

# Net Zero Carbon Draft Zoning

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.

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

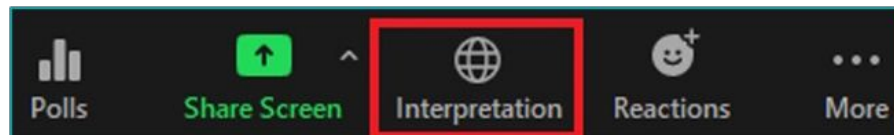
**(Kreyòl Ayisyen)** Chèche ikòn entèpretasyon ki gen fòm (**glòb**) anba ekran ou an epi seleksyone lang ou vle tandè a.

**(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。

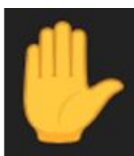


# Zoom Meeting Info + Tips

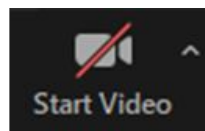
- **The BPDA will be recording this meeting** and posting it on the BPDA's project webpage. If you do not wish to be recorded during the meeting, please turn off your microphone and camera.
- **Zoom controls are available at the bottom of your screen.** Clicking on these symbols activates different features.
- **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.



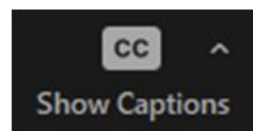
Mute/unmute



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



Astrid Walker-Stewart  
Zoning Reform  
Planner  
BPDA



Hannah Payne  
Director of Carbon  
Neutrality  
City of Boston



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

## 3. Draft Net Zero Carbon Zoning Proposal

- a. Continues LEED Certifiable
- b. Requires net zero building emissions
- c. Requires reporting on embodied carbon

## 4. Timeline & Next Steps

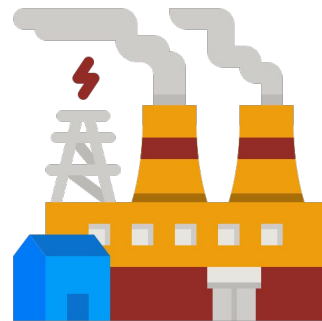
# What are building emissions?

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, like gas in your boiler, hot water heater, or stove



Some fuels are burned **outside** your building to generate electricity or to generate district steam or chilled water.



# 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.

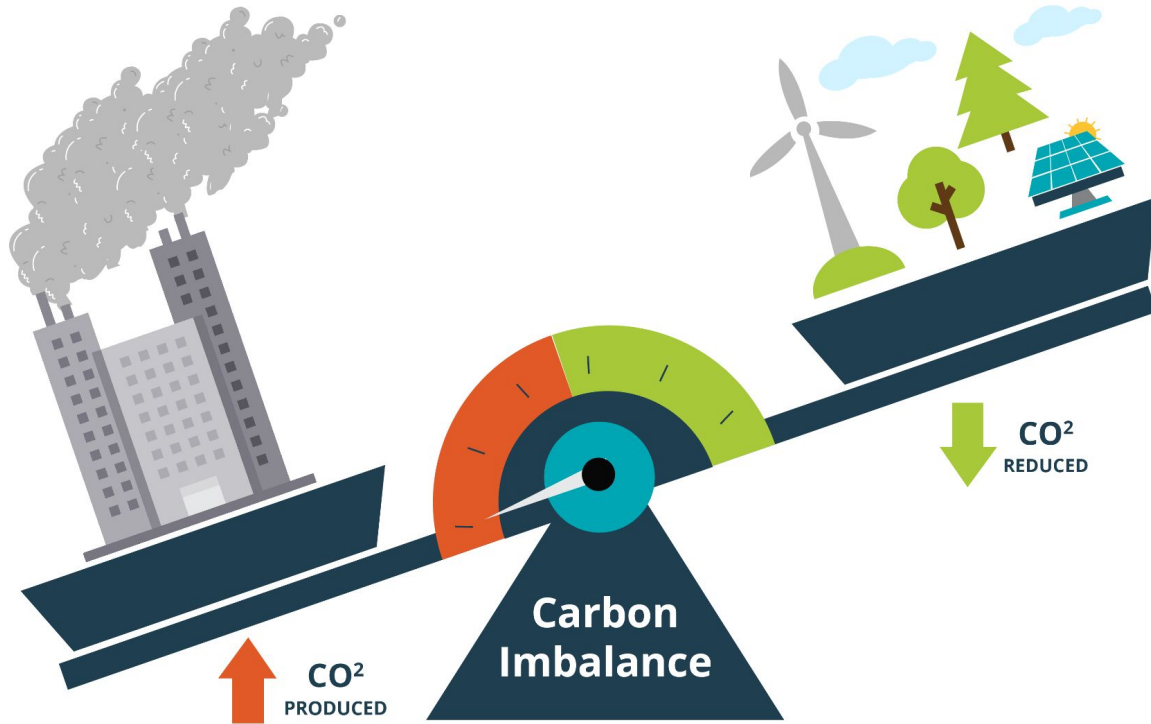
Vs.

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





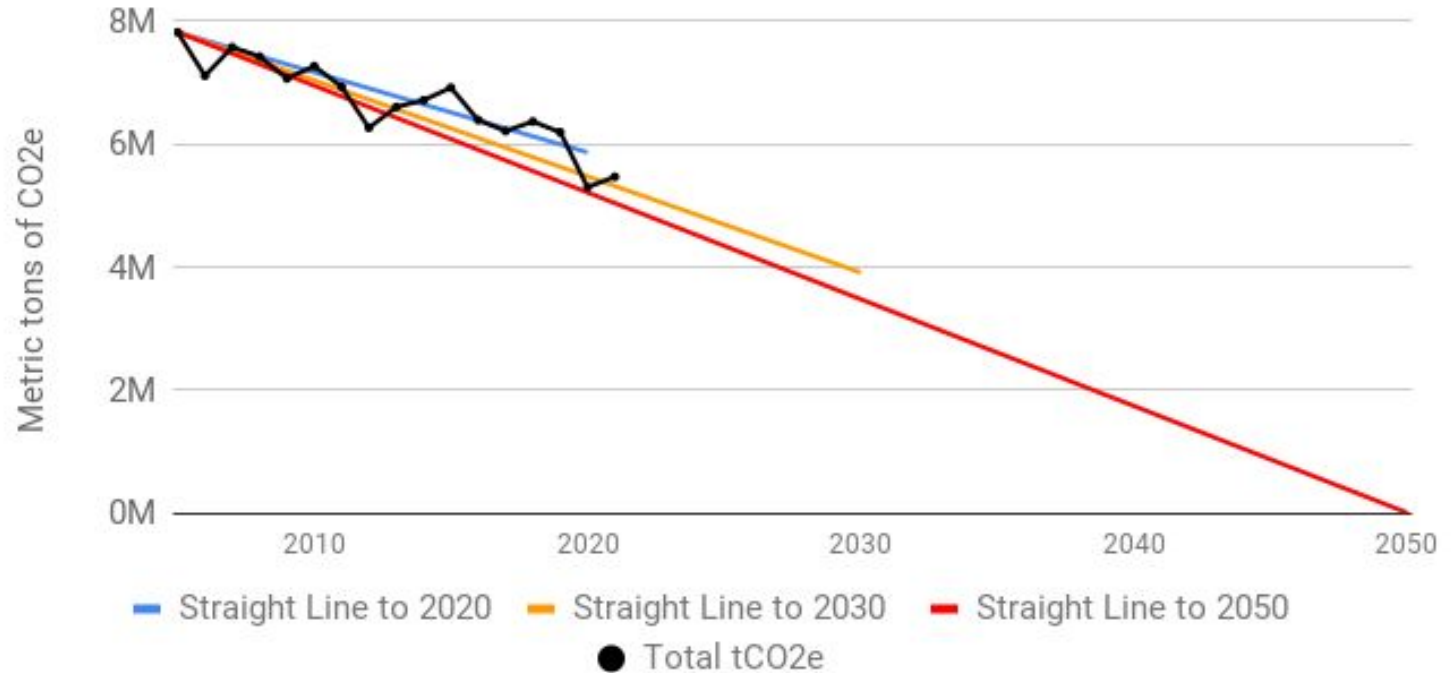
# The City of Boston aims to achieve **carbon neutrality** by **2050**.



