

BERDO Review Board





Rashida BoydBoard Member



Hessann FarooqiBoard Member



Gabriela Coletta Zapata





Gail LatimoreBoard Member



Stephen EllisBoard Member



Jack NelsonBoard Member



City of Boston BERDO Staff



Hannah Payne

Director, Carbon Neutrality



Diana Vasquez

BERDO Review Board Manager



Dr. Claudia Diezmartinez

Policy and Equity Advisor



Zengel "Ziggy" Chin

BERDO Review Board Assistant



Today's Meeting

Public Meeting

1. Vote on Flexibility Measure Applications

Public Hearing

- **2.** City of Boston Building Portfolio Hearing
- **3.** Approval of Meeting Minutes
- **4.** Administrative Updates
- **5.** Adjournment











Diamond Rock Hospitality Co

Background Information

- Submitted through Pathway 1.
- 2 buildings in the neighborhoods of Downtown and Seaport.
- Applicant meets all eligibility criteria and application was deemed complete.

Standard Conditions

- Timely compliance with reporting and third-party verification requirements.
- Timely compliance with the requirements in <u>Section XI.b</u>, including, when applicable, the submission of a satisfactory Emissions standard compliance plan.
- The Review Board or its designee may inspect any Building that is part of an approved Building Portfolio, at reasonable times and with reasonable notice, in order to assess compliance with the terms and conditions of said Building Portfolio.

Diamond Rock Hospitality Proposed Portfolio



Owner: Diamond Rock Hospitality Co

Building Use Types: Lodging

Number of buildings: 2 buildings

Addresses of buildings:

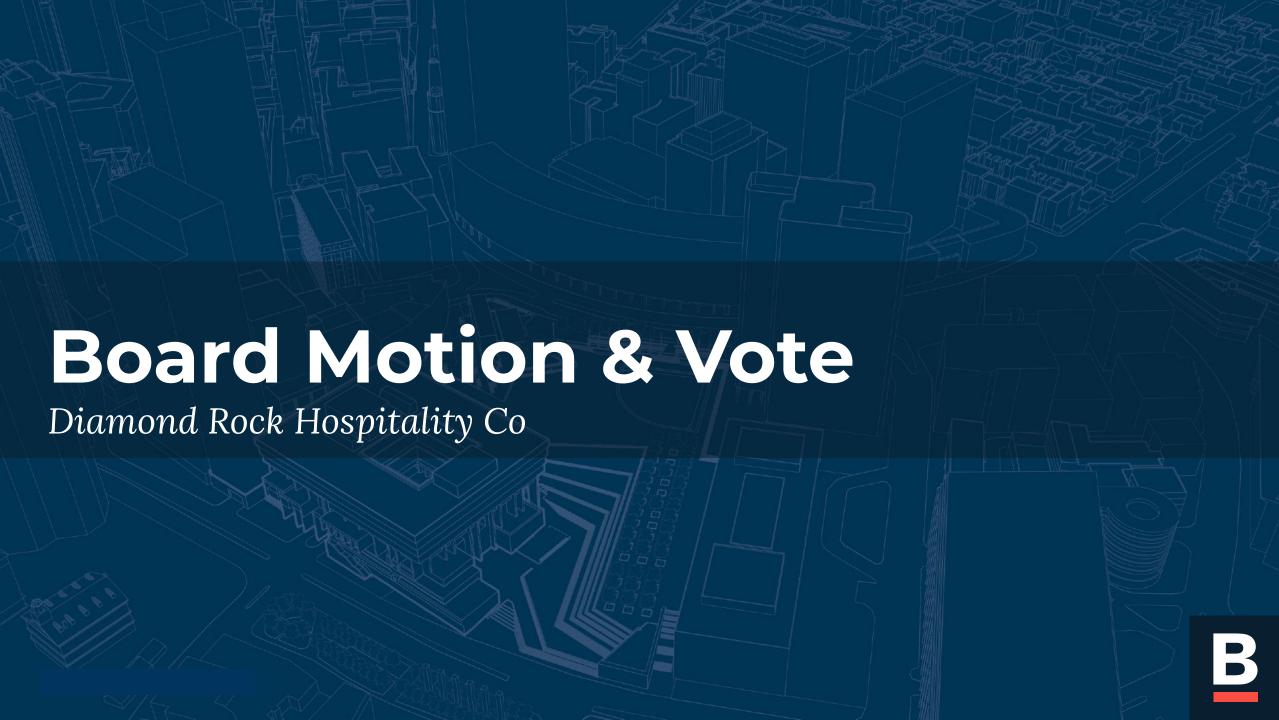
• 83-95 Broad St, Boston, MA 02110

• 425 Summer Street, Boston, MA 02210

Calculated Blended Emission Standards

Calculated Blended Emissions Standards (kgCO2e/SF/yr)							
2025-2029 2030-2034 2035-2039 2040-2044 2045-2049 2050-							
Default Emissions Standards: Lodging	5.8	3.7	2.7	1.8	0.9	0	
Portfolio Emissions Standards	5.8	3.7	2.7	1.8	0.9	0	









Pathway 2

Pathway 2 Reminder:

Review Board may vote to hold a hearing:

- Review Board invites applicant to prepare slides at a subsequent meeting
- Applicant presents on their application and requested information regarding impacts to EJ populations
- Review Board accepts public comment regarding application

Review Board may vote to:

- Approve with standard conditions;
- Approve with special conditions; or
- Deny the application

Special Conditions:

• These are conditions that are relevant to the distribution of decarbonization benefits to Environmental Justice Populations. Example, a condition based on asthma rates map.



Building Portfolio Application



Mass General Brigham

Background Information

- Submitted through Pathway 2.
 - ullet On-site Combined Heat and Power Plants that use non-renewable or ${
 m CO2}_e$ emitting fuels and are located in Environmental Justice Populations.
- 30 buildings in the neighborhoods of West End, Longwood Medical Area, Charlestown, Jamaica Plain, and Allston.
- Applicant meets all eligibility criteria and application was deemed complete.

Standard Conditions

- Timely compliance with reporting and third-party verification requirements.
- Timely compliance with the requirements in <u>Section XI.b</u>, including, when applicable, the submission of a satisfactory Emissions standard compliance plan.
- The Review Board or its designee may inspect any Building that is part of an approved Building Portfolio, at reasonable times and with reasonable notice, in order to assess compliance with the terms and conditions of said Building Portfolio.

