



# FAQ Updated Stretch Energy Code & Opt-In Specialized Energy Code

## Overview

### **1. What are the building energy code options for cities and towns in Massachusetts?**

Cities and towns have three choices of standards for building energy performance: (1) a required *Base Energy Code*, (2) an optional, more energy efficient *Stretch Energy Code*, and (3) a new opt-in *Specialized Energy Code* that was created to ensure new construction meets State greenhouse gas limits.

### **2. What energy code currently applies in Needham?**

Needham adopted the *Stretch Energy Code* in 2019, effective January 1, 2020. The most recent version of the *Stretch code* was updated effective July 1, 2023. The Select Board has placed an article on the October 2023 Town Meeting warrant proposing to adopt the *Specialized Energy Code*, to be effective July 1, 2024. If Town Meeting adopts the *Specialized Energy Code*, it will apply to new construction and the *Stretch Code* will remain in effect for existing buildings, including certain renovations and additions.

### **3. What is the *Stretch code*?**

The *Stretch code* is a more energy efficient alternative to the base code. It increases the energy efficiency requirements for all new residential and commercial buildings, as well as for certain additions and renovations of existing buildings. It has been adopted by 301 communities in Massachusetts, 20 of which have also adopted the *Opt-In Specialized Code*.

### **4. What is the *Opt-In Specialized code*?**

The *Specialized code* was created to ensure that new building construction is consistent with State greenhouse gas emission limits set for 2025 to 2050, primarily through a combination of energy efficiency, reduced heating loads, and efficient electrification. Use of fossil fuels, such as gas and propane or biomass, is permitted but comes with additional requirements for on-site solar generation and pre-wiring for future electrification of any fossil fuel using equipment. It has been adopted by 20 communities in Massachusetts.

### **5. What is the history of the *Stretch* and *Specialized codes*?**

#### 2009

- *Stretch Energy Code* is created as part of Green Communities Act under Board of Building Regulations and Standards
- Towns and cities must adopt the *Stretch Energy Code* to qualify for Green Communities
- *Stretch Energy Code* sets efficiency requirements about 20% to 35% above the *Base Energy Code*

#### 2019

- Needham adopts *Stretch Energy Code* at Annual Town Meeting, effective January 1, 2020

#### 2021

- Climate Act 2021 established MA Department of Energy Resources as *Stretch Code* authority.
- Climate Act 2021 mandated a new energy code tier be developed to provide a pathway for buildings to be made net zero over time.



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### 2022

- DOER releases updates to the Stretch Energy Code and introduces the new Opt-In Specialized Energy Code for new construction.

### 2023

- Stretch Code updates went into effect for Needham on January 1, 2023, and July 1, 2023. Additional updates to the Stretch code will take effect on July 1, 2024.
- Select Board proposes adoption of Opt-In Specialized Energy Code for October Town Meeting. If adopted, the Specialized code would become effective in Needham on July 1, 2024.
- If Town Meeting adopts the Specialized Energy Code, it will apply to new construction and the Stretch Code will remain in effect for existing buildings.

### ***6. What building types does the Stretch energy code and Specialized code apply to?***

If adopted, the Specialized code would apply only to new residential and commercial construction. The Stretch code would apply to existing buildings, including certain renovations and additions. The codes only apply to construction projects receiving permits after effective dates, not those already under construction.

