

Stretch Code Overview

- Municipalities have two options for building energy codes – Base or Stretch.
- Adopting the stretch code fulfills the fifth of five criteria required for Green Communities Designation
- The stretch code **applies to:**
 1. New Residential Construction
 2. New Commercial Construction over 100,000 sq. ft.
 3. New Commercial conditioned spaces (labs/supermarkets) over 40,000 sq. ft.
- The stretch code **does not apply to:**
 1. Additions, renovations or repairs to residential or commercial buildings
 2. Historic Buildings
- The stretch code requires buildings to follow the “performance path” outlined in the base code (see definitions below).

Performance path: This means the building performs to a certain level of efficiency, in this case a HERS rating of 55 or below (see HERS overview sheet). The advantage of the performance path is it ensures building performance and allows for some flexibility on which energy efficiency measures to install. The disadvantage is it requires a HERS rater which adds a \$700 to \$1,300 cost. Much, if not all of HERS rater costs can be reimbursed through the [MassSave program](#).

Prescriptive path: This path is available only in the base code. It requires the installation of certain energy efficiency measures, such as boilers with a certain level of efficiency, insulation with a specific R-value, or windows with a specific U-factor. The advantage is it does not require the added costs and work involved with a HERS rating. The disadvantage is there is less flexibility and there is no guarantee for performance.

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*Creating a Clean, Affordable and Resilient
Energy Future for the Commonwealth*



Stretch Energy Code - Needham

Massachusetts gives communities two options for their building energy code – a base energy code or an optional stretch energy code. Municipalities can choose to adopt the stretch energy code by vote of City Council or Town Meeting article and it can be rescinded by vote of Town Meeting. Adoption of the Stretch Code will allow the Town of Needham to apply for designation as a Green Community and thus be eligible for grants to pay for energy saving projects in town buildings.

On January 1, 2017, both the Base Energy Code as well as the Stretch Energy Code were updated. The difference between the two will be much smaller than in the past. In fact, the new Stretch Code will be incorporated into the new Base Code; no more extensive and separate language to describe it. Basically, **new** residential construction in a Stretch Code town will need to follow the Performance Path of the Base code and achieve a **HERS rating of 55** rather than following the Prescriptive Path of the Base Code. The updated Stretch Code will also apply to new commercial buildings over 100,000 square feet. **Additions, renovations, and repairs to residential or commercial buildings are not applicable to the updated Stretch Code, only the Base Energy Code is applicable.**

A key feature of the Stretch Energy Code is that it is performance based. It requires new homes to meet a HERS (Home Energy Rating System) index rating target, rather than requiring the installation of specific levels of energy efficiency for each building element (e.g. windows, wall insulation, roof insulation, furnace etc). The HERS rating is a measure based on a home's total expected energy use and overall efficiency. It is calculated by a certified HERS rater using accredited software, which uses information on the design of the energy systems in a home to calculate the annual energy needs of the home and give it a rating score.

One benefit of using HERS ratings for compliance with the Stretch Energy Code is that builders do not have to install specific energy efficiency measures, rather they have the flexibility to choose which energy efficiency measures to install, and how to design the home in order to meet the HERS rating target. It is also a way to ensure that homes are well built. As part of the HERS rating, the HERS rater tests the home for air leakage and inspects insulation installation, which helps ensure that the home performs as designed.

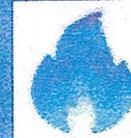
The Base Energy Code in Massachusetts is updated approximately every 3 years, the Stretch Energy Code must be updated periodically in order to maintain the "stretch." When the stretch energy code was first adopted, it was characterized as adopting the next version of the base energy code early, which is how it turned out.

The Board of Building Regulations and Standards (BBRS) and the Department of Energy Resources (DOER), two state entities responsible for the building energy codes, have completed work on a new stretch energy code. Basically, it requires that the performance path of the standard building code be followed in Stretch Code municipalities for new homes and for large new commercial buildings. The new Stretch Code will add an additional cost to new home construction which will be primarily for the services of the HERS Rater. This is generally in the \$700 - \$1300 range per residence. There are also typically significant annual energy bill savings that more than tip the balance to give homeowners a net savings every year. Some, if not all, of the HERS Rater costs may be reimbursed to the builder through the MassSave program.

Once adopted, the stretch energy code would take effect on the date identified in the local City Council's ordinance adopting the Stretch Code. Currently 250 communities, representing more than half of the state's population (over 70%), have adopted the Stretch Energy Code. Nearby communities that have adopted it include Belmont, Brookline, Dedham, Dover, Holliston, Hopkinton, Natick, Newton, Wayland, Westwood, and Wellesley. Most builders in the area are familiar with the requirements of the Stretch Energy Code. Many builders say that the energy efficiency trade-off features of the Stretch Code makes it easier to fulfill customers design wishes than following the Base Energy Code prescriptive requirements.

