Monday, November 6, 2023
7:00 P.M.
Zoom Meeting, WCAT, WCAT Studio

COMMITTEE MEMBERS PRESENT:	Melissa Eusden, Chair Tiana Veldwisch, Vice Chair Robin Greenberg, Clerk Julie Smith-Galvin, Town Council rep Sharon Daly, WMGLD rep	**COMMITTEE MEMBERS ABSENT:** Christina Olivieri Lillian Guinther Chris Lewis Steffin Spears Joe Conway, DPW rep Ann Waitt, DPW rep proxy Amy Leeman, School Comm. rep Nate Chines, Youth Council rep

----- TOPICS OF DISCUSSION -----

Call to Order

The meeting was called to order at 7:02 p.m by M. Eusden.
The meeting is being recording and closed captioning is available.

Presentation

Michael Rossi, Energy Code Specialist at PSD Consulting, and Dillan Patel, Green Communities Northeast Regional Coordinator for the Massachusetts Department of Energy Resources presented on the Specialized Energy Code. Approval of the Specialized Energy Code is a warrant article 7 at Wakefield's Town Meeting on Saturday, November 18, 2023.

Wakefield has already adopted the Stretch Code. The warrant article is to extend the by-law to include the Specialized Energy Code. The article would have the new code apply to new construction projects that apply for permits starting on July 1, 2024.

One way to comply with the Specialized Energy Code is to meet Passive House principals. By doing so, the structure will have a tight building envelope (very little heat leakage) and good mechanical ventilation.

Hiring a HERS rater is one pathway for compliance. The consultant will do computer modeling of a project and test the complete project to confirm compliance with the requirements on ventilation and air sealing. It is the owner's responsibility to hire the HERS rater.

Meeting some requirements of the Specialized Energy Code may lead to tax credits for the Owner/developer. Owners/ developers should consult a tax adviser for more information.

If Wakefield passes the Specialized Energy Code, no anticipated financial burden is expected on the town. Training is available to the Building Inspector to learn about the code and compliance methods.

The Specialized Energy Code requires new structures to be pre-wired for electric heating systems or already have electric heating and cooling. Gas heating and gas laundry remains allowed under the code.

All electric building helps the town, WMGLD, and the state meets its state targets on reduction of Greenhouse Gas (GHG) emissions and would show Wakefield as a Climate Leader.

Adjournment Info-session adjourned at 7:58 pm by M. Eusden.

Respectfully submitted,

Robin Greenberg, Clerk

Attachments: DOER – MA Municipal Opt-In Specialized Code, Fall 2023, presentation

Creating A Clean, Affordable, Equitable and Resilient Energy Future For the Commonwealth

