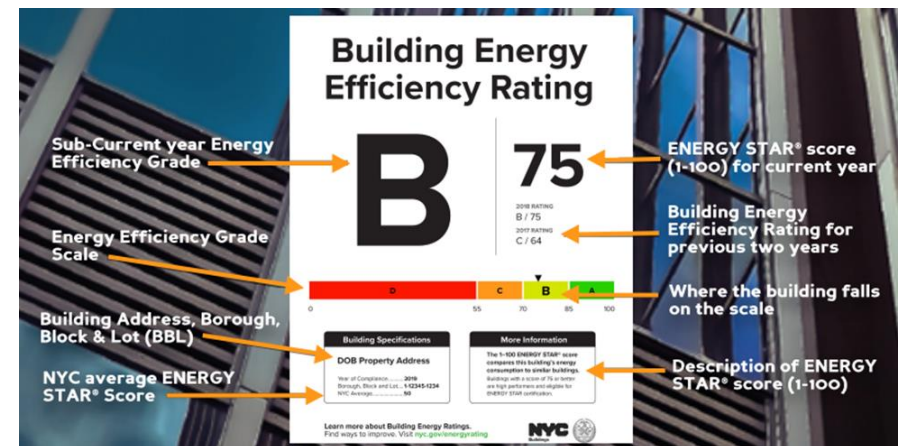
Penalties for noncompliance vary; e.g., fee capped at \$1000 (St. Louis, MO)

Benchmarking transparency examples

Interactive maps (Columbus, Most jurisdictions)²



Letter grades (NYC, Chicago)³



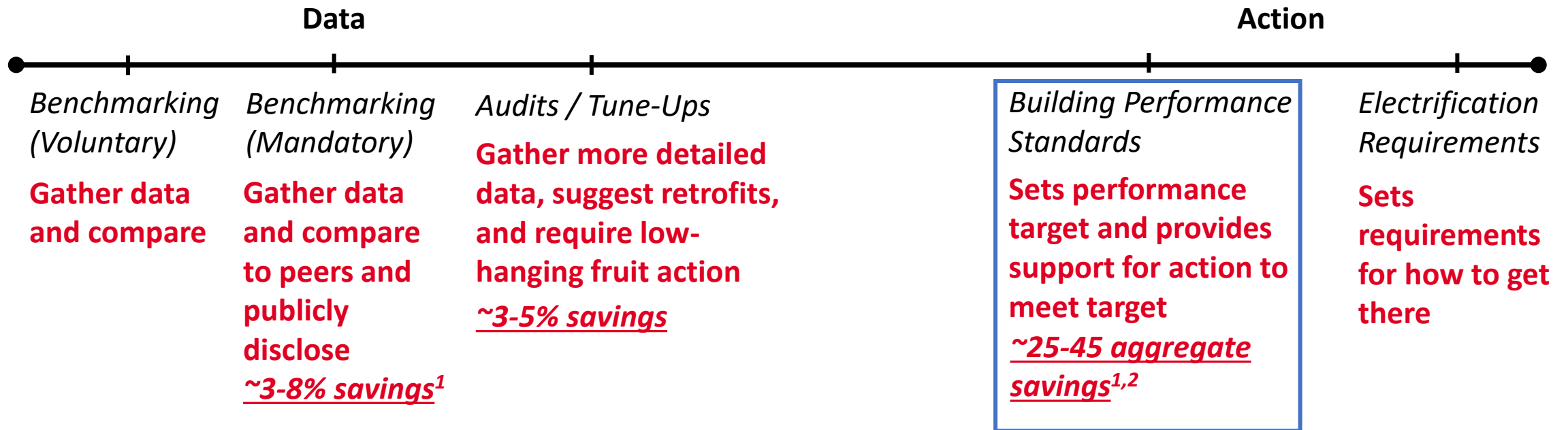
¹<https://www.imt.org/resources/comparison-of-commercial-building-benchmarking-policies/>

²<https://maps.touchstoneiq.com/columbus/>

³<https://www.swinter.com/party-walls/nyc-building-energy-letter-grades-what-property-managers-need-to-know/>

The existing building decarbonization policy spectrum

**Energy codes only address new construction and major renovations*



¹A.L. Webb, C. McConnell, Evaluating the feasibility of achieving building performance standards targets, Energy and Buildings. (2023) 112989. <https://doi.org/10.1016/j.enbuild.2023.112989>.