9th Edition Stretch Code Modeling Analysis

2550 sq.ft. 3 BR Single Family Home with Natural Gas Heat
Worcester, MA



HERS Index (ERI)	
Target	55
Example Base	66
Example Stretch	55

Costs and Benefits to Meet Stretch Code

	COSTS	BENEFITS	NET		
	Adjustments + HERS Rater Fee	Utility Rebates ¹	Cost Compared to Base Code		
BUILDER	+\$(2,606)	-\$1,630	\$(976)		
	Change to Downpayment ³	Change to Annual Mortgage Payment ³	Estimated Reduced Energy Cost per Year ²	Year 1 Cash Flow	Year 2+ Cash Flow
HOMEBUYER	+\$(97)	+\$(77)	-\$213	\$37	\$135

1 – Incentives are determined using the Blended Savings Approach calculator. Savings compared to MA reference home.
BSA Incentive = \$0.35 * kWh savings + \$35 * MMBtu savings + \$3000 * 0.xx percent savings (single family home)

2 – Energy costs are based on 19 cents/kWh, \$0.97/therm, \$2.88 gal propane, \$2.58 gal oil. Savings are compared with Base Code home

3 – 30-year mortgage assumes 10% down payment at 4% APR



APPENDIX AA Stretch Energy Code Language:

AA101 Purpose and Adoption. The purpose of the stretch energy code is to provide a more energy efficient code alternative for new buildings. The stretch energy code may be adopted or rescinded by any municipality in the commonwealth in the manner prescribed by law.

AA102 Applicability. Municipalities that have adopted the stretch energy code shall use the energy efficiency requirements of this appendix as provided below. These requirements replace all previous stretch energy code requirements.

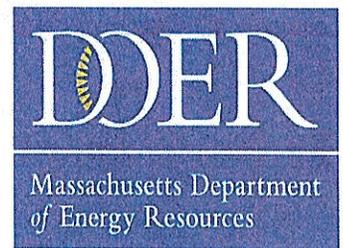
AA103 New buildings.

AA 103.1 R-use buildings. In all R-use buildings, of four stories or less above *grade plane* with one or more dwelling units, each *dwelling unit* shall comply with Section N1106 of 780 CMR 51 (Residential Code). **THIS IS SAYING THAT STRETCH CODE APPLIES TO ALL NEW RESIDENTIAL BUILDINGS 4 STORIES OR LESS**

AA103.2 Large area and high energy use buildings. All buildings over 100,000 sq ft, and new supermarkets, laboratories and conditioned warehouses over 40,000 sq. ft. shall comply with 780 CMR 13 and shall demonstrate energy use per square foot at least 10% below the energy requirements of ANSI/ASHRAE/IESNA 90.1 APPENDIX G Performance Rating Method on either a site or source energy basis. **THIS IS SAYING THAT STRETCH CODE APPLIES TO ALL NEW COMMERCIAL BUILDINGS OVER 100,000 SQ. FT. OR 40,000 SQ. FT. FOR CONDITIONED SPACES**

AA103.3 Other new buildings. New buildings not covered in AA103.1 and AA103.2 shall comply with 780 CMR 13: *Energy Efficiency* or 51.00: *Massachusetts Residential Code*, Sections N1100.1 through N111.2, as applicable based on the use and occupancy of the building. **THIS IS SAYING THAT ANY NEW BUILDINGS THAT ARE NOT MENTIONED ABOVE, YOU SHOULD REFER TO THE BASE CODE (RELEVANT SECTIONS LISTED). THIS MEANS THE STRETCH CODE DOES NOT APPLY AND NOTHING CHANGES FOR SUCH BUILDINGS.**

AA104 Existing buildings. For alterations, renovations, additions or repairs of existing buildings in these municipalities the energy efficiency requirements of 780 CMR 13: *Energy Efficiency* or 51.00: *Massachusetts Residential Code*, Sections N1100.1 through N111.2, as applicable based on the use and occupancy of the building. **THIS IS SAYING THAT FOR RENOVATIONS AND ADDITIONS, REFER TO THE BASE CODE (RELEVANT SECTIONS LISTED).**



Stretch Code Adoption Process

INTRODUCTION

In accordance with M.G.L. c 25A Section 10, a municipality must require all new residential construction over 3,000 square feet and all new commercial and industrial real estate construction to minimize, to the extent feasible, the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.

The recommended way for cities and towns to meet this requirement is by adopting the Board of Building Regulations and Standards (BBRS) Stretch Energy Code (780 CMR 115.AA), an appendix to the MA State Building Code. Should a community choose to not adopt the Stretch Code and choose to use another standard, the community must provide evidence that this alternative standard minimizes the life cycle energy costs for all new construction and is enforceable by the community.