Massachusetts Department of Energy Resources

MA Municipal Opt-In Specialized Code

Fall 2023

Dillan Patel– Northeast Regional Coordinator, DOER Green Communities

Michael Rossi – Energy Code Specialist, PSD Consulting

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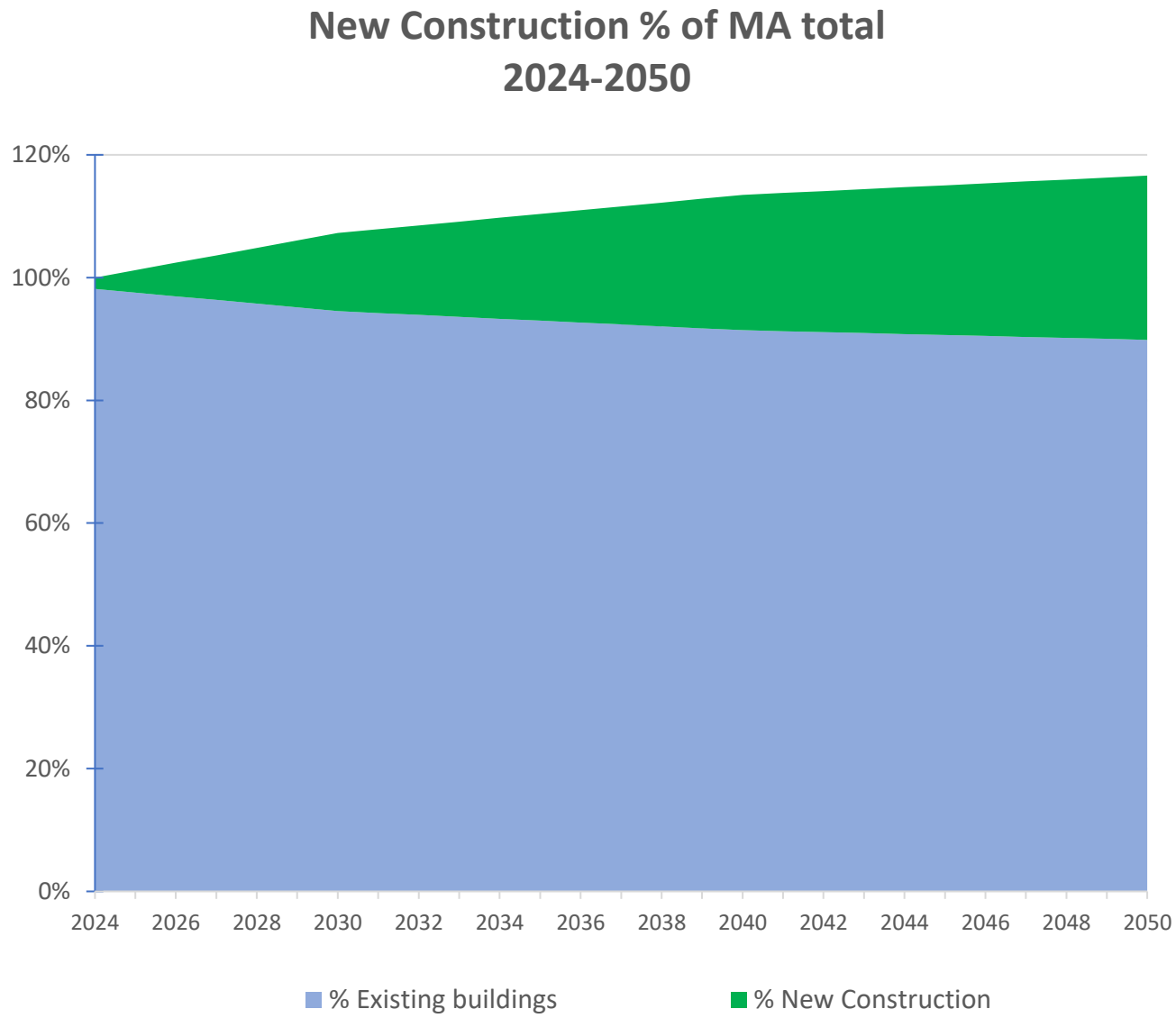
Climate Act 2021

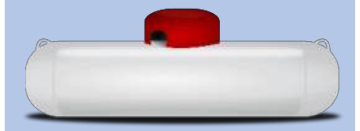
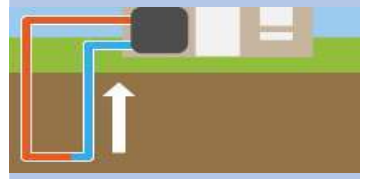
The legislation signed into law updates the greenhouse gas emissions limits related to the 2008 Global Warming Solutions Act, commits Massachusetts to achieve **Net Zero emissions in 2050**, and authorizes the Secretary of Energy and Environmental Affairs (EEA) to establish an emissions limit of no less than **50% for 2030**, and no less than **75% for 2040**.

Building Energy Code's role in reducing emissions

- Building code is the primary policy impacting new buildings.
- New buildings (built after 2023) **~27% of all building space by 2050**
- New buildings are easiest and cheapest to make 2050-compliant
- New construction market helps drive cost reductions in building retrofits



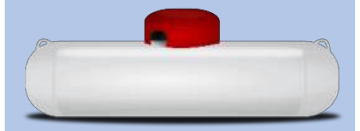
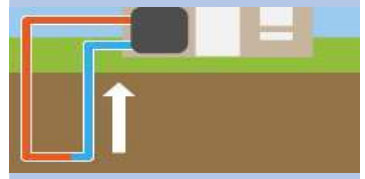
2020

OIL	PROPANE	GAS	ELECTRIC RESISTANCE	ELECTRIC COLD CLIMATE AIR SOURCE HEAT PUMP	ELECTRIC GROUND SOURCE HEAT PUMP
					
Pounds of emissions to deliver 1 MMBtu of heat					
170	145	120	205	65	45

45% Less

Current grid emissions: ~680 lbs/MWh

2050

OIL	PROPANE	GAS	ELECTRIC RESISTANCE	ELECTRIC COLD CLIMATE AIR SOURCE HEAT PUMP	ELECTRIC GROUND SOURCE HEAT PUMP
					
Pounds of emissions to deliver 1 MMBtu of heat					
170	145	120	~~205~~ 59	~~65~~ 18	~~45~~ 13

85% Less

Future grid emissions: ~200 lbs/MWh

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From Green Community to Climate Leader