**Present**

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

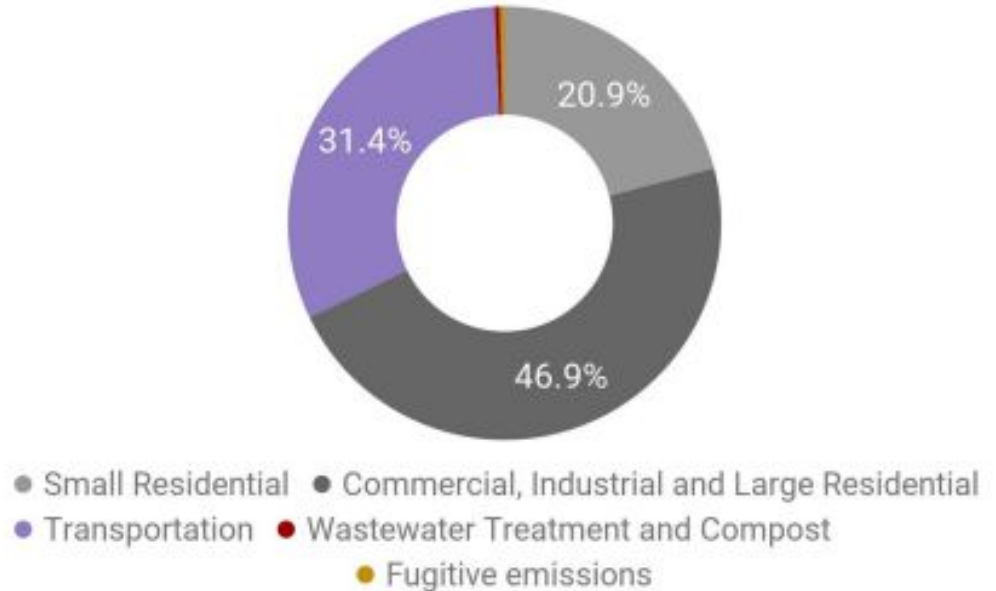
BOSTON COMMUNITY-WIDE EMISSIONS



# Emissions by Sector

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

2021 EMISSIONS BY SECTOR

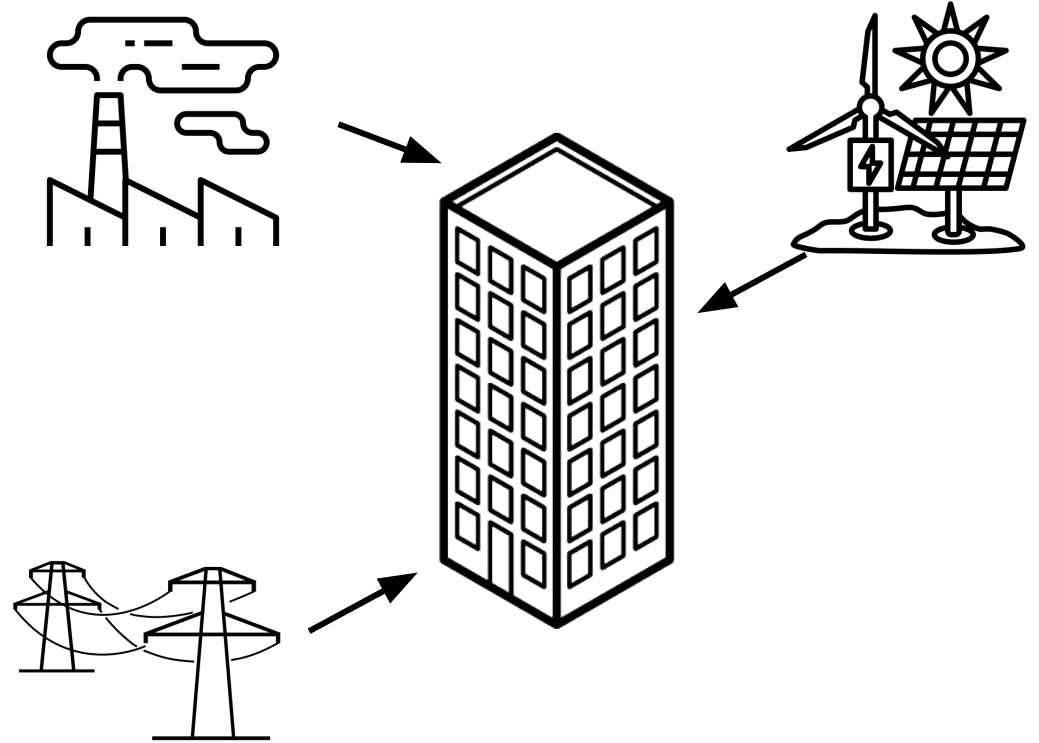


# Building Emissions

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

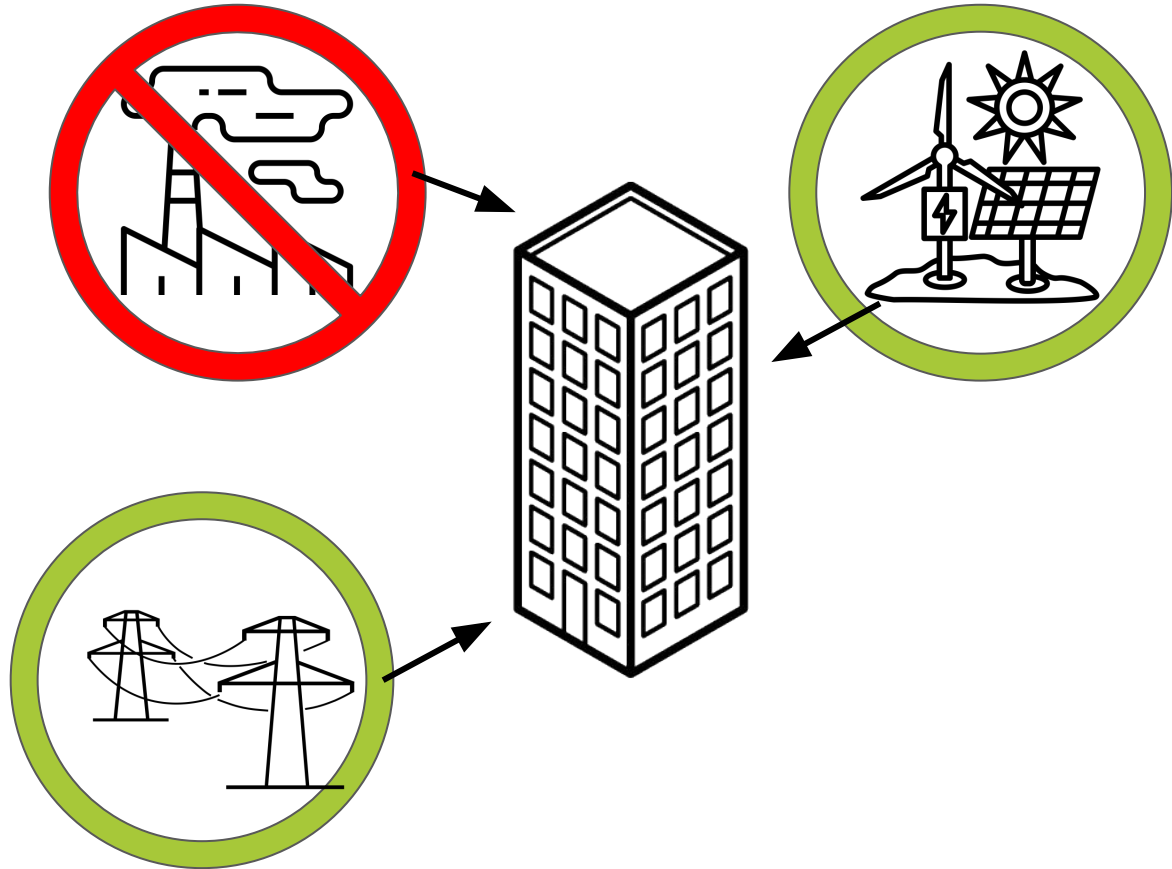


Typical building's power supplies

# 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

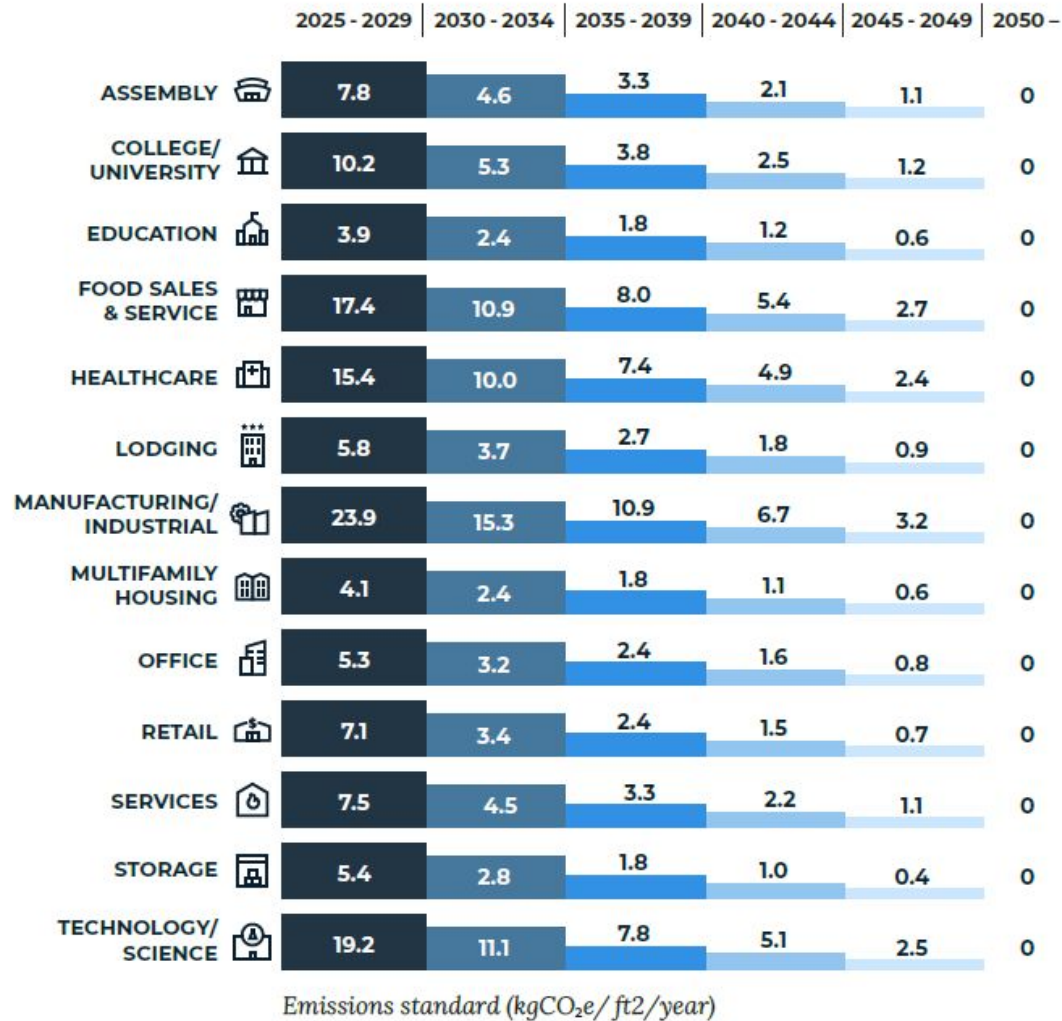


Typical building's power supplies

**What is Boston already doing to decarbonize new buildings?**

# Boston's BERDO addresses emissions in existing buildings

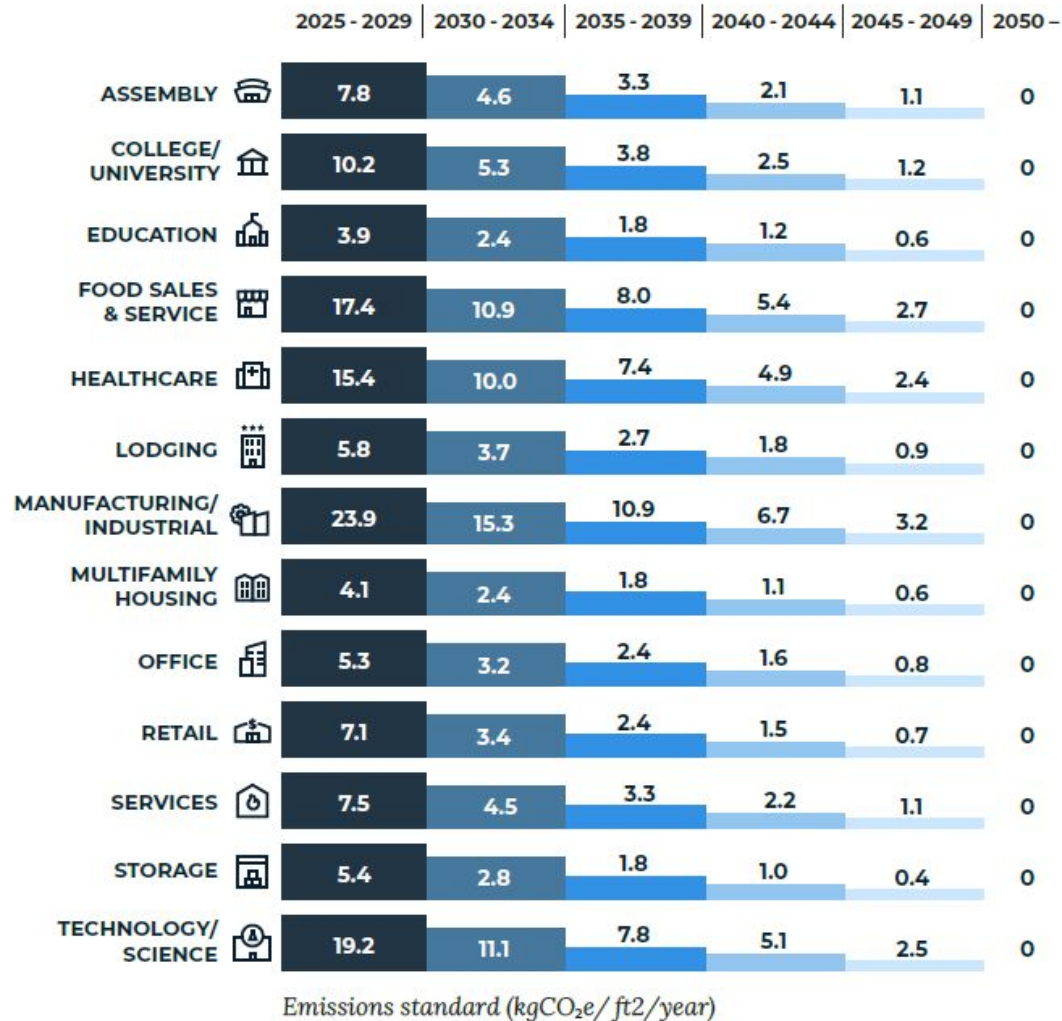