Building Portfolio List

Mass General Brigham, Part 1

#	BERDO ID	Address	Campus ID
1	107924	165 Cambridge St. Boston, MA 02114	
2	107282	161-209 Cambridge St. Boston, MA 02114	
3	106825	60 Fenwood Rd. Boston, MA 02115	
4	106824	70 Francis St. Boston, MA 02115	C1004
5	106100	125 Nashua St. Boston, MA 02114	C1004
6	106097	75 Fenwood Rd. Boston, MA 02115	
7	106096	80 Francis St. Boston, MA 02446	
8	105303	20 Staniford St. Boston, MA 02114	
9	104416	36 First Ave Charlestown, MA 02129	
10	104235	243 Charles St. Boston, MA 02114	
11	104234	317-325 Cambridge St. Boston, MA 02114	
12	104222	75 Thirteenth St. Boston, MA 02129	
13	104085	20 Vining St. Boston, MA 02115	
14	102834	45 Avenue Louis Pasteur Boston, MA 02115	
15	101208	114 Sixteenth St. Charleston, MA 02129	



Building Portfolio List

Mass General Brigham, Part 2

#	BERDO ID	Address	Campus ID
16	106099	32 Fruit St. Boston, MA 02114	
17	103195	14 Fruit St. Boston MA, 02114	
18	103194	275-281 Cambridge St. MA 02114	C10028
19	103191	273 Charles St. Boston, MA 02114	
20	103178	265 Charles St. Boston, MA 02114	
21	102900	1153 Centre St. Jamaica Plain, MA 02130	
22	102496	149 Thirteenth St. Boston MA 02129	
23	101526	62 Thirteenth St. Boston MA 02129	
24	101426	640-644 Centre St. Jamaica Plain, MA 02130	
25	101425	1245 Centre St. Jamaica Plain, MA 02130	
26	101424	3293-3297 Washington St. Jamaica Plain, MA 02130	
27	100771	221 Longwood Ave Boston, MA 02115	
28	106826	5-75 Francis St. Boston, MA 02115	
29	105876	300 First Ave Charlestown, MA 02129	
30	103121	100 N Beacon St. Allston, MA 02134	





Mass General Brigham Proposed Portfolio

Owner: Mass General Brigham

Building Use Types: College/University, Healthcare, Office, Storage, and

Technology/Science

Number of buildings: 30 buildings



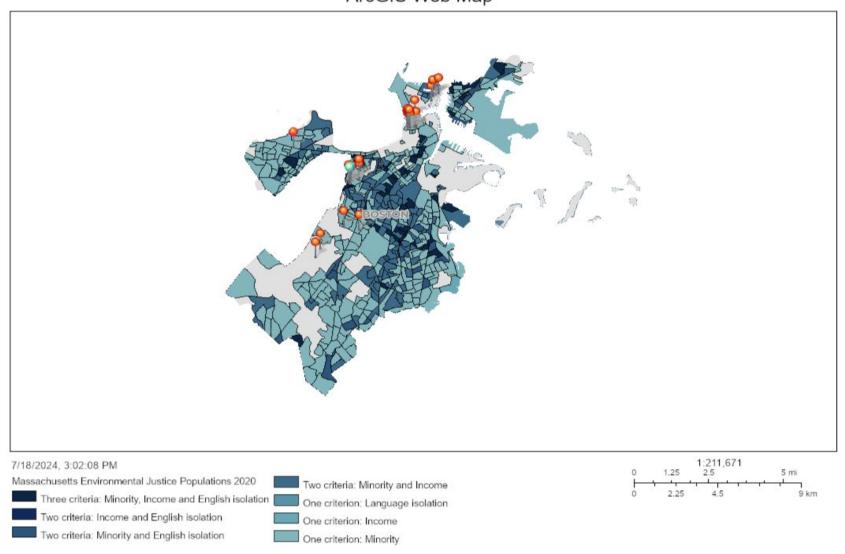
Mass General Brigham Blended Emission Standards

Calculated Blended Emission Standards

Calculated blended Emissions Standards (kgCO2e/SF/yr)						
	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049	2050-
Default Emissions Standards: Healthcare (n = 18)	15.4	10.0	7.4	4.9	2.4	0
Default Emissions Standards: Tech/Science (n = 7)	19.2	11.1	7.8	5.1	2.5	0
Default Emissions Standards: Office (n = 3)	5.3	3.2	2.4	1.6	0.8	0
Default Emissions Standards: College/University (n = 1)	10.2	5.3	3.8	2.5	1.2	0
Default Emissions Standards: Storage (n = 1)	5.4	2.5	1.8	1.0	0.4	0
Portfolio Emissions Standards	15.5	9.8	7.1	4.7	2.3	0

