



Article 15: Opt-In Specialized Energy Code

SPECIAL TOWN MEETING PRESENTATION

OCTOBER 30, 2023

Why are we talking about energy codes?

Climate Act of 2021 requires Massachusetts to achieve net zero by 2050.

- 2030: 50% GHG emission reduction, compared to 1990 levels
- 2040: 75% GHG emission reduction, compared to 1990 levels

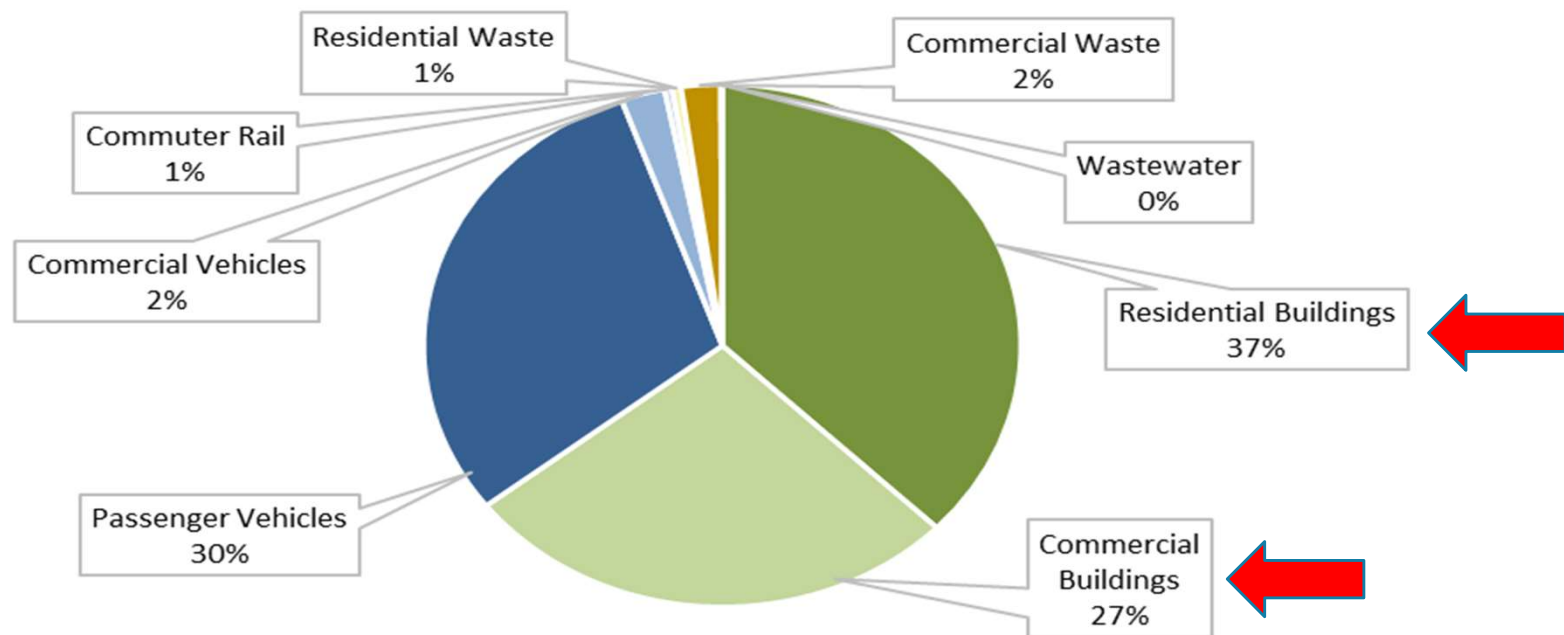
October 2021 Special Town Meeting adopts Climate Resolution recommending the Select Board:

- Communicate the critical need to achieve net zero greenhouse gas emissions.
- Prioritize projects that reduce the town's greenhouse gas emissions and biodiversity loss.

