



MESM ACADEMY:

**Base Code, Stretch Code, Specialized Code,
Oh My!**

**February 11, 2026
10:30am – 11:30am**



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Today's Lesson

Lesson Questions

- What are the building energy code options in Massachusetts?

Lesson Objectives

- Learn how building energy codes vary by town
- Understand the differences between the Base, Stretch, and Specialized Codes
- Understand how towns/cities opt-in to the Stretch or Specialized Code
- Learn about the Fossil Fuel Free Pilot Program





Introductory Polls

Rate your level of agreement with the following statements:

- I can describe the difference between the Base, Stretch, and Specialized Codes.
- I understand the process for how towns/cities opt in to the Stretch or Specialized Code.
- My city/town has adopted the:
 - Stretch Code
 - Specialized Code
 - Base Code
 - Not sure

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

Training Agenda

- **Welcome & Lesson Overview**
- **What are energy codes?**
- **Why is electrification part of this conversation?**
- **What are the energy codes in Massachusetts?**
- **How are Massachusetts energy codes ahead of the nation?**
- **Next Steps**

Meet the Instructor



Becca Edson

**Architect
DOER**

Building Energy Codes - Why do we have them?

Because (most) buildings (still) use an enormous amount of energy.

Fuel & energy are finite resources *and* are expensive.

Climate and grid reliability risks.

80% of the buildings that will exist in 2050 are already built
(don't forget that codes need to address existing buildings, too!).

Structure + Plumbing + Electrical + Accessibility + Materials + Methods...
Many codes form how to build a building.



Energy Code Goals:

Least-cost decarbonization

1. Reduce or eliminate fossil fuel use,
2. Mitigate impacts or add positive benefits to the electric grid,
3. Improve public health,
4. Improve resilience to extreme weather events
5. Incentivize ADUs and new affordable housing
- 6. Renewable energy:** Enable on-site solar PV and storage.
- 7. Transport:** Enable EV charging, with load management incentivized.
- 8. Non-Energy:** Reduce GHG emissions from methane, refrigerants & embodied carbon.

And do it affordably during a housing crisis



Before we talk about Massachusetts energy codes....
We need to talk about electrification

The Climate Act 2021 commits Massachusetts
to achieving **Net Zero emissions** by **2050**

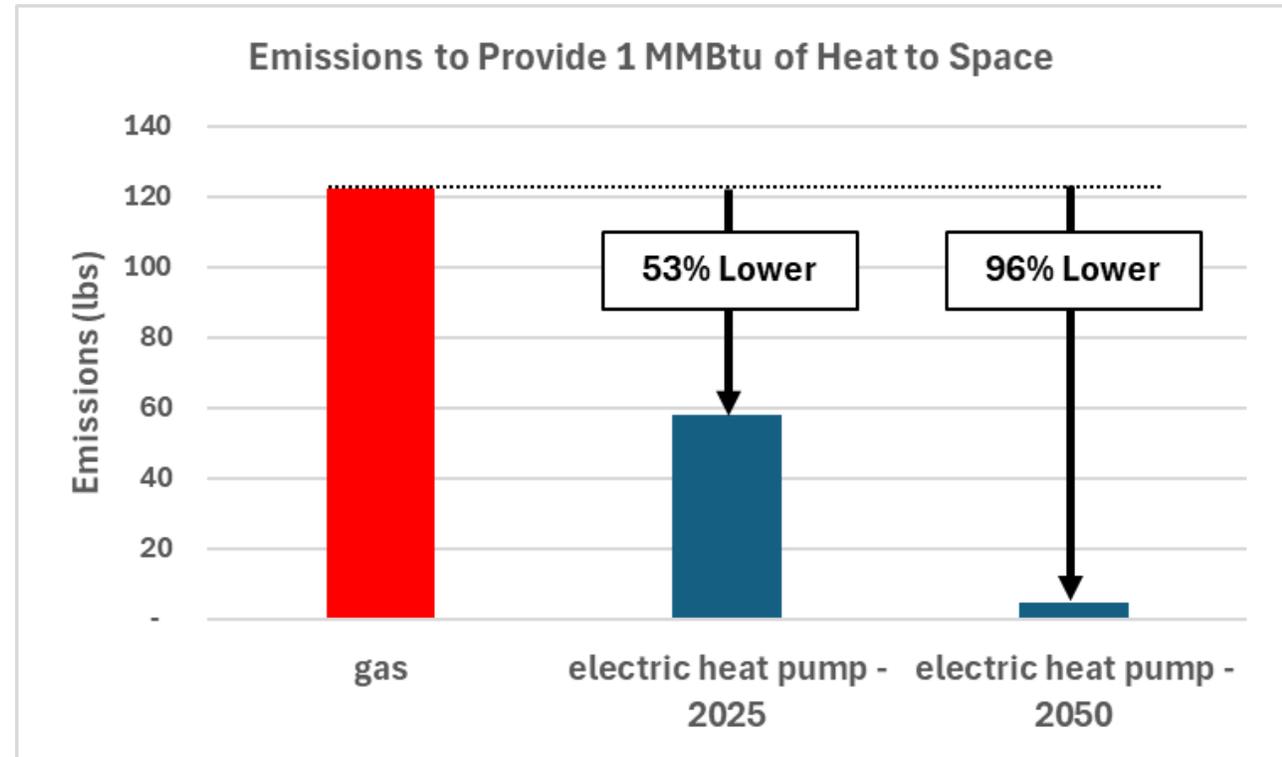
Big Picture : Electrify Everything is the plan.
Other divisions of DOER & beyond are working
on building the all-renewable grid AND making
electricity affordable. If buildings can reduce the
peak energy use, we draw less energy from grid,
need less grid infrastructure, and can take advantage
of all the renewable power we hope to have by 2050.