The Building Emissions Reduction and Disclosure Ordinance (BERDO) sets annual emissions limits based on different types of building uses.



# Boston's BERDO addresses emissions in existing buildings

The Building Emissions Reduction and Disclosure Ordinance (BERDO) sets annual emissions limits based on different types of building uses.

Requires residential buildings with 15+ units and non-residential buildings >20,000 SF to meet declining emissions standards and achieve net zero emissions by 2050.

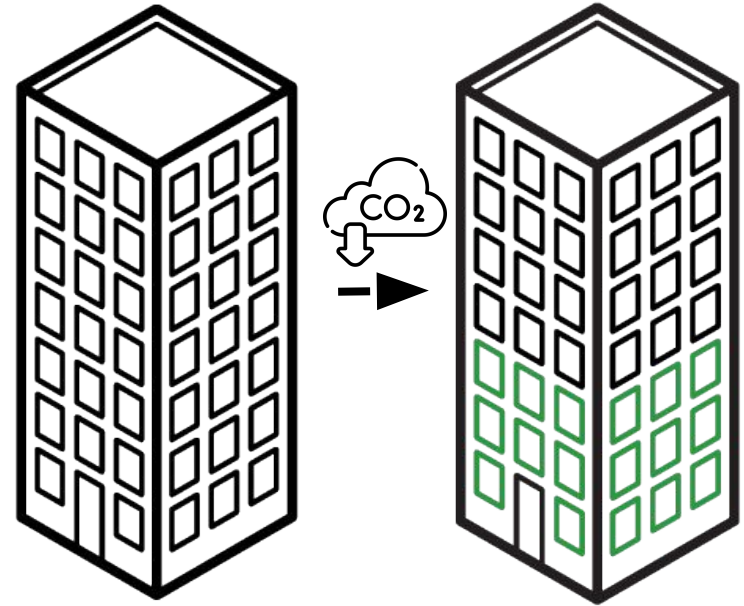




# Boston's BERDO addresses emissions in existing buildings

Large new buildings are  
subject to BERDO after they  
become operational.

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



Typical Building

BERDO

→ *Reduces emissions*

# What is a *BERDO* Net Zero Building?

Boston's BERDO allows buildings to demonstrate "net zero" building emissions through:



## Direct emissions reduction efforts in buildings

*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.*



## Investing in your community with Alternative Compliance Payments

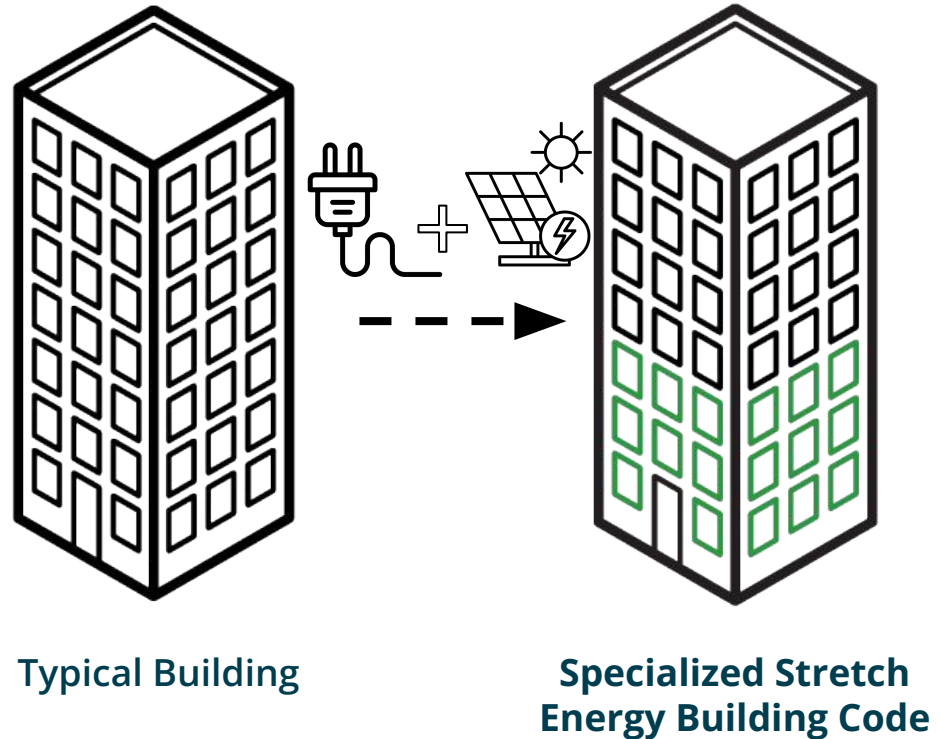
*Alternative Compliance Payments (ACPs) will be paid into the new Equitable Emissions Investment Fund to support building decarbonization projects that prioritize benefits to Environmental Justice communities in Boston. ACPs are set at \$234/ton of carbon dioxide.*

# The state energy code regulates energy efficiency in new construction

## Boston has adopted the Specialized Stretch Energy Code

The Specialized Stretch Energy Code is the most stringent energy code allowed in Massachusetts.

The Specialized Code went into effect Jan. 1, 2024.