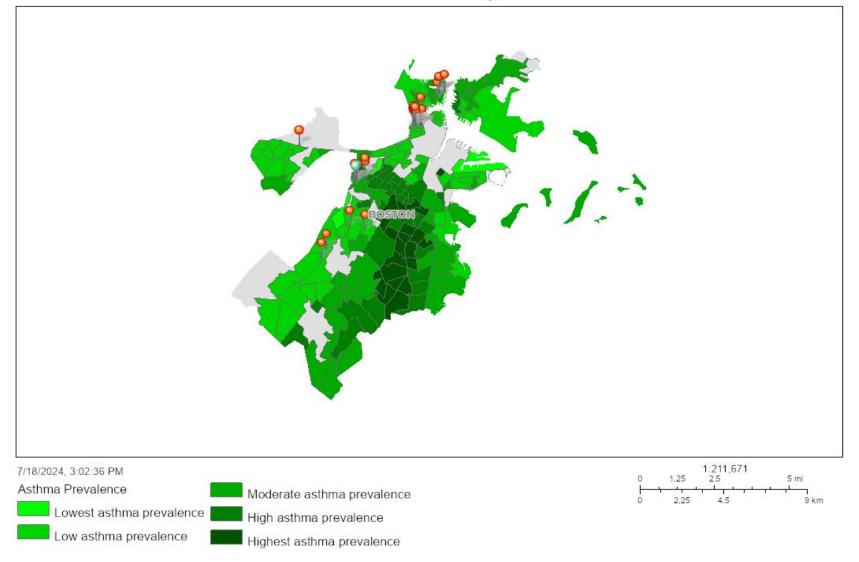
Environmental Justice Map





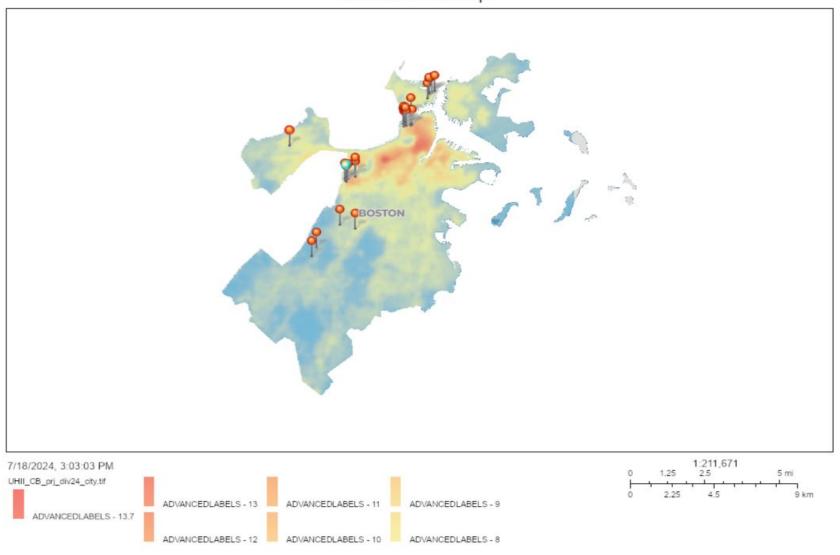
Asthma Prevalence Map





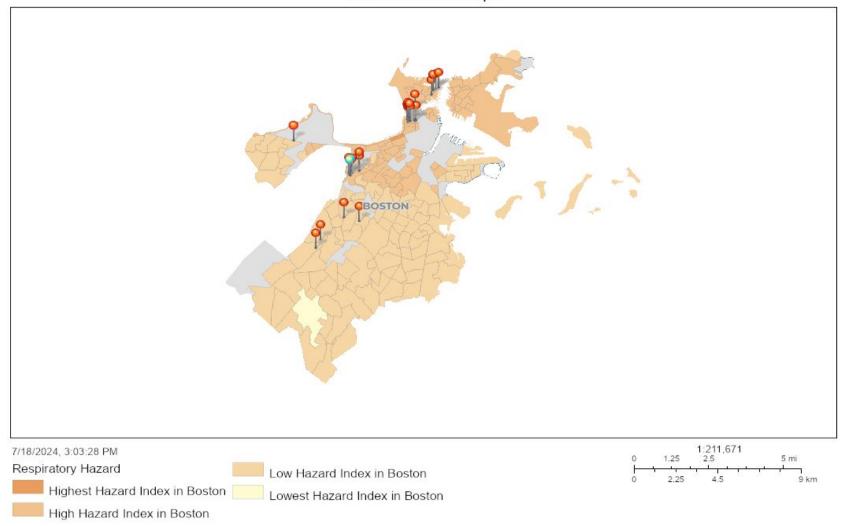
Urban Heat Island Intensity Map



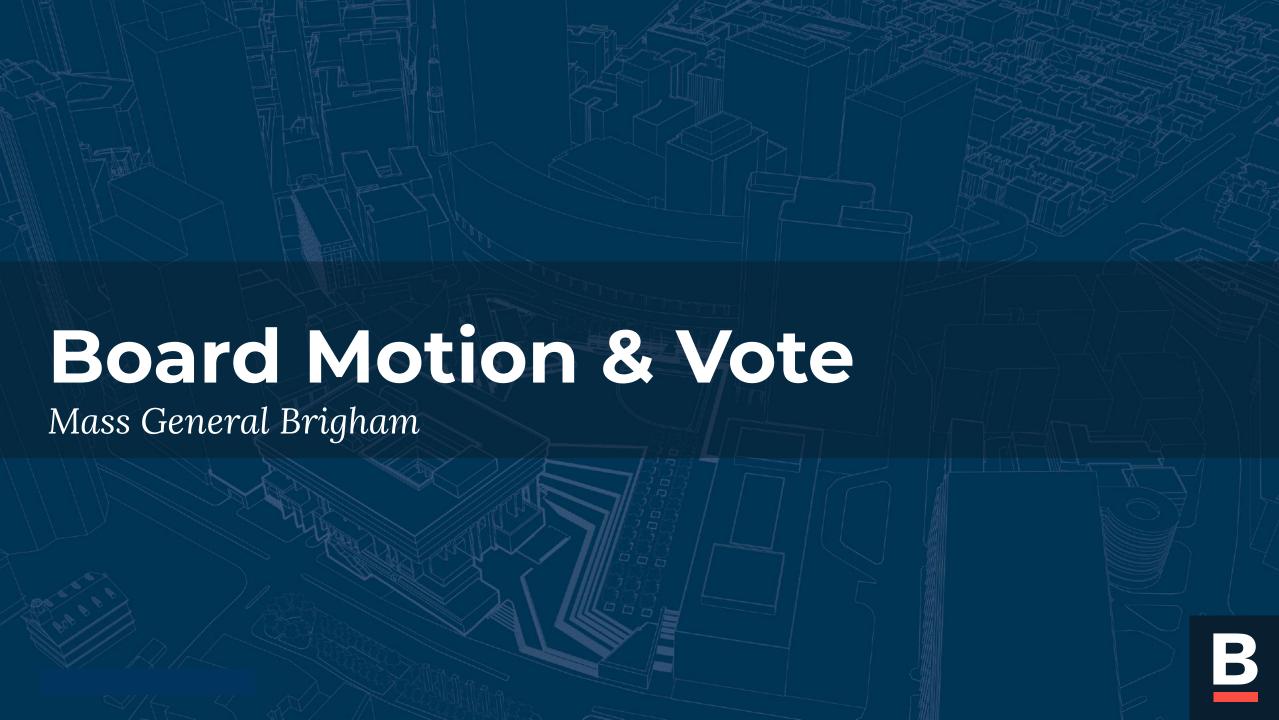


Respiratory Hazard Index Map











Building Portfolio Application

B

The Community Builders

Background Information

- Submitted through Pathway 2.
 - A combination of Residential Buildings located in Environmental Justice Populations and non-Environmental Justice Populations.
- 10 buildings in the neighborhoods of Jamaica Plain, Charlestown, Downtown, Dorchester, and Roxbury.
- Applicant meets all eligibility criteria and application was deemed complete.

Standard Conditions

- Timely compliance with reporting and third-party verification requirements.
- Timely compliance with the requirements in <u>Section XI.b</u>, including, when applicable, the submission of a satisfactory Emissions standard compliance plan.
- The Review Board or its designee may inspect any Building that is part of an approved Building Portfolio, at reasonable times and with reasonable notice, in order to assess compliance with the terms and conditions of said Building Portfolio.