Space heating (and cooling)

accounts for a big chunk of a building's energy use

- Electric vs gas heating
 - 53% lower GHG in 2025
 - 96% lower GHG in 2050
- Critical that new buildings migrate toward electrification, to pave the way for more expensive existing building conversions

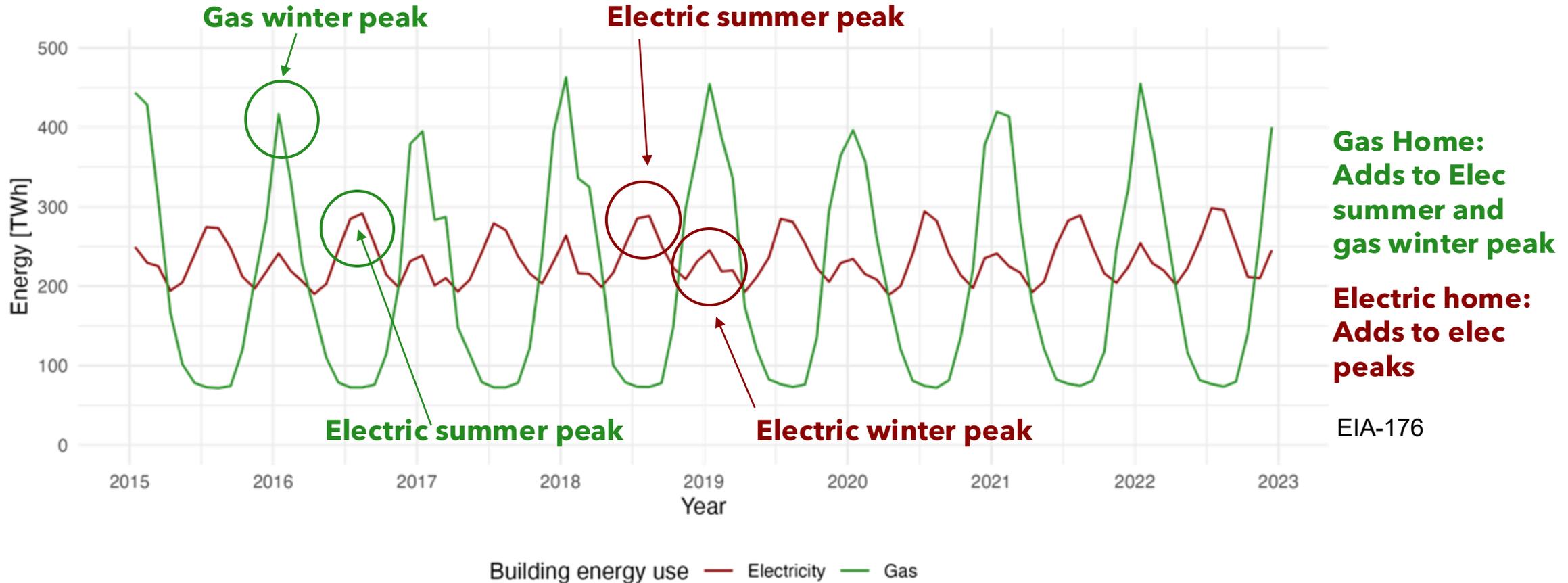


Based on 95% efficient natural gas boiler vs. 320% efficient air source heat pump, 2023 emission rate of 633 lbs/MWh, 2050 emission rate of 50 lbs/MWh



Cost driver: Peaking capacity of electricity & gas networks

New gas buildings add to both network peaks,
New electric buildings concern is around future winter peaks



(strong) Energy Codes

mean buildings consume less energy & are more efficient



*I heard from Bertha that
Massachusetts has
17 different energy codes!*



3 tiers of Energy Code

available to MA towns & cities:

Massachusetts "Opt-In" Energy Codes

Stretch Code

IECC 2021
w/ key MA amendments:
225 CMR Chapter 22 (residential)
225 CMR Chapter 23 (commercial)

60% population
New Construction,
Major Alterations &
Additions

245 municipalities

Specialized Code

IECC 2021
w/ key MA amendments:
**225 CMR Chapter 22 +
Appendix RC** (residential)
**225 CMR Chapter 23 +
Appendix CC** (commercial)

33% population
New Construction Only
Reference Stretch Code for
existing buildings

56 municipalities

Base Code

IECC 2021 (10th edition*)
w/ MA amendments:

7% population

50 municipalities



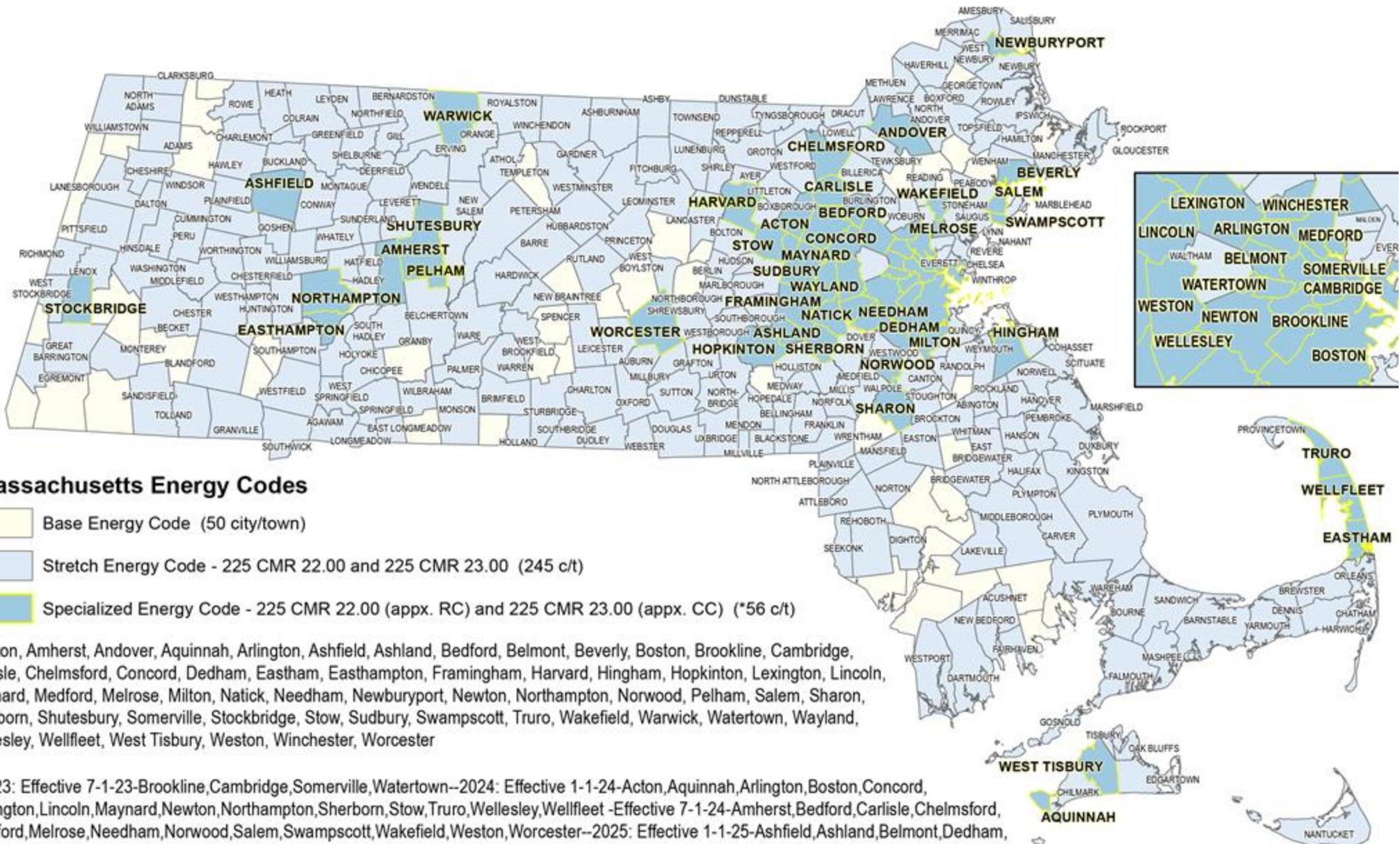
...but isn't there a 4th.....?