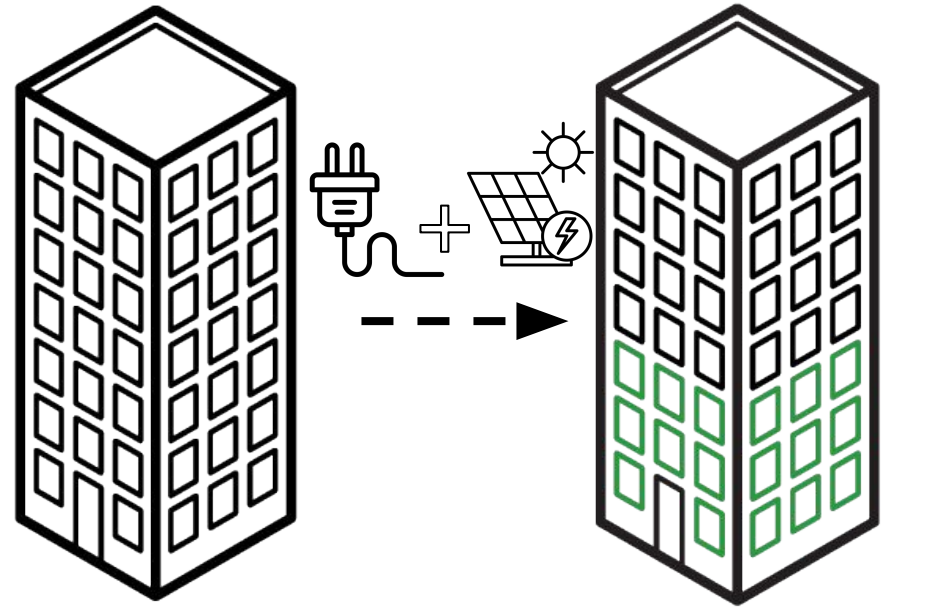
→ *Improves energy efficiency*

# MA Specialized Stretch Energy 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

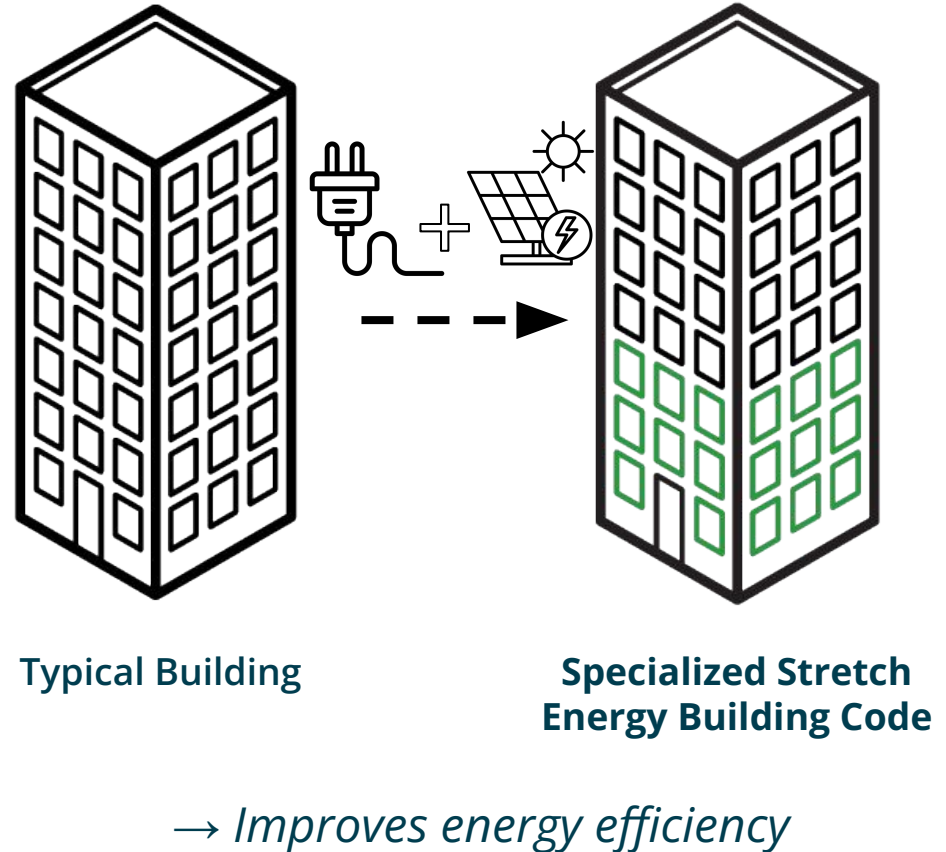
**Specialized Stretch  
Energy Building Code**

→ *Improves energy efficiency*

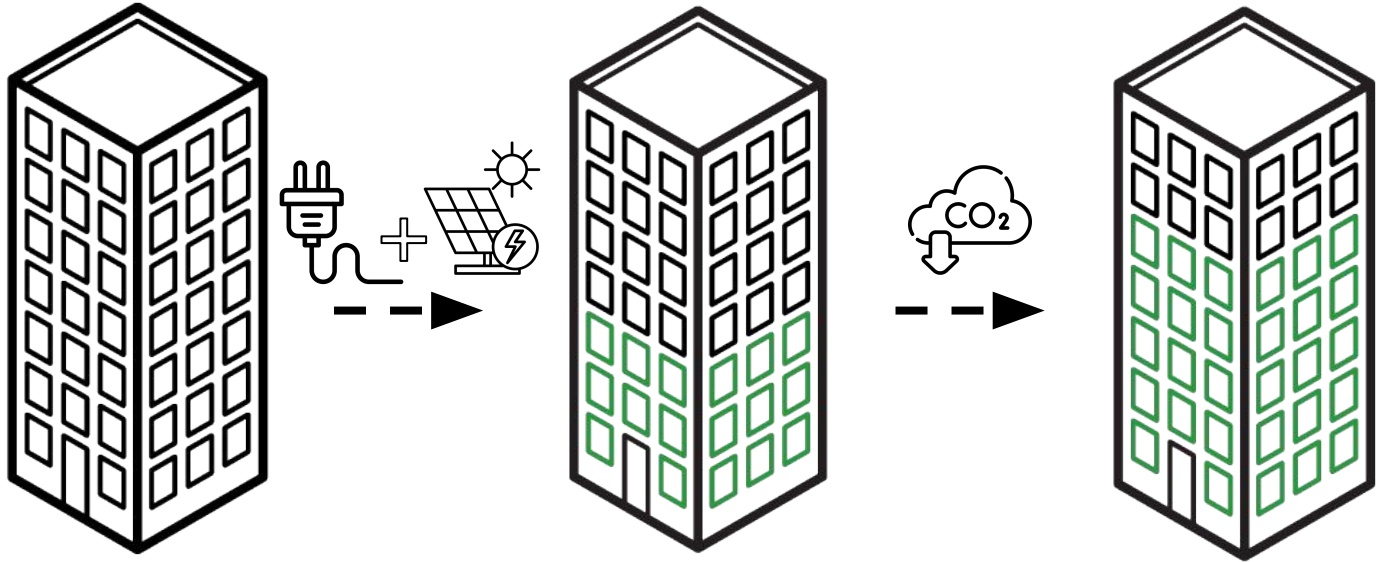
# MA Specialized Stretch Energy Code

Boston adopted the **Specialized Stretch Energy Code** that 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.
2. **Passive House Certification** required for all new multifamily housing over 12,000 sf. Requires reduction of energy use for space heating and cooling