Building Portfolio List

The Community Builders

#	BERDO ID	Address			
1	100086	225 CENTRE ST # COMMERCIAL BOSTON MA 02119			
2	100261	93-95 HYDE PARK AVE BOSTON MA 02130			
3	101419	104 FIRST AVE BOSTON MA 02129			
4	101729	115-119 CHAUNCY ST BOSTON MA 02111			
5	107627	128-136 ADAMS ST BOSTON MA 02122			
6	104619	140 SEAVER ST BOSTON MA 02121			
7	104620	294-296 SEAVER ST BOSTON MA 02121			
8	107628	282-292 TALBOT AVE BOSTON MA 02124			
9	106067	295-311 BLUE HILL AVE BOSTON MA 02121			
10	106771	6 SOUTHBOURNE RD BOSTON MA 02130			



The Community Builders Proposed Portfolio

Owner: The Community Builders

Building Use Types: Multifamily Housing, Education, Retail, and Storage.

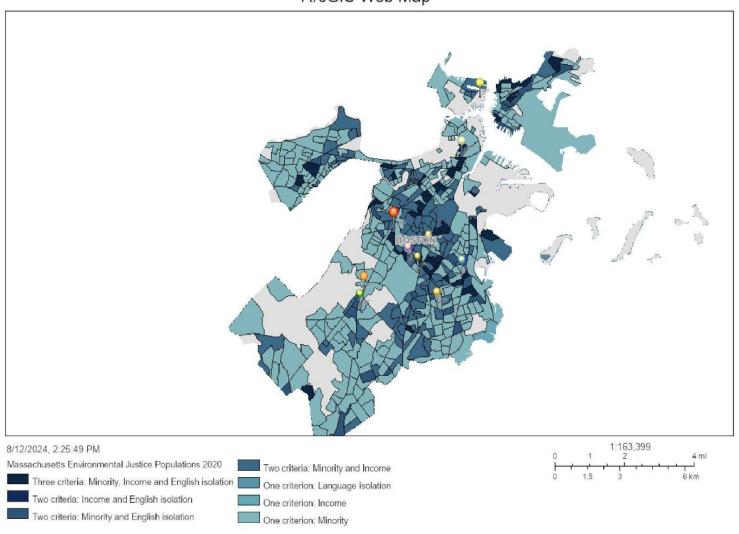
Number of buildings: 10 buildings

Calculated Blended Emission Standards

Calculated blended Emissions Standards (kgCO2e/SF/yr)						
2025-2029 2030-2034 2035-2039 2040-2044 2045-2049 2050-						
Default Emissions Standards (Multifamily Housing)	4.1	2.4	1.8	1.1	0.6	0
Portfolio Emissions Standards	4.3	2.5	1.8	1.1	0.6	0

