

Net Zero Carbon Zoning Draft for Adoption

BPDA x City of Boston Environment Department

Zoom Controls to Listen to Interpreters

(EN) Look for the interpretation icon (**globe**) at the bottom of your screen and select the language you want to hear.

(Cabovertdean) Djòbe íkune di interpretason (**un globu**) na parti inferior di tela y selesiona bu língua ki bu kre skuta reunion.

(Kreyòl Ayisyen) Chèche ikòn entèpretasyon ki gen fòm (**glòb**) anba ekran ou an epi seleksyone lang ou vle tandè a.

(Español) Busque el ícono de la interpretación (**globo**) en el borde inferior de su pantalla y seleccione el idioma en el que desea escuchar.

(Tiếng Việt) Tìm biểu tượng phiên dịch (**hình quả địa cầu**) ở phía cuối màn hình của bạn và chọn ngôn ngữ bạn muốn nghe.

(简体中文) 查找屏幕底部的翻译图标 (**地球仪**)，然后选择您想听到的语言。

(繁體中文) 查找屏幕底部的翻譯圖標 (**地球儀**)，然後選擇您想听到的語言。

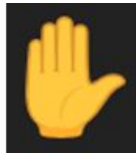


Zoom Meeting Info + Tips

- **The BPDA will be recording this meeting** and posting it on the BPDA's project webpage. If you do not wish to be recorded during the meeting, please turn off your microphone and camera.
- **Zoom controls are available at the bottom of your screen.** Clicking on these symbols activates different features.
- **Use raise hand function** (dial *9 if joining by phone) **and wait to be called upon to unmute** (dial *6 if joining by phone) before asking your question or providing comment.



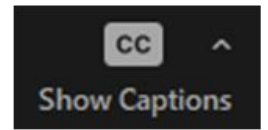
Mute/unmute



Raise hand to get in line to ask a question or provide comment



Turn video on/off



Turn on captions



Please Ask for Clarification!

Ask questions in the chat along the way!

Ask for us to clarify any terms or concepts we discuss!

We want to make sure that what we cover is accessible to everyone so you can all share your informed feedback.



NZC Team Presenters



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Planner
BPDA



Hannah Payne
Director of Carbon
Neutrality
City of Boston



Travis Anderson
Senior Infrastructure
and Energy Planner
BPDA

Agenda

1. City of Boston's Carbon Neutrality Goals

- a. What are Building Emissions?
- b. What is Carbon Neutrality?

2. What is Boston already doing to decarbonize new buildings?

- a. Building Emissions Reduction and Disclosure Ordinance (BERDO)
- b. Updated State Building Code

3. Net Zero Carbon Zoning Proposal

- a. Feedback & Response
- b. Updates to Proposed Zoning Amendment

4. Timeline & Next Steps

What are building emissions?

Building emissions refer to the polluting gases that come from heating, cooling, cooking, and generating electricity used in buildings.

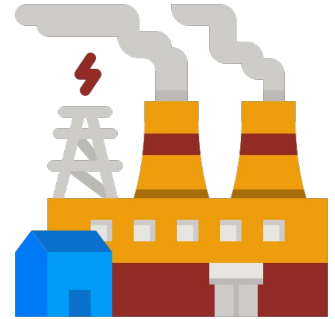
*Some fuels are burned **inside** your building.*

EX: gas from stove



*Some fuels are burned **outside** your building.*

EX: generate electricity.



Types of Emissions from Buildings

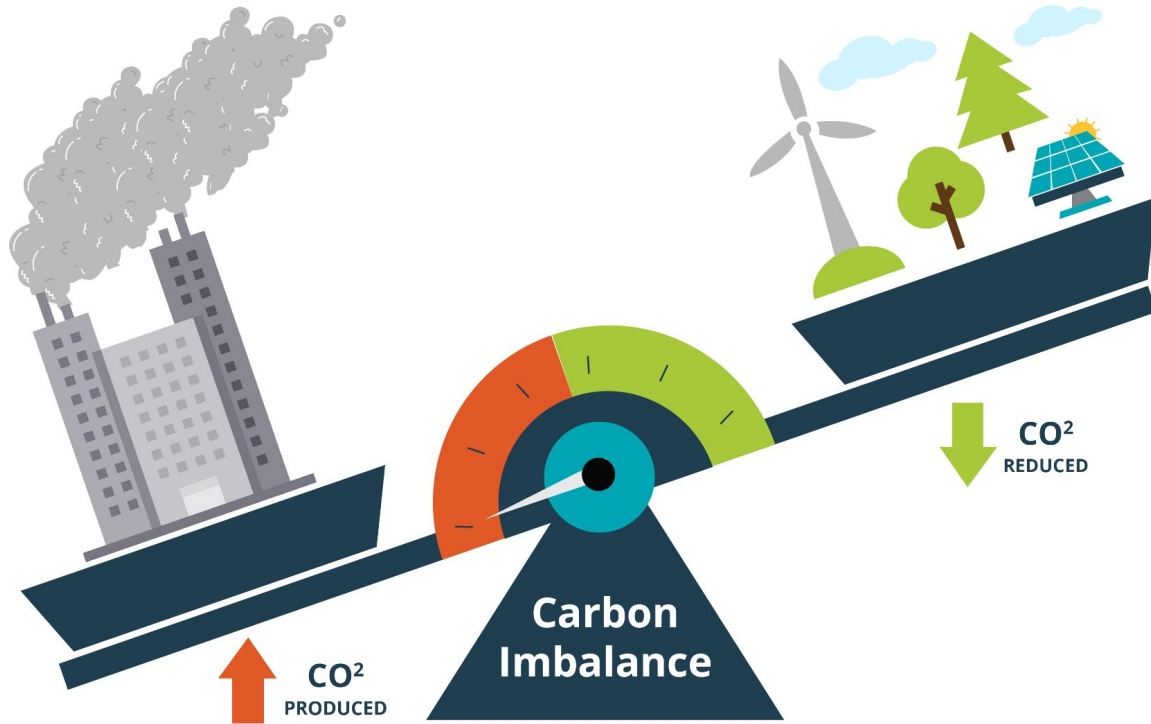
Embodied Carbon: Greenhouse Gas Emissions associated with stages of products' lifespan - extraction, production, transport, and manufacturing. Embodied Carbon accounts for almost half of a building's total GHG emissions over its lifetime.

Vs.

Building Emissions: Greenhouse Gas Emissions associated with a building's operations.



