An introduction to benchmarking and building performance standards

Amanda Webb, PhD

Department of Civil and Architectural Engineering and Construction Management

University of Cincinnati

Climate, Environment & Infrastructure Committee
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Key Questions

1. What is benchmarking? What is a building performance standard (BPS)?

2. How do these policies align with the Green Cincinnati Plan?

3. What are the considerations for successful benchmarking and/or BPS implementation?

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

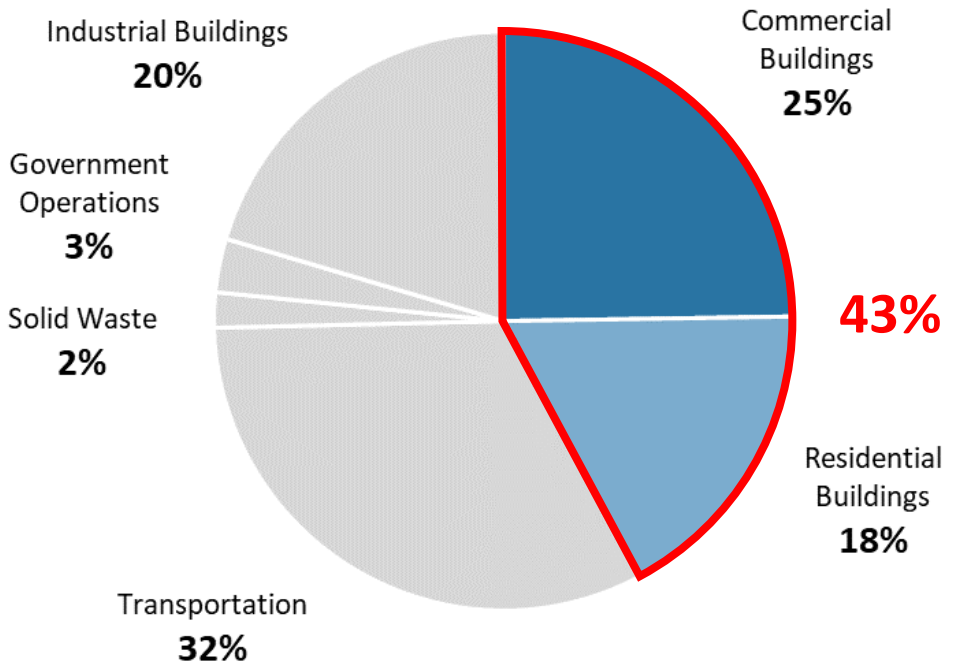
2023 Green Cincinnati Plan (GCP) goals[1]

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

2022 Cincinnati Carbon Emissions[1]



[1]2023 Green Cincinnati Plan: https://www.cincinnati-oh.gov/oes/climate/climate-protection-green-cincinnati-plan/