Environmental Justice Map

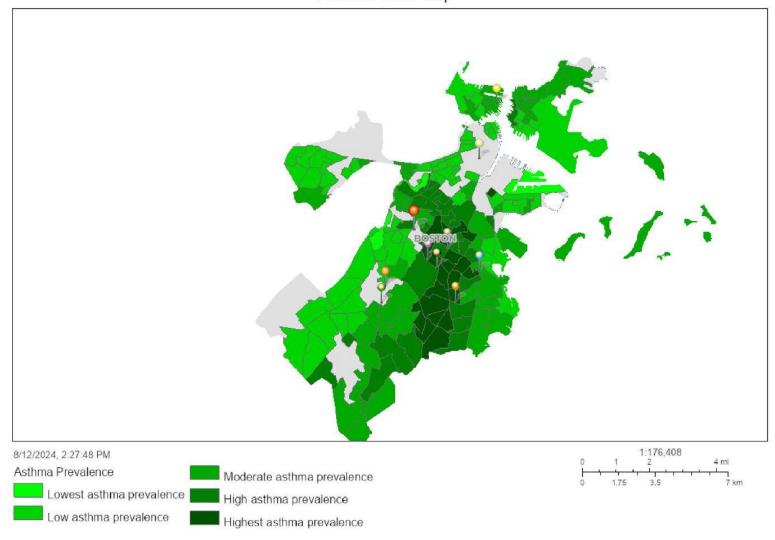




Asthma Prevalence Map

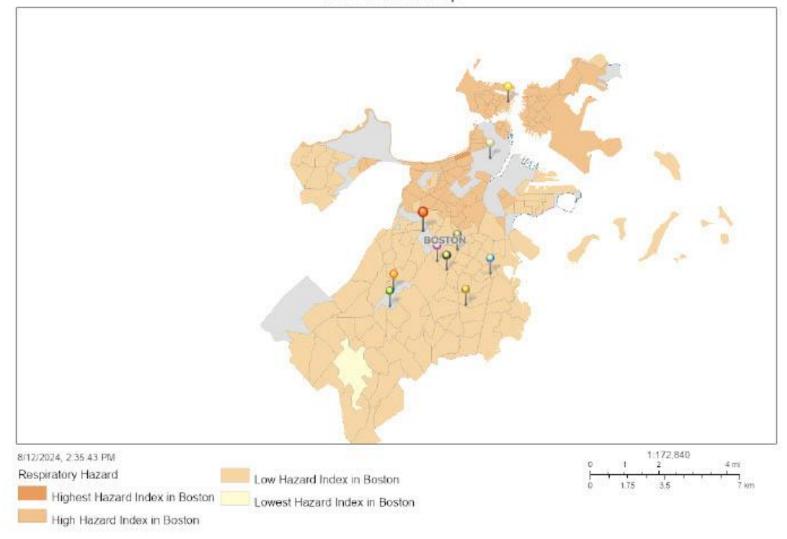


ArcGIS Web Map



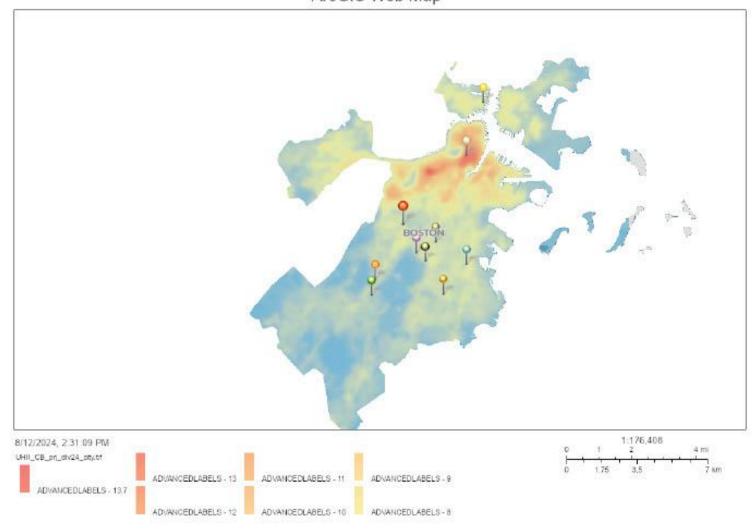
Respiratory Hazard Index Map



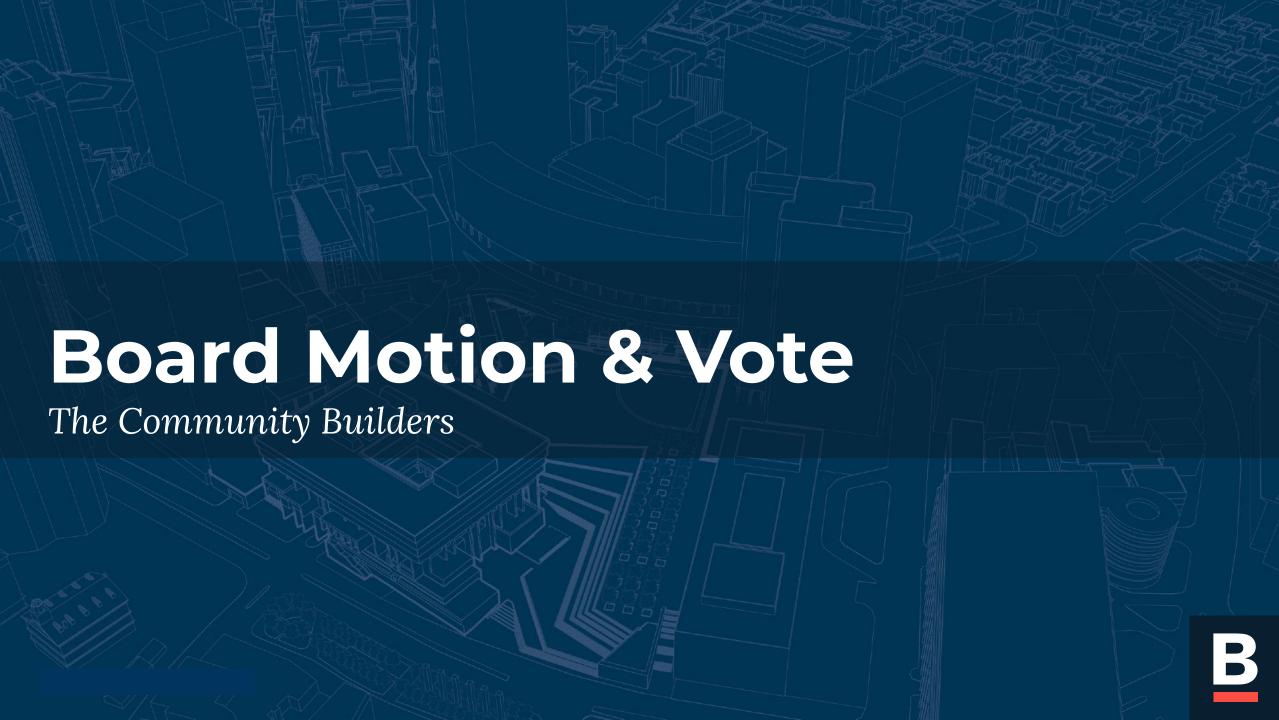


Urban Heat Island Intensity Map













Agenda



- Introduction
- Overview of Proposed Building Portfolio
- Blended Emissions Standard
- Pathway 2 Maps:
 - Environmental Justice
 - Asthma Prevalence
 - Urban Heat Island Index(UHII)
 - Respiratory Hazard Index
- Energy Efficiency and Decarbonization Initiatives
- Review Board Inquiries:
 - Overview of CHP Units
 - Residential and School Tenant Engagement Plans
 - BPS Student Engagement
- Additional Q&A

Overview of Proposed Building Portfolio



Owner: City of Boston

Number of buildings: 369 Buildings

- 141 buildings owned by the Boston Public Schools;
- 24 buildings owned by the Boston Public Health Commission;
- 7 Trust buildings managed by the City of Boston's Treasury Department;
- 2 buildings owned by the Mayor's Office of Planning (formerly the BPDA); and
- 195 buildings owned by other City departments (BPL, PMD, BFD, BPD, BTD, BCYF, Parks, PWD)

Combine Heat and Power (CHP) Units:

• Total: 20

• Location: 16 Locations

Residential Buildings:

• Total: 2 0

Location: Roxbury and Long Island NA

• Updated in Amended Application

Note: Excludes Boston Housing Authority (BHA) and seven additional buildings governed by Trust agreements for which the City's Treasury Department is custodian.

City of Boston Proposed Portfolio



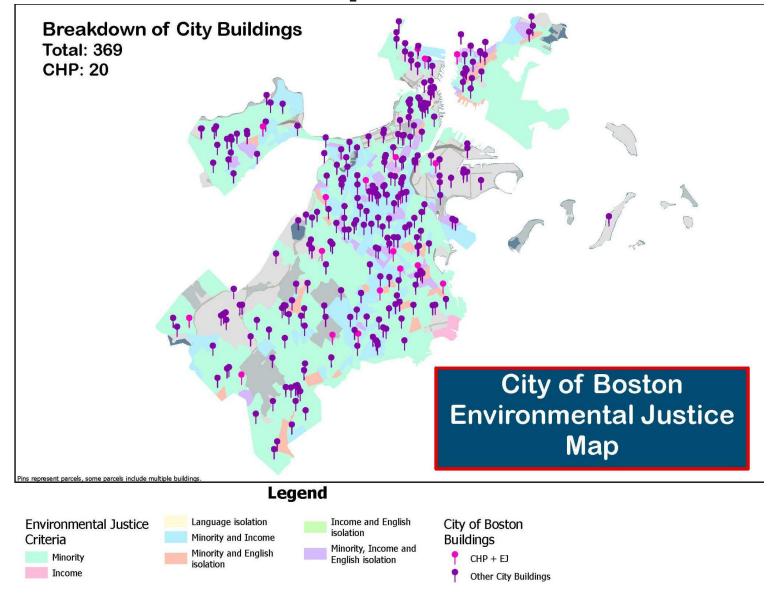
Blended Portfolio Emissions Standards

Calculated Blended Emissions Standards (kgCO2e/SF/yr)								
	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049	2050-		
Default Emissions Standards per Building (Education)	3.9	2.4	1.8	1.2	0.6	О		
Blended Portfolio Emissions Standards	5.2	3.2	2.3	1.5	0.8	0		
Absolute Emissions Limit (MtCO2e/yr)	91,946	55,967	41,341	27,272	13,589	O		

- Boston Public Schools represent roughly ¾ of all City of Boston municipal property square footage subject to BERDO
- 2023 Portfolio Emissions: ~77,000 MtCO2e
 - The City of Boston is on target to comply the emission standards across the proposed portfolio for the first compliance period starting in 2025
 - o In 2023, carbon emissions from the buildings in the proposed portfolio were roughly 16% below the 2025 blended emission target.