Green Communities Criteria		Climate Leaders Criteria
Adopt as-of-right siting for RE/AE generation, R&D, or manufacturing		Establish/maintain local committee to advise, coordinate, and/or lead clean energy and climate activities
Adopt expedited permitting process		Municipal decarbonization commitment
Create an Energy Reduction Plan to reduce energy use by 20% in 5 years		Create Municipal Decarbonization Roadmap with 2030 & 2050 goals
Purchase only fuel-efficient vehicles		ZEV-First vehicle policy
Minimize life cycle cost in new construction (adopt the Stretch Code)		Specialized Stretch Code Adoption

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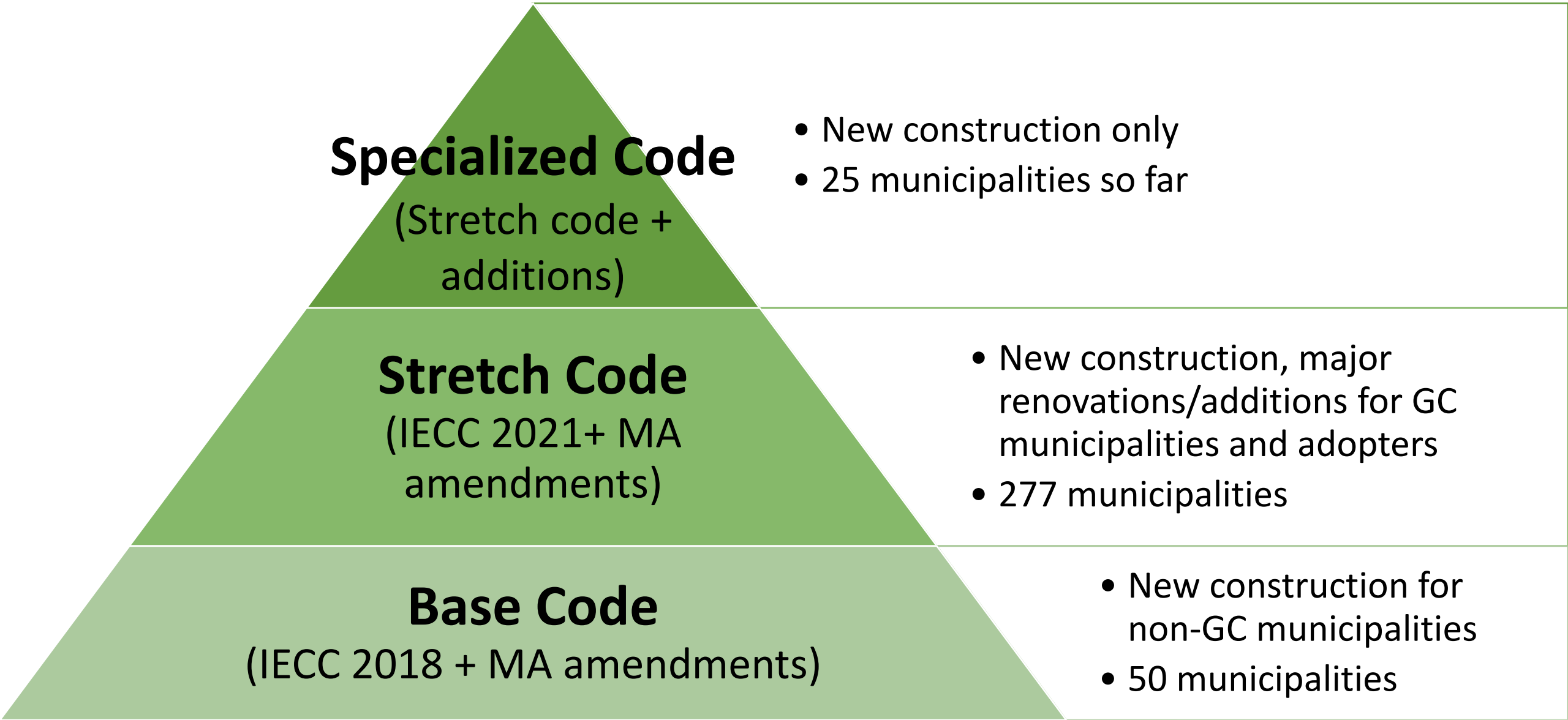
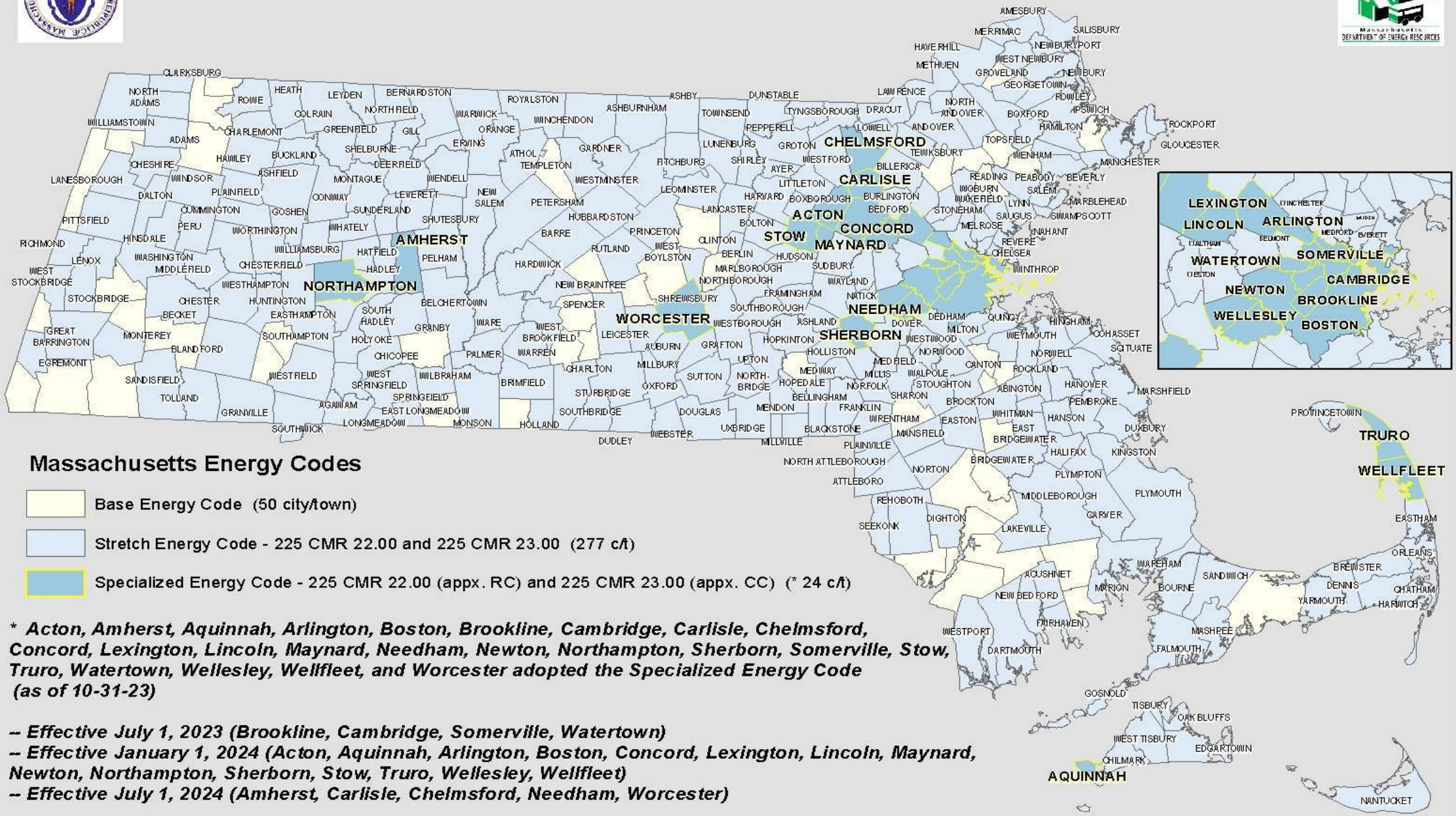
Base, Stretch, and Specialized – 3 Options