The existing building decarbonization policy spectrum

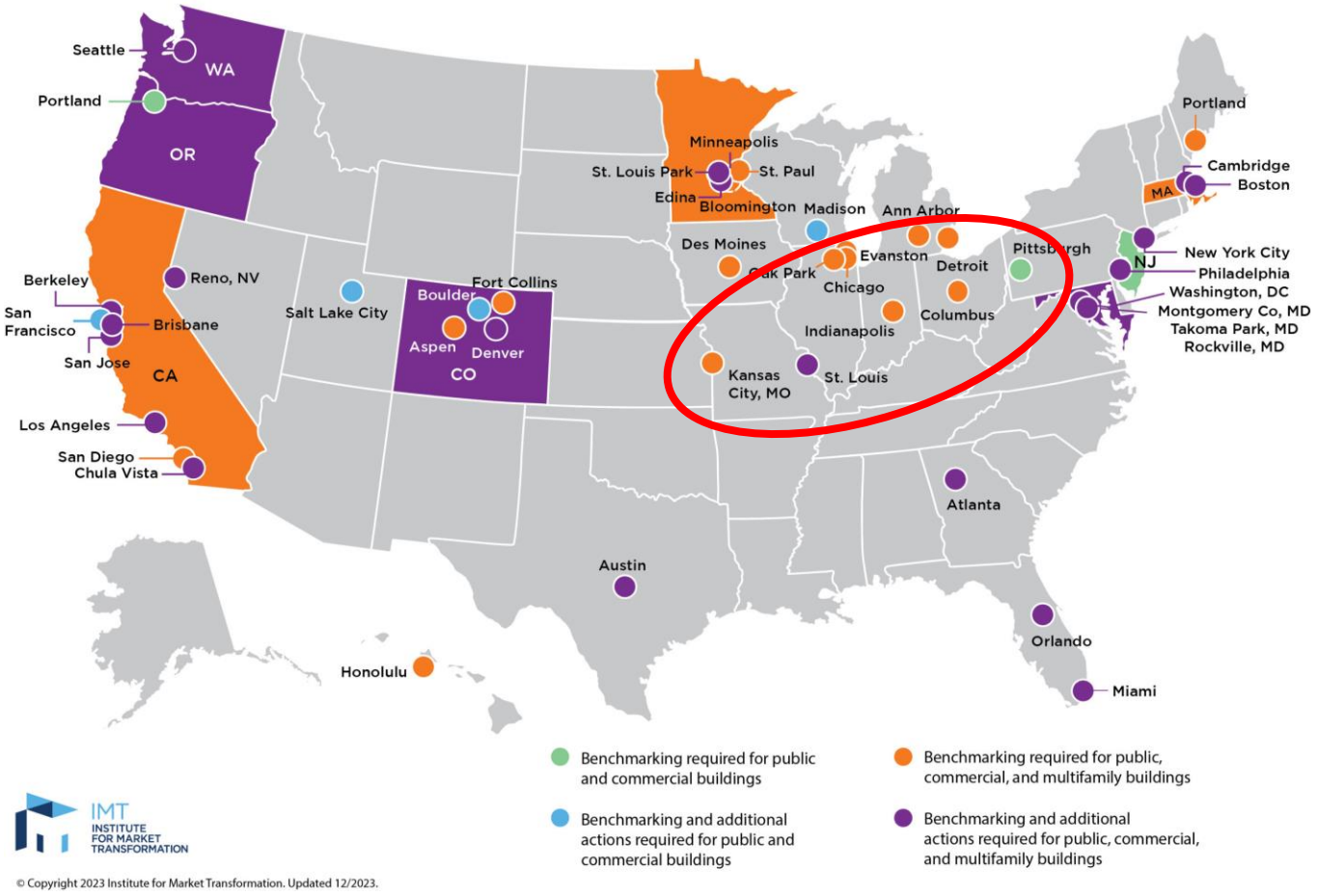
You can't improve what you don't measure!

Benchmarking

- **Collect data**
- **Compare to peers**
- **Publicly disclose**
- ***~3-8% savings*[1]**

[1]N. 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

MAP: https://www.imt.org/resources/map-u-s-building-benchmarking-policies/
COMPARISON MATRIX: https://www.imt.org/resources/comparison-of-commercial-building-benchmarking-policies/

Benchmarking design considerations

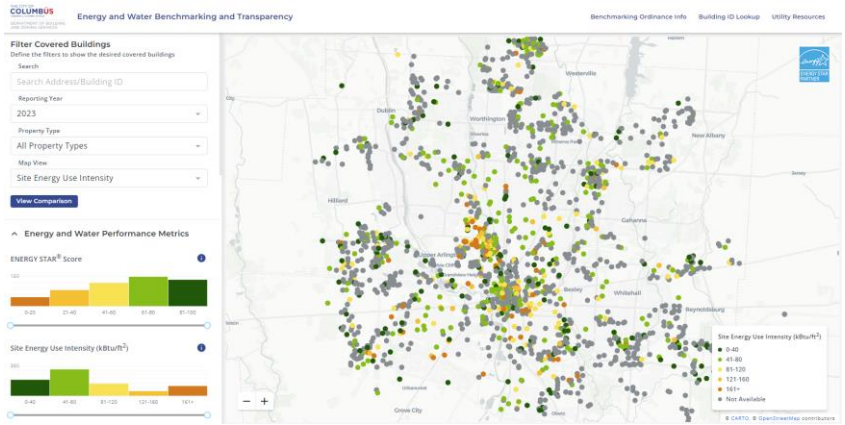
Benchmarking scope examples[1]

Jurisdiction	Covered Buildings
Columbus, OH	Public/Government ≥ 25k ft^2 Commercial ≥ 50k ft^2 Multifamily ≥ 100k ft^2
Indianapolis, IN	Public/Government ≥ 25k ft^2 Commercial and Multifamily ≥ 50k ft^2
Seattle, WA	Public/Government Commercial and Multifamily ≥ 20k ft^2
St. Louis, MO	Public/Government ≥ 50k ft^2 Commercial and Multifamily ≥ 50k ft^2

