

March 20, 2025

Centralizing Knowledge to Scale Commercial Building Decarbonization

BUILDING ENERGY BOSTON - 2025



Speakers



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Agenda

- Introduction
- Building Performance Exchange Overview
- Green School Works Program Opportunity
- BETA: Project Planning and BETA: Roadmaps Program Opportunity
- YMCA Decarbonization Roadmap Testimonial
- Questions



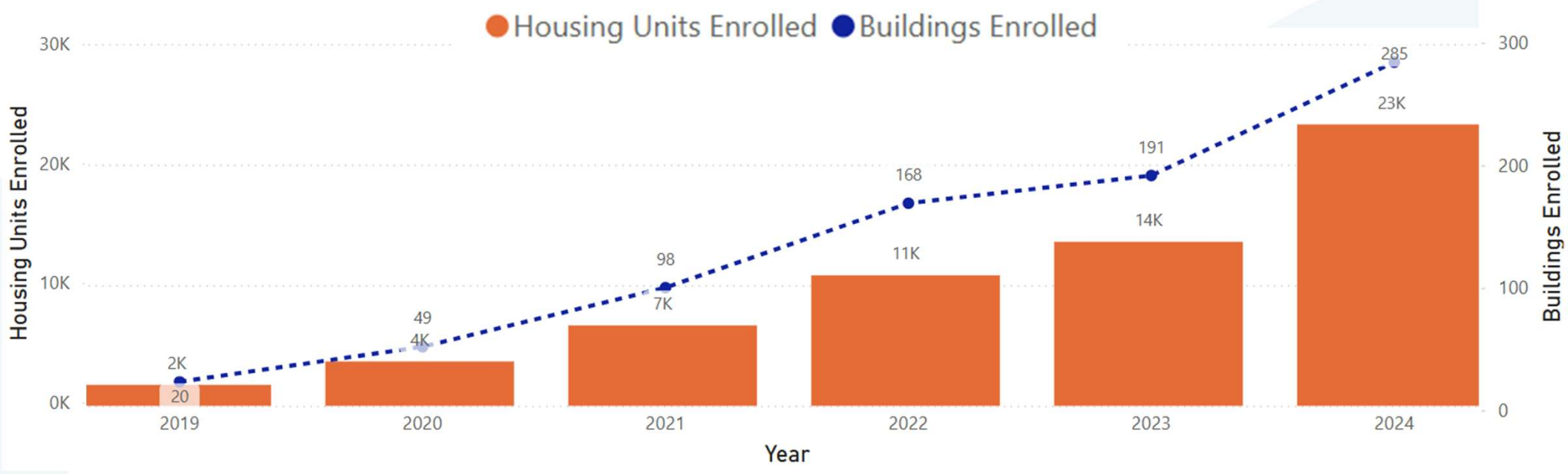
Introduction

MassCEC's Work Spans Four Main Areas of Climate Impact for Massachusetts

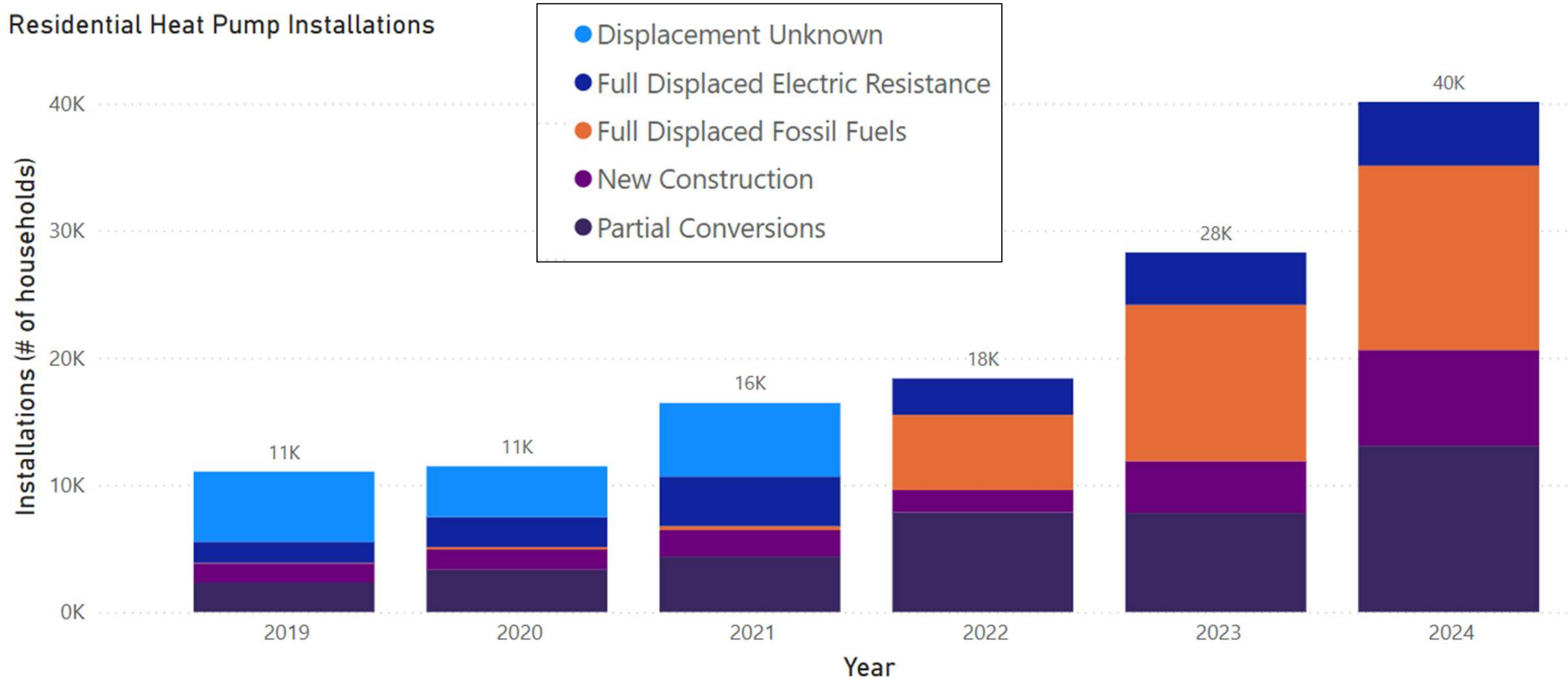
Emerging Climatetech	Accelerating Decarbonization	Large Scale Deployment: Offshore Wind	Clean Energy & Climate Workforce Development
 <p>We help new climate-focused businesses grow faster by backing a vibrant community of researchers, startups, and established industry players - creating an ecosystem where they connect and thrive.</p>	 <p>We contribute to meeting our state's ambitious climate goals by tackling barriers to widespread use of clean energy and climate technology in buildings, transportation, and the grid.</p>	 <p>We're building a cutting-edge offshore wind industry, marshaling world-class ports while addressing supply chain and workforce development challenges.</p>	 <p>We're growing a diverse and talented clean energy workforce by supporting a dynamic network of community-based organizations, labor, training providers, schools and employers committed to a sustainable future for all.</p>

Measures of Progress & Upcoming Policy Drivers

Housing Units and Buildings Enrolled in Mass Save Passive House Incentive



Measures of Progress & Upcoming Policy Drivers



Measures of Progress & Upcoming Policy Drivers

Massachusetts Decarbonization Metrics

Buildings
sector
at-a-glance

253

communities adopted
the stretch code

48

communities adopted
the specialized code

94K

residential audits
in 2024

55K

residential weatherization
projects in 2024

103K

cumulative heat pump
installations 2020-2024

Policy Drivers Coming Down the (Mass) Pike

- Statewide Building Energy Reporting (2025)
- Clean Heat Standard (in development)
- Heat Pump Rates (2025?)
- New framework for natural gas utilities & Climate Compliance Plans (April 2025)