Massachusetts Building Energy Code Adoption by Municipality



Massachusetts Energy Codes

Base Energy Code (50 city/town)

Stretch Energy Code - 225 CMR 22.00 and 225 CMR 23.00 (277 c/t)

Specialized Energy Code - 225 CMR 22.00 (appx. RC) and 225 CMR 23.00 (appx. CC) (* 24 c/t)

**** Acton, Amherst, Aquinnah, Arlington, Boston, Brookline, Cambridge, Carlisle, Chelmsford, Concord, Lexington, Lincoln, Maynard, Needham, Newton, Northampton, Sherborn, Somerville, Stow, Truro, Watertown, Wellesley, Wellfleet, and Worcester adopted the Specialized Energy Code (as of 10-31-23)***

-- Effective July 1, 2023 (Brookline, Cambridge, Somerville, Watertown)
-- Effective January 1, 2024 (Acton, Aquinnah, Arlington, Boston, Concord, Lexington, Lincoln, Maynard, Newton, Northampton, Sherborn, Stow, Truro, Wellesley, Wellfleet)
-- Effective July 1, 2024 (Amherst, Carlisle, Chelmsford, Needham, Worcester)

MA DOER, 11-1-2023, jpfister

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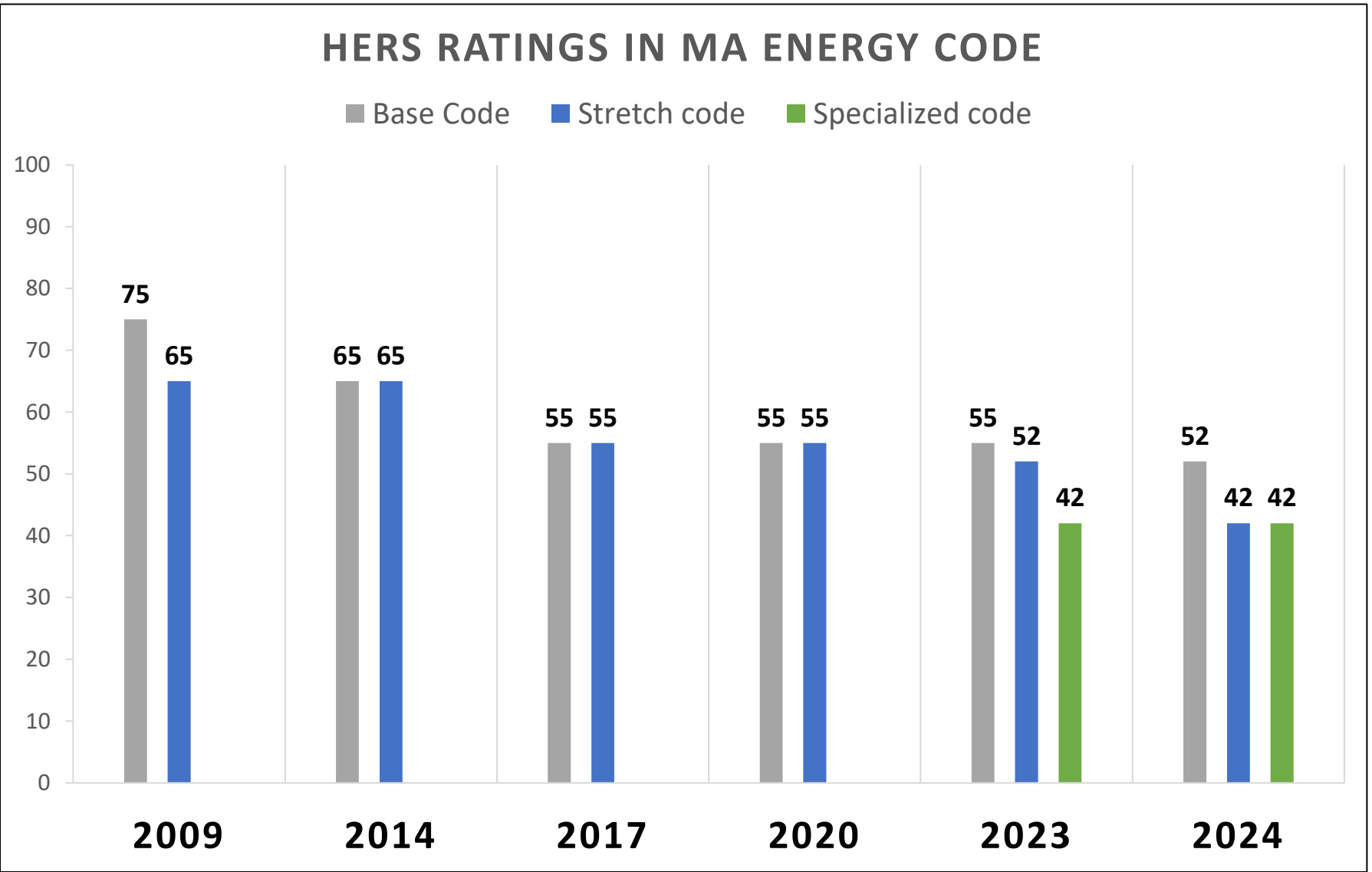
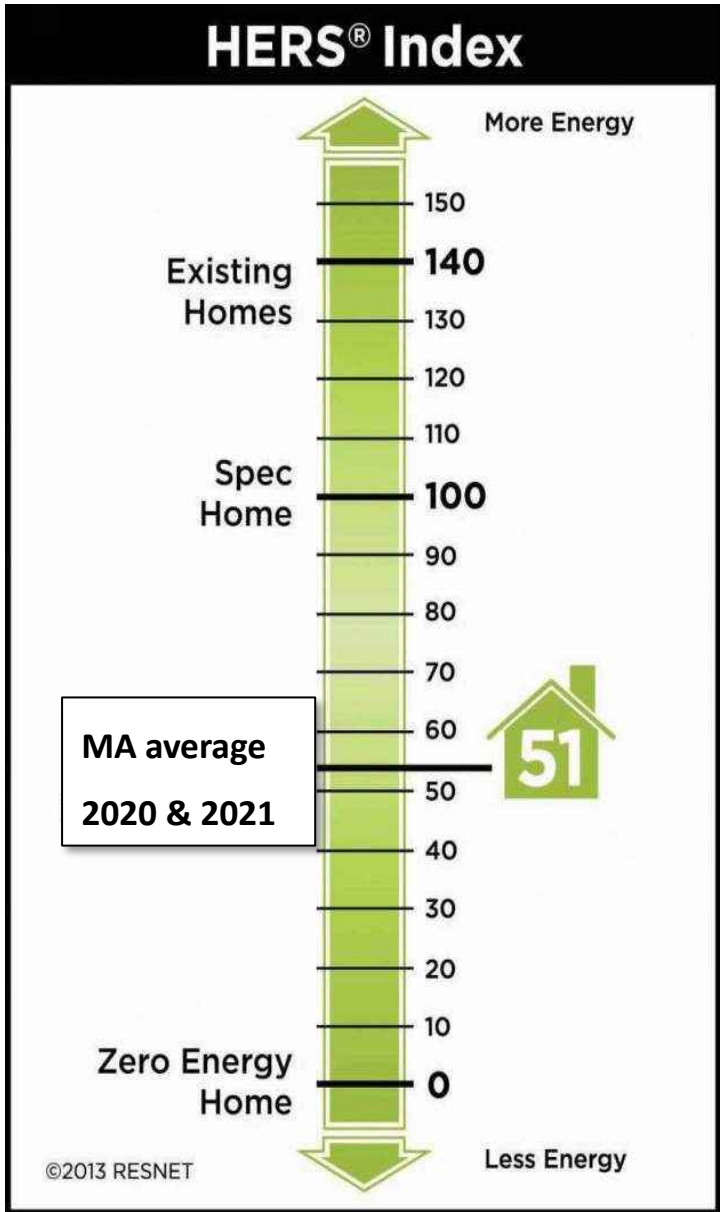
Intro to HERS ratings in MA energy code