call me!

Fossil Fuel Free communities

Acton
Aquinnah
Arlington
Brookline
Cambridge
Concord
Lexington
Lincoln
Newton
Northampton





Massachusetts Energy Codes

- Base Energy Code (50 city/town)
- Stretch Energy Code - 225 CMR 22.00 and 225 CMR 23.00 (245 c/t)
- Specialized Energy Code - 225 CMR 22.00 (appx. RC) and 225 CMR 23.00 (appx. CC) (*56 c/t)

* Acton, Amherst, Andover, Aquinnah, Arlington, Ashfield, Ashland, Bedford, Belmont, Beverly, Boston, Brookline, Cambridge, Carlisle, Chelmsford, Concord, Dedham, Eastham, Easthampton, Framingham, Harvard, Hingham, Hopkinton, Lexington, Lincoln, Maynard, Medford, Melrose, Milton, Natick, Needham, Newburyport, Newton, Northampton, Norwood, Pelham, Salem, Sharon, Sherborn, Shutesbury, Somerville, Stockbridge, Stow, Sudbury, Swampscott, Truro, Wakefield, Warwick, Watertown, Wayland, Wellesley, Wellfleet, West Tisbury, Weston, Winchester, Worcester

--2023: Effective 7-1-23-Brookline, Cambridge, Somerville, Watertown--2024: Effective 1-1-24-Acton, Aquinnah, Arlington, Boston, Concord, Lexington, Lincoln, Maynard, Newton, Northampton, Sherborn, Stow, Truro, Wellesley, Wellfleet -Effective 7-1-24-Amherst, Bedford, Carlisle, Chelmsford, Medford, Melrose, Needham, Norwood, Salem, Swampscott, Wakefield, Weston, Worcester--2025: Effective 1-1-25-Ashfield, Ashland, Belmont, Dedham, Eastham, Easthampton, Harvard, Hopkinton, Milton, Sharon, Wayland, West Tisbury -5-31-2025-Shutesbury; 7-1-25- Natick, Newburyport, Winchester; -9-1-25-Pelham, Sudbury--2026: Effective 1-1-26- Beverly, Hingham, Stockbridge, Warwick -Effective 7-1-26, Andover, Framingham



Who is responsible for the codes?

Base Code

Division of Occupational Licensure (DOL)

Board of Building Regulations & Standards (BBRS)

Building Code Appeals Board (BCAB)

Stretch & Specialized Codes

Department of Energy Resources (DOER)

Board of Building Regulations & Standards (BBRS)

Building Code Appeals Board (BCAB)



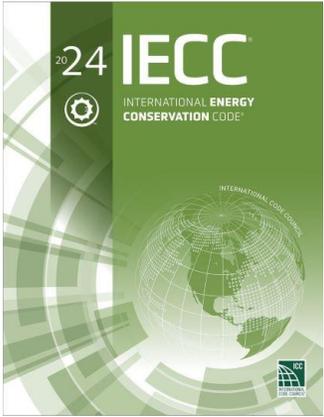
Town Meeting !!!



Green Community  Stretch Code

Climate Leader  Specialized Code





IECC standard code



Massachusetts' Amendments



modest
changes

Base Code



Adds
"thermal"
performance

Stretch Code

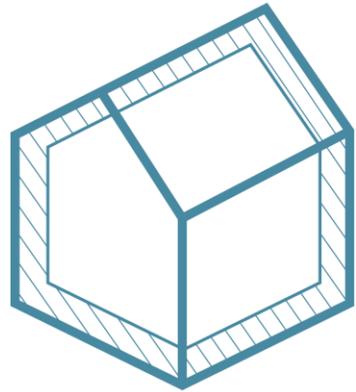


Adds "thermal"
performance **and**
electrification

**Specialized
Code**



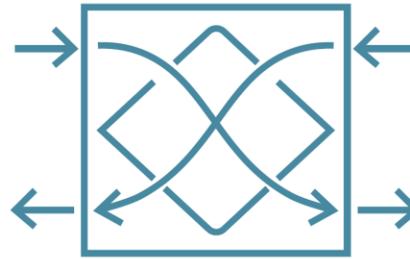
Massachusetts **THERMAL CODE** **Four Pillars** based on Passive House



Envelope U-Value



**Low Air
Infiltration**



**Ventilation
Energy
Recovery**



**Thermal Bridge
Mitigation**

= energy efficiency, comfort, **resilience** & grid-friendly electrification



Massachusetts **THERMAL CODE** **Four Pillars** based on Passive House



Comfort



**Simplified,
reduced HVAC**



Resilience



**Grid-friendly
electrification**

+ cost effective: lower life cycle cost for all building types

https://www.mass.gov/info-details/final-stretch-code-guideline-materials?auHash=cyHdJ0-aKeSKJLbQxVafygKhfAQT_0NW7kiF-sgWGMk#stretch-energy-code-study-report