Building Performance Exchange

BERDO, BEUDO, LBER

**Library of Resources
Training
Build Community**

First Boston & Cambridge

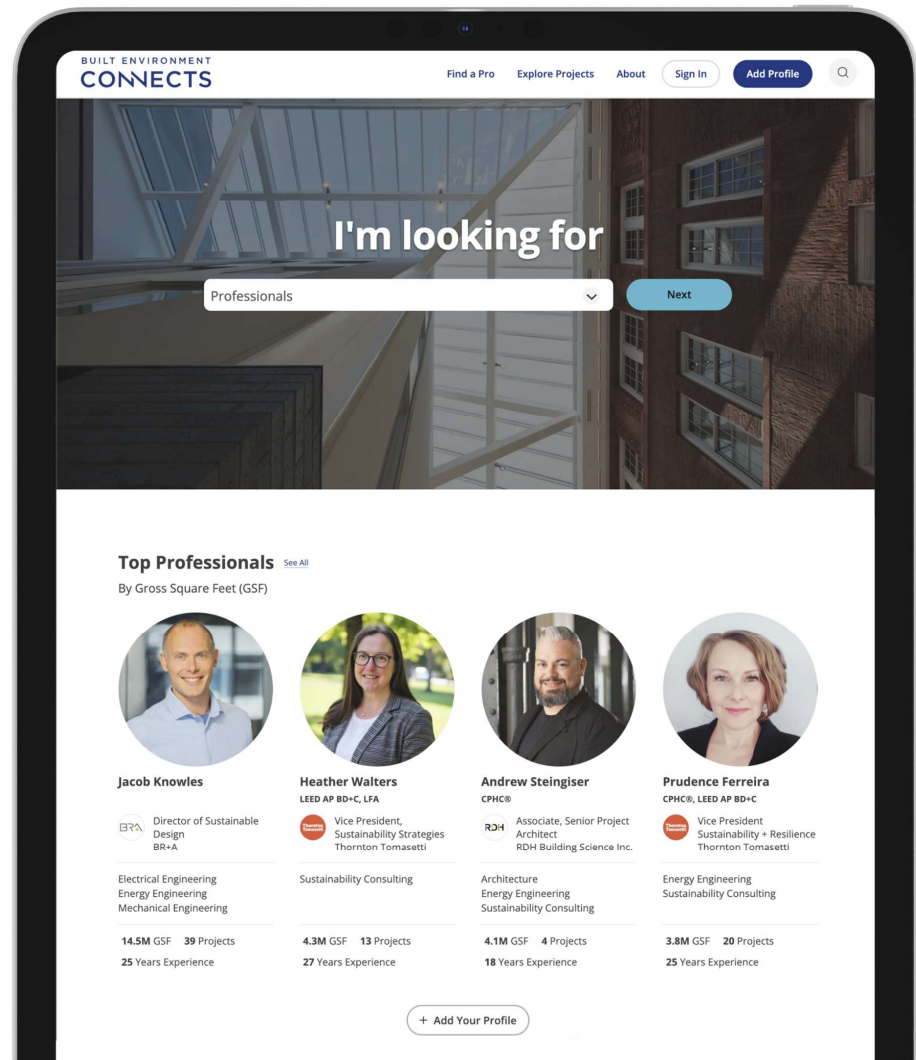
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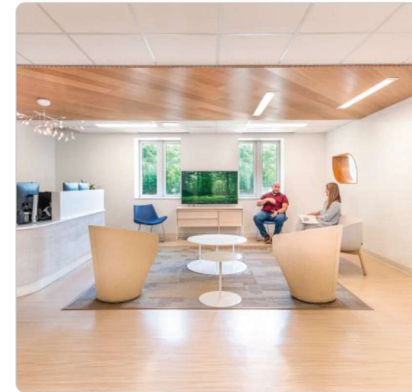
Jacob Knowles