### ***7. What changed in the 2023 update to the Stretch code?***

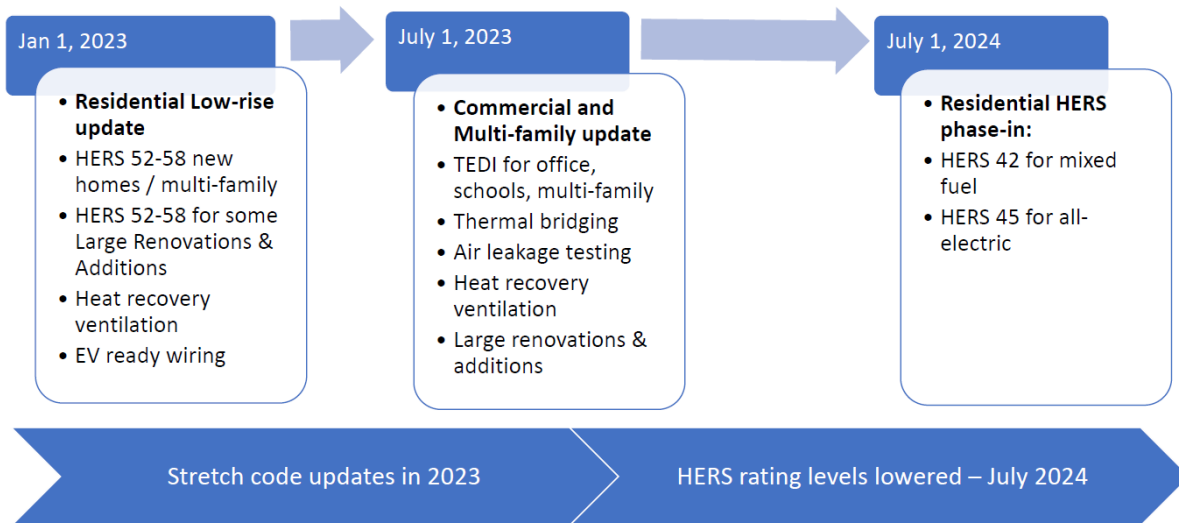
Needham adopted the Stretch code in all future forms, so the updates to the Stretch code applied immediately without a Town Meeting vote. By contrast, the Opt-In Specialized Energy Code requires Town Meeting to affirmatively vote to adopt it. Certain updates to the Stretch Code took effect immediately, other provisions became effective on July 1, 2023, and some will take effect July 1, 2024. All buildings are required to install wiring for electric vehicle (EV) charging in a minimum of 20% (up from 10%) of new parking spaces, and one space per home in one- and two-family homes.



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## Timeline: Stretch code update



Existing residential buildings are now subject to the updated Stretch code if:

- You are building an addition over 1,000 square feet,
- Your addition exceeds 100% of the conditioned floor area of the existing dwelling, or
- Renovations or reconfigurations are more than 50% of your home and the altered area exceeds 1,000 square feet.

Existing commercial buildings are now subject to the updated Stretch code if:

- You are building an addition greater than 20,000 square feet.
- There's an alteration of commercial building, but the code allows for 10% reduced envelope requirement for alterations compared to true new construction.
- There's a change of use or occupancy, but the code allows for a 10% reduced envelope requirement for change of use compared to true new construction.

### **8. Does the Stretch code apply to historic buildings?**

No, historic buildings are exempt from the Stretch code and the base energy code.

### **9. Does the Opt-In Specialized Energy Code apply to existing structures?**

No, the Opt-In Specialized Energy Code applies only to new construction and not to existing structures.



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### 10. What is the main difference between the updated Stretch Code vs Opt-In Specialized Energy code?

Under the Specialized Code, all mixed-fuel residential and commercial buildings (i.e., with any space or water heating or appliances powered by fossil fuels) must provide pre-wiring for electric space heating, electric water heating, and electric appliances.

### Specialized vs Stretch code - Residential Low-Rise

Energy Source(s)	Home Size	Stretch code	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	

Mixed-Fuel Residential buildings must also install solar. Those greater than 4,000 square feet must achieve high energy efficiency standards (net zero). These performance standards encourage large homes to go all-electric.

### 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



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Multi-Family residential buildings greater than 12,000 square feet must achieve pre-certification to Passive House Standards.

### 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

Mixed-Fuel Commercial and Municipal buildings of all sizes must offset their emissions by providing on-site solar panels or achieve Passive House certification plus wiring for future electrification.

#### **11. Is EV readiness required for alterations?**

No. EV readiness is only required for new construction.