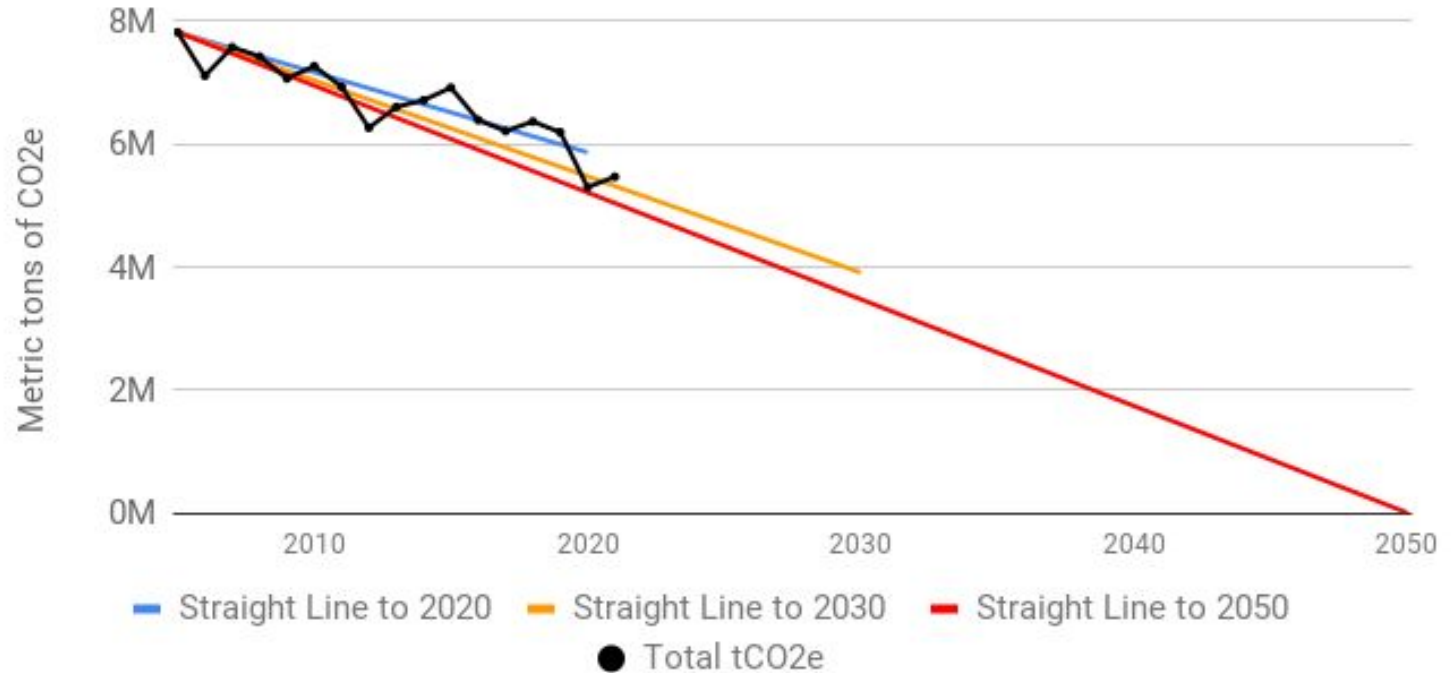
The City of Boston aims to achieve carbon neutrality by 2050.



Present

The City of Boston aims to achieve **carbon neutrality by 2050**.

BOSTON COMMUNITY-WIDE EMISSIONS

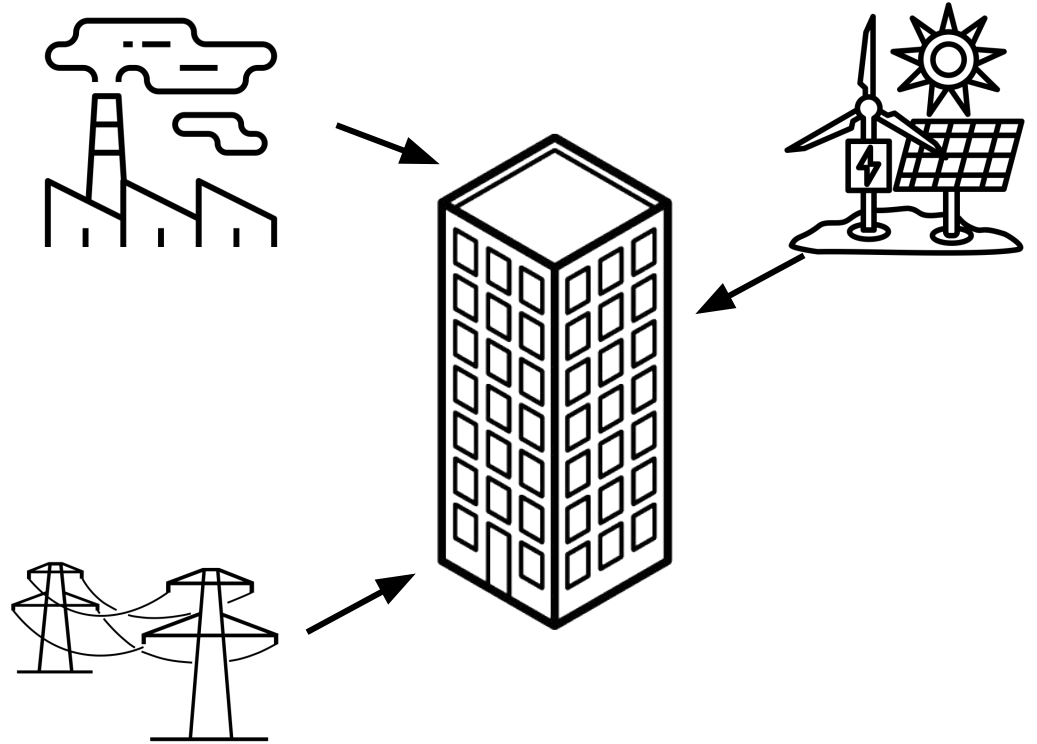


Building Emissions

Existing buildings account for nearly **70% of our community's carbon emissions**.

Fossil fuels and electricity power the majority of buildings' operations.

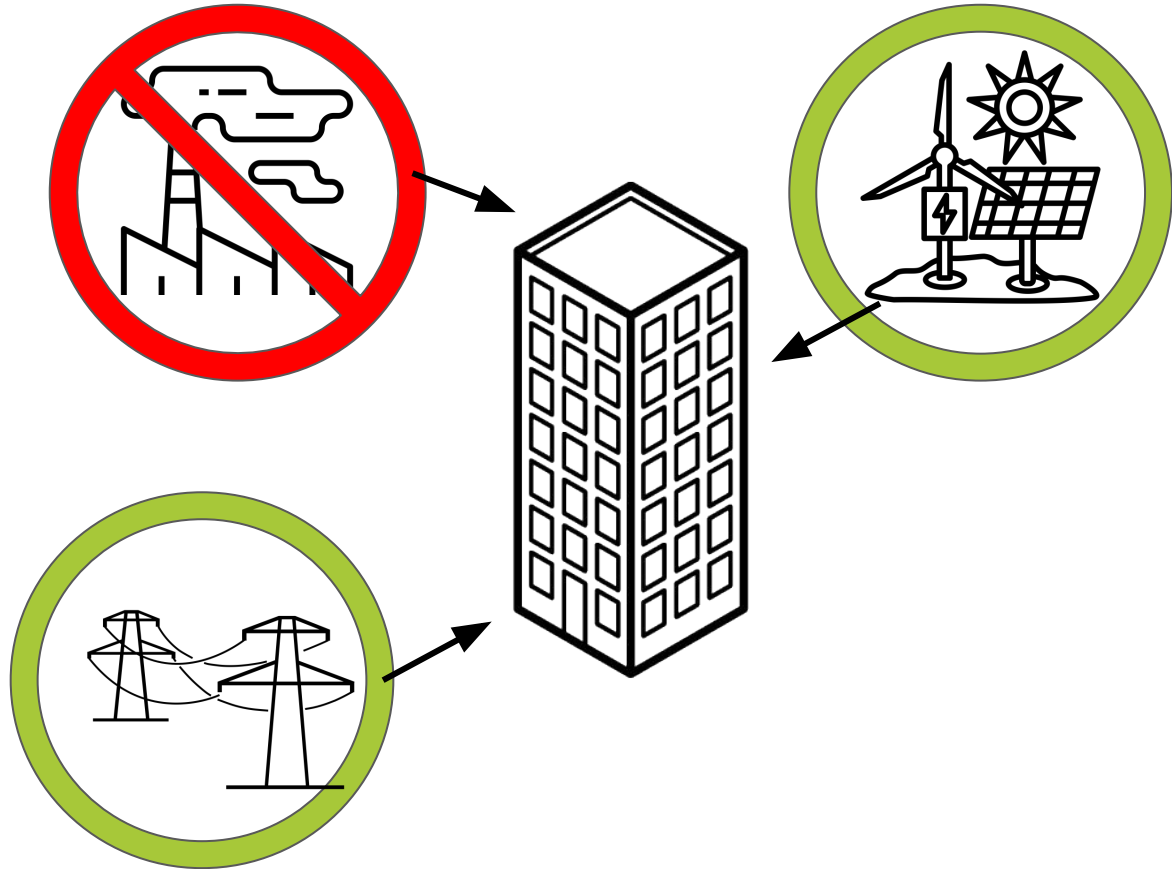
Ex: Heating and cooling systems



Reducing Buildings' Emissions

Buildings can be designed to minimize emissions and climate impact by:

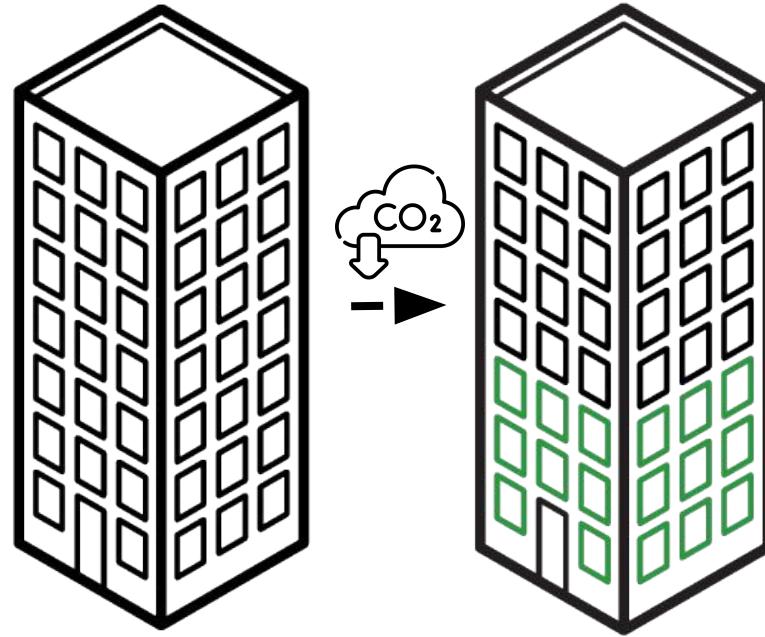
1. Increasing efficiency
2. Reducing reliance on fossil fuels (e.g. decarbonize)
3. Using renewable energy



Typical building's power supplies

What is Boston already doing to decarbonize new buildings?

Boston's Building Emissions Reduction Disclosure Ordinance (BERDO) sets annual emissions limits on existing buildings



Typical Building

BERDO

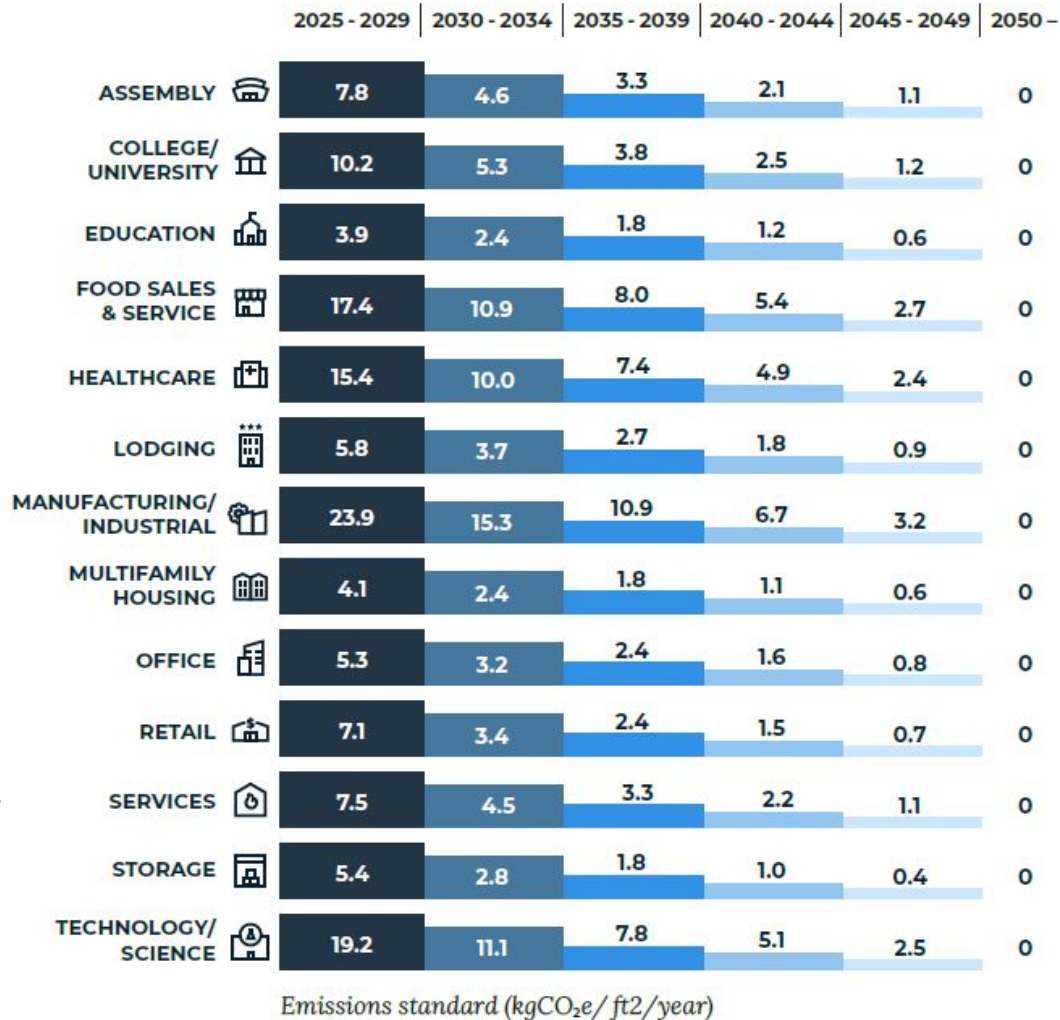
→ *Reduces emissions*

BERDO applies to:

- residential buildings with 15+ units
- non-residential buildings >20,000 SF

BERDO tracks and enforces emissions reductions after a building is in operation (i.e. up and running).