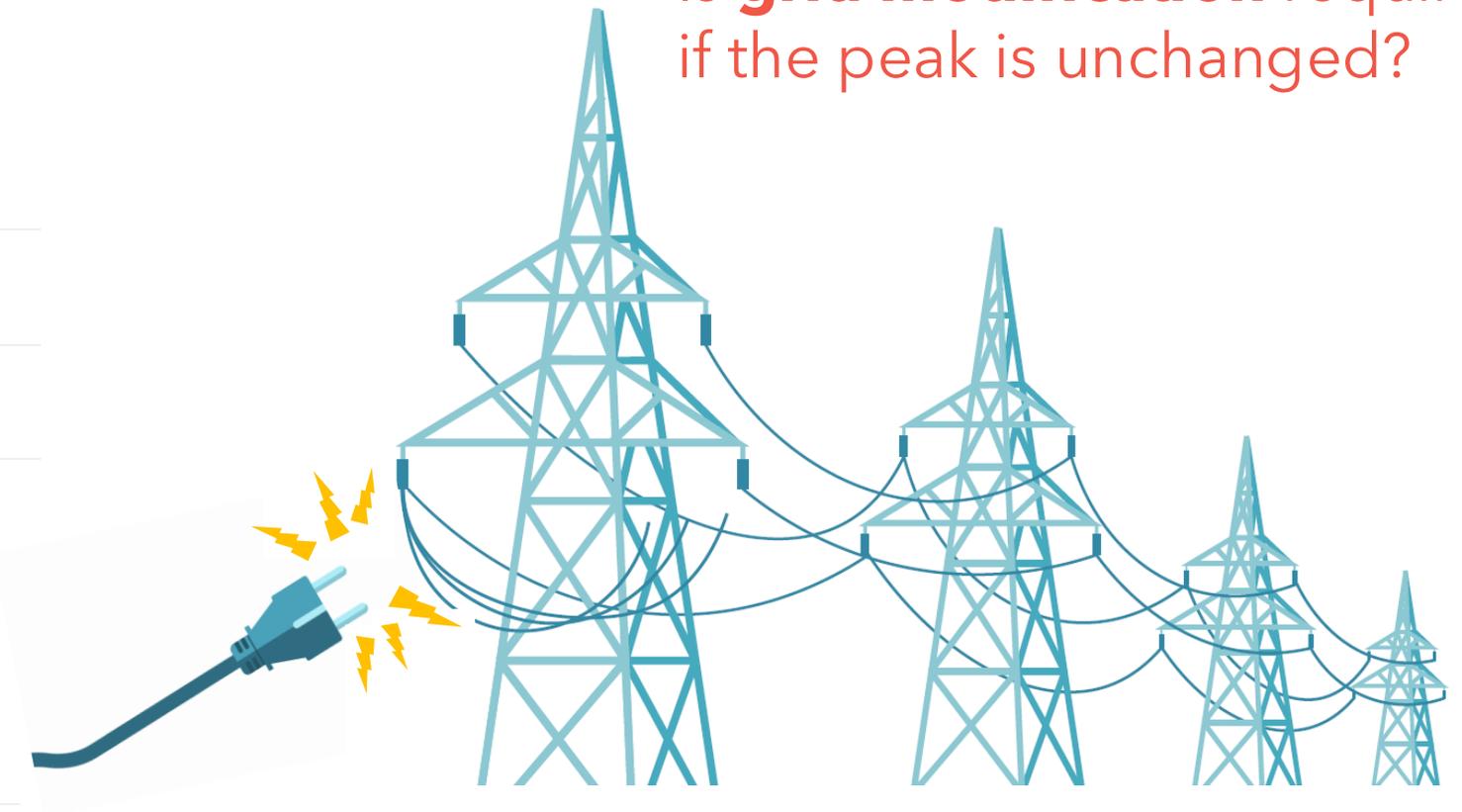
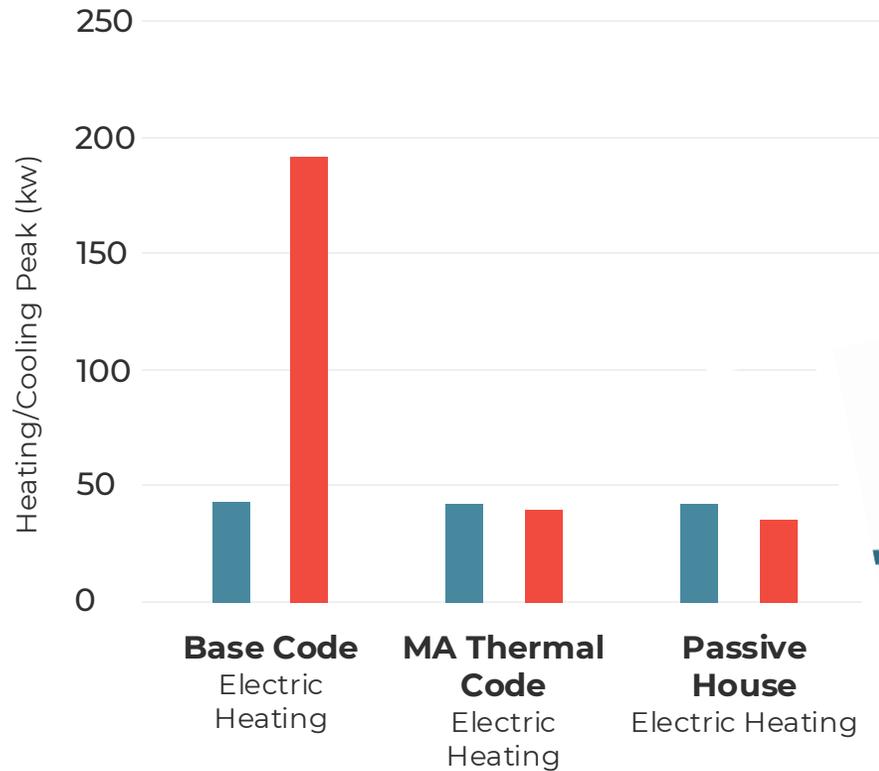


while typical above-code programs focus on reduction of total energy.....

the Massachusetts **THERMAL CODE**

CRUSHES heating loads

Is **grid modification** required if the peak is unchanged?



Example Load on Electric Grid due to Heating/Cooling in a school



Back to Massachusetts.....

the Massachusetts
THERMAL CODE

New construction,
Major Alterations
+ Additions

Stretch Code

IECC 2021 w/
4 thermal pillars

Adds "thermal"
performance

New construction

Specialized Code

IECC 2021 w/
4 thermal pillars
+
Passive House
(multifamily > 12,000 sf)
+
All-electric or
Electric-ready + Solar

Adds "thermal"
performance **and**
electrification

Base Code

IECC 2021 w/
modest
changes

Where can you find the codes?

