MA Stretch Code Update & New Specialized Code

DOER Overview

January 24, 2023

Paul Ormond

Key elements





Base, Stretch, and Specialized – 3 Options

Base Code (IECC 2021*)

- New construction in towns & cities not a green community
- 52 communities

*Expected from BBRS: July 2023 (current base code is IECC 2018 with MA amendments)

Stretch Code (2023 update)

- New construction in towns & cities that are a green or stretch community
- 299 communities

Residential : Jan 2023 Commercial: July 2023

Specialized Code ("Net-Zero")

- New Construction in towns & cities that vote to opt-in to this code
- Effective date: Typically 6-11 months after Town/City vote



Timeline: Stretch code update



Stretch code updates in 2023

HERS rating levels lowered – July 2024

STRETCH CODE - COMMERCIAL

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Current Stretch Code

Site energy reduction*

10% reduction

Buildings over 100,000-sf No add'tns, alt'ns

*from ASHRAE baseline



New Stretch Code

Heating and cooling demand targets*

up to 90% reductions

all building sizes Includes add'tns, alt'ns

*set targets, not % better than ASHRAE baseline



New Provisions for Demand Reduction





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





CONSIGLI Est. 1905





Demand reduction means less equipment and equipment elimination



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

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



What happens to the grid when we "electrify everything"





BURO HAPPOLD





Stretch code now <u>directly regulates</u> heating and cooling demand for office, muni buildings, schools, and residential buildings:

Heating TEDI

Cooling TEDI

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



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 <u>demand</u> while EUI is <u>consumption</u>



TEDI Limits – by Building Size and Type

Building type	Heating TEDI limit (kBtu/sf-yr)	Cooling TEDI limit (kBtu/sf-yr)
K-12 school	2.2 - 2.4	12 -20
Office, fire & police station, library, post office, town hall	1.5 - 2.5	21 - 23
Multi-family (including dorms)	2.8 - 3.2	15 - 22

The <u>same models</u> currently used for stretch code compliance also produce TEDI information





Other Key Modifications



Envelope backstop

Add'l stringency



Tenant spaces

Treated like new construction



Electrification of space heating

Highly ventilated: partial Highly glazed: full



Mixed-use

Treat each use independently



EV ready parking

Wire 20% of new Business & Residential spaces Wire 10% of spaces for other uses



Additions, Alterations, Change of Use (Commercial)

Additions and alterations are explicitly exempted from the current stretch code.

Starting in July 2023, the new stretch code will require the following for Commercial Buildings:

Scenario	Stretch Code Requirement
Additions up to 100% of existing building size; or, up to 20,000-sf	Follow stretch code prescriptively
Additions which exceed either of above	Treat addition like new construction
Alteration of existing building	Altered portions: follow stretch code prescriptively
	Unaltered portions: no updates required
Change of use	Follow stretch code prescriptively



Classification	1 July 2023 through 30 June 2024	1 July 2024 onward
Detached one and two family dwellings, townhouses, and R-2, R-3, R-4 buildings three stories or less	HERS 52/55/58 with R401.2.5 (add'l eff measures), or Passivehouse Plus: ERV/HRV, EV ready & App RB	HERS 42/45 with R401.2.5 (add'l eff measures), or Passivehouse Plus: ERV/HRV, EV ready & App RB
R-use buildings without individually separate dwelling units three stories or less	Prescriptive comply with R401 through R404, R408, or Passivehouse Plus: ERV/HRV, EV ready & App RB	Prescriptive comply with R401 through R404, R408, or Passivehouse Plus: ERV/HRV, EV ready & App RB
All other R-use buildings 12,000-sf or less	Relative Performance Path in C code, Passivehouse, or HERS Plus: EV ready & App CB	Relative Performance Path in C code, Passivehouse, or HERS Plus: EV ready & App CB
All other R-use buildings over 12,000-sf	Relative Performance Path in C code, Passivehouse, or HERS Plus: EV ready & App CB	Targeted Performance Path in C code, Passivehouse, or HERS Plus: EV ready & App CB

(air sealing)

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Heat pump (heat and AC)

Induction stove

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Specialized Code Net zero in 2050

Heat pump water heater ENERGY STAR appliances

LED/efficient lighting

Specialized Code Multi-Family Passive House

- Application: R-use buildings which includes dormitories
- January 2023: Passive House required for 5 stories or less, if over 12,000 sf*
- January 2024: Passive House required for all Residential over 12,000 sf

*Note: the earliest specialized is available for adoption is 1 July 2023



Specialized Code - Commercial



Solar PV

• Required:

- Using Fossil fuels
- Using Net Zero path
- Optional:
 - All-electric building
- Exceptions for shaded sites can reduce min. size



Next Steps & 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: <u>https://www.mass.gov/info-details/stretch-energy-code-</u> <u>development-2022</u>

Contact your local Green Communities Coordinator

https://www.mass.gov/service-details/contact-gc-coordinator

Energy Code Training (free via Mass Save®)

• <u>https://www.masssave.com/en/learn/partners/energy-code-</u> <u>training-and-events</u>

Contractor Training

 <u>https://www.masssave.com/en/saving/residential-</u> rebates/passive-house-training

Questions?

Contact DOER:

Stretchcode@mass.gov

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Additional slides

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Modeling depends upon Pathways

SCENARIO	FANCY PATHWAY NAME	WHAT IT MEANS
Less then 20,000-sf	Prescriptive	No modeling
More than 20,000-sf and office, dorm, fire station, library, school, police station, post office, or town hall	"Targeted" performance	Equest (or other) model – show heating/cooling demand below limits
More than 20,000-sf and not use above, or any use for high ventilation building	"Relative" performance	Equest (or other) model – show EUI improvement over baseline
Passivehouse	Passivehouse	WUFI or PHPP models, work with PHIUS or PHI
HERS (Group R Buildings)	HERS	HERS model, work with HERS people

Repair, alterations, additions, and change of use

SCENARIO	<u>What it is</u>	What you have to do
Repair	Maintain or correct damage	Conform with code under which it was installed
Alteration	Any change other than a repair and any change, alteration, or extension of MEP systems	If you touch – prescriptive stretch code. If you don't touch - nothing
Small Addition	Less than 100% of original building, max 20,000-sf	Prescriptive stretch code
Large Addition	Larger than above	Treat like new construction
Change of use	Change in occupancy which increases either fossil fuel or elec energy	Treat like new construction