# 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?**

# Goals for Zero Net 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

# Draft Proposal: Article 37 – Green Building + Zero Net Carbon

1. Continues LEED Certifiable (no change)

+

2. Requires net zero building emissions

+

3. Requires reporting on embodied carbon

# Net Zero Carbon Draft Overview

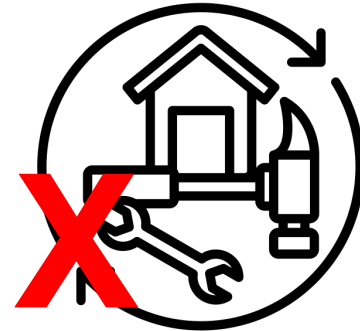
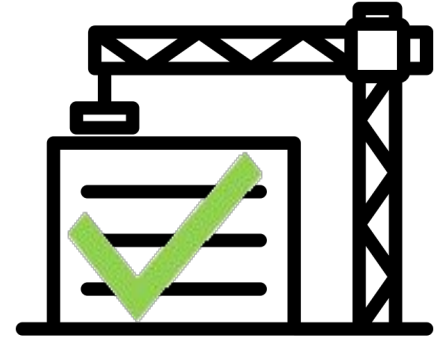
## Applies to *new* construction:

- 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

**Zoning to take effect** on January 1, 2026.



# Net Zero Carbon Draft Overview

## Applies to *new* construction:

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The new zoning requirements do not apply to a project that has received ZBA Zoning relief or BPDA Board Approval prior to Jan 1, 2026.

**Zoning to take effect** on January 1, 2026.



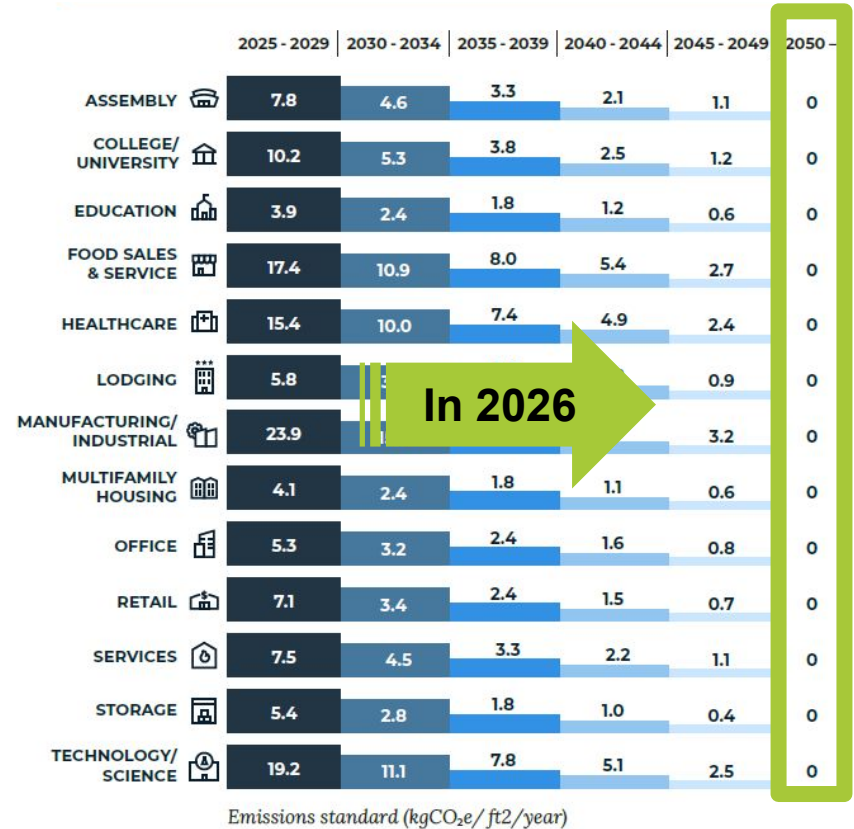
# Require Net Zero Emissions

- All new buildings >20,000 SF, with 15+ units or more, or adding >50,000 SF will be required to be **Net Zero Carbon** emissions (i.e. BERDO 2050) starting in 2026.

Once a building is in operation:

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

\* Phased in emissions requirements for Hospitals, Labs, and Industrial Uses



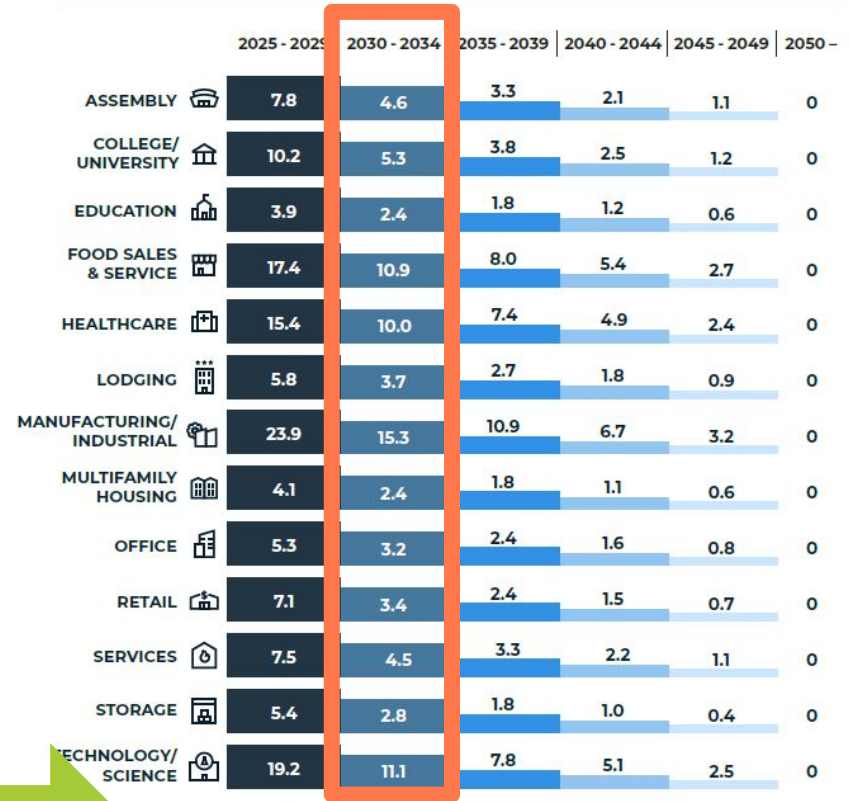
# Require Phased In Net Zero Emissions

## For Hospital and General Manufacturing Uses:

- Require compliance with 2030-2034 building emission standards in 2026

### Why?

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



In 2026

Hospital and General Manufacturing Uses

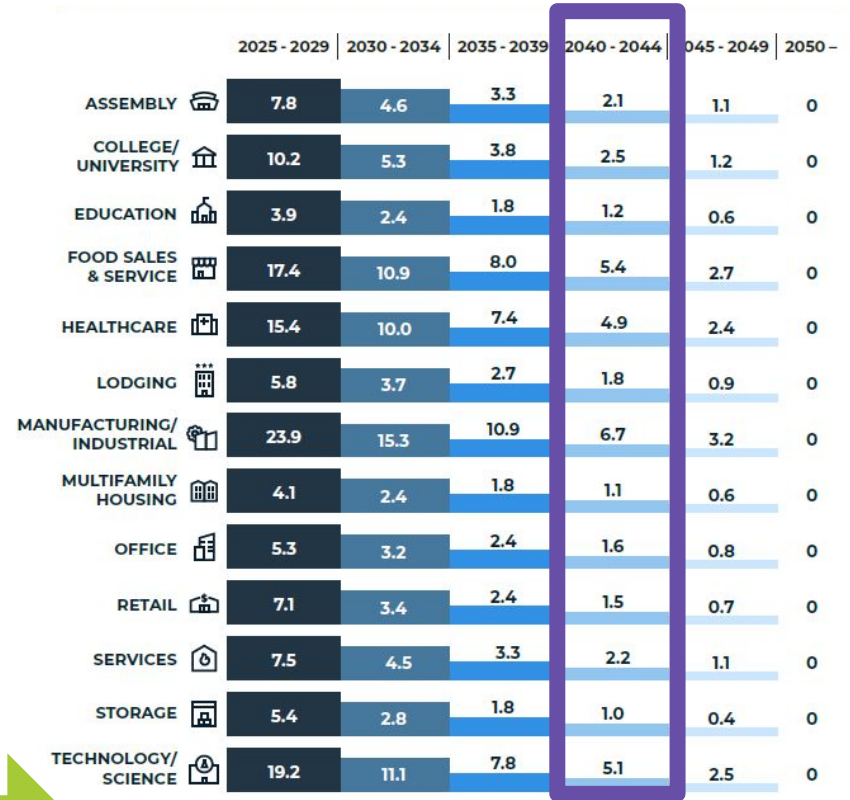
# Require Phased In Net Zero Emissions

## For Labs (high ventilation buildings):

- Require compliance with 2040 -2044 building emissions standards in 2026

## Why?

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



In 2026

Labs

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## Investing in your community with 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.*



# Introduce Embodied Carbon Reporting

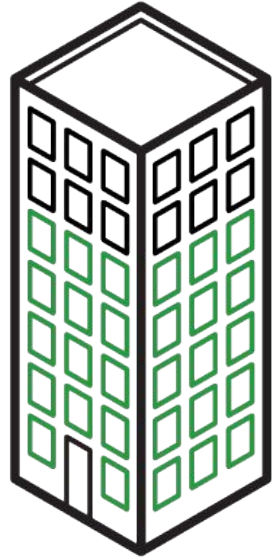
1. Large buildings (> 50,000 SF) required to provide **structural life cycle analysis**.
2. Smaller buildings (<50,000 SF) required to report on their embodied carbon through a checklist/sustainability narrative.

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

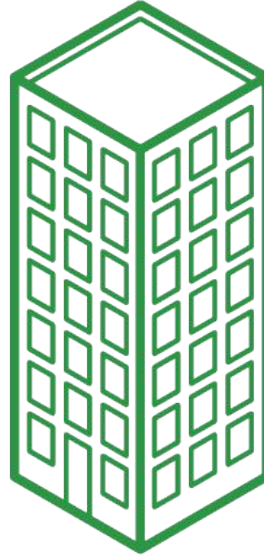
Next Steps: Collaborate with industry leaders on methodology to collect embodied carbon data.



# New buildings can achieve Net Zero Emissions now

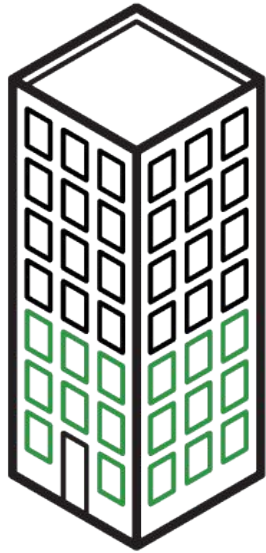


Stretch Energy  
State Building  
Code + BERDO



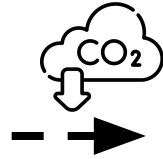
Stretch Energy  
State Building  
Code + BERDO  
+  
**Zoning**

# Without Zero Net Carbon Zoning → ZERO in 2050



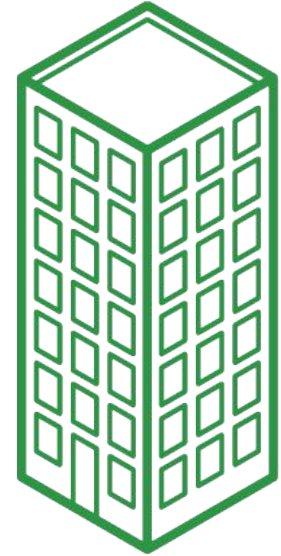
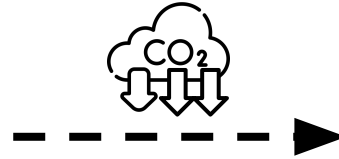
**Specialized  
Stretch  
Energy  
Building Code**