Needham Climate Action Plan Committee established by the Select Board to:

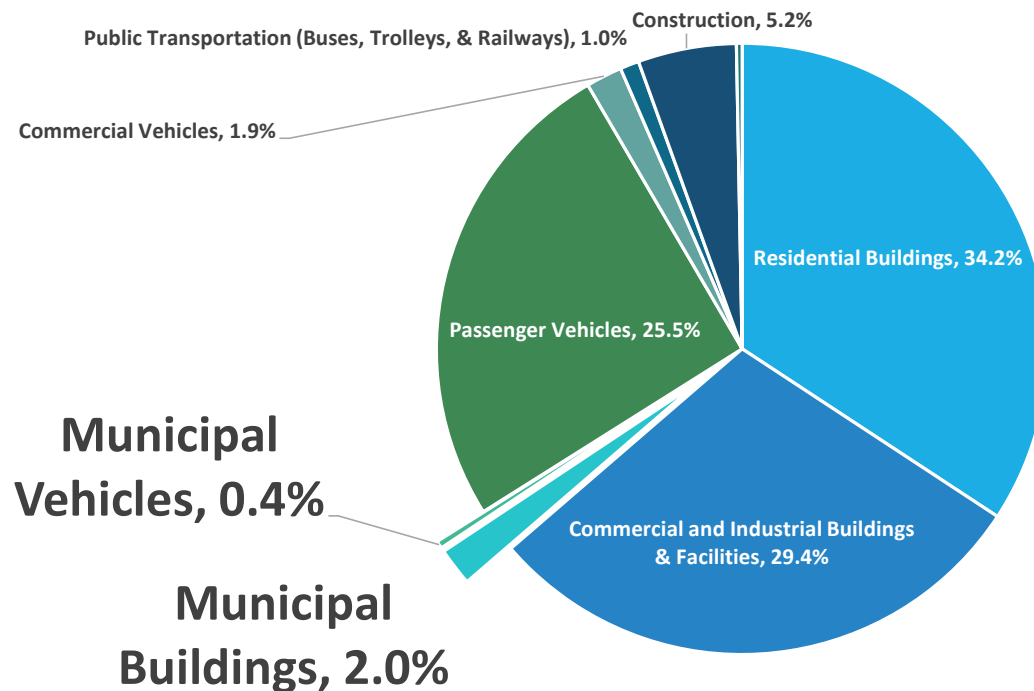
- Develop a townwide plan that meets or exceeds the State's climate mitigation and resilience goals.
 - Make recommendations to reduce Needham's greenhouse gas emissions.
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Buildings account for about 64% of Needham's greenhouse gas emissions

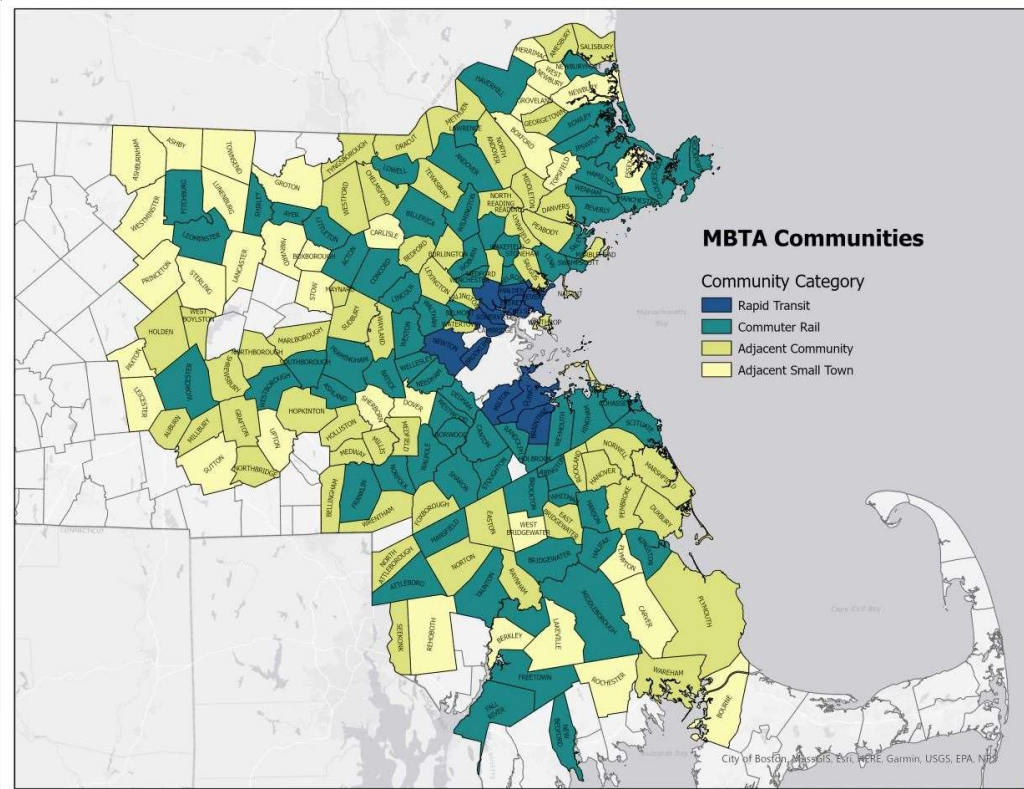


Source: Needham Greenhouse Gas Inventory, 2023 (Prepared by KLA Associates)

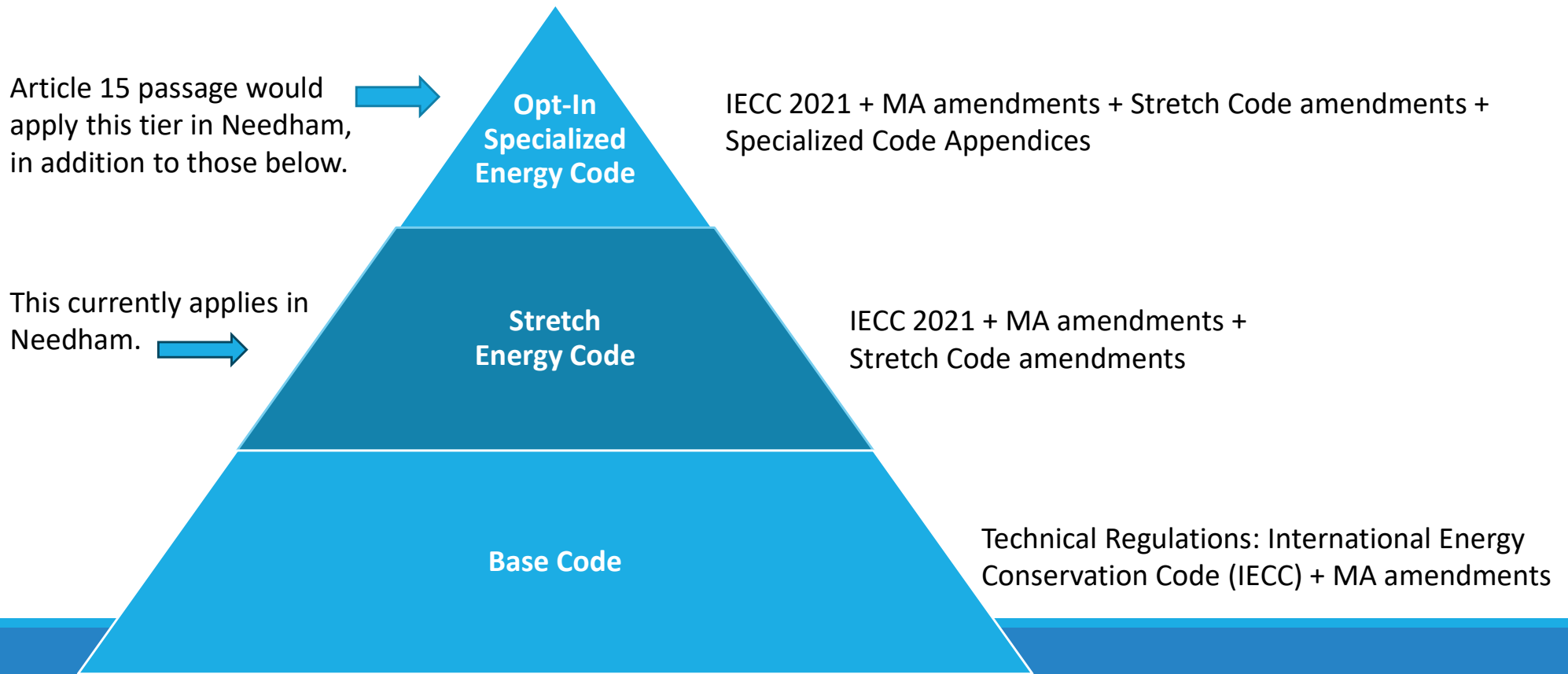
Town of Needham's share of greenhouse gas emissions is only ~2.5%



On the Horizon: Municipal Projects, MBTA Communities Act



Energy codes “build” on each other



Stretch & Specialized Energy Code History

2009	• Stretch Energy Code was created, giving cities and towns an option to require more energy efficient buildings • Adopting the Stretch Energy Code was required to qualify for Green Communities
2019	• Needham adopts Stretch Energy Code, effective January 1, 2020
2021	• Massachusetts' Climate Act of 2021 directed Mass Dept. of Energy Resources (DOER) to create a new energy code tier to provide a pathway for buildings to be made net zero by 2050
2022	• DOER releases updates to the Stretch Energy Code AND introduces the new Opt-In Specialized Energy Code for new construction
2023	• Updated Stretch Code went into effect for Needham on Jan 1, 2023 • Warrant article to adopt the Opt-In Specialized Energy Code goes to Town Meeting

New Opt-In Specialized Energy Code

1. Only applies to NEW construction.

2. New all-electric residential and commercial buildings of any size have same requirements under Stretch Code and Specialized Code.

3. New residential and commercial buildings with fossil fuels are required to be pre-wired to transition to all electric in the future and install solar panels.

4. New homes >4000 sq. ft. with fossil fuels must achieve net zero (likely through larger solar installation). Homes <4000 sq. ft. do not need to meet this standard.

5. Requires Passivehouse certification for multi-family buildings over 12,000 sq. ft.

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 Passivehouse	
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	Passivehouse option	+ wiring for electrification
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	

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 R-uses	0.75 W/sq ft (same as commercial)

Specialized vs Stretch code – Multi-family

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

Specialized vs Stretch code – what's different?

Commercial Buildings:

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

What is the financial impact of building to the Opt-In Specialized Code vs. Stretch Code?

- MassDOER's cost analysis of the Stretch Code found that single family homes built with all electric heating and cooling typically cost less to build and operate than those built with fossil fuels.
- Under the Specialized Energy Code, anticipated additional costs:
 - For new all-electric buildings = \$0
 - For new mixed-fuel buildings = the cost to pre-wire the building and to install solar, which will vary by project size.
- Adopting the Specialized Code would increase incentives for builders to install all-electric heating and appliances in new construction, thereby protecting future owners and tenants from the high cost of transitioning a building from fossil fuels to all-electric later.

Increased Incentives for builders & developers

- **All-electric homes are generally cheaper to build**
Heat Pump(s) replaces both Central A/C + Furnace(s)
- **Mass Save: 1-4 unit all-electric homes**
\$15,000 for HERS 45 single-family
\$25,000 for HERS 35 / Passive House single-family
- **Mass Save: multi-family Passivehouse**
\$3,000 per unit plus design study funding
- **Federal IRA:**
\$2,500 or \$5,000/home from 45L tax credit: (aligned with HERS)
up to \$6/sqft from 179D tax credit for commercial & multi-family

<https://www.masssave.com/saving/residential-rebates/all-electric-home>

<https://www.masssave.com/saving/residential-rebates/passive-house-incentives>

How will adopting the Opt-In Specialized Energy Code impact the cost of public building projects?

- **School Master Plan:**
 - The September 2023 Dore & Whittier estimates included \$30/square foot to comply with the Opt-in Specialized Energy Code.
 - The MA School Building Authority now provides an additional 3% reimbursement to municipalities whose projects meet the Opt-in Specialized code and achieve added indoor air quality standards.
- **Needham Housing Authority Linden/Chambers Redevelopment** is already being designed to meet the Opt-in Specialized Energy Code .
- **Department of Public Works Facilities:** Current feasibility study estimates include Stretch Energy Code compliance. These estimates would be updated to comply with the Opt-In Specialized energy code once a project option is chosen and the design phase is underway.
- There would be no impacts on projects that are already under construction.

Can the electric grid support this transition?

Yes, Eversource confirmed that Needham has sufficient capacity to support full electrification by 2050, with no significant upgrades to transmission or nearby sub-station required.

- Eversource continuously forecasts demand and updates 5-year plans for upgrades as needed.
- Electric grid is operating at 20% below the all-time system electric peak in 2006, due to energy efficiency measures.
- At the local street level, transformers (the “cans” on the poles) will need to be upgraded.

Massachusetts is expanding clean energy supply, transmission capacity, and has committed \$470M for grid modernization.

The Inflation Reduction Act also has significant funding for clean power generation, transmission, and grid modernization.

Sources: <https://www.energy.gov/sites/default/files/2022-10/BIL%20and%20IRA%20Program%20and%20Opportunities.pdf>
<https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac>

Adopted Opt-In Specialized:

Acton

Aquinnah

Arlington

Boston

Brookline*

Cambridge*

Concord

Lexington

Lincoln

Maynard

Newton

Northampton

Sherborn

Somerville*

Stow

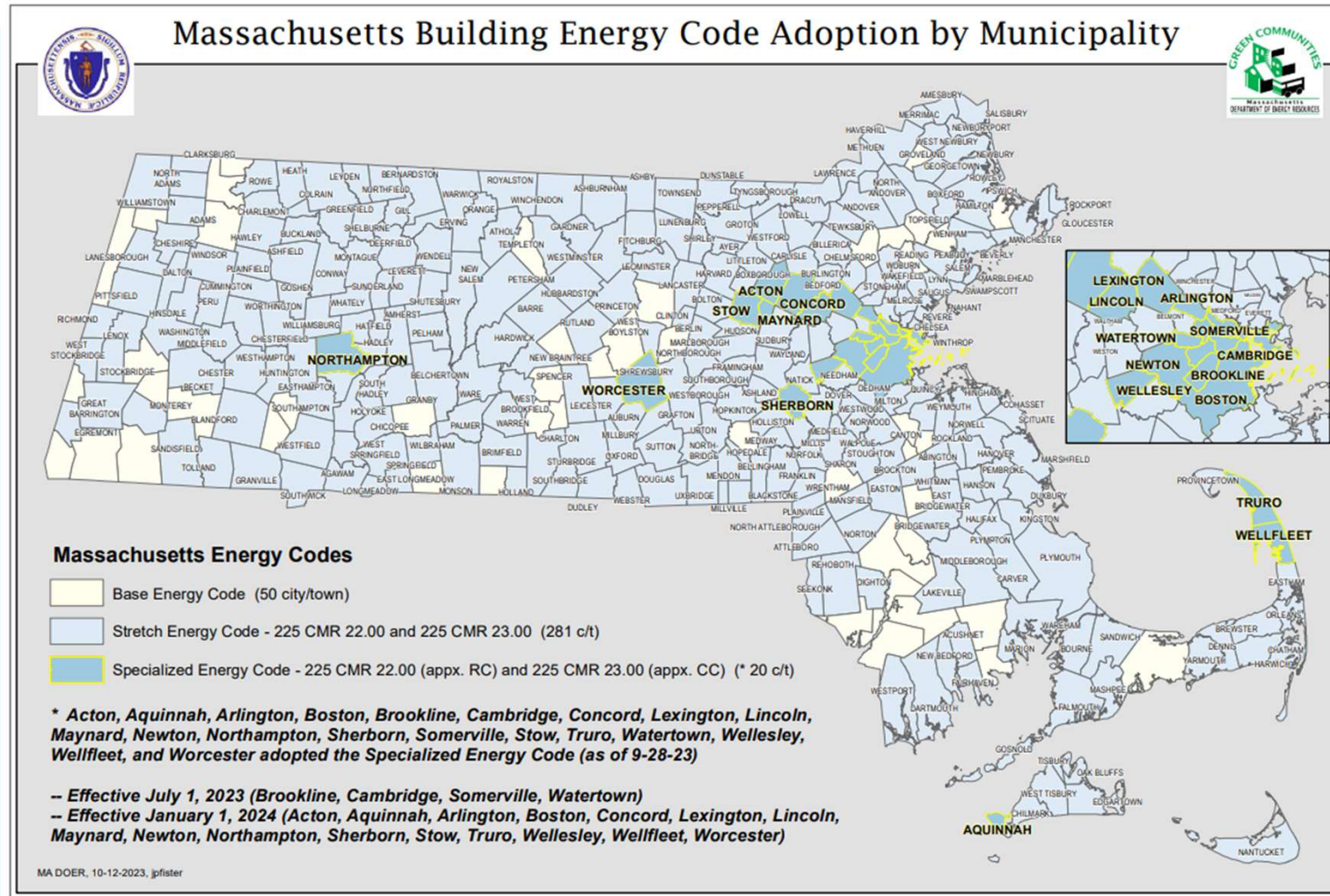
Truro

Watertown*

Wellesley

Wellfleet

Worcester



Source: <https://www.mass.gov/doc/building-energy-code-adoption-by-municipality/download>

Adoption & Implementation

- The Opt-In Specialized Energy Code must be **adopted as-is** (no amendments).
- Adoption of Article 15 would **approve all future versions** of the Specialized Energy Code, as it is updated by Mass Department of Energy Resources.
- The Opt-In Specialized Energy Code would **go into effect on July 1, 2024 in Needham**, if adopted.

The Select Board unanimously recommends adoption of Article 15.

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