²S. Nadel and A. Hinge, "Mandatory building performance standards: A key policy for achieving climate goals," ACEEE, 2020. <https://www.aceee.org/white-paper/2020/06/mandatory-building-performance-standards-key-policy-achieving-climate-goals>

Recently, cities and states are going beyond benchmarking and audits to mandatory Building Performance Standards (BPS)

The State of Building Performance Standards (BPS) in the U.S.
Members of the National BPS Coalition as of July 2024



Key components:

- **Scope:** Large (>50k sf) existing commercial and multifamily
- **Metric:** Site EUI, ENERGY STAR score, or CO2e/ft²
- **Targets:** Varies by jurisdiction
- **Timing:** 5-year cycles with stricter targets over time

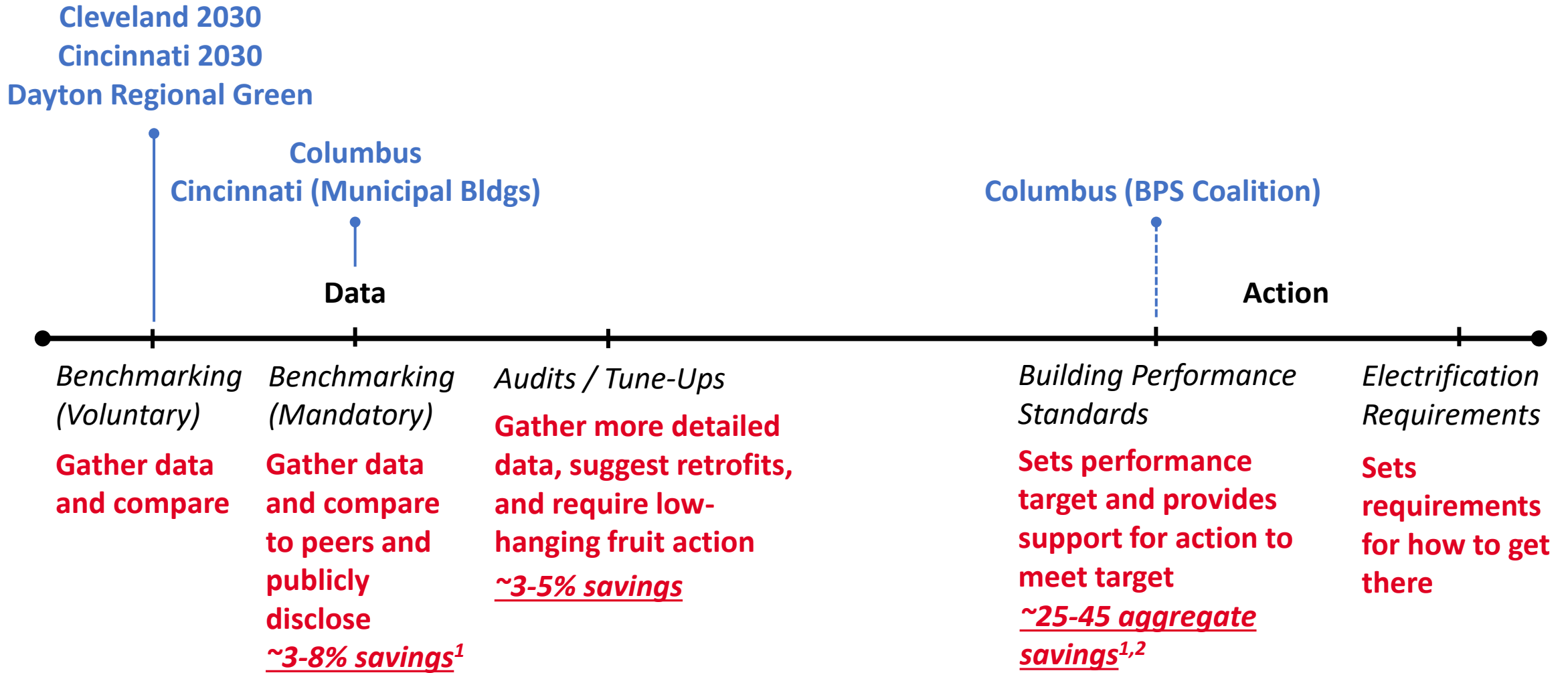
*BPS are an emerging policy tool;
first BPS enacted in 2018*

BPS policy design considerations include scope, metric, targets, timing, and penalties