All uses' emission standards →

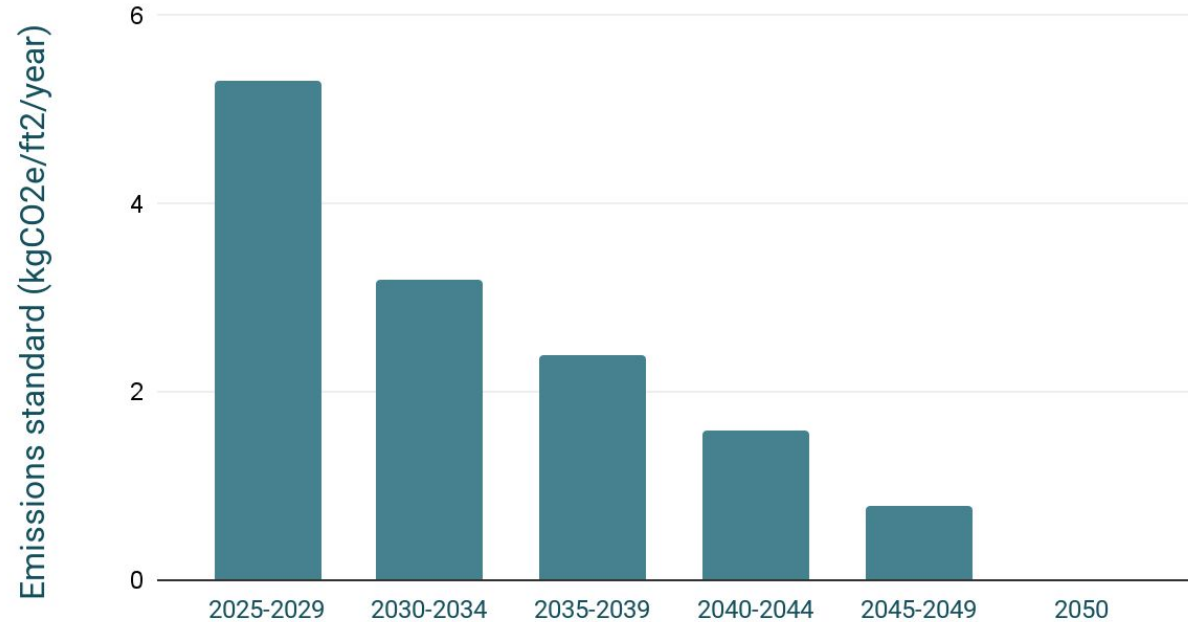


Boston's BERDO sets annual emissions limits on existing buildings

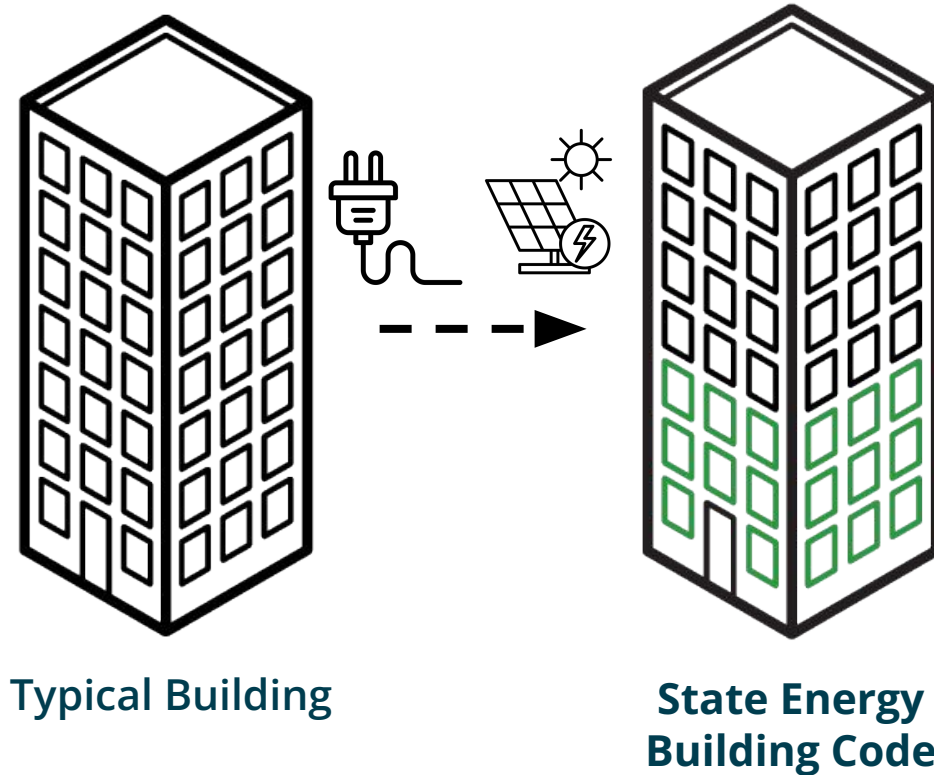
The annual emissions limits are based on different types of building uses, which meet declining emissions standards and achieve net zero emissions by 2050.

For example 

Office's Emissions Standard by Year



The State Energy Code regulates energy efficiency in new construction.



Typical Building

State Energy
Building Code

→ *Improves energy efficiency*

Municipalities can choose from 3 energy codes:

Base Energy Code

Current Base
Energy Code

Updated Stretch Code

Current Base
Energy Code



Stretch Code
Amendments

Specialized Stretch Code

Current Base
Energy Code



Stretch Code
Amendments

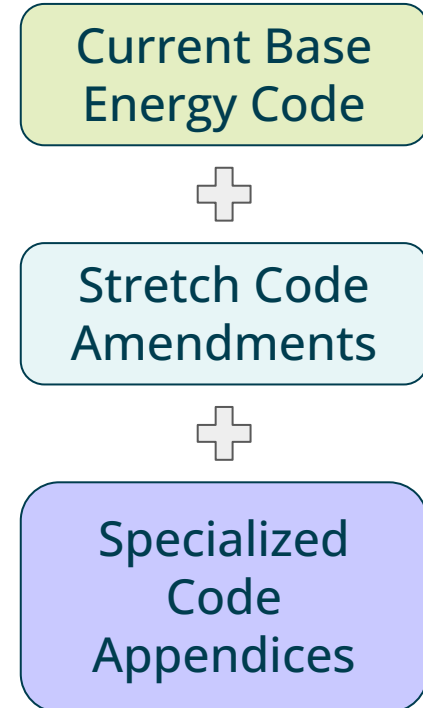


Specialized
Code
Appendices

Boston adopted the Specialized Stretch Energy code (went into effect Jan. 1, 2024).

Boston adopted the ***most stringent energy code*** allowed in Massachusetts.

Specialized Stretch Code

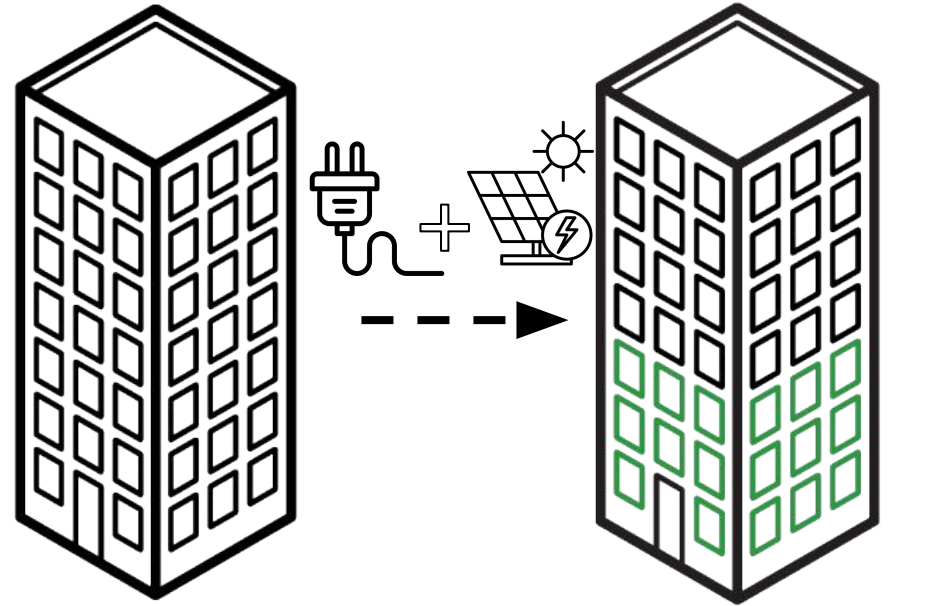


Specialized Stretch Energy Building Code

Requires very high levels of energy efficiency for all new construction.

1. **Incentivizes electrification:**
Mixed fuel buildings must pre-wire* for electrification and install solar where feasible.

*install electrical infrastructure during construction to support future electrical demands



Typical Building

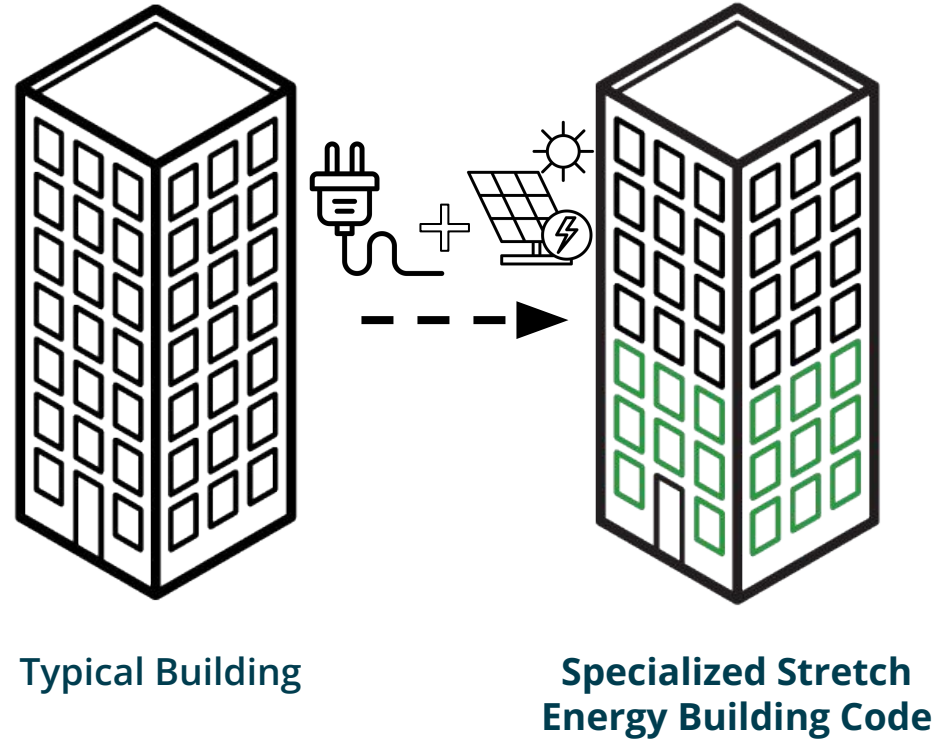
Specialized Stretch Energy Building Code