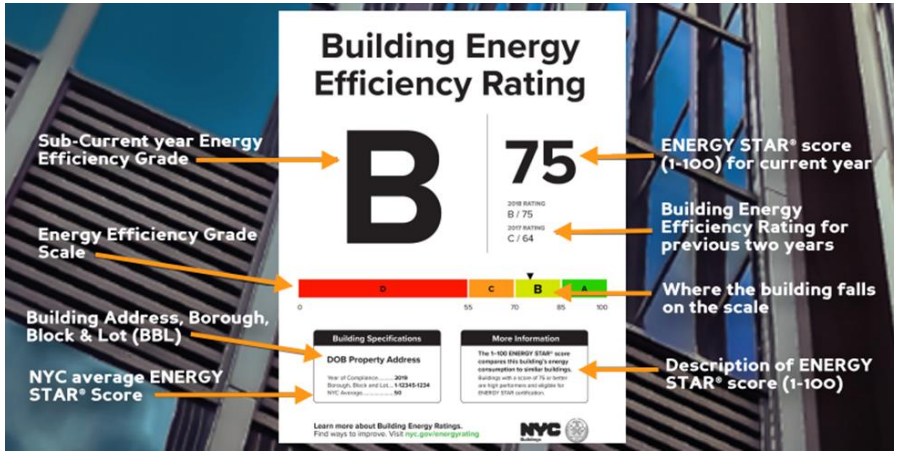
Penalties for noncompliance vary; e.g., fee capped at $1000 (St. Louis, MO)

Benchmarking transparency examples

Interactive maps (Columbus, Most jurisdictions)[2]

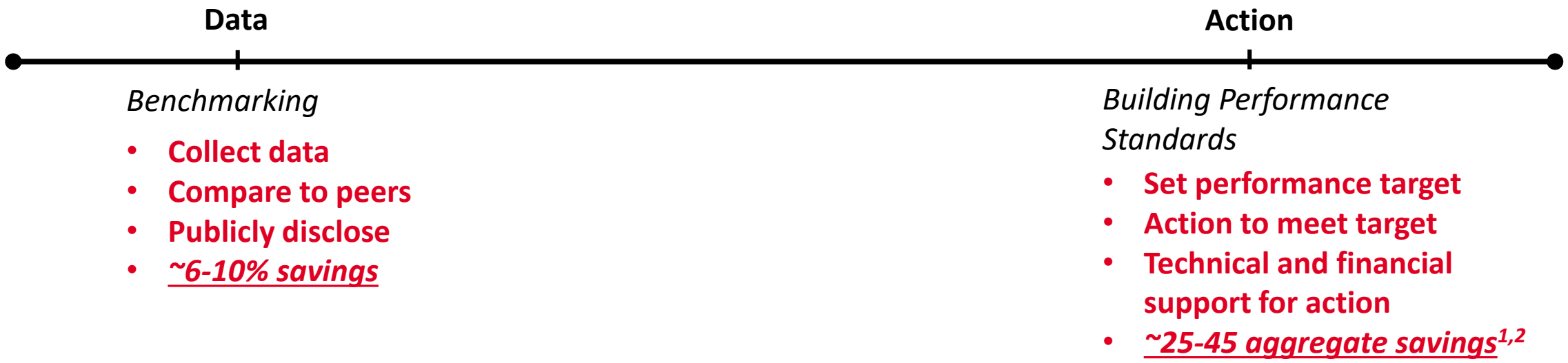


Letter grades (NYC, Chicago)[3]