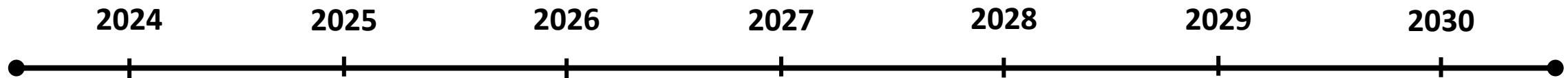
BPS Examples

Scope (Covered Buildings)	Metric	Targets	Penalties
<ul style="list-style-type: none"> Public/Government Commercial and Multifamily $\geq 20k$ ft² (Seattle, WA) Commercial and Multifamily $\geq 50k$ ft² (St. Louis, MO) 	<ul style="list-style-type: none"> Site kBtu/ft²-yr (St. Louis, MO) ENERGY STAR score (Washington DC) kgCO₂e/ft²-yr (Boston, MA) 2+ metrics (Washington DC considering, Seattle + WA State) 	<ul style="list-style-type: none"> ~25th percentile (ASHRAE Standard 100) ~50th percentile (Washington DC) ~75th percentile (St. Louis, MO; European Union MEPS) 	<ul style="list-style-type: none"> \$/day (Boston, MA) \$ per year per kBtu over target (Denver, CO) Social cost of carbon (State of MD) \$/ft² (Seattle, WA) Withholding of occupancy permits (St. Louis, MO)

The existing building decarbonization policy spectrum - Ohio



Two DOE-funded projects in Ohio are working to shift Ohio's cities along this spectrum towards action



OH RECI Project – BPS Development

Key components:

- **Data analysis:** Pathways for **cost-optimal** and **equity-focused** BPS
- **Policy analysis:** Identify legal, financial, and workforce development opportunities
- **Outreach:** Engage diverse stakeholder groups and local government
- **Data collection:** Develop data collection solutions and infrastructure
- **Network building:** Facilitate peer-to-peer discussion between large and smaller cities

IRA CODES Project – BPS Implementation Support

Key components:

- **Resource Hub:** Establishes the [Ohio High Performance Buildings Hub](#), a shared statewide resource
- **Ohio Building Challenge:** Offers financial support to building owners through a retrofit challenge
- **Staffing Support to Cities:** Provides financial support to jurisdictions for BPS implementation staff
- **Technical Support:** Provides technical support to building owners for data collection, energy audits, and compliance

The goal of the OH RECI project is to develop cost-optimal, equitable BPS in Ohio’s large cities

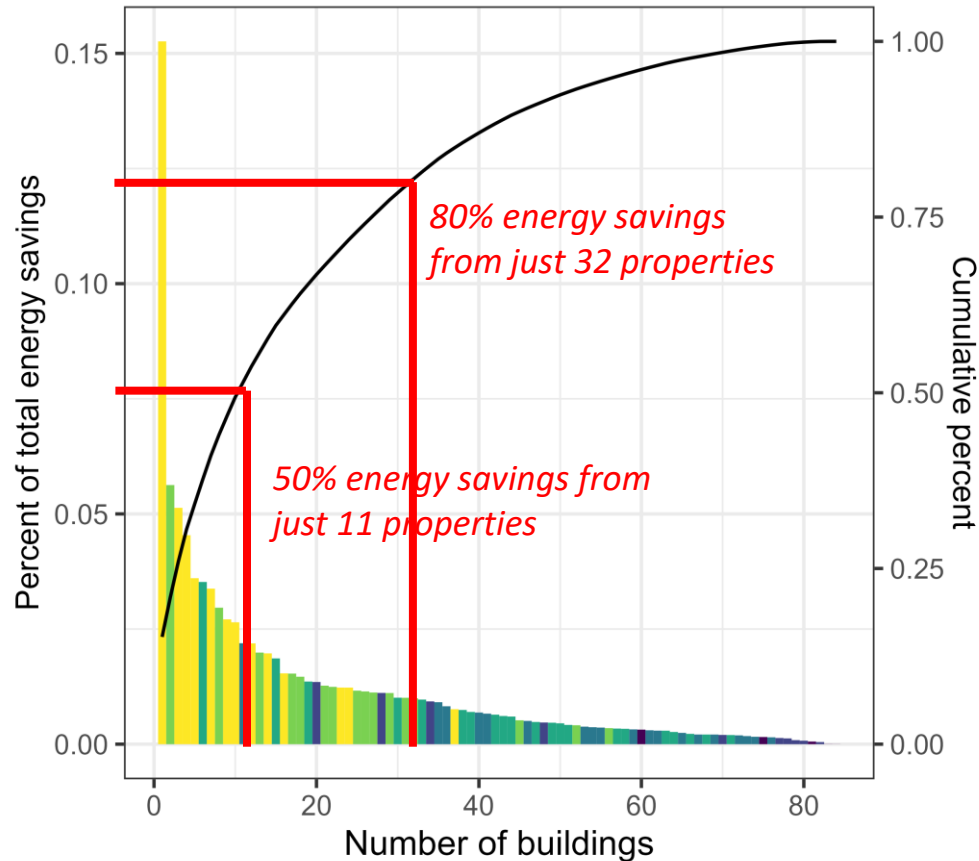
Barrier	Solution
Limited interest in broad mandates	Develop a cost-optimal approach to BPS with strong incentives that focuses on a few buildings with the greatest savings potential
Misalignment with local priorities (especially energy equity)	Develop an equity-centered approach to BPS that is based on an equity metric, rather than an environmental metric
Limited resources to support BPS	Establish a collaborative , statewide network of partners that shares knowledge and resources
Challenges accessing utility data	Collaborative approach to creating a seamless flow of data

