



# Massachusetts Codes

## Updated Stretch Code and Municipal Opt-In Stretch Code for Residential Low Rise

### Background and Introduction

Massachusetts has consistently been a national leader in energy efficiency, especially in new construction. With buildings making up 40 percent of total greenhouse gas emissions in the United States, decarbonization measures in new construction offer critical solutions to mitigate the worst impacts of climate change. Base codes only go so far to address emission reduction goals, so states must take the lead and adopt above-code measures in order to effectively respond to a changing climate.

Massachusetts has recently revamped its energy stretch code in order to meet targets set by the [Global Warming Solutions Act](#). This ambitious [Updated Stretch Code](#) adopts stronger measures that greatly exceed those of the 2021 International Energy Conservation Code (IECC). In addition to the Updated Stretch Code, the Climate Act of 2021 in Massachusetts requires the Department of Energy Resources (DOER) to create a [Municipal Opt-In Stretch Code](#) that provides even more opportunities for energy savings than the Updated Stretch Code.

The Green Communities Program in Massachusetts requires that existing and newly- designated Green Communities adopt the Updated Stretch Code. As of November 2022, 299 cities and towns in Massachusetts have joined the program. This document summarizes the new provisions of both the Updated Stretch Code and Municipal Opt-In Stretch Code for low-rise residential buildings. For information regarding commercial buildings, please see NEEP’s resource on the Commercial Updated Stretch Code and Municipal Opt-In Stretch Code.

The Updated Stretch Code requirements outlined in this document take effect for buildings permitted on or after January 1, 2023, except for Section R406 for HERS Ratings, which have an interim score that will be reduced in July 2024. The HERS Index reflected in this document is the updated score that will take effect in July 2024. For existing Green Communities, the Updated Stretch Code will automatically take effect immediately on January 1, 2023 without the need for adoption by municipalities.

The Municipal Opt-In Stretch Code will be available for adoption in late December 2022. The recommended effective period is at least six months after adoption, allowing an easier transition for developers, builders, and designers, and giving time for training municipal code officials. This adoption cycle mirrors that of the stretch code, which would initially take effect in either January or July, depending on which is at least six months from the adoption date.



## **Base Code**

Massachusetts recently promulgated the 10th Edition of the Building Code which will take effect in early 2023 after a public comment period. The 52 municipalities in Massachusetts that haven't joined the Green Communities Program must follow the Massachusetts amended 2021 International Energy Conservation Code (IECC)<sup>1</sup>.

## **Updated Stretch Code**

All 299 municipalities in the Green Communities Program are automatically enrolled in the Updated Stretch Code and must follow the requirements in the base code, the 2021 IECC, along with the amendments of the Massachusetts Updated Stretch Code. The Updated Stretch Code provisions are noted in this section.

**R405:** There is a new optional compliance pathway via Passive House Institute US (PHIUS), or Passive House International (PHI), which requires a home to meet PHIUS CORE 2021, PHIUS ZERO 2021, or PHI. Passive House is a holistic approach to durability, high air quality, occupant comfort, and energy savings.

**R406:** The other pathway to compliance is a Home Energy Rating System (HERS) Rating, which is a points-based rating system performed by a third-party verifier used to quantify overall energy use, similar to a miles-per-gallon sticker on a car. A HERS 100 is equivalent to a new home constructed in 2006 from the perspective of energy use, and the lower the score the better. The required HERS Index for compliance is HERS 42 if the building is using fossil fuels, or HERS 45 if the building is all electric.

**R403.6.1:** An Energy Recovery Ventilator (ERV) or Heat Recovery Ventilator (HRV) is required to meet the whole home ventilation requirements of the code. These systems are more effective than traditional exhaust-only ventilation systems (such as a bath fan) because they provide supply air from the outside and also remove stale air from the home, which effectively balances the flow of the system and improves indoor air quality.

**R404.4:** For single family homes, one parking space is required to be Electric Vehicle (EV) Ready, which means it has to be wired to accommodate future electric vehicle use. For multifamily homes, 20 percent of the parking spots have to be EV Ready. This will ease the transition for new homeowners who want to purchase EVs.

**R503.1.5:** The HERS Index required for alterations, additions, and change-of-use is lowered to a HERS 52 if the home is using fossil fuels, a HERS 55 if the home is all electric or using solar PV, or a HERS 58 if it is both all electric and using solar PV. This will allow for more efficient existing building upgrades.

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<sup>1</sup> Residential IECC2021 MA amendments-UNOFFICIAL: <https://www.mass.gov/doc/residential-iecc2021-ma-amendments-unofficial-posted-12121/download>



## ***Municipal Opt-In Stretch Code***

These requirements are for municipalities that want to go above and beyond the stretch code requirements. In addition to following the IECC 2021 and Updated Stretch Code, these municipalities must also follow the provisions outlined in this section.

Each municipality must comply with one of the following sections depending on building energy fuel type.