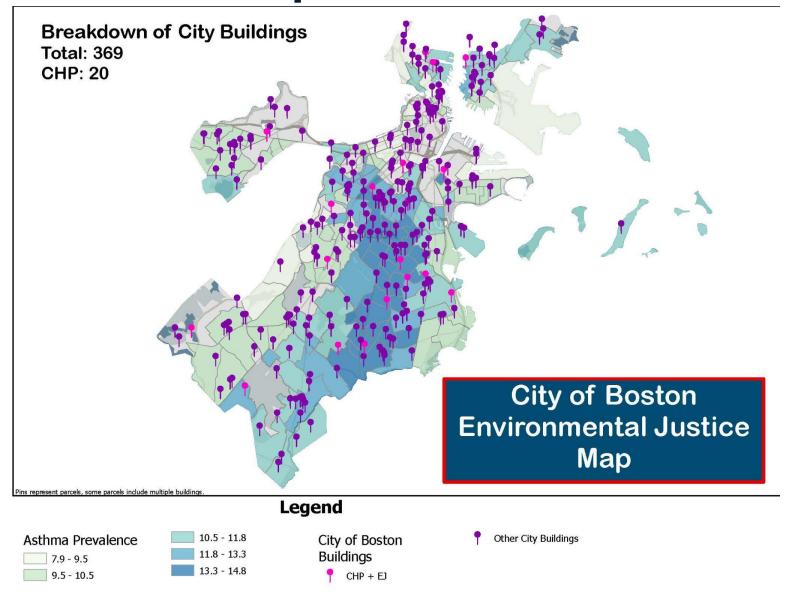
Environmental Justice Map





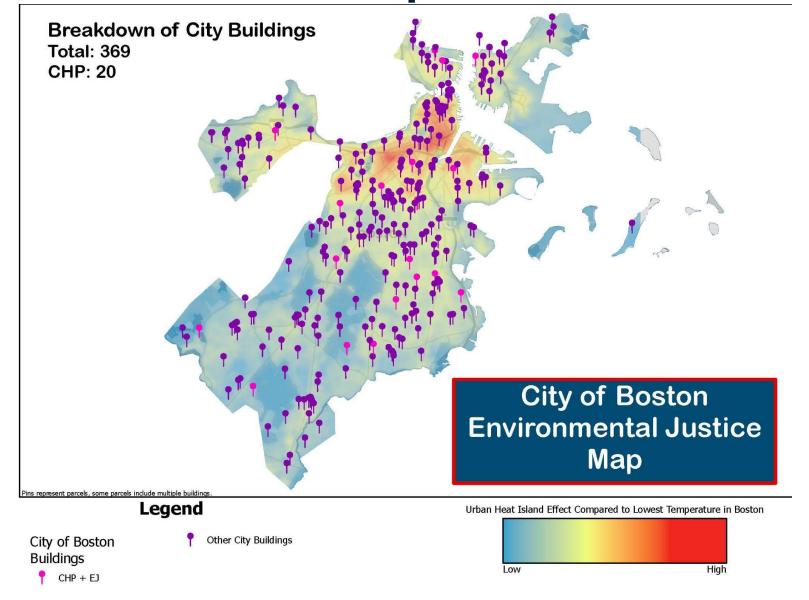
Asthma Prevalence Map





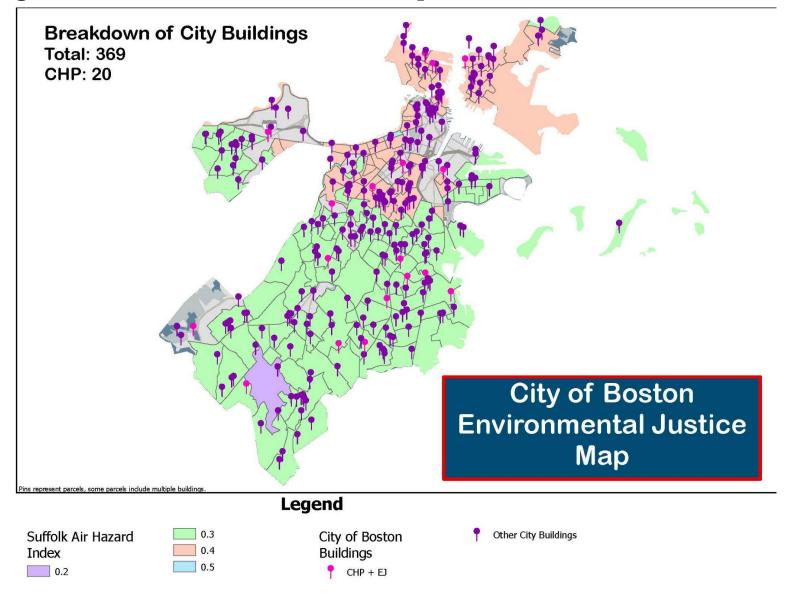
Urban Heat Island Index Map





Respiratory Hazard Index Map







Energy Efficiency and Decarbonization Initiatives

- Renew Boston Trust:
 - <u>Phase 1 (Pilot Phase):</u>
 - Elimination of roughly 1,300 metric tons of annual carbon emissions
 - Installation of three solar arrays through a PPA (BPD HQ, Tobin Community Center, and Roslindale Community Center)
 - ° Phase 2:
 - Elimination of roughly 1,000 metric tons of annual carbon emissions.
 - Conversion of the primary heating for six fire houses from natural gas to electric air-source heat pumps
 - Phase 3 (Ongoing):
 - Replacement of 14,000 lights at City Hall, saving 1.3 million kWh of electricity per year
 - Additional seven solar arrays through a PPA (5 schools, Library, and BPD HQ)
 - First time performing work in BPS Buildings



Energy Efficiency and Decarbonization Initiatives

- Mayor Wu's <u>Executive Order Eliminating the Use of Fossil Fuels in New Construction and Major</u> <u>Renovations of City Buildings</u>
- Facilities Condition Assessments (BPS and non-BPS buildings)
- Major Construction Projects
 - <u>Carter School (New Construction)</u>
 - Horace Mann School for the Deaf and Hard of Hearing (Major Renovation)
 - Josiah Quincy Upper School (New Construction)
 - Philbrick-Sumner School (Major Renovation)
 - 26 Court Street (Major Renovation)
 - Dorchester Community Center (New Construction)
 - Hyde Park and Connolly Branches of Boston Public Libraries (Major Renovation)
 - Fire Department Engines 3 and 17 (New Construction)
 - Many more!

