New Jersey Energy Code Collaborative

April 17, 2026

Agenda

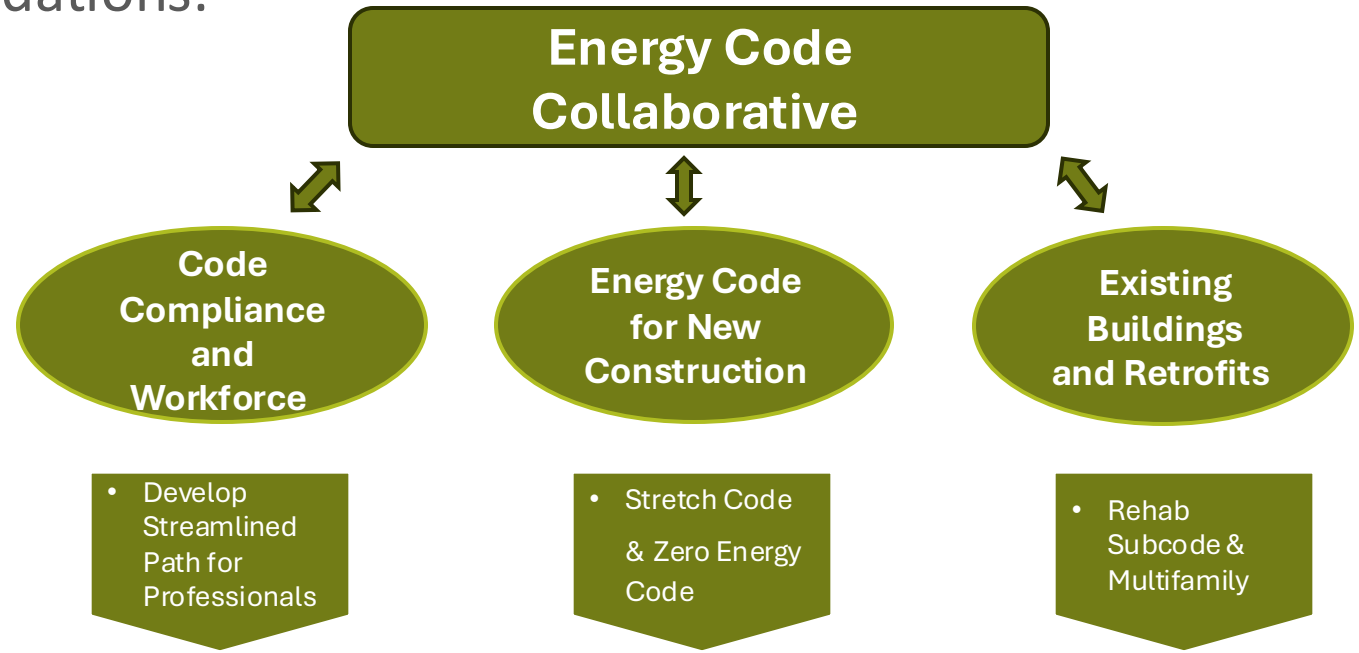
10:00am	5 minutes	Welcome	BPU/Rutgers/NEEP
		NJ ECC – Subcommittees report out	NEEP
10:05am	25 minutes	Towards Zero Energy code: MA experience with stretch codes and peak demand reduction	MA DOER
		Q&A / Discussion	
10:30am	20 minutes	Pathways toward net-zero homes	ACEEE
		Q&A / Discussion	
10:50am	10 minutes	Affordability of ER-DR Appendices - resource planning and soliciting stakeholder feedback	NEEP
		Closing	BPU/Rutgers/NEEP

Meeting Guidelines – Antitrust Statement

Throughout our meetings, participants shall comply with competition law requirements and shall not enter into any discussion, activity or conduct that may violate any applicable competition law. Should the meeting discuss matters that contravene competition law requirements, it is the responsibility of participants to notify the Moderator who will discontinue the discussion or close the meeting.

NJ ECC Purpose

Establish a timely and robust, stakeholder-guided process to research and develop a New Jersey Zero Energy Building Roadmap that provides options to build government and market capacities to effectively advance an increasingly more energy-efficient building energy code and improve administration, enforcement and compliance, aligned with relevant clean energy policies of the State, including the Energy Master Plan goals and recommendations.



Zero Energy Building Roadmap

The Roadmap, as a living document, presents three concurrent pathways with explicit actions and timing for implementing zero energy building strategies, primarily through the adoption/amendment of building codes. These pathways, adopted together, are designed to lead New Jersey to implement zero-energy building codes for both new construction and existing buildings by 2030 or sooner.

- New Building Base Code Path
- Stretch Code/Zero Energy Code Path
- Existing Building Path

Subcommittees report out

Energy Codes for New Construction Subcommittee

- Update on NJ's 2024 IECC adoption and review of stretch/zero energy code pathways and incentive alignment

Existing Buildings and Retrofits Subcommittee

- Updates on workforce initiatives (BILT, ECO TEC, NJEDA grant) and review of NEEP's workforce roadmap findings
- Discussed workforce shortages, training needs, and implications for energy code compliance and consistency

Energy Code Compliance and Workforce Subcommittee

- Presented change-of-occupancy modeling results under 2024 code updates and implications for system performance
- Reviewed existing building incentives, identifying gaps and barriers, particularly for multifamily, and highlighted NJ Green Building Manual case studies

MASSACHUSETTS
DEPARTMENT OF ENERGY RESOURCES

Towards Zero Energy code:
MA experience with stretch codes and peak demand reduction