The purpose of the Stretch Energy Code is to provide a more energy efficient alternative to the Base Energy Code for new buildings. A municipality seeking to ensure that construction within its boundaries is designed and built to the highest energy efficiency requirements of 780 CMR (i.e., the "Base" Energy Code) may mandate adherence to the Stretch Energy Code. Municipalities interested in adopting 780 CMR 115.AA, the Stretch Energy Code, are directed to do so in the manner prescribed by law. The code may also be rescinded by any municipality in the Commonwealth in the manner prescribed by law.

Municipalities that have adopted the stretch energy code shall use the energy efficiency requirements of appendix 780 CMR 115.AA, which stipulates higher energy efficiency requirements for most new construction.

PROCESS for ADOPTION

Cities are advised to adopt the Stretch Code by general ordinance via City Council.

Towns are advised to seek adoption of the Stretch Code as a general bylaw through a vote of Town Meeting.

Please note, once the Stretch Code is adopted by a municipality, all future editions, amendments and modifications of the Stretch Code are automatically adopted unless the municipality rescinds adoption of the Stretch Code itself. A community must adopt the Stretch Code "as is," without applying any amendments or conditions.

Also note, according to the Attorney General's office:

Pursuant to G.L. c.40, S 32, neither general nor zoning by-laws take effect unless the town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, general by-laws and amendments take effect on the date that these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law ...

DOER recommends that the warrant article, the motion and the by-law/ordinance explicitly specifies an effective date so that everyone (building officials, builders, homeowners, voters) is fully aware of when the Stretch Energy Code takes effect. It is further recommended that municipalities choose either July 1 or January 1 as the effective date (whichever comes 'next' after the vote).

The following sample article, sample motion, and sample bylaw/ordinance are provided as examples:

SAMPLE TOWN WARRANT ARTICLE:

To see if the Town will vote to enact Chapter ___ of the Town of _____ General Bylaws, entitled "Stretch Energy Code" for the purpose of regulating the design and construction of buildings for the effective use of energy, pursuant to Appendix 115.AA of the Massachusetts Building Code, 780 CMR, the Stretch Energy Code, including future editions, amendments or modifications thereto, with an effective date of _____ a copy of which is on file with the Town Clerk, or take any other action relative thereto.

SAMPLE TOWN MEETING MOTION:

I move that the Town will enact Chapter ___ of the Town of _____ General Bylaws, entitled "Stretch Energy Code" for the purpose of regulating the design and construction of buildings for the effective use of energy, pursuant to Appendix 115.AA of the Massachusetts Building Code, 780 CMR, the Stretch Energy Code, including future editions, amendments or modifications thereto, with an effective date of _____.

SAMPLE BYLAW follows:

Chapter ____

STRETCH ENERGY CODE

[Adopted 0-0-2018 ATM / STM by Art.]

- § ____-1 Definitions
- § ____-2 Purpose
- § ____-3 Applicability
- § ____-4 Stretch Code

§ ____-1 Definitions

International Energy Conservation Code (IECC) - The International Energy Conservation Code (IECC) is a building energy code created by the International Code Council. It is a model code adopted by many state and municipal governments in the United States for the establishment of minimum design and construction requirements for energy efficiency, and is updated on a three-year cycle. The baseline energy conservation requirements of the MA State Building Code are the IECC with Massachusetts amendments, as approved by the Board of Building Regulations and Standards.

Stretch Energy Code - Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the Massachusetts building code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation Code (IECC) to improve the energy efficiency of buildings built to this code.

§ ____-2 Purpose

The purpose of 780 CMR 115.AA is to provide a more energy efficient alternative to the Base Energy Code applicable to the relevant sections of the building code for new buildings.

§ ____-3 Applicability

This code applies to residential and commercial buildings. Buildings not included in this scope shall comply with 780 CMR 115.AA, as indicated.

§ ____-4 Stretch Code

The Stretch Code, as codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA, including any future editions, amendments or modifications, is herein incorporated by reference into the Town of _____ General Bylaws, Chapter ____.

The Stretch Code is enforceable by the inspector of buildings or building commissioner and effective as of _____.

IMPORTANT LINKS

This document, as well as the following documents, is found on our web page for [Criterion 5](#) guidance.