Combine Heat and Power (CHP) Units

В

Program History

- Initial fleet installed between 2002-2008
- Maximum fleet size: 29 units
 - 5.9 MW generating capacity
- Current fleet size: 20 units
 - 4 MW generating capacity

Benefits:

- Enrolled in Demand Response (DR) program
 - Helps reduce grid stress in the summer months during system peak times
- Reduces operating costs
 - \$4.7 M in net savings from FY15-23 (total electric savings and DR revenue minus O&M and gas costs)
- Waste thermal heat is used to reduce stress on existing hydronic heating equipment

Downsides:

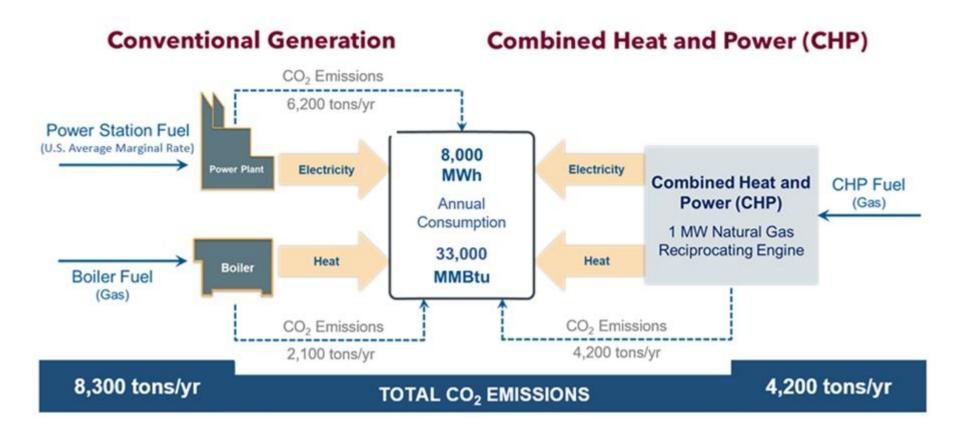
- Increased Type 1 (direct site) carbon emissions
- Ongoing specialized O&M contracts
- End-of-life strategy vis-a-vis Mayor's Fossil Fuel Free EO



Ohrenberger School 250 kW Unit: Controls upgraded in Summer 2024 to allow for participation in demand response program and improved data tracking



Conventional Generation vs. CHP: CO₂ Emissions



This diagram illustrates the CO2 emissions output from electricity and useful thermal energy generation for two systems: (1) a fossil-fuel-fired power plant and a natural gas-fired boiler and (2) a 1 MW reciprocating engine CHP system powered by natural gas. The separate heat and power system emits a total of 8,300 tons of CO2 per year (2,100 kilotons from the boiler and 6,200 kilotons from the power plant), while the CHP system, with its higher efficiency, emits 4,200 tons of CO2 per year. Source: EPA CHP Benefits





- Heat Utilization (percentage of waste heat used in hydronic loops):
 - 55+%
 - Variable by season but highest in winter
- Average total efficiency (energy output / energy input):
 - New Units: 80%
 - Tested and monitored data from 2016 shows range of 40-70%
- Emission Controls and Standards:
 - Periodic inspection and replacement of exhaust catalyst
 - Emissions standards on units with catalysts (50+%) maintained based on exhaust temperature and oxygen sensors
- Resiliency Benefits:
 - Most units are flood-protected (located on rooftops)
 - Old Cleveland (ground-floor location) at 9 Charles Street in Dorchester is not in a flood zone
 - West Roxbury Units (next slide): equipped with absorption chillers
- No units are black-start capable

School	Capacity (kW)	Age (Years)	Annual Utilization Hours (%)
Blackstone	250	4	38
Charlestown	250	3	41
Cleveland Old	150	20	46
English	150	20	41
English	250	20	37
Hennigan	150	3	36
Hennigan	50	2	35
Holland	250	3	46
Jackson Mann #1	250	17	23
Jackson Mann #2	250	17	32





Additional Questions Received Today:

- 1. Are any of the CHP units utilized for standby power in the event of a power outage?
- 2. What is the plan for the units when they reach the end of their useful life (eliminated or replaced)?
- 3. What is the carbon footprint of the CHP units when compared to grid electricity + gas for heat today and in the future?
- 4. Emissions related to utilizing utility electricity will reduce over time. When will running the cogen equipment become more emissions-intensive than purchasing grid electricity?
- 5. Will a master plan be developed that considers carbon emissions for the City's cogen machines?

School	Capacity (kW)	Age (Years)	Annual Utilization Hours (%)
Kent	150	6	45
Lee	150	5	32
Marshall	250	21	30
Mattahunt	250	6	34
Madison Park	250	7	38
Murphy	150	12	39
Ohrenberger	250	3	0
Umana-Barnes	250	20	87
West Roxbury #1	150	9	17
West Roxbury #2 150		1	30

Residential Building Overview



First Application included <u>two</u> residential facilities: both owned by Boston Public Health Commission: Condos at Northampton Campus and the Morris Building on the Long Island Campus

Amended BERDO Building Portfolio Application for City of Boston contains <u>0 residential buildings</u>

Condos at Northampton Campus:

- Two buildings: 35 Northampton Street and 860 Harrison Avenue
- Current leases: 98 year term starting in 2013 between Trinity Financial and BPHC Northampton Square Development Corporation (non-profit)
 - Triple Net Leases: Trinity responsible for capital upgrades and utilities
 - Annual lease payments: \$400,000 for 860 Harrison Ave and \$1 million for 35 Northampton Street
- All units are rented to tenants who pay 30% of their income (60-70% AMI)
- Per BERDO, regulations, and policies, these buildings were <u>removed</u> from the portfolio and Trinity Financial will report their emissions and can answer questions about short and long-term capital plans and resident displacement concerns

Morris Building - Long Island Campus:

- Incorrectly labeled as Multifamily Housing but now correctly identified as a Residential Care Facility
- Long Island Campus is currently unoccupied





Charter Schools in City Buildings

- Lucy Stone Stone (BERDO ID: 102079)
 - No longer a Roxbury Prep Charter School
 - Will be added to the portfolio when a full year of utility data is available (2025)
- Hamilton School (BERDO ID: 102143)
 - Current Lease: Through June 30, 2025
 - BPS staffs building with custodial services and pays (and passes through) utility bill costs to tenant (BAIS Yaakov School)
- Dickerman School (BERDO ID: 102020)
 - Current Lease: Through June 30, 2028
 - Roxbury Prep (tenant) pays for utilities, repair work, and staffs building with custodians
 - Currently excluded from portfolio