14.5M GSF | **39** Projects | **25** Years Experience



Your experience counts



57K GSF Net Zero
52.5 Site EUI

Showcase your work



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Getting started is easy



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Green School Works Program Opportunity

Green School Works Overview

\$60 million committed by Massachusetts legislature



Provide technical assistance, planning, and implementation funding to MA K-12 public schools for projects that improve energy efficiency, reduce carbon emissions, or mitigate the impacts of climate change.



Eligible schools and school districts with at least 40% low-income student population for one or more of the last three school years.



Combination of:

Technical services grants

Implementation grants

Green School Works Program Offerings

Technical Assistance (~\$5M)

- ▶ **Currently:** RFQ seeking vendors to offer services in coordination with Mass Save, including:
 - Comprehensive Building Assessments
 - Portfolio Decarbonization Roadmaps
 - Focused Studies
- ▶ **Late spring:** Eligible districts can apply for funding, covering 100% of costs

Implementation Funding (~\$50M)

- ▶ **Late spring:** Eligible districts can apply for grants and/or loans to support implementation of eligible projects, such as:
 - Air-source heat pumps
 - Ground-source heat pumps
 - Envelope
 - Barrier mitigation
 - Electrical upgrades
 - Storage
 - Solar PV
 - EV chargers
 - Appliance electrification

Keep in Touch on Green School Works

**Learn more about
Green School Works**



**Sign up for program
email updates!**



**BETA: Project Planning
& BETA: Roadmaps
Program Opportunity**

Overview & Goals

BETA: ROADMAPS

- ▶ **High-level portfolio decarbonization roadmaps** aligned with building capital needs with target of a zero emissions portfolio by 2050.
- ▶ Open enrollment for **non-profit and public entity** building owners
- ▶ **Roadmap process developed** by PowerOptions, with unique relationship to non-profit portfolio owners through existing utility procurement offering.



BETA: PROJECT PLANNING

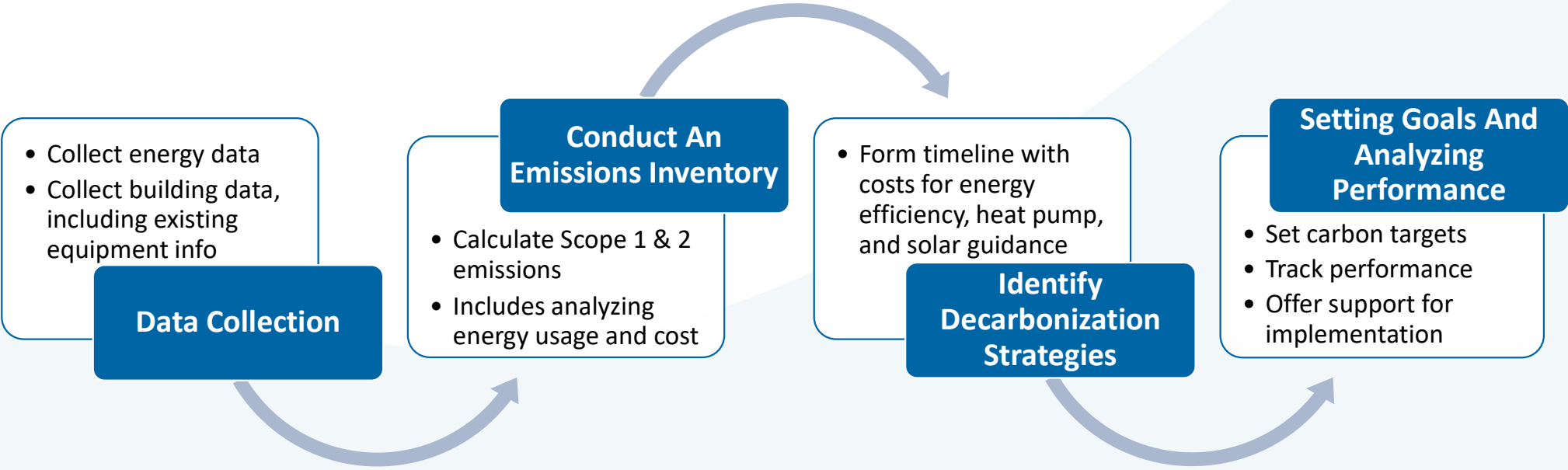
- ▶ **In-depth** planning and technical decarbonization strategy studies for **individual buildings**
- ▶ **Decarbonization assessment framework** based on ASHRAE II Audit protocol with additional capital planning and financing considerations
- ▶ **Case studies and white paper**, including gap analysis of technical and financial challenges to achieving 2050-Ready buildings
- ▶ Rolling application for **commercial or large multi-family** building owners
- ▶ **Coordination** with Mass Save's Deep Energy Retrofit incentive program and identification of other implementation funding sources