**RC103 (All-Electric):** For a building to be considered all electric, it must use air source or ground source heat pumps for space heating, a heat pump or solar thermal system for water heating, and all electric appliances. A HERS 45, PHIUS CORE, or PHI is required for compliance for single family dwellings. Unlike the Updated Stretch Code, however, there is an additional provision for multifamily buildings greater than 12,000 square feet to only allow PHIUS CORE or PHI for compliance, removing the HERS Index Option. This means that multifamily projects must be built to the Passive House Standard.

**RC104 and RC105 (Mixed Fuel):** This path is for buildings using fossil fuels for space heating, water heating, cooking, or clothes drying. Unlike the Updated Stretch Code, this option requires electric readiness for future electrification of a home, meaning that homes should be wired to accommodate future electric use and plugs must be installed near fossil fuel equipment for future installation of electric equipment. In addition, the Municipal Opt-In Stretch Code contains specific requirements depending on the size of the unit. For dwelling units up to 4,000 sq ft, a HERS 42 or PHIUS CORE or PHI is required, and solar PV must be installed, with an exception for shaded sites. For dwelling units over 4,000 sq ft, a HERS 0 or PHIUS ZERO is required and solar PV or other renewables must be installed. For multifamily units over 12,000 sq ft, PHIUS CORE or PHI is required and renewable generation is optional.

**RC102 (Zero Energy Buildings):** This is an optional pathway for buildings that are designed to result in annual net zero energy consumption through a combination of highly energy efficient design and onsite renewable energy generation. If using the HERS Rating path, the HERS Index must be 42 or below before factoring in solar, and HERS 0 after solar is installed. If using the Passive House Path, a PHIUS ZERO certification is required without the use of renewable energy credits (RECs) or off-site renewable energy sources.

## **Conclusion**

The Massachusetts Updated Stretch Code and Municipal Opt-In Stretch Code offer solutions that would save money on energy bills, improve indoor air quality, and ease the transition to a clean energy future. The state has used energy codes as one of many tools to reduce carbon emissions and meet its goals set forth in the Global Warming Solutions Act. The state also added provisions dedicated to addressing equity and environmental justice such as strengthened ventilation requirements, which creates a healthier living space for occupants of a home or building. Stretch codes are unique because they go above and beyond what is expected, which demonstrates strong leadership and a commitment to addressing the challenges posed by climate change. Although there is always more that can be done, Massachusetts has taken a great first step in advancing its clean energy and climate goals.



## Comparison Chart

	UPDATED STRETCH CODE		MUNICIPAL OPT-IN STRETCH CODE	
<b>RESIDENTIAL LOW-RISE</b>				
R406.5 Maximum Energy Rating Index (HERS Index) <sup>1</sup>	Fossil Fuel	HERS 42	<4000 sf - Mixed Fuel*	HERS 42
	Solar		<4000 sf - All-Electric	HERS 45
	All-Electric	HERS 45	>4000 sf - Mixed Fuel*	HERS 0
	Solar & All-Electric		>4000 sf - All-Electric	HERS 45
R405 - Passive House Building Certification Pathway <sup>2</sup>	Passive House	PHIUS CORE, PHIUS ZERO, or PHI	All Building Sizes	PHIUS CORE, PHIUS ZERO, or PHI
R403.6.1 Mechanical Ventilation <sup>2</sup>	ERV/HRV for Ventilation		ERV/HRV for Ventilation	
R404.4 - EV Ready Parking Spaces <sup>2</sup>	1 EV Ready Space		1 EV Ready Space	
<b>EXISTING BUILDINGS</b>				
R503.1.5 Alterations <sup>1</sup>	Fossil Fuel	HERS 52	Fossil Fuel	HERS 52
	Solar	HERS 55	Solar	HERS 55
	All-Electric		All-Electric	
	Solar & All-Electric	HERS 58	Solar & All-Electric	HERS 58
<b>MULTI-FAMILY</b>				
R406 Maximum Energy Rating Index (HERS Index) <sup>1</sup>	Fossil Fuel	HERS 42	None	
	Solar			
	All-Electric	HERS 45		
	Solar & All-Electric			
R405 - Passive House Building Certification Pathway <sup>2</sup>	Passive House	PHIUS CORE, PHIUS ZERO, or PHI	>12,000 sf Mixed Fuel	PHIUS CORE or PHI
			>12,000 sf All Electric	
R403.6.1 Mechanical Ventilation <sup>2</sup>	ERV/HRV for Ventilation		ERV/HRV for Ventilation	
R404.4 - EV Ready Parking Spaces <sup>2</sup>	20% of Spaces EV Ready		20% of Spaces EV Ready	

1. Impacts buildings permitted on or after July 1, 2024 for Updated Stretch Code

2. Impacts buildings permitted on or after January 1, 2023 for Updated Stretch Code

\* Municipal Opt-In Stretch Code requirements only take effect after adoption, with a recommended 6 month waiting period