<u> Decarbonization BPS Student Engagement:</u>

- Supported Madison Park Clean Energy Task Force
 - Undergoing curriculum design around green jobs
 - Students performing pre and post renovation energy audits
- Support for Boston Green Academy
 - Energy audits at the Old State House
- Community Benefits in Power Purchase Agreements
- Additional Opportunities

B

Additional Questions from October Review Board Meeting

Prioritizing Deferred Maintenance

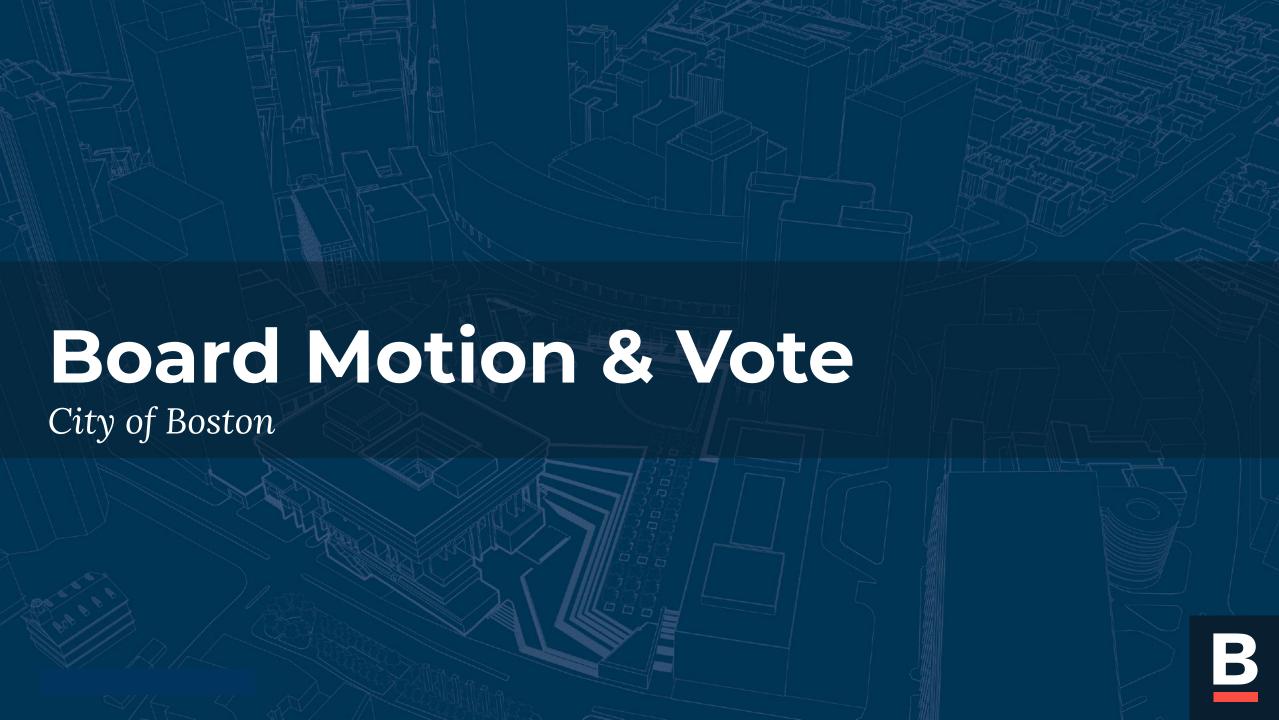
- Priority based on need and available operating and capital dollars
- Capital plans are developed in five-year increments
 - We are in Year 1 of the current five-year plan
- Operating budgets are approved by our Budget Office annual that building-owner department can use toward ongoing maintenance needs
 - Emergency needs receive the highest priority
- Visit https://www.boston.gov/departments/budget for more information

Separate Portfolios for Large (35k+ sq. ft) and Small City Buildings

- We considered different portfolio submissions but based on owner department(s) and building use type but not size
- The City is balancing the desire to implement emissions reduction projects in buildings that need them on various BERDO timeline against the need to streamline BERDO compliance and reduce administrative burden on City Staff.
- Ultimately we decided that the larger portfolio with all City buildings was the most sensible approach.













B

In-person Workshop

The BERDO Team held an in-person workshop at the Faneuil Branch of BPL in Brighton on December 10, 2024

We conducted 20 in-person building consultations organized into four tracks:

- Track 1: Getting started with BERDO and applying for free BERDO Reporting and Verification Services
- Track 2: Completing BERDO Reporting
- **Track 3:** Getting started with emissions compliance
- **Track 4:** Exploring flexibility measures

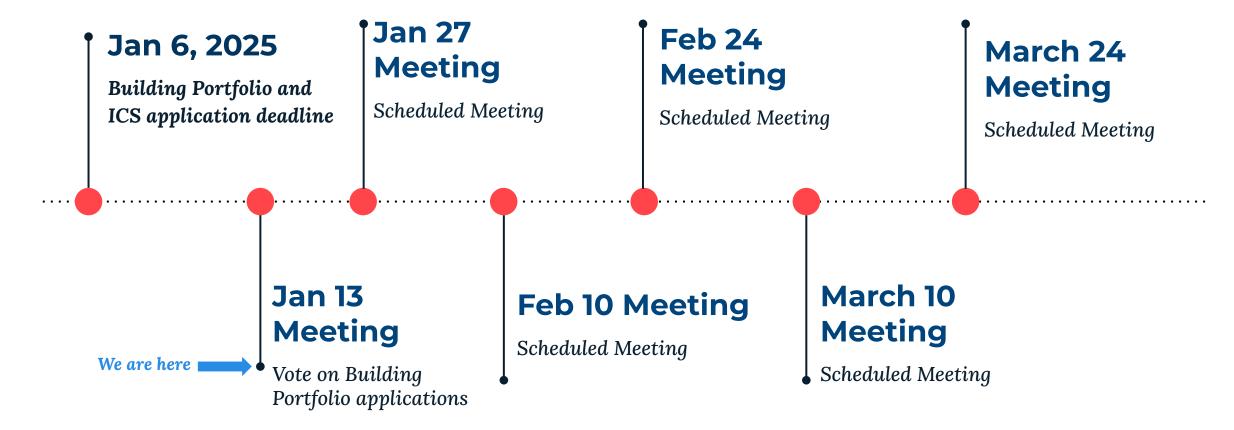
The BERDO Team will continue to hold this types of workshops throughout 2025!





Review Board Upcoming Timeline





Adjourn

Thank you! A recording and slide deck for this meeting will be available at boxen.gov/berdo-review-board.