MA Building Code = CMR 780 10th Edition

Base Code = IECC 2021 w/ MA amendments
Find these amendments in:
780 CMR Chapter 11R (residential)
780 CMR Chapter 13 (commercial)

Stretch Code = IECC 2021 w/ MA amendments
Find these amendments in:
225 CMR Chapter 22 (residential)
225 CMR Chapter 23 (commercial)

Specialized Code = IECC 2021 w/ MA amendments
Find these amendments in:
225 CMR Chapter 22 + Appendix RC (residential)
225 CMR Chapter 23 + Appendix CC (commercial)

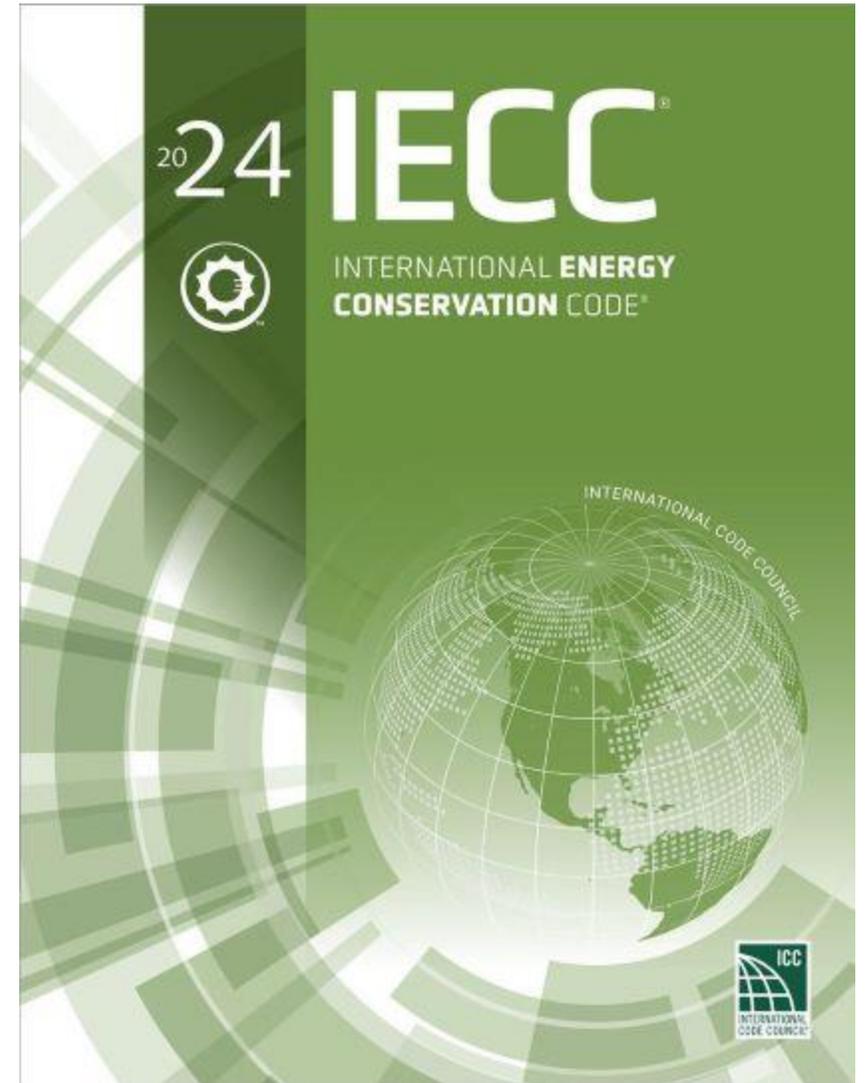


MA Base Energy Code 101

- Developed and adopted by the Board of Building Regulations and Standards (BBRS) with input from DOER and the Energy Technical Advisory Committee

General Law - Part I, Title XX, Chapter 143, Section 94

- (o) To adopt and fully integrate the latest International Energy Conservation Code and any more stringent amendments thereto as part of the state building code, **in consultation with the department of energy resources**. The energy provisions of the state building code shall be updated within 1 year of any revision to the International Energy Conservation Code.
- **Timing:** Currently beginning the 11th edition process to update codes based on the 2024 ICC codes. Likely to take effect in 2027.
- Massachusetts modifies model codes with amendments which greatly improve thermal performance of buildings - our **"thermal code"** approach.