BETA: Roadmaps Approach

Desktop analysis and decarbonization study roadmap that includes:

virtual energy efficiency audit, virtual solar assessment, electrification, and REC purchases.



BETA: Project Planning Approach



**MASSACHUSETTS
CLEAN ENERGY
CENTER**

A Pathway to Net Zero for Commercial Buildings

**Building Electrification and
Transformation Accelerator
(BETA) Project Planning**

Future-Proof Your Building:
How will evolving emissions standards, high-performance building codes, and decarbonization incentives shape your property's future?

MassCEC's BETA Project Planning program equips commercial building owners with **cost-effective strategies to reduce risk, maximize value, and achieve net-zero emissions by 2050.**

- 1 REDUCE**
energy loads to an optimized state.
- 2 RECONFIGURE**
systems where possible to enable electrified heating solutions.
- 3 RECOVER**
as much energy as possible from air, water, and other sources.
- 4 REPLACE**
equipment incrementally over time until full decarbonization is reached.

BETA: Roadmaps Results to Date

- ▶ Number of Completed Roadmaps:
 - 47
- ▶ Number of Buildings Supported:
 - 393
- ▶ Total Annual Energy Savings (mmBTU):
 - 1,441,000
- ▶ Total CO2 Savings (metric tonnes):
 - 78,000



BETA: Project Planning Results to Date

- Projects Enrolled: 18
- Projects Completed: 6
- Top Outstanding Typology Targets:
 - Medium Residential
 - Small Commercial/Mercantile
 - Warehouse/Big Box
 - Food service
 - Process driven
 - Grocery

Building Block	Target Number of Buildings	Total Applicants	Total Enrolled	% to target
Medium Residential	5	5	0	0%
Large Residential / Lodging	10	30	6	60%
Warehouse / Big-box	3	2	1	33%
Medium / Simple HVAC	5	9	2	40%
Large / Complex HVAC	8	6	4	50%
Ventilation Driven	2	4	2	100%
Education	5	20	3	60%
Process Driven	2	0	0	0%
Small Commercial	15	8	0	0%
MassDev	15	0	0	0%
Total	70	84	18	26%

Timeline

BETA: PROJECT PLANNING

- **Launched:** Fall 2023
- **Expanded:** Fall 2024
- **Target Completion:** Summer 2027

BETA: ROADMAPS

- **Launched:** Fall 2022
- **Expanded:** Summer 2024
- **Target Completion:** Spring 2026