→ Improves energy efficiency

Specialized Stretch Energy Building Code

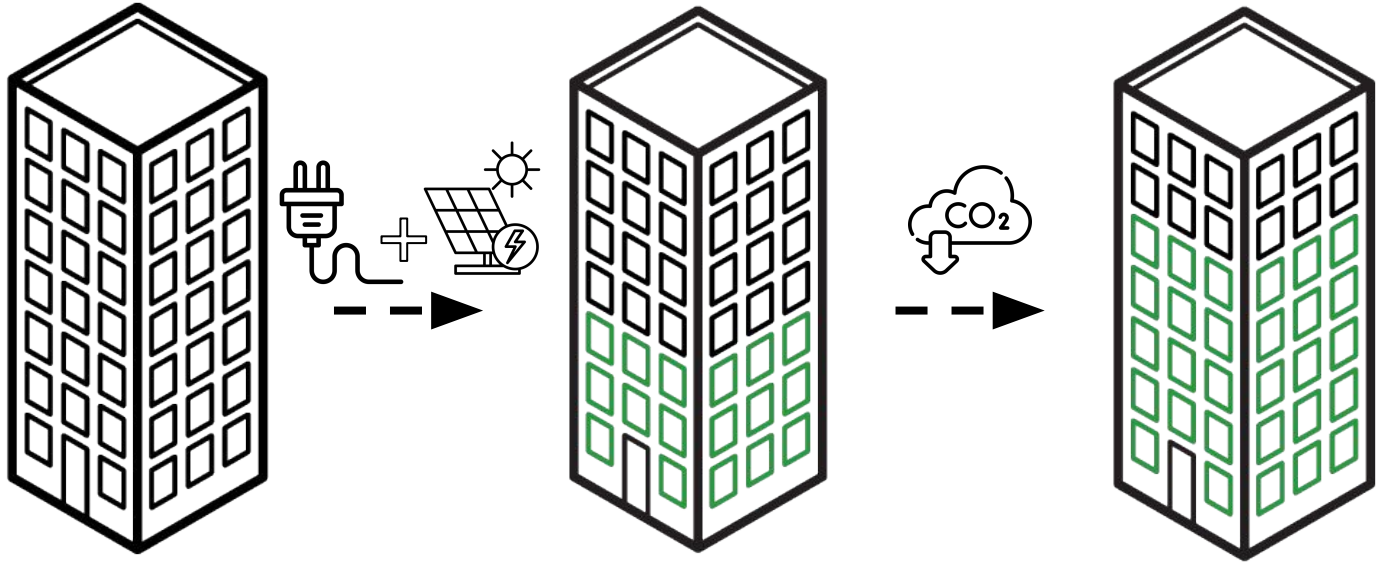
Requires very high levels of energy efficiency for all new construction.

2. **Passive House Certification** required for all new multifamily housing over 12,000 sf. Requires reduction of energy use for space heating and cooling



→ *Improves energy efficiency*

What is Boston already doing to decarbonize new buildings?



Typical Building

**Specialized
Stretch Energy
Building Code**

**Specialized Stretch
Energy Building
Code + BERDO**

An architectural rendering of a modern city street. The central focus is a tall, curved building with a glass facade and gold-colored accents. The building's design is futuristic, with rounded corners and a mix of materials. The street is wide and paved, with a sidewalk on the left where several people are walking. A dog is also visible on the sidewalk. On the right, there are more buildings, including a brick one, and a dark car is parked. The scene is set during the day with soft lighting, suggesting a pleasant urban environment.

How can zoning support the City's decarbonization goals?

NZC Comment Period Summary

Since the draft was released on April 26, 2024...

- We had a 32 day comment period (closed May 28, 2024):
 - Public Meeting
 - 4 Office Hours
- We received:
 - 84 comments through feedback form
 - 8 comment letters

All feedback received by the BPDA can be found on the NZC [website](#).

NZC Comment Period Summary

Common Questions & Feedback:

1. Feedback on the date the zoning would go into effect
2. More clarity on the review process and expectations
3. Feedback on the embodied carbon reporting
4. Concern about the impact on development
5. Feedback on sustainability certification systems

NZC Final Draft

Now we will walk through the final draft and highlight

1. What has changed and why

2. What hasn't changed and why

And respond to the feedback we heard.

Goals for Net Zero Carbon Zoning

1. **SUPPORT** decarbonization of new buildings
2. **REDUCE** future expensive building retrofits
3. **ACCELERATE** adoption of renewable energy
4. **CLIMATE LEADER** – Position Boston at the forefront of building sustainability

Existing Zoning: Article 37 – Green Building

1. Requires LEED Certifiable

Applicable to Large Projects (i.e. create/add >50,000 SF)

- Ensures that major building projects are designed and constructed to minimize adverse environmental impacts

Article 37 – Green Building + Net Zero Carbon

1. Continues LEED Certifiable (no change)

+

2. Requires net zero building emissions

+

3. Requires reporting on embodied carbon

Continue LEED Certifiable Requirement

Feedback on maintaining LEED Certifiable:

- Require more stringent standard → LEED Gold
- Support maintaining LEED Certifiable (as proposed)
- Remove LEED standard to allow flexibility to pursue other sustainability certification pathways

Why are we maintaining the existing requirement?

- Recognize importance of additional sustainability review
- Familiarity with review process
- Allow flexibility to pursue other rigorous sustainability certifications

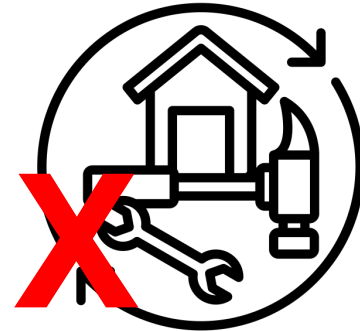
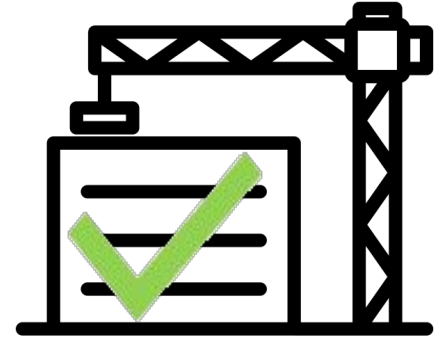
Net Zero Carbon Draft Overview

Applies to new construction **filed on/after July 1, 2025:**

- New buildings >20,000 SF; or
- New building with 15 units +; or
- Additions >50,000 SF

Does not apply to:

- Renovations
- Changes of use (e.g. office to residential conversions)
- Additions <50,000 SF



Why July 1, 2025 for project filings with the BPDA?

- The project **filing** requirement recognizes the timelines of existing projects under review and establishes **clear expectations** based on filing date, as opposed to being subject to Net Zero Carbon standards mid-review.