[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/

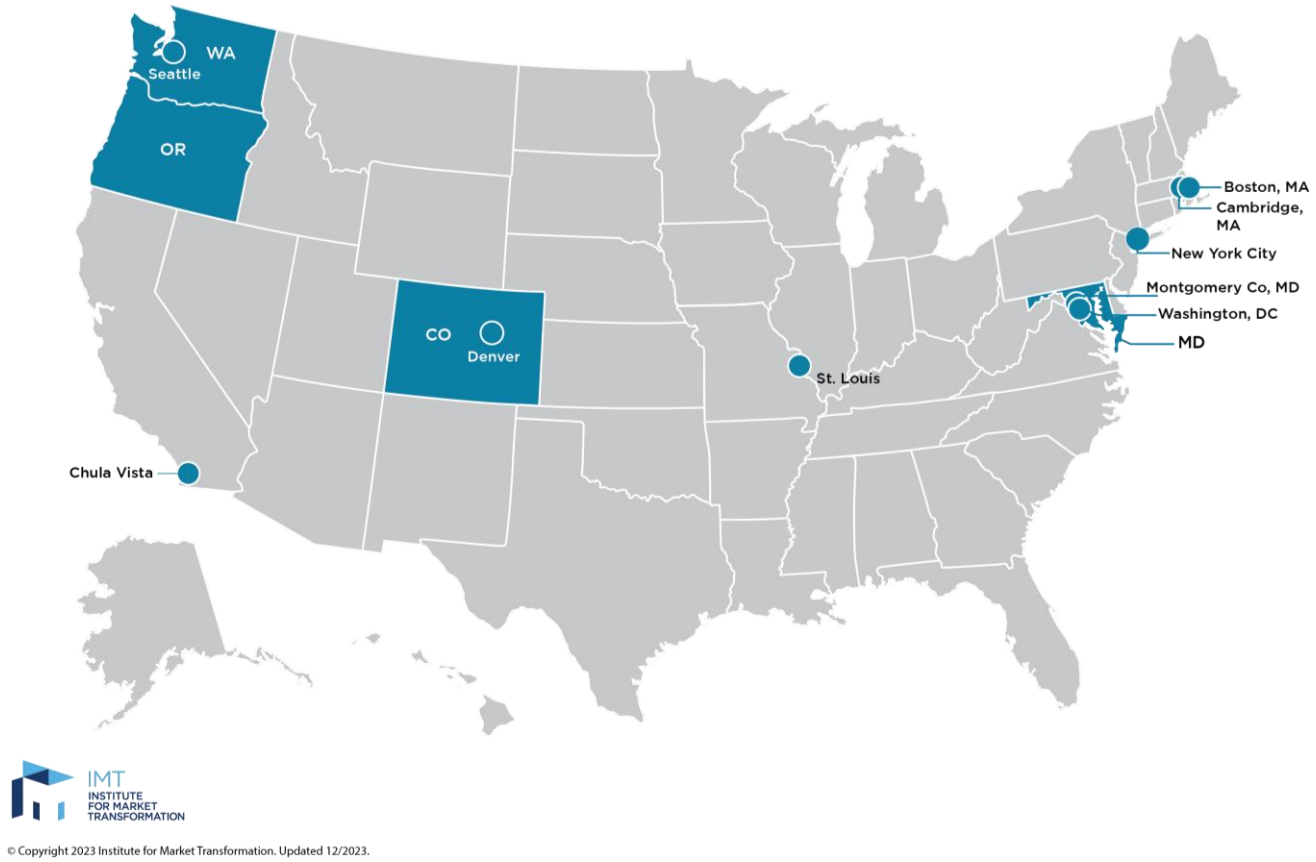
The existing building decarbonization policy spectrum



[1]A.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.

[2]S. 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

13 jurisdictions have enacted a BPS as a key strategy to meet their climate goals



Key components:

- **Scope**: Large 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

MAP: https://www.imt.org/resources/map-building-performance-standards/
COMPARISON MATRIX: https://www.imt.org/resources/comparison-of-u-s-building-performance-standards/
ADDITIONAL RESOURCES: https://www.imt.org/public-policy/building-performance-standards/

Many more jurisdictions have committed to advancing BPS through the National BPS Coalition

Key features:

- **Goal**: Advance and adopt BPS by Earth Day 2024 (or 2026)
- **Benefits**: Technical and financial assistance from DOE
- **Scale**: Members represent ~25% of the buildings in the U.S.

MAP: https://www.imt.org/resources/map-national-bps-coalition-participating-jurisdictions/
https://nationalbpscoalition.org/

Where are we now in Cincinnati and Ohio?

Benchmarking

- **Collect data**
- **Compare to peers**
- **Publicly disclose**
- ***~6-10% savings***