Learn More and Apply

BETA: PROJECT PLANNING



BETA: ROADMAPS

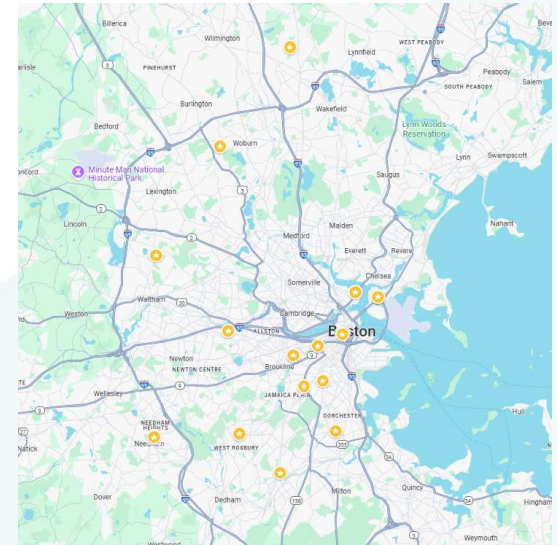


BETA: Roadmaps Testimonial

Overview of YMCA

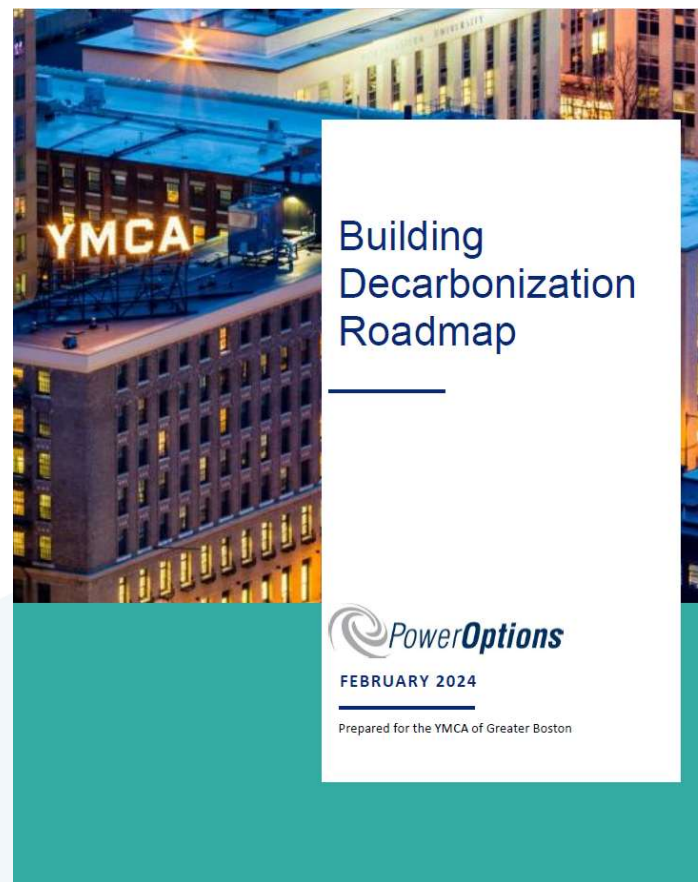


- **America's 1st YMCA – Established in 1851**
- **13 Centers**
- **500,000 sf**
- **7 'BERDO buildings'**



Why YMCA was interested

- This thing called 'BERDO'
- We're paying what??
- Another unit failed
- We need a plan



Experience

- Positive
- PowerOptions did data collection and analysis
- Simple to understand and communicate

- Buy in from multiple stakeholders
- Get resources that weren't previously part of budget
- Selling it
- Different audiences

First steps

➤ Where do we start?

- VFDs
- Simple weatherization

➤ \$4,000,000 to stay status quo

➤ \$20,000,000 in long term savings

➤ Electrification

- Previously replacing like for like when something broke
- Late 2024 installed first heat pump
- Installed now 7+

➤ Momentum...

- Solar
- Hot Water

Roadmap

2024



**First Heat Pump
Oak Square YMCA**

2025



One Y – Portfolio Application

Late 2025



**First Solar Project
East Boston YMCA**

Thank You