July 2025 effective date:

- Continues to allow project teams to prepare ahead of adoption
- Continues to allow time for planning and coordination between development review and electrical grid capacity
- Maintains very similar timeline as previous proposal – Jan.1 BPDA Board Approval

Feedback on Effective Date

Feedback:

1. Align with the timeline of the “greening of the electric grid”
2. Concern that the proposal will stall desired development in Boston
3. Supply chain & electric grid capacity disruption concerns

Response:

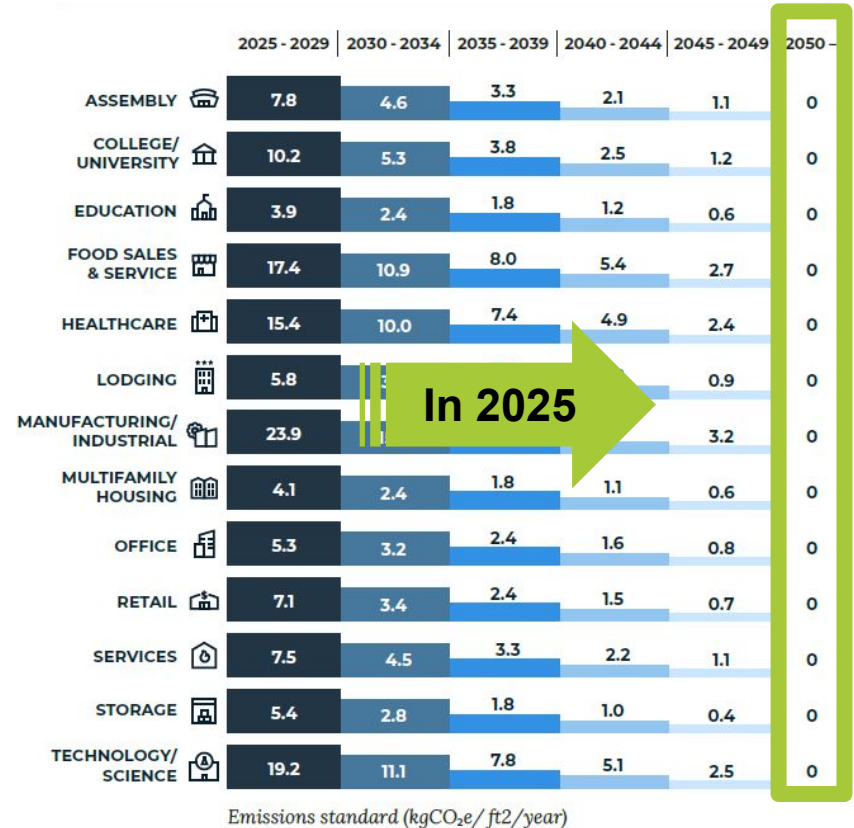
- The Mayor and the City’s Climate Action Plan have identified achieving carbon neutrality for new buildings as a priority.
- High Ventilation and General Manufacturing Buildings have Phased-in requirements to achieve Net Zero Carbon emissions over-time
- Building Code is main driver for mechanical system needs

Require Net Zero Carbon Emissions

- New project filings will be required to meet **Net Zero Carbon** emissions standard (i.e. BERDO 2050) starting July 1, 2025.

Once a building is in operation:

- Compliance with net-zero emissions will be demonstrated through BERDO compliance mechanisms and annual reporting.



Require Phased-in Net Zero Emissions

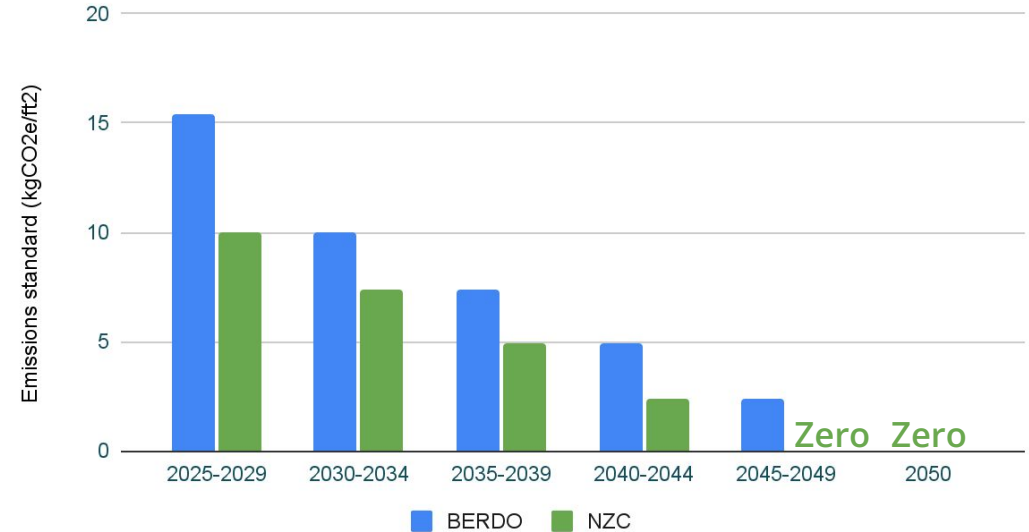
For Hospital and General Manufacturing Uses:

- In 2025 - 2029 require compliance with 2030-2034 building emission standards stepping down to Net Zero emissions by 2045.

Why?

- Complexities related to mechanical systems to achieve zero emissions
- Specialized equipment and unique energy demands

Hospital's Phased-in Emissions Standard



Require Phased-in Net Zero Emissions

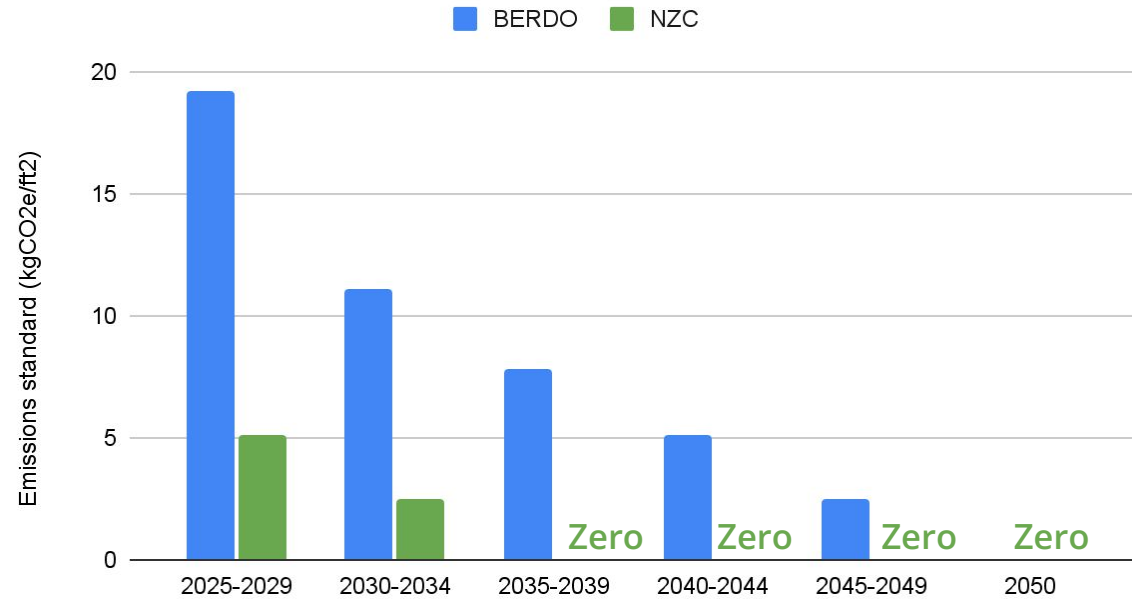
For Labs (high ventilation buildings):

- Require compliance with 2040 -2044 building emissions standards in 2025, stepping down to Net Zero in 2035

Why?

- Complexities related to unique energy demands
- Technology constraints related to peak energy demands

Lab's Phased-in Emissions Standards



Introduce Embodied Carbon Reporting

1. Large buildings (> 50,000 SF) required to provide structure and **enclosure** life cycle assessment.
2. Smaller buildings (<50,000 SF) required to report on their embodied carbon through a checklist/sustainability narrative.