Building Performance Standards

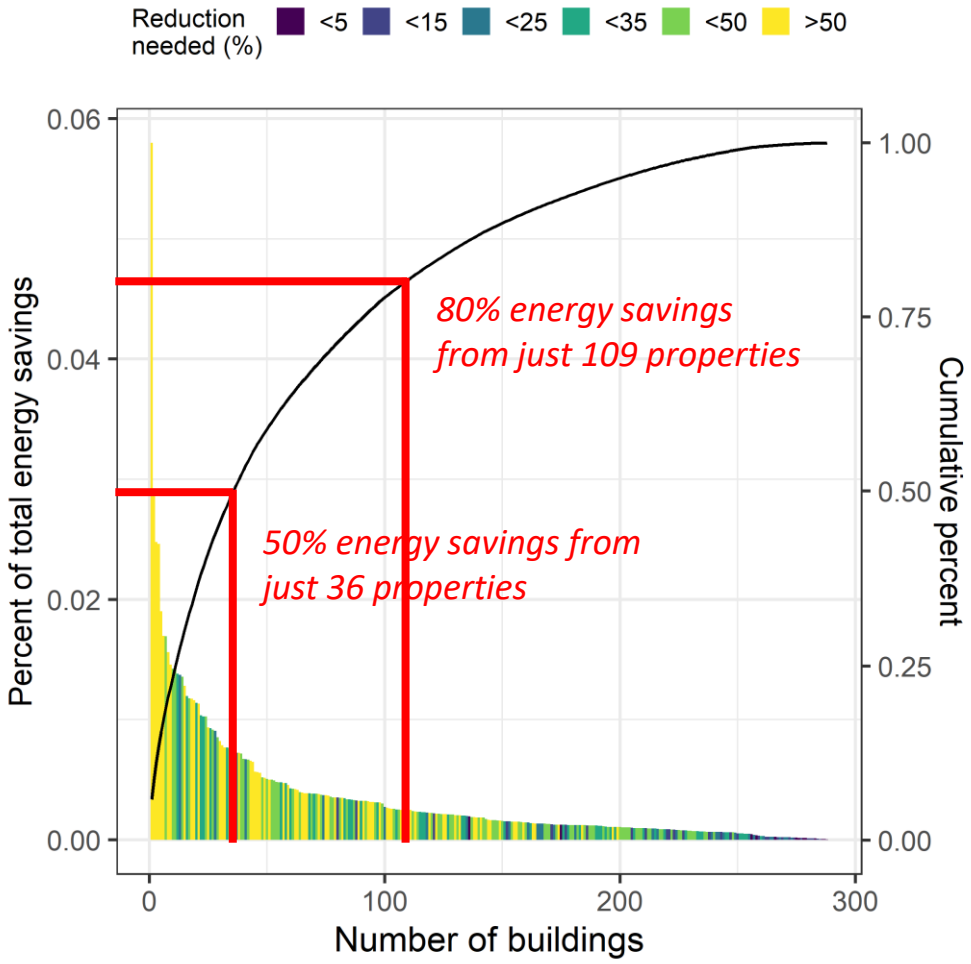
- **Set performance target**
- **Action to meet target**
- **Technical and financial support for action**
- ***~25-45 aggregate savings***

What are the considerations for successful benchmarking policy implementation?

Policy Characteristic	Best Practice[1]
Scope	• Perform quantitative analysis of the building stock to determine the size threshold with greatest impact for least cost
Outreach and Education	*Policy Development* • Document benefits of benchmarking for building owners and public • Develop partnerships with nonprofits, building owners and operators, and utilities *Policy Compliance* • Establish help centers and training materials
Data Access and Quality	• Establish consistent data collection and aggregation procedures that reduce reporting burden
Phased Implementation	• Lead by example with benchmarking and transparency for public buildings
Support Programs	• Couple benchmarking with available financial incentives and technical assistance (e.g., energy audits, retro-commissioning)

[1]N. 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.

DOE RECI project is working to develop a cost-optimal, equitable approach to BPS in Ohio's large cities



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

Graph: A.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.

DOE RECI takes a collaborative, grassroots approach to reducing building emissions

Community-Based Organizations

GROUNDWORK Ohio River Valley

Cleveland Neighborhood Progress

IMPACT Community Action

Local Government and State Agency

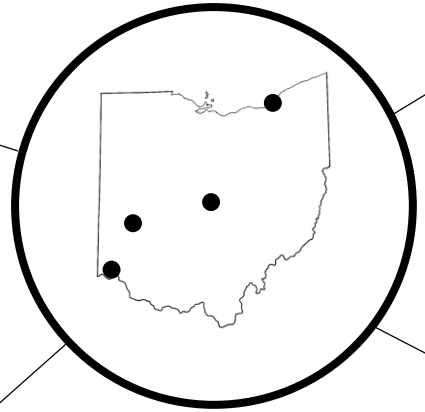
city of CINCINNATI

DAYTON

THE CITY OF COLUMBUS

CITY OF CLEVELAND OHIO

OHIO AIR QUALITY DEVELOPMENT AUTHORITY



Technical Providers

University of CINCINNATI

go sustainable energy

Power A Clean Future Ohio
LOCAL COMMUNITIES LEADING THE WAY

MEEA
MIDWEST ENERGY EFFICIENCY ALLIANCE

Ohio Environmental Council

Building Owners and Design Professionals and Workforce Development

DAYTON REGIONAL GREEN

CLEVELAND 2030 DISTRICT

Cincinnati State

ASHRAE Cleveland Chapter

CINCINNATI 2030 DISTRICT

Questions?

Amanda L. Webb, PhD

Assistant Professor

Department of Civil and Architectural Engineering and Construction Management

amanda.webb@uc.edu