What do we mean by cost-optimal and equity-centered BPS?

Cost-optimal BPS¹

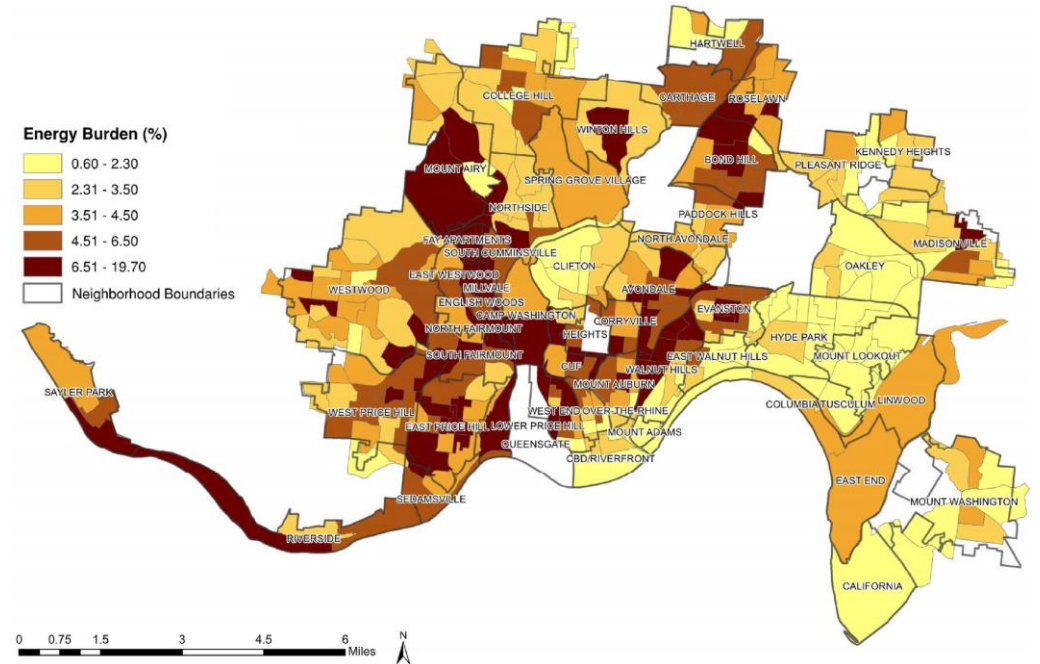
Reduction needed (%)

<5	<15	<25	<35	<50	>50
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Equity-centered BPS²

$$\text{Energy burden}(\%) = \frac{\text{Utility costs} (\$)}{\text{Household income} (\$)}$$