EX: What is your low carbon and healthy material strategy?



Introduce Embodied Carbon Reporting

Feedback:

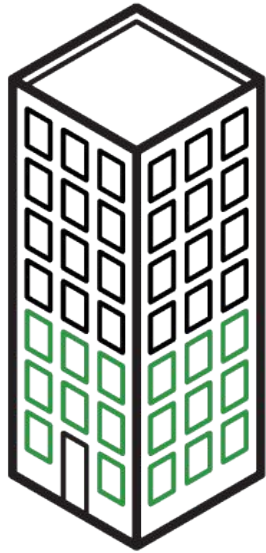
- Support for embodied carbon reporting & suggestions on how to collect data
- Align with Cambridge and Newton's embodied carbon reporting standard
- Introduce embodied carbon requirements in addition to reporting

Next Steps:

- Collaborate with industry leaders on methodology to collect embodied carbon data.
- Align with Cambridge and Newton's existing standards
- Obtain embodied carbon data to establish future requirements

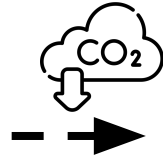


Without Zero Net Carbon Zoning → ZERO in 2050



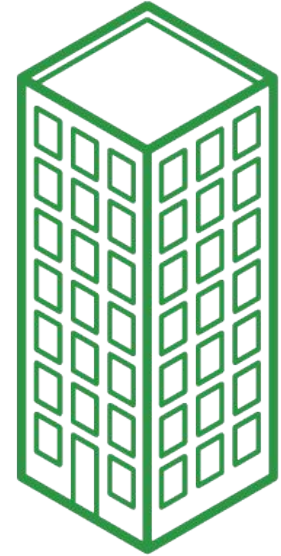
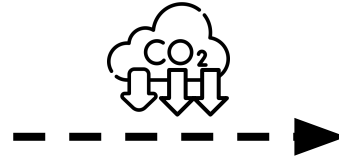
**Specialized
Stretch
Energy
Building Code**

2024



**Specialized Stretch
Energy Building
Code + BERDO**

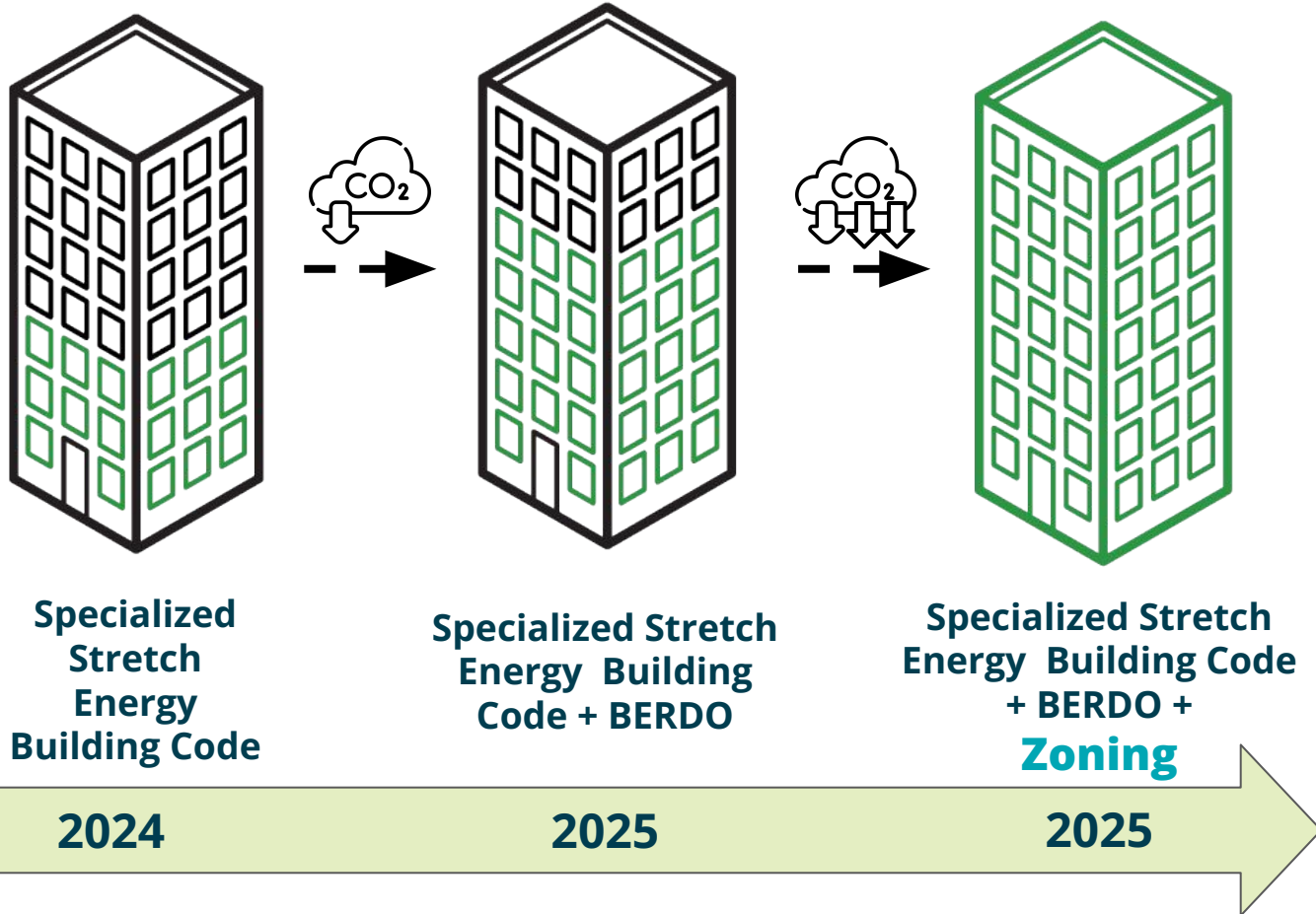
2025



**Specialized Stretch
Energy Building
Code + BERDO**

2050

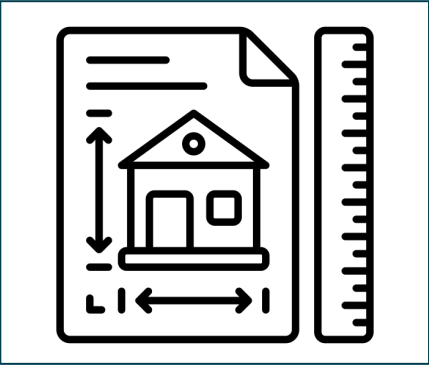
With Zero Net Carbon Zoning → ZERO in 2025



How do buildings demonstrate compliance during BPDA review?

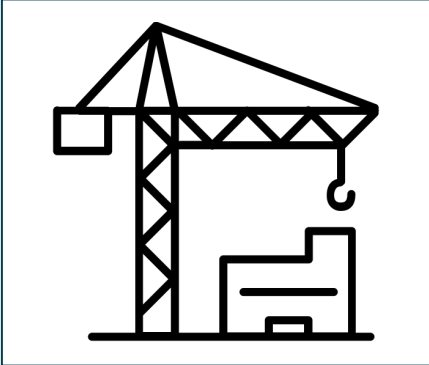
Green Building Review Process - NZC Compliance

Planning



NZC Zoning
+
Stretch Energy Code

Construction



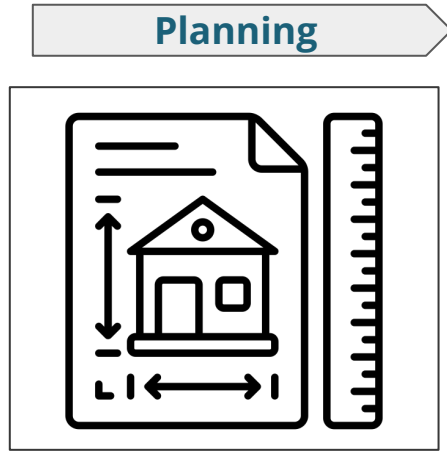
Final BPDA Design
Review
+
Stretch Energy Code

Built



BERDO

NZC Compliance - Net Zero Ready



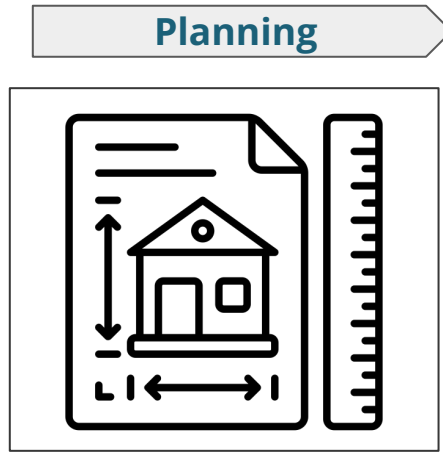
NZC Zoning

Projects will demonstrate they are **designed** to be Net Zero once they are in operation.