Standards & Ratings:

- [Northeast HERS Alliance](#)

Stretch Code:

- [Stretch Code \(780 CMR Appendix 115AA\)](#)
- [Updated Building Code \(780 CMR\) Ninth Edition](#)
- [Stretch code "Residential Cash Flow Analysis"](#)
- [Stretch Code Adoption by Community](#)

Community Adoption of the Stretch Energy Code;
 "Appendix 115 AA" of the MA State Building Code (780 CMR)

Municipality	2015 Population	Status	Effective Date
Abington	16,227	Town Meeting adopted 5/22/17	7/1/2017
Acton	23,549	Town Meeting adopted 4/6/10	1/1/2011
Acushnet	10,477	Town Meeting adopted 5/20/13	1/1/2014
Adams	8,187	Town Meeting adopted 6/23/15	1/1/2016
Agawam	28,839	City Council adopted 9/19/16	1/1/2017
Amesbury	17,414	City Council adopted 1/8/13	1/1/2014
Amherst	39,833	Town Meeting adopted 5/23/11	1/1/2012
Andover	35,299	Town Meeting adopted 4/28/10	1/1/2011
Arlington	44,815	Town Meeting adopted 4/28/10	7/1/2011
Ashburnham	6,209	Town Meeting adopted 10/29/13	7/1/2014
Ashby	3,226	Town Meeting adopted 5/4/13	1/1/2014
Ashfield	1,723	Town Meeting adopted 9/29/11	7/1/2012
Ashland	17,573	Town Meeting adopted 5/1/12	1/1/2013
Athol	11,654	Town Meeting adopted 4/12/10	1/1/2011
Auburn	16,516	Town Meeting adopted 5/1/12	7/1/2013
Ayer	8,001	Town Meeting adopted 5/9/11	1/1/2012
Barre	5,496	Town Meeting adopted 6/20/11	1/1/2012
Becket	1,762	Town Meeting adopted 5/8/10	1/1/2011
Bedford	14,171	Town Meeting adopted 3/28/11	1/1/2012
Belchertown	14,929	Town Meeting adopted 5/10/10	1/1/2011
Belmont	25,584	Town Meeting adopted 5/11/11	1/1/2012
Berlin	3,020	Town Meeting adopted 5/3/11	1/1/2012
Bernardston	2,101	Town Meeting adopted 10/8/14	7/1/2015
Beverly	41,186	City Council adopted 5/2/11	1/1/2012
Billerica	42,683	Town Meeting adopted 5/8/18	7/1/2018
Blackstone	9,104	Town Meeting adopted 5/28/13	1/1/2014
Blandford	1,259	Town Meeting adopted 5/2/16	1/1/2017
Bolton	5,180	Town Meeting adopted 5/2/16	1/1/2017
Boston	667,137	City Council adopted 11/17/10	7/1/2011
Boxford	8,253	Town Meeting adopted 5/8/18	7/1/2018
Bridgewater	27,628	Town Meeting adopted 9/6/2011	7/1/2012
Brimfield	3,741	Town Meeting adopted 5/15/17	7/1/2017
Brockton	95,314	City Council adopted 10/14/16	1/1/2017
Brookline	59,195	Town Meeting adopted 5/25/10	1/1/2011
Buckland	1,864	Town Meeting adopted 5/4/11	1/1/2012
Cambridge	110,402	City Council adopted 12/21/09	7/1/2010
Canton	22,817	Town Meeting adopted 5/8/17	7/1/2017
Carlisle	5,245	Town Meeting adopted 5/10/10	1/1/2011
Charlemont	1,234	Town Meeting adopted 5/30/18	7/1/2018
Charlton	13,406	Town Meeting adopted 10/18/16	1/1/2017
Chelmsford	35,149	Town Meeting adopted 4/29/10	1/1/2011
Chelsea	39,398	City Council adopted 10/3/16	7/1/2017
Chester	1,372	Town Meeting adopted 6/10/17	1/1/2018
Chesterfield	1,249	Town Meeting adopted 6/15/11	1/1/2012
Chicopee	56,741	City Council adopted 11/15/16	1/1/2017
Clarksburg	1,659	Town Meeting adopted 5/25/16	1/1/2017
Cohasset	8,393	Town Meeting adopted 5/2/15	1/1/2016
Colrain	1,647	Town Meeting adopted 5/8/18	1/1/2019
Concord	19,830	Town Meeting adopted 4/29/10	1/1/2011
Conway	1,881	Town Meeting adopted 10/17/10	7/1/2012
Cumington	871	Town Meeting adopted 10/30/17	10/30/2017
Dalton	6,661	Town Meeting adopted 5/5/14	7/1/2015
Dartmouth	34,715	Town Meeting adopted 10/18/16	1/1/2017
Dedham	25,397	Town Meeting adopted 5/17/10	1/1/2011
Deerfield	5,015	Town Meeting adopted 4/25/11	1/1/2012
Dighton	7,399	Town Meeting adopted 6/13/18	7/1/2018
Douglas	8,728	Town Meeting adopted 5/1/17	7/1/2017