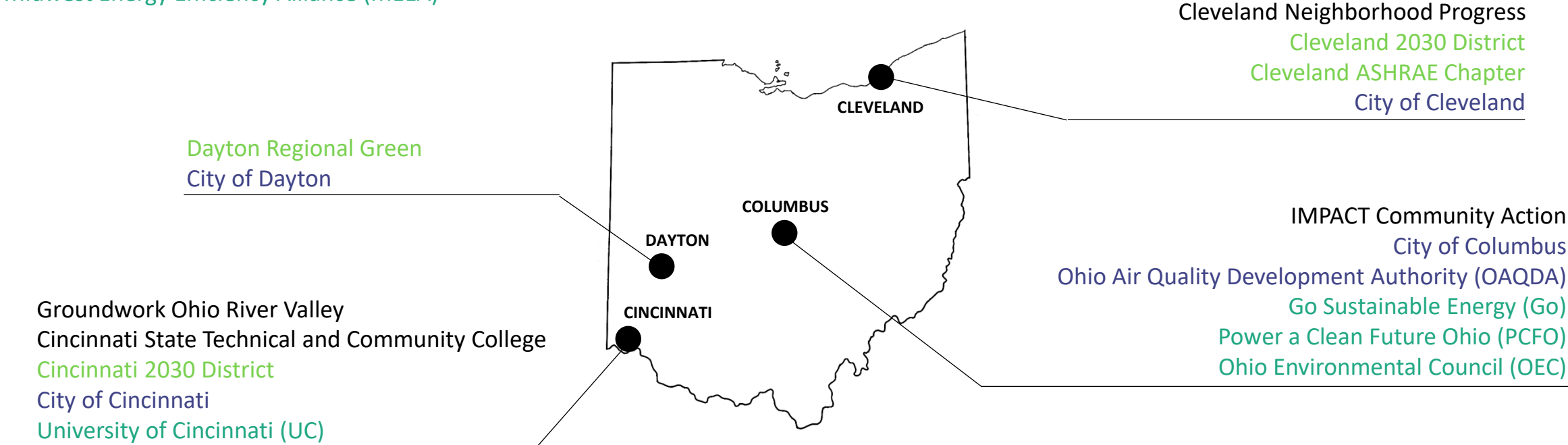
This is in addition to stakeholder engagement with equity priority communities in policy development

¹A. Webb, S. Brown, J. Florida, A. Lindburg, and N. Ziegler, "Overcoming Barriers to BPS: A Collaborative, Grassroots Approach to Building Performance Standards," in Proceedings of the 2024 ACEEE Summer Study on Energy Efficiency in Buildings, Pacific Grove, California, Aug. 2024. <https://www.aceee.org/summer-study-2024-proceedings>

²D. Moore, A.L. Webb, Evaluating energy burden at the urban scale: A spatial regression approach in Cincinnati, Ohio, Energy Policy 160 (2022) 112651. <https://doi.org/10.1016/j.enpol.2021.112651>.

The OH RECI project establishes a collaborative, grassroots partnership across Ohio

REGIONAL ENERGY EFFICIENCY ORGANIZATION (REEO)
 Midwest Energy Efficiency Alliance (MEEA)



IMPACT Community Action
 City of Columbus

Ohio Air Quality Development Authority (OAQDA)
 Go Sustainable Energy (Go)
 Power a Clean Future Ohio (PCFO)
 Ohio Environmental Council (OEC)

FUNDING AGENCY
 U.S. Department of Energy

PARTNER TYPES

- Technical Providers
- Local Government and State Agency
- Building Owners and Design Professionals
- Community-Based Organizations and Workforce Development

**Statewide Support Partner

What are the considerations for successful benchmarking (and BPS) policy implementation?

Policy Characteristic	Best Practice ¹
Scope	<ul style="list-style-type: none"> Perform quantitative analysis of the building stock to determine the size threshold with greatest impact for least cost
Outreach and Education	<p><i>Policy Development</i></p> <ul style="list-style-type: none"> Document benefits of benchmarking for building owners and public Develop partnerships with nonprofits, building owners and operators, and utilities <p><i>Policy Compliance</i></p> <ul style="list-style-type: none"> Establish help centers and training materials
Data Access and Quality	<ul style="list-style-type: none"> Establish consistent data collection and aggregation procedures that reduce reporting burden
Phased Implementation	<ul style="list-style-type: none"> Lead by example with benchmarking and transparency for public buildings
Support Programs	<ul style="list-style-type: none"> Couple benchmarking with available financial incentives and technical assistance (e.g., energy audits, retro-commissioning)

¹N. Mims, S. R. Schiller, E. Stuart, L. Schwartz, C. Kramer, and R. Faesy, "Evaluation of U.S. Building Energy Benchmarking and Transparency Programs: Attributes, Impacts, and Best Practices," Lawrence Berkeley National Lab. Apr. 2017. doi: [10.2172/1393621](https://doi.org/10.2172/1393621).

How can Cincinnati's EAB help move this GCP action forward?