In others words, they will demonstrate that they are **Net Zero Ready**.

How will projects demonstrate they are Net Zero Ready?

3 Phases of Review and Compliance:



NZC Zoning

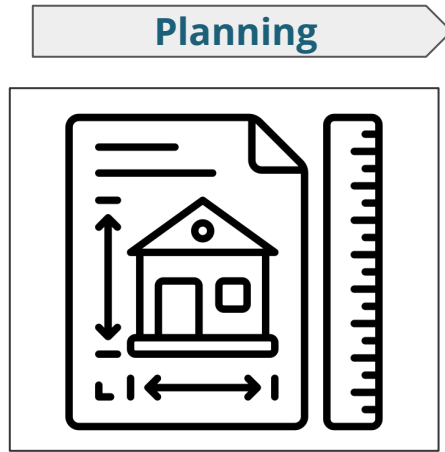
1. Initial Filing:

- a. Sustainability Narrative with Energy Performance Model
- b. Climate Resiliency / Net Zero Carbon Ready Checklist
- c. Preliminary Embodied Carbon Narrative
- d. Preliminary embodied CO₂e emissions structural life cycle assessment

What does this mean?

- *Projects will work with the BPDA to determine anticipated building use to establish emissions standard*
- *Determine appropriate strategies to achieve emissions standard*
- *Project is NZC Ready at end of review*

How will projects demonstrate they are Net Zero Ready?



NZC Zoning

3 Phases of Review and Compliance

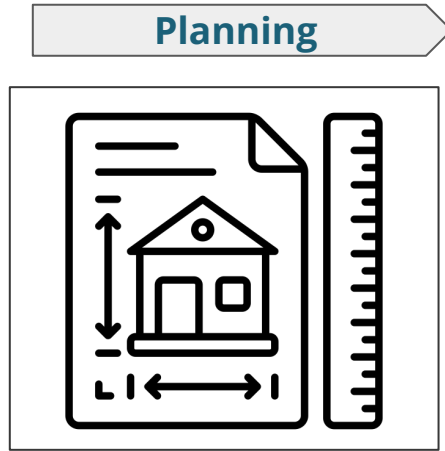
2. Design/ Building Permit Filing

- Updated Sustainability Narrative with Preliminary Performance Model
- Updated Climate Resiliency / Net Zero Carbon Ready Checklist
- Updated Embodied Carbon Narrative
- Updated embodied CO₂e emissions structural life cycle assessment

What does this mean?

- *Verify Project has maintained NZC Readiness*
- *Approve Article 37 Design compliance ahead of construction permit filing*

How will projects demonstrate they are Net Zero Ready?



NZC Zoning

3 Phases of Review and Compliance

3. Construction / Certificate of Occupancy Filing

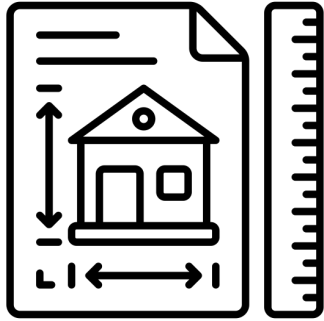
- a. Net Zero Greenhouse Gas Emissions Ready Acknowledgment Letter
- b. Updated Design Filing reflecting built conditions

What does this mean?

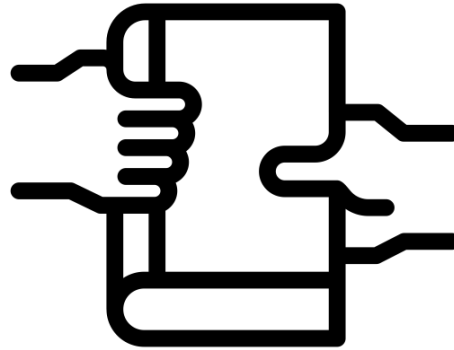
- *Verify Project has maintained NZC Readiness*
- *Approve Article 37 Construction compliance ahead of construction Certificate of Occupancy filing*

NZC Compliance to BERDO

Planning



NZC determines if a building is **Net Zero Ready**.



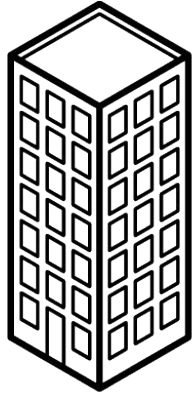
Built



BERDO reviews **annual compliance** with the emissions standard established in NZC.

Example of NZC Compliance to BERDO

Filing



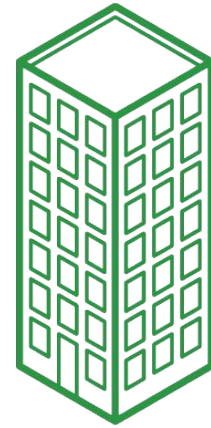
In August 2025, a office files with the BPDA.

Planning



The project will demonstrate that their building is designed to be ready to meet Net Zero Carbon once in operation.

Built



BERDO reviews annual compliance with the emission standard established in NZC.

How can a building be Net Zero under BERDO?

BERDO Compliance Mechanisms: Available to NZC buildings



Direct emissions reduction in the building

Implement building retrofits or improvements. (e.g. improving insulation, upgrading heating and cooling systems)



Renewable energy

Install renewable energy (e.g. solar) or purchase eligible renewable energy to reduce emissions from electricity only.



Alternative Compliance Payments

Alternative Compliance Payments (ACPs) will be paid into the new Equitable Emissions Investment Fund to support building decarbonization projects that prioritize benefits to Environmental Justice communities in Boston. ACPs are set at \$234/ton of carbon dioxide.

Renewable Energy Options under BERDO

In all cases, eligible renewable energy can only be used to reduce emissions from electricity.

Renewable Energy Options	Key Requirements
Boston Community Choice Electricity (BCCE)	MA Class I RECs purchased on behalf of residents and businesses enrolled in either the standard or Green 100 options of the BCCE program.
MA Class I Renewable Energy Certificates (RECs)	MA Class I RECs bought and retired independently or as part of a Power Purchase Agreement.
Power Purchase Agreement (PPA) outside the ISO New England grid	<p>Energy contract requiring the purchase of both electricity and its associated RECs. This includes virtual PPAs.</p> <p>PPAs need to be signed prior to the commercial operation of the renewable energy project (additionality requirement)</p>
Local renewable generation	<p>Rooftop solar, community solar, or other local renewable generation.</p> <p>REC retirement is not required if: (a) purchasing from solar system in Eastern MA that began operation before 2024; or (b) purchasing from any type of non-emitting renewable energy system located inside the City of Boston.</p>



Next Steps

Next Steps

1. **BPDA June 13 Board, July Zoning Commission**
2. **Embodied Carbon Data Collaboration & Collection**
3. **Develop Equitable Electrification Plan**

* All feedback comments can be found on our [website](#) *

If you have any questions, please reach out to:

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Astrid Walker-Stewart astrid.walker-stewart@boston.gov

Questions?