Opt-in Specialized Energy Code

RESIDENTIAL
Low Rise & Multi-family

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Specialized vs Stretch code - Residential Low-Rise

Energy Source(s)	Home Size	Stretch code (July 2024)	Specialized Code
All Electric New Homes	Any Size home	HERS 45 or Passive house	
Mixed-Fuel New Homes	Under 4,000 sq. ft.	HERS 42	**+Solar PV (min 4kw) + wiring for electrification**
	4,000 sq. ft. and over	HERS 42	**+ Solar PV (to net-zero) + wiring for electrification**
	Any	Passive house option	**+ wiring for electrification**

EV wiring for 1 parking space

Energy Source(s)	Home Size	Stretch code (July 2024)	Specialized Code
Home additions & alterations	Any	Same as Stretch code	
Historic or Existing homes	Any	Energy Code exemption if it would damage the historic fabric of the building	

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Specialized Residential Code: Solar PV sizing

- Mixed-fuel buildings, solar required when there is a suitable solar-roof zone of 300 sq ft or greater
- All-electric buildings – solar not required, just solar-ready roofs

Home Type	Solar required
All-electric	No
Passivehouse	No
Mixed-fuel < 4,000 sq ft	**4 kW**
Mixed-fuel 4,000 sq ft +	**Enough for net-zero (8+ kw)**
Other residential	0.75 W/sq ft (same as commercial)

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Specialized vs Stretch code – Multi-family