Potential areas of policy action

1. **Policy Strategy:** Advise on benchmarking-then-BPS or BPS-with-benchmarking
2. **Stakeholder Engagement:** Advise on the stakeholder engagement process to ensure that all voices are heard
3. **BPS Policy Design:** Advise on the design of the BPS policy using the results of the OH RECI data analysis
4. **Utility Data Access:** Advocate for utility data access and advise on proactive engagement with utilities

Questions?



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DOE Latest and Zero Building Energy Codes: The Ohio Cities Building Performance Challenge



Grant Summary

- 1 Awarded \$10 million to advance BPS
- 2 Partnership between four cities and MEEA with support from UC and PCFO
- 3 Grant period of 5-7 years
- 4 Project is designed to address major barriers to BPS in Ohio by providing implementation resources to cities



Key Concepts

- 1 Develop a BPS that is measurable, verifiable, and enforceable
- 2 Develop the Ohio High Performance Hub to serve as a resource for cities and building owners
- 3 Achieve a target site energy reduction of 45% by 2050 for commercial buildings over 50,000 ft²



Grant Implementation

- 1 Leverage the work from the RECI project to implement a BPS in each city
- 2 Cities must pass a mandatory BPS that achieves the energy usage intensity (EUI) for ASHRAE 90.1-2019
- 3 The Hub will provide support to building owners and cities in the implementation of the local BPS



Building Performance Standards: Policy Options



2 Step Process

Overview

- An ordinance to implement benchmarking is passed to assist with target setting
- After several years of benchmarking and data collection, an ordinance is passed to implement BPS

Benefits

- Provides building owners with time to adopt to reporting requirements
- Allows Council to get comfortable with a BPS
- Data collection
- Can include different requirements for different building sizes

Key Considerations

- Requires two ordinances to be passed – could be passed simultaneously
- BPS ordinance may not receive a vote
- May prevent the City from accessing grant funds



1 Step Process

Overview

- An ordinance to implement BPS is passed
- The ordinance begins with a reporting period before the BPS becomes mandatory
- BPS standards are set in ordinance

Benefits

- Only requires one piece of legislation
- Can provide runway for building owners to get used to reporting
- Higher likelihood of unlocking grant funds

Key Considerations

- Would require a separate ordinance to implement benchmarking for buildings not subject to the BPS



Policies Passed by Governments

Jurisdiction	Level	State	Benchmarking Status	Benchmarking Policy Year	BPS Status	BPS Policy Year
Boston	City	MA	✓	2014	✓	2021
Cambridge	City	MA	✓	2014	✓	2022
Chula Vista	City	CA	✓	2021	✓	2021
Colorado	State	CO	✓	2021	✓	2023
Denver	County	CO	✓	2017	✓	2021
Denver	City	CO	✓	2017	✓	2021
Maryland	State	MD	✓	2022	✓	2022
Montgomery	County	MD	✓	2014	✓	2022
New York City	City	NY	✓	2009	✓	2019
Oregon	State	OR	✓	2023	✓	2023
Saint Louis	City	MO	✓	2017	✓	2020
Seattle	City	WA	✓	2012	✓	2023
Washington, DC	State	DC	✓	2008	✓	2018
Washington	State	WA	✓	2009 (later expanded)	✓	2023





Environment Subcommittee

- Zero Waste (ZW.8)
 - Short Term Action: Drafting comment for Futures Commission
 - Medium Term Action: how to build off of Futures Commission comment to address zero waste
- Natural Environment (NE.4/NE.13/NE.15)
 - Short Term: engage non-traditional groups, Greenspace Alliance
 - Medium Term Action: draft comment with policy recommendations and co-benefits

Sustainability Subcommittee

- Buildings and Energy (BE.1)
 - Short Term Action: RECI grant presentation (explain BPS and benchmarking)
 - Medium/Long Term Action: draft policy recommendations related to BPS, benchmarking, electrification, etc.
- Community Activation (CA.3)
 - Short Term Action: identify what steps are needed to codify climate equity, bringing NAACP and other frontline communities into conversation (resource: [NRDC EJ Ordinance Scan](#))
 - Medium/Long Term Action: draft comment with policy recommendations



EAB Committees

Environment

- Natural Environment
- Resilience & Climate Adaptation
- Zero Waste

Sustainability

- Buildings & Energy
- City Operations
- Community Activation
- Mobility
- Food



Next Meeting

- 3PM October 30, 2024
 - **In person:** Centennial II Training Room A
 - 805 Central Avenue, Cincinnati, OH 45202
 - **Virtually:** Microsoft Teams