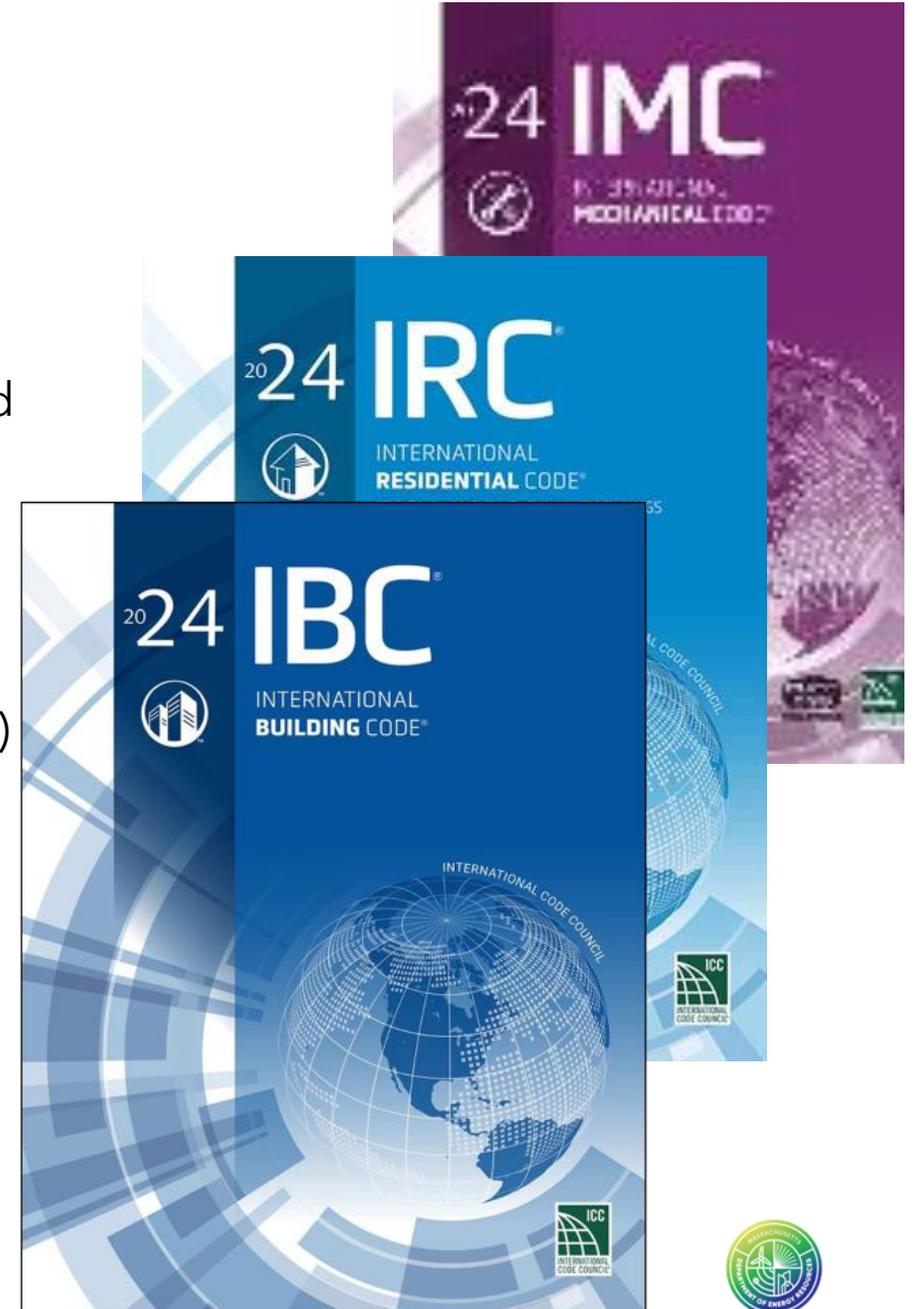


Other BBRs building codes

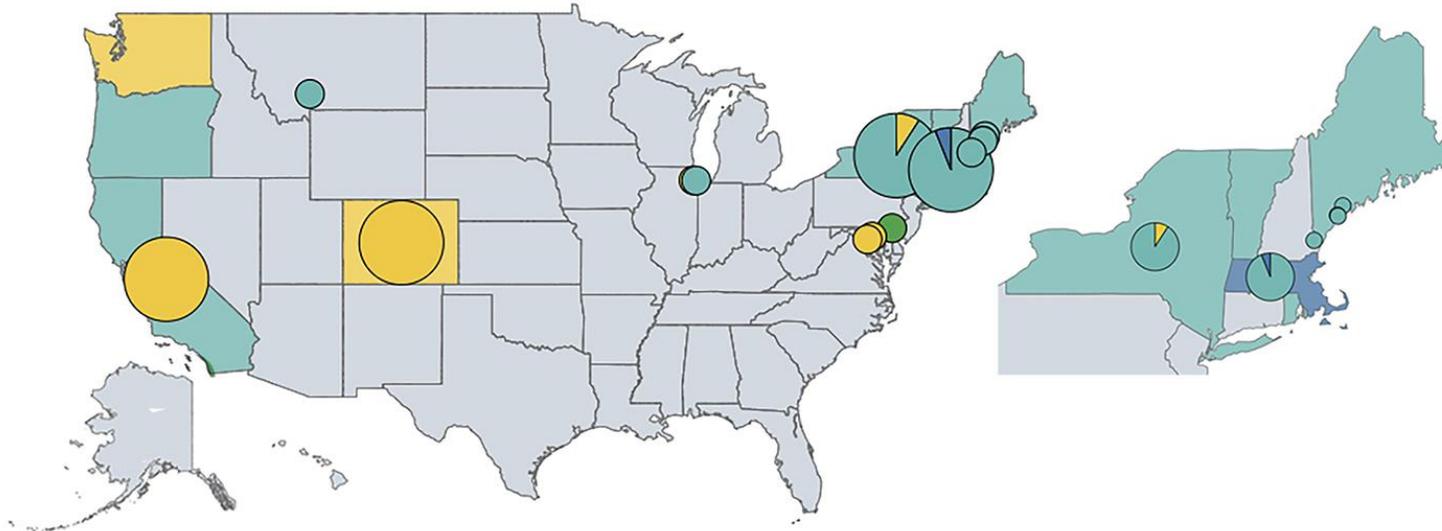
- DOER Priority is the **IECC** via the Energy Advisory Committee

Other relevant BBRs codes:

- **International Mechanical Code** (2024 IMC) & ASHRAE standard 15
 - **A2L refrigerants** - major GWP reduction, impact all heat pumps and A/C
- **International Residential Code** (2024 IRC) & Fire Code (NFPA1)
 - **Solar rooftop setbacks**
 - Energy storage safety provisions
- **International Building Code (2024 IBC)**
 - **Climate/Flood Resilience** - new BBRs advisory committee led by EEA/DCR/CZM