**2024**



**Specialized Stretch  
Energy Building  
Code + BERDO**

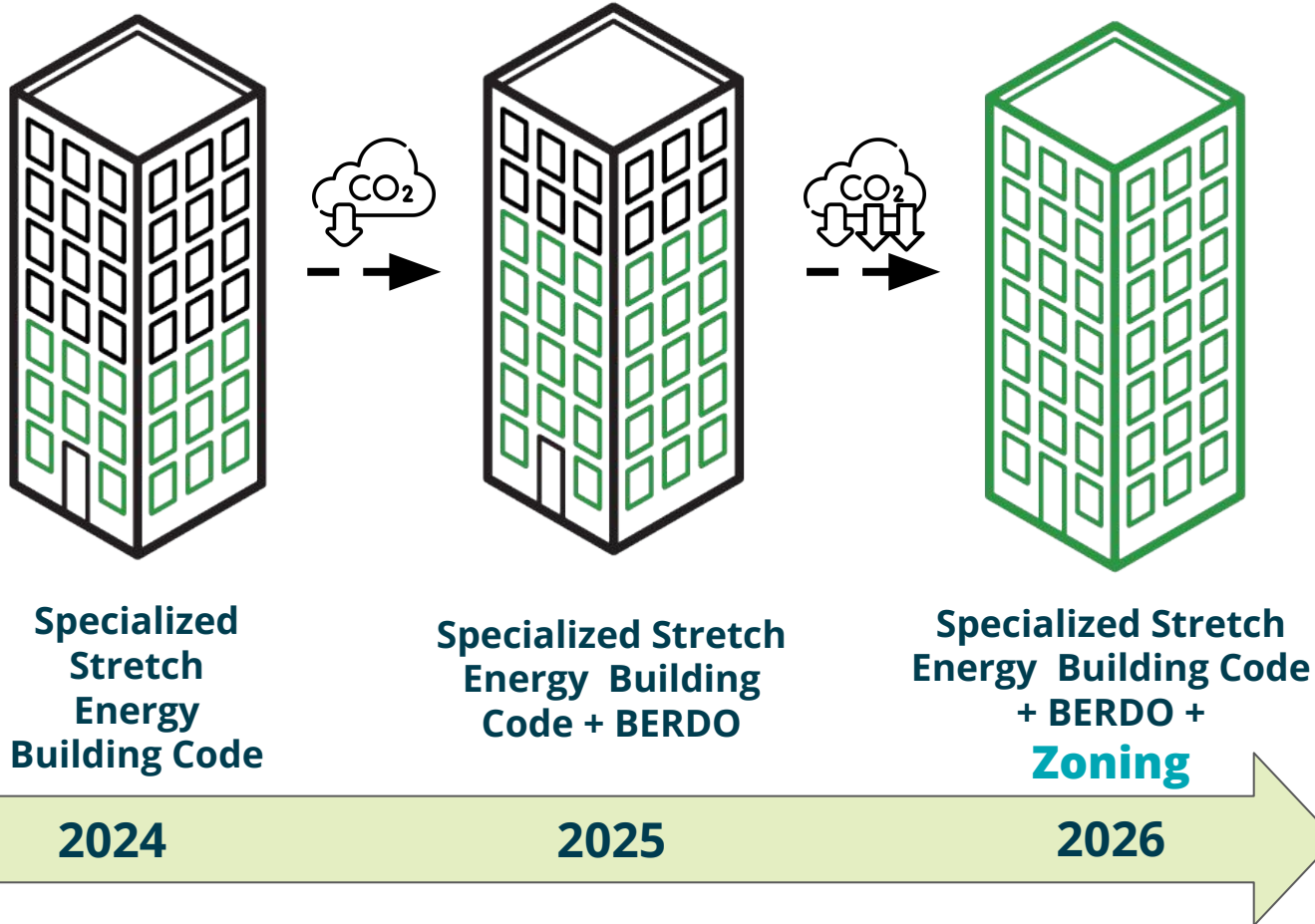
**2025**



**Specialized Stretch  
Energy Building  
Code + BERDO**

**2050**

# With Zero Net Carbon Zoning → ZERO in 2026



# Zoning Effective Date – Why January 1, 2026?

1. **Align with ongoing Article 80 Reform (Additional review of projects by the BPDA, City, and community)**
  - a. Changes to Article 80 project thresholds, review timelines, etc., will have a direct impact on Article 37 administration.
  - b. Directly encode appropriate sustainability measures alongside Art 80 and zoning reform.

**Zoning will  
be effective  
as of  
January 1,  
2026.**

# Zoning Effective Date – Why January 1, 2026?

2. **Allow projects teams to prepare for compliance ahead of adoption**
  - a. Recognize timeline of existing projects under review.
  - b. Time to advance an embodied carbon collection standard in collaboration with industry leaders.

**Zoning will  
be effective  
as of  
January 1,  
2026.**

# Zoning Effective Date – Why January 1, 2026?

3. **Allows time for planning and coordination**
  - a. Coordinate project pipeline with electrical load planning.
  - b. Electrical supply equipment and interconnection delays have continued over the past 2+ years. Allows time to address backlog.

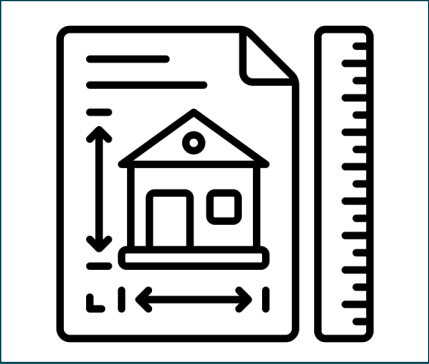
**Zoning will  
be effective  
as of  
January 1,  
2026.**

**How do the new requirements line up with  
the BPDA Review Process & BERDO?**



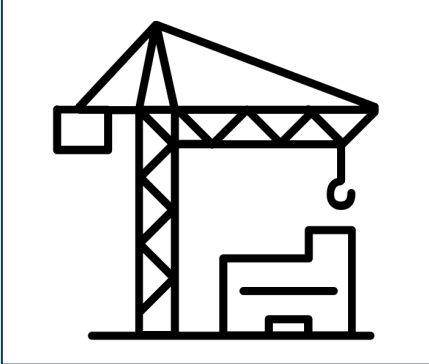
# Green Building Review Process - NZC Compliance

## Planning



**NZC Zoning**  
+  
Stretch Energy Code

## Construction



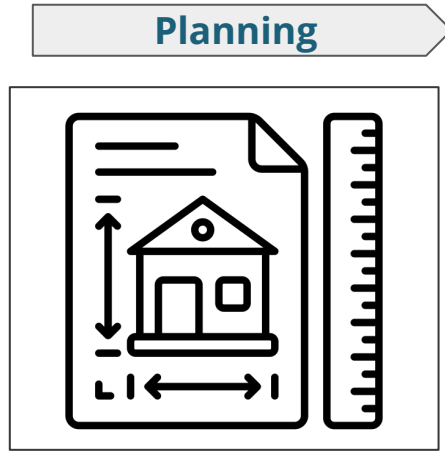
Final BPDA Design  
Review  
+  
Stretch Energy Code

## Built



BERDO

# NZC Compliance



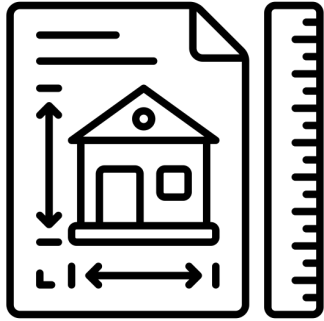
NZC Zoning

## 3 Phases of Review and Compliance

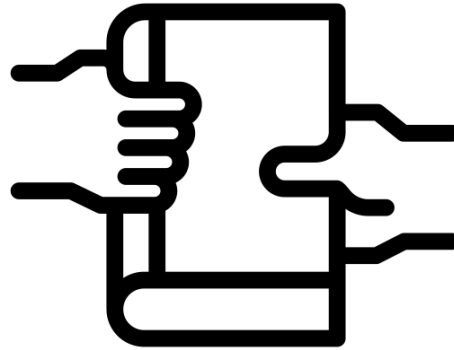
- 1. Initial Filing:**
  - a. Embodied Carbon & Greenhouse Gas Emissions Checklist
  - b. Initial Performance modeling
- 2. Design/ Building Permit Filing**
  - a. Structural Life Cycle Analysis
  - b. Final Design review
  - c. Updated checklist and performance modeling
- 3. Construction / Certificate of Occupancy Filing**
  - a. Net Zero Greenhouse Gas Emissions Ready commitment letter
  - b. Final Checklist and built conditions

# NZC Compliance to BERDO

Planning



NZC Zoning



Built



BERDO

# Next Steps & Timeline

# Next Steps

## Upcoming Office Hours:

- Week of May 6th & May 13th
- Date & time of office hours to come on website

Consultant's analysis will be posted tomorrow (4/30)

**Provide feedback** on our [website](#) using the feedback [form](#) until May 28.

Or

Email:

Travis Anderson [travis.anderson@boston.gov](mailto:travis.anderson@boston.gov)

Astrid Walker-Stewart [astrid.walker-stewart@boston.gov](mailto:astrid.walker-stewart@boston.gov)

# Anticipated Timeline

## Net Zero Carbon Zoning Timeline