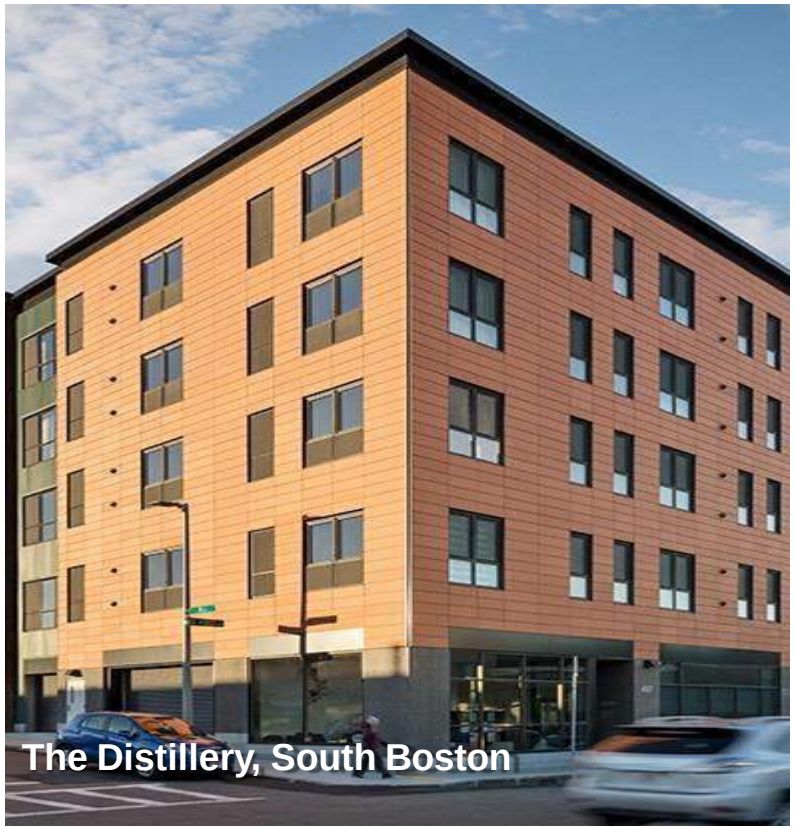
Building Type	Fuel Type	Stretch code (July 2024)	Specialized Code
New Multi-family (4+ stories & over 12,000 sf)	All Electric	HERS 45 or TEDI or Passive house	**Passive house**
	Mixed Fuel	HERS 42 or TEDI or Passive house	**Passive house + wiring for electrification**

EV wiring for 20% of parking spaces

Passive House Building Standards

What is Passive House?

- Passive House is third party building verification program with two options for certification (PHIUS and PHI)
- These certification standards set energy performance and building envelope air-tightness requirements
- Can be any type of building
- Does not require all-electric or net zero


The Distillery, South Boston

How do Passive House Buildings Perform?

- Heating loads can be reduced by 90% or more compared to a typical building
- Overall energy demand can be reduced by 60% or more
- Significant improvement in indoor air quality and occupant comfort

Affordable Housing & Passive House Are a Great Mix

- Lower utility costs for tenants or for the developer
- Higher level of indoor air quality leading to lower healthy impacts from indoor pollutants
- Improved occupant comfort, consent room temperatures, and elimination of air drafts
- Longer lasting construction with less maintenance needs (and costs)


The Kenzi, Roxbruy

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Specialized code – Requirements summary

- ✓No effect on existing houses
- ✓Efficiency requirements same as in Stretch code
- ✓EV ready same as Stretch code: min. 1 space (20% of spaces for business or multifamily residential)
- ✓Multi-family buildings over 3 stories: Passive house
- ✓New mixed-fuel buildings:
  - Pre-wired for Electrification
  - Solar PV on available space – minimum size
  - Homes over 4,000 sf – HERS 0 (HERS 42 + Solar PV)

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Frequently Asked Questions

- Why adopt the Opt-In Specialized Code?
  - **The #1 reason is that it requires pre-wiring**, avoiding costly retrofits down the road and expediting electrification.
- Does the Opt-In Specialized Code apply to existing structures?
  - **No**. Improvements to existing structures, depending on size, are regulated by the Updated Stretch Code and Base Code.
- Will the Opt-In-Specialized Code discourage the creation of affordable housing?
  - **No.** Incentives will continue to encourage affordable housing while the Opt-In Specialized Code delivers benefits for residents.
- Does the Opt-in or Stretch Code apply to historic buildings?
  - **No**. Historic buildings are exempt from the energy codes provided an official* agrees that compliance with the Base/Stretch code would threaten the historic character of the building.
- How do we know whether the grid will handle electrification?
  - The Stretch and Specialized codes are designed so that new buildings use as little additional demand as possible especially during peak times. The Specialized Code permits backup generators for all-electric houses.
- Is it possible to install a gas cooktop?
  - **Yes.** This is permitted under the Mixed Fuel pathways.
- Why does the Opt-In Specialized Code permit fossil fuels?
  - **It preserves market choice** at a time when utility pricing is highly volatile and utility costs vary 300% among MA communities.
- Is off-site renewable generation counted?
  - **No.**