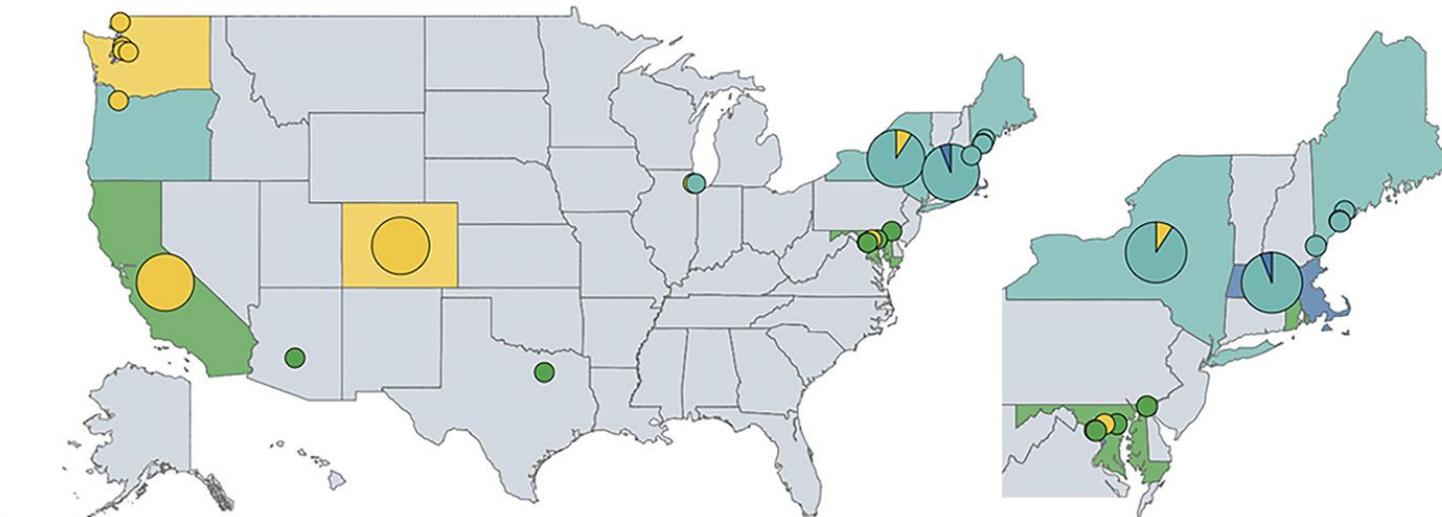


Massachusetts isn't alone..... ...but we are well-ahead of the nation



Type of Residential Stretch Code

- Green
- Energy
- Electric/Electric Ready
- Zero Energy
- None



Type of Commercial Stretch Code

- Green
- Energy
- Electric/Electric Ready
- Zero Energy
- None

Source US DOE: Stretch Codes | Building Energy Codes Program



Stretch Code:

Thermal Code + “peak load” added to model code

- Require envelope calculations to account for thermal bridges - not ignore them
- Require ventilation to be balanced and include heat and energy recovery
- Require air leakage testing - and at rates lower than the model codes

+

- Give designers and builders design flexibility to reach the desired outcomes with Performance Based Codes (Same concept as Performance Based Ratemaking)

=

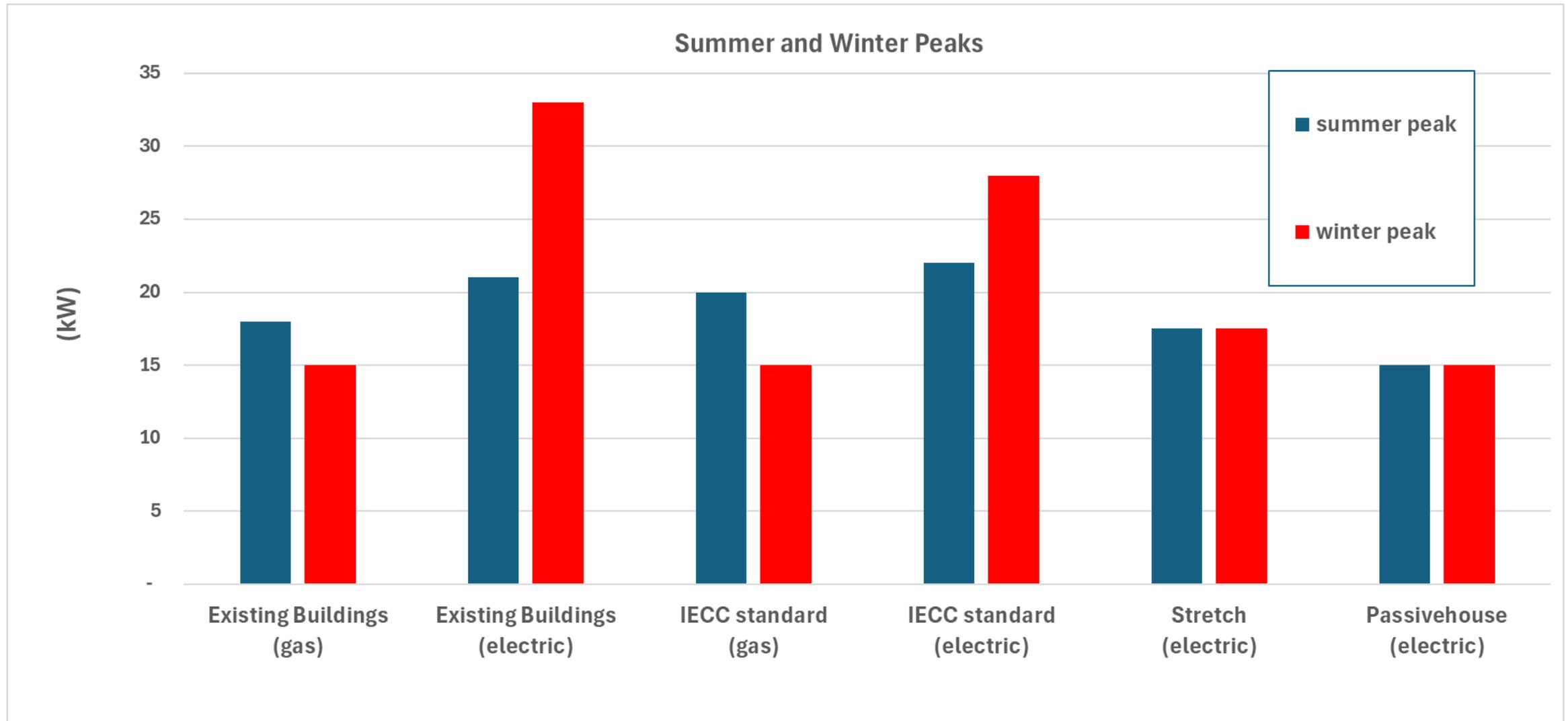
TEDI - Thermal Energy Demand Intensity (pioneered in Canada)

Passive House - (pioneered in Germany, Austria, Switzerland, Scandinavia)

HERS ratings - (pioneered in Alaska)

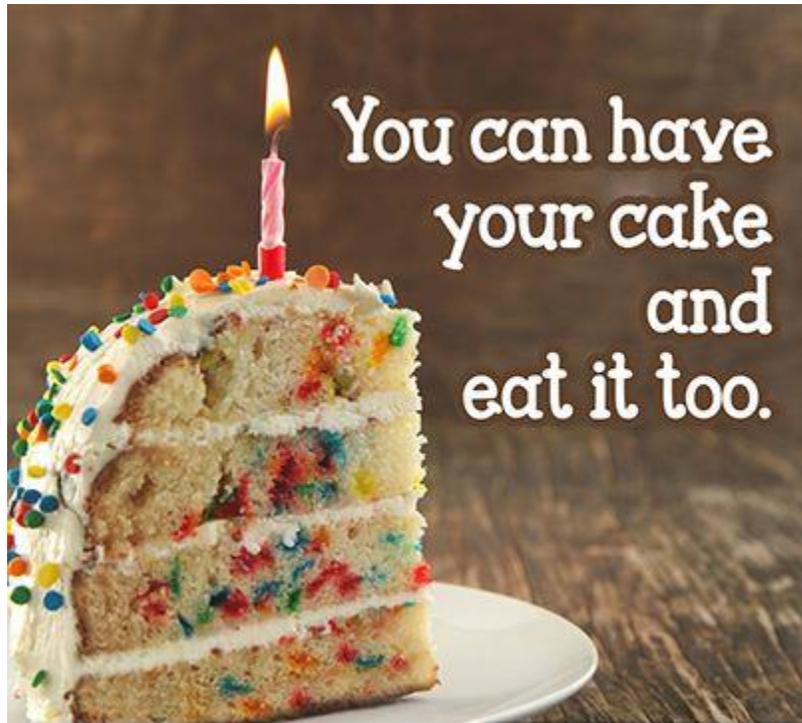


Energy Code Goals: manage peak electric loads



Recipe for success

High in electric calories



Low in electric peak loads

RECIPE:

1. blend IECC with MA amendments
2. add 4 cups - Thermal Code
3. add Heat Pumps to taste
4. season with EV & Solar ready
5. leave to prove for 5 years

Potential side-effects: may reduce electric rates for all ratepayers



Alignment with MassSave

Building Type	Fuel Type	Stretch Code	Specialized Code
New Multi-Family 4+ stories & >12,000 sf	All Electric	HERS 45 or TEDI or Passive House	Passive House
	Mixed Fuel	HERS 42 or TEDI or Passive House	Passive House + wiring for electrification



↓

= \$3,750 per unit



Mass Save **Passive House** Incentive Program



Leyland Community
Dorchester MA
Davis Square Architects



Glen Brook Way
Medway MA
Meander Studio Collaborative



McElwain Apartments
Bridgewater MA
Prellwitz Chilinski Associates



11 E. Lenox Street
Boston MA
Haycon Construction



Walnut Street Building 2
Foxborough MA



1005 Broadway
Chelsea MA
Utile, Inc



The Loop at Mattapan Station
Boston MA
The Architectural Team



Hillside Center for Sustainability
Newburyport MA
Hall & Moskow

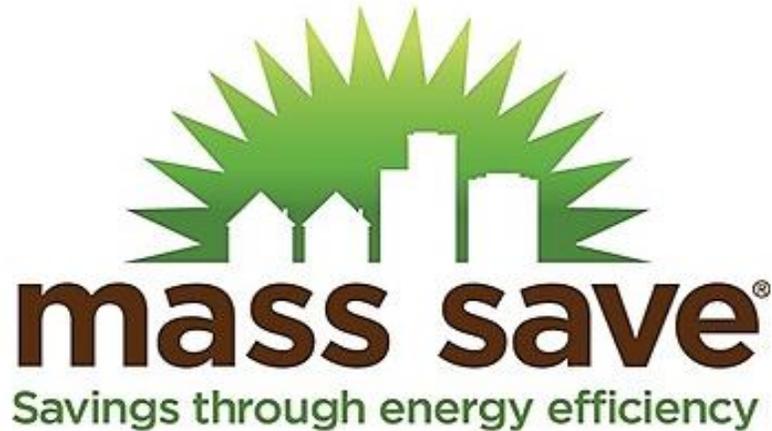


JJ Carroll Redevelopment
Boston MA
MASS Design Group

to date **>16,000** housing units
have pursued **PH** through **Mass Save**



Upcoming Trainings:



Go here to find more info on more trainings:

www.masssave.com/en/trade-partners/events-and-trainings-calendar?page=1

email anytime for help:

stretchcode@mass.gov

becca.edson@mass.gov

or

psdtraininghelpma@psdconsulting.com



Next Steps

- Please take 3-5 mins to please complete the anonymous evaluation form (link in chat)

Upcoming Events:

- **PLN Meeting (2/18 @ 3pm)**
- **Training: State Policies and Programs (2/24 @ 11am)**
- **Optional Office Hour (2/25 @ 1pm)**
- **Training: Grid-Level Energy Systems & Management (3/17 at 10:30am)**



Thank you!



Q&A + Discussion Notes



Q&A Notes

- Q: Could you talk more about Energy Recovery Ventilators (ERVs)? Do we need to install ERVs in all new projects? For context, working on a Green School Works Grant. The Comprehensive Building Assessment told us that ERVs would add more energy than it saves because of fan power. What are the requirements of ERVs?
 - A: Becca will follow up with an answer. It will be shared with everyone.
- Becca: Have recently become aware of EV programs through National Grid and Eversource that are separate from Mass Save. These incentivize developers to do the right thing and sweeten the deal. Can connect you with those offers, if of interest.
- Q: Noticed building U-value mentioned when discussing the thermal code. Shouldn't it be R-value for building envelope?
 - U and R-values both telling story of thermal capability of materials. Engineers prefer to use the U value over R because it provides a more holistic understanding and the R-value is more piecemeal.
- Q: In the slides, you mentioned Stretch code being equated with passive house, isn't it supposed to be for the Specialized code?
 - Passive house is an allowed pathway in the stretch code for new and existing construction in Stretch code. In Specialized code, it's required for multi-family. Passive House pathways are also allowed in the Base code, if you get the building commissioner to agree (but not written into the code).

Q&A Notes

- Q: Heard from the building commissioner in town that the HERS rating reports are incomplete and not submitted correctly.
 - DOER just launched a beta update with Ekotrope, which is the main group that HERS raters run their ratings through. Ekotrope makes the reports that is shared with the towns. The beta update is better at specifying requirements based on town/city selected. You or your building inspector/commissioner can email Becca to provide feedback on whether it's working well, easier to read, etc.
- Municipal Light Plant municipalities – DOER working to get incentives for MLP towns.
- Reflections:
 - Code tells you what you're allowed to do in a building and how your building meets the standards.
 - Base code is more prescriptive. Stretch/Specialized introduce performance pathways (TEDI, HERS, passive house, etc.). All components of a building work together to meet pathway requirements. Pathways are performance base and not prescriptive. There are also incentives to ease the implementation.

Q&A Notes

- Q: How to get building dept commissioner/inspector on your side?
 - A lot of the building inspectors are excited about the Specialized code, while others like the Base code. People do not see codes as a life and safety issue.
 - The jump from Base to Stretch is the most significant, where you see significant increase in costs. To move from Stretch to Specialized is not as big of a jump.
 - One way to get them on your side is communicating that with Specialized code, the construction of new multifamily housing will have third party vendors who will have clear solutions. These are vetted firms/providers that have to meet certain quality to keep their license.
 - Connect with your sustainability committee/volunteers as well as your Green Communities coordinator.