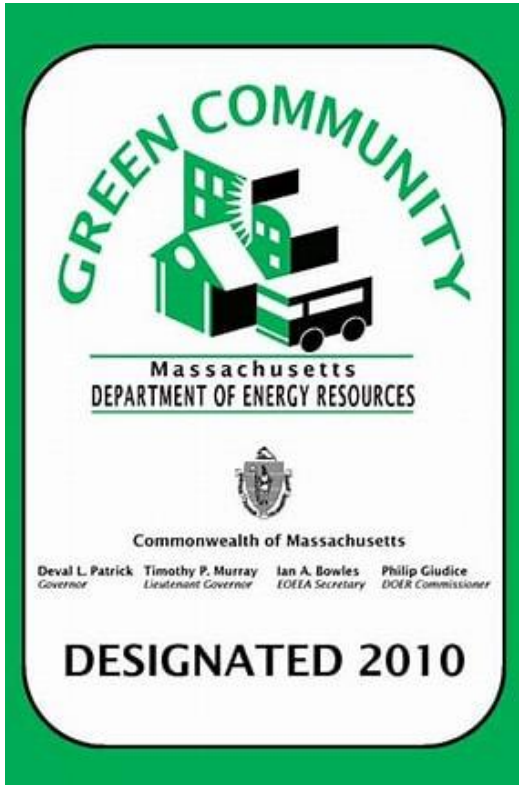
NJ Energy Code Collaborative

April 17, 2026

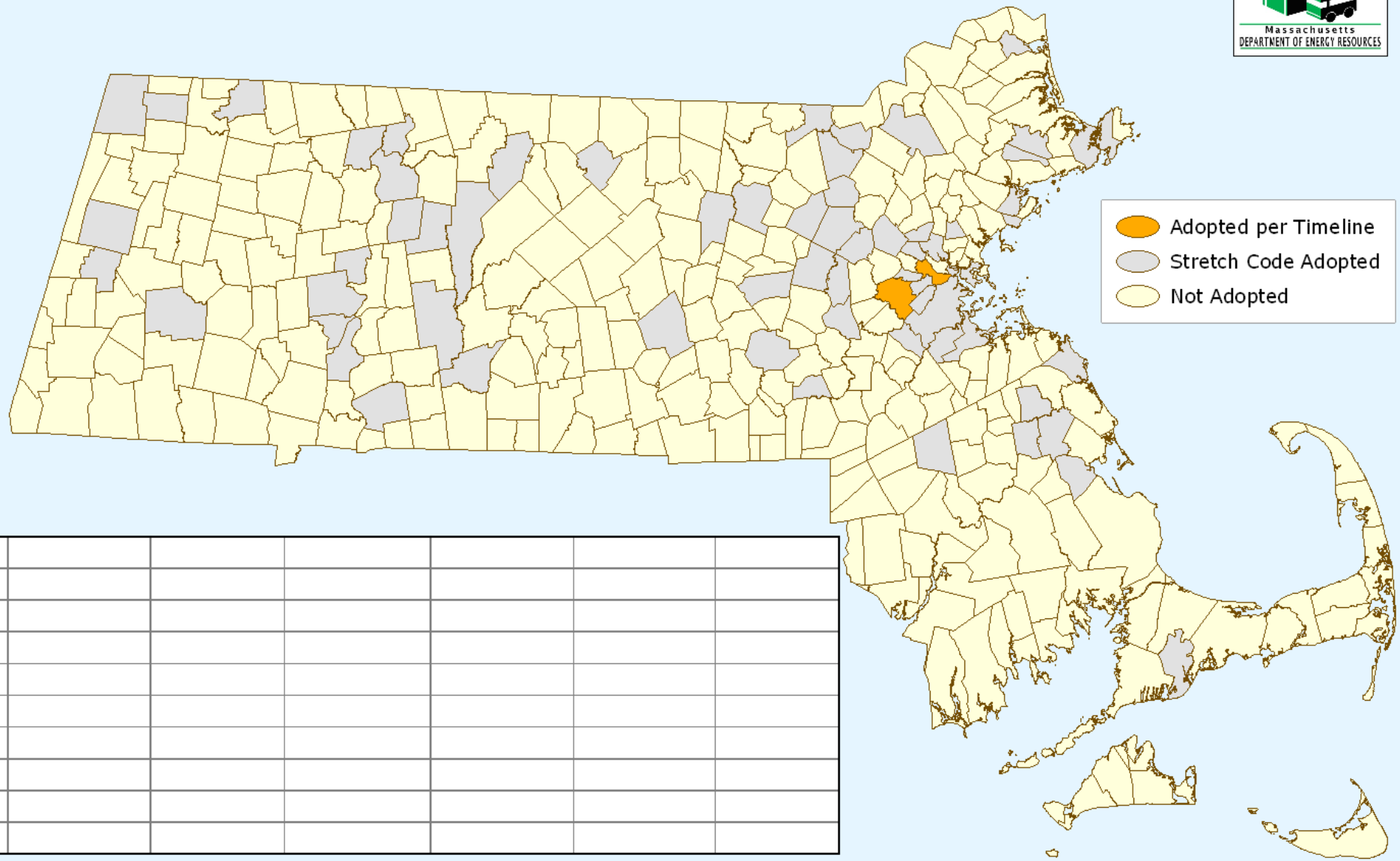
Ian Finlayson & Paul Ormond

Context: 2008 – MA pre-Stretch Code

- MA like NJ is a home rule state, with one statewide min/max energy code (IECC 2006/7)
  - 2006-2008: Multiple city & town appeals for ‘green’ code – e.g. Energy Star Homes and LEED – all rejected
  - Building officials concerned about lack of training and increasing complexity in the IECC and ASHRAE energy codes
  - 2008 Legislation created MA Green Communities program and Stretch Code