*design professional, historic preservation authority, or State Historic Preservation Officer

Supplemental information

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Accessory Dwelling Units

ADUs (Accessory Dwelling units) Because these are dwelling units it means that a HERS rating can be conducted on an ADU. This is helpful because then if an addition or an alteration to an existing home is big enough to trigger the HERS rating requirement (ie. Over 1,000sf addition or change of use, or over 1,000 sf and over 50% of existing conditioned floor area for an alteration to an existing home.) then the HERS rating can be done on just the ADU, and it can be clearly separated from the original residential dwelling unit.

ADUs can be either additions – if they are physically connected to the existing building, or new construction – if they are standalone buildings. That new construction vs addition question is down to the physical design and that is based on IRC language that has been in place for decades, not the IECC deciding the difference between new construction and additions.

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Thermal Energy Demand Intensity (TEDI)

Stretch code now directly regulates heating and cooling demand for office, municipal buildings, schools, and residential buildings:

Heating TEDI

*Total annual energy **delivered to** the building for space conditioning and conditioning of ventilation air, normalized by area (kBtu/sf-yr)*

Cooling TEDI

*Total annual energy **removed from** the building for space conditioning and conditioning of ventilation air, normalized by area (kBtu/sf-yr)*

Important: even though they have the same units, TEDI is not the same as energy use intensity (EUI) TEDI is demand while EUI is consumption

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Specialized vs Stretch code – what's different?
Commercial Buildings

Building Type	Fuel Type	Stretch code (July 2024)	Specialized Code
Schools, Offices, Municipal buildings	All Electric	TEDI or Passive house	
	Mixed Fuel	TEDI or Passive house	TEDI **+ Solar PV** or Passive house **+ wiring for electrification**
Other Commercial (over 20,000 sf)	All Electric	ASHRAE or TEDI or Passive house	
	Mixed Fuel	ASHRAE or TEDI or Passive house	ASHRAE **+ Solar** or TEDI **+ Solar** or Passive house **+ wiring for electrification**

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Specialized Commercial Code: Solar PV sizing

CC105.2 On-site renewable energy. New mixed-fuel buildings shall have equipment installed for on-site renewable energy with a rated capacity of not less than 1.5 W/ft² (16.1 W/m²) multiplied by the sum of the gross conditioned floor area of the three largest floors.

Exception: Where the building site cannot meet the requirement in full with an on-site renewable energy system, the building site shall install a partial system designed to utilize not less than 75% of the *Potential Solar Zone Area*.

Examples of Solar PV size:

- 4 story 200,000 sf High school: 160,000 sf on 3 largest floors

  Min. Solar = 1.5 x 160,000 = 240 kW system

- 3 story 80,000 sf Office

  Min. Solar = 1.5 x 80,000 = 120 kW system

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Specialized Code – Commercial Building Pathways

Commercial Building Types (except Multi-family)

- All-Electric → Stretch code
- Passive House → Stretch code → **Electrification-ready (pre-wiring)**
- Mixed fuel → Stretch code → **Electrification-ready (pre-wiring)** → **Solar on-site where feasible**

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Improved Life Cycle Cost

Our 2021 study team (below) found that reducing energy demand:

- Lowered LCC for all building types
- Lowered first cost for some building types

https://www.mass.gov/lists/stretch-energy-code-development-support-documentation

Demand reduction means less equipment and equipment elimination

CONSIGLI Est. 1905 · BRA+ · BURO HAPPOLD · Steven Winter Associates, Inc. · nbi

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What about the grid?

Our 2021 study team (below) found the following:

- The same or lower peak electric use for most building types
- Modest peak electric increases in residential
- Across Massachusetts: about 5% increase in peak electric
- Key is demand reduction, which is key priority in new code

What happens to the grid when we "electrify everything"

https://www.mass.gov/lists/stretch-energy-code-development-support-documentation

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Resources

Stay in touch

Sign up for DOER energy code email updates:
https://app.e2ma.net/app2/audience/signup/1965182/1356542/
Code language, case studies, detailed technical information here:
https://www.mass.gov/info-details/stretch-energy-code-development-2022
Local vote coming up? Contact your local Green Communities Coordinator
https://www.mass.gov/service-details/contact-gc-coordinator

Energy Code Training (free via Mass Save®)
https://www.masssave.com/en/learn/partners/energy-code-training-and-events
Contractor Training
https://www.masssave.com/en/saving/residential-rebates/passive-house-training