#### **12. Is solar readiness required for alterations?**

No. The solar-ready provisions apply only to new construction.

#### **13. Are there EV parking space requirements?**

Yes. The updated Stretch Code raises the minimum number of spaces requiring EV wiring to 20% for business and multi-family buildings (up from 10% required in the base code), and 1 per new residential home. The EV requirements under the Opt-In Specialized Code are the same as the Stretch Code.

### **Adoption & Enforcement**

#### **14. Why adopt the Opt-In Specialized Energy Code?**

Buildings account for about 64% of Needham’s greenhouse gas emissions, with residential buildings contributing 37% and commercial buildings contributing 27% of total emissions. Achieving Net Zero emissions by 2050 will require efficiency upgrades and electrification of heating in all residential and



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commercial buildings. The Opt-In Specialized energy code will accelerate the transition to clean energy transition and avoid cost premiums to convert these buildings to all-electric in the future. As the electric grid becomes greener with wind, solar, and other renewables, all-electric homes will allow us to meet our net zero emissions targets.

### ***15. How is the Specialized energy code adopted?***

A vote of Town Meeting is required to adopt the Specialized energy code. Article 15 is on the warrant for Needham's October 30, 2023 Special Town Meeting. Once the Specialized code is adopted by a municipality, all future editions, amendments and modifications are automatically adopted unless the municipality rescinds adoption of the code itself by a vote of Town Meeting. A community must adopt the Specialized code "as is," without applying any amendments or conditions.

### ***16. How many MA communities have adopted the current Stretch Code?***

As of September 2023, 50 municipalities follow the base code, 281 municipalities have adopted the Stretch code and 20 municipalities have adopted the Specialized code. Specialized code has been adopted in Acton, Aquinnah, Arlington, Boston, Brookline, Cambridge, Concord, Lexington, Lincoln, Maynard, Northampton, Newton, Sherborn, Somerville, Stow, Truro, Watertown, Wellesley, Wellfleet, and Worcester.

### ***17. How would the Specialized code be implemented and enforced?***

Once the Specialized energy code is adopted by a town or city, it supplements the previous energy code language and becomes the binding energy code language for building projects in that municipality. Implementation and enforcement of the code is similar to existing code, where the developer is responsible for submitting documentation of compliance to the building inspector for review, and the building inspector conducts a site review.

### **Other Considerations**

### ***18. How will adopting the Opt-In Specialized Energy Code impact the cost of potential municipal 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 code.

Department of Public Works Facilities: Feasibility study estimates include stretch energy code compliance. These estimates would need to be updated to comply with the specialized energy code once a project option is chosen and the design phase is underway.



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There would be no impacts on projects that are already under construction.

### ***19. Is it possible to install a gas-powered cooktop, water heater or other appliance along with all-electric heating and cooling?***

Yes, but this would be a Mixed Fuel building and must meet the Mixed Fuel requirements including installation of electrical service and wiring for eventual conversion of those gas appliances to electric. All-electric buildings allow fossil fuels for emergency backup generation systems.

### ***20. What is the anticipated cost of building under the Opt-In Specialized energy code?***

DOER has commissioned studies to analyze the change in construction costs related to building to the Stretch code for several sizes and types of residences, and they generally indicate the construction and operating costs are lower with fully electric heating and cooling via heat pumps compared to fossil fuels. <https://www.mass.gov/doc/residential-stretch-code-costs-and-benefits-case-studies/download>

Under the Specialized Energy Code, there would be no additional costs for all-electric buildings compared to the Stretch Code.

Under the Specialized Energy Code, anticipated additional costs for new mixed-fuel buildings include the cost to pre-wire the building for future electrification and the cost 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.

### ***21. Won't the electric grid be overwhelmed by building electrification?***

Today, the electric grid is operating at 20% below the all-time system electric peak in 2006, due to energy efficiency measures. Nearly 50% greater energy efficiency will be gained by switching from fossil fuels to electric vehicles, electric heat pumps, and electric appliances. Electric heat pumps are 2.5 to 4 times more efficient than the most efficient gas boiler. By 2035, building electrification will cause the grid to switch from summer peaking to winter peaking. This will not require a lot of transmission upgrades in the next 10 years. By 2050, New England capacity is planned to double from 25 to 50GW; an additional 10 GW is planned to be available by 2035. The electric grid is mandated to get greener by 3% per year.

At the April 2023 Climate Action Planning Committee meeting, Eversource presented that Needham has sufficient capacity to support full electrification by 2050, with no significant upgrades to transmission lines or nearby sub-station required. Eversource continuously forecasts demand and updates 5-year plans for upgrades as needed. Eversource did say that at the local street level, transformers (the "cans" on the telephone poles) may occasionally need to be upgraded.



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### **22. Will the Opt-In-Specialized Energy Code discourage the creation of affordable housing?**

No, because financial incentives through Mass Save and competitive incentives from the Department of Housing and Community Development make this attractive. Once federal and state incentives are factored in, builders with experience building all-electric buildings incur little if any additional construction costs. Third party power purchase agreements provide solar energy with no upfront cost.

### **23. Why are fossil fuels permitted if the climate bill required DOER to produce a “net zero” code?**

The definition of “Net Zero” is evolving. The Federal Department of Energy (DOE) compiled 20+ net zero definitions used in official publications over the past decade; many definitions permit fossil fuel use. Both the Updated Stretch Code and Opt-In Specialized Energy Code offer Mixed Fuel and All Electric compliance pathways. This preserves market choice at a time when economic uncertainty makes utility pricing highly volatile, and utility costs vary significantly from one community to another.

### **Technical**

### **24. What is TEDI and how is it calculated?**

TEDI stands for “Thermal Energy Demand Intensity.” Like, EUI, “Energy Use Intensity,” TEDI is a computed value derived from building energy modeling software such as eQuest. Whereas EUI measures annual energy consumption, TEDI measures annual thermal demand (not usage), reflecting the building envelope and mechanical design quality. DOER has issued [2023 Technical Guidance for Massachusetts Stretch Codes](#) and [Guidelines for TEDI Modeling](#), explaining, among many other things, how TEDI values are calculated.

### **25. What is a HERS rating?**

HERS stands for ‘Home Energy Rating System,’ and is a national standard that uses information on the design of the energy systems in a home to calculate, via computer modeling, the average energy needs of that home and give it a rating score. The HERS Index was developed by the non-profit Residential Energy Services Network (RESNET) for the mortgage industry and is utilized by the Federal Internal Revenue Service (IRS) and the LEED for Homes program. On the HERS 2006 index scale smaller numbers are better, with 0 representing a net zero energy home, and 100 represents a home built according to meet the national model energy code in 2006 (the IECC 2004 with 2005 amendments). A HERS rating of 52 means that the home uses about 48% less energy than the same size home built to the 2004/2005 IECC code requirements.

### **26. What is Passive House?**

Passive House is a set of performance-based building certification standards that focus on the significant reduction of energy demand while ensuring a healthy and comfortable building. A Passive House can be any building and any size – a home, office, or school, a large multifamily building or mixed-use commercial development. A Passive House approach focuses on the building envelope and mechanical systems to reduce energy.





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### Resources

#### **27. Where can I go to learn more?**

MA Department of Energy Resources: <https://www.mass.gov/info-details/building-energy-code>

The Mass Save program provides training for code officials, builders, and design professionals: <https://www.masssave.com/trade-partners/energy-code-training-and-technical-support>

[\*A Next-Generation Roadmap for Massachusetts Climate Policy \(2021\)\*](#)

[\*Global Warming Solutions Act \(2008\)\*](#)

Northeast Energy Efficiency Partnerships' [Commercial](#) and [Residential](#) resources.

[HERS Index](#)

[Passive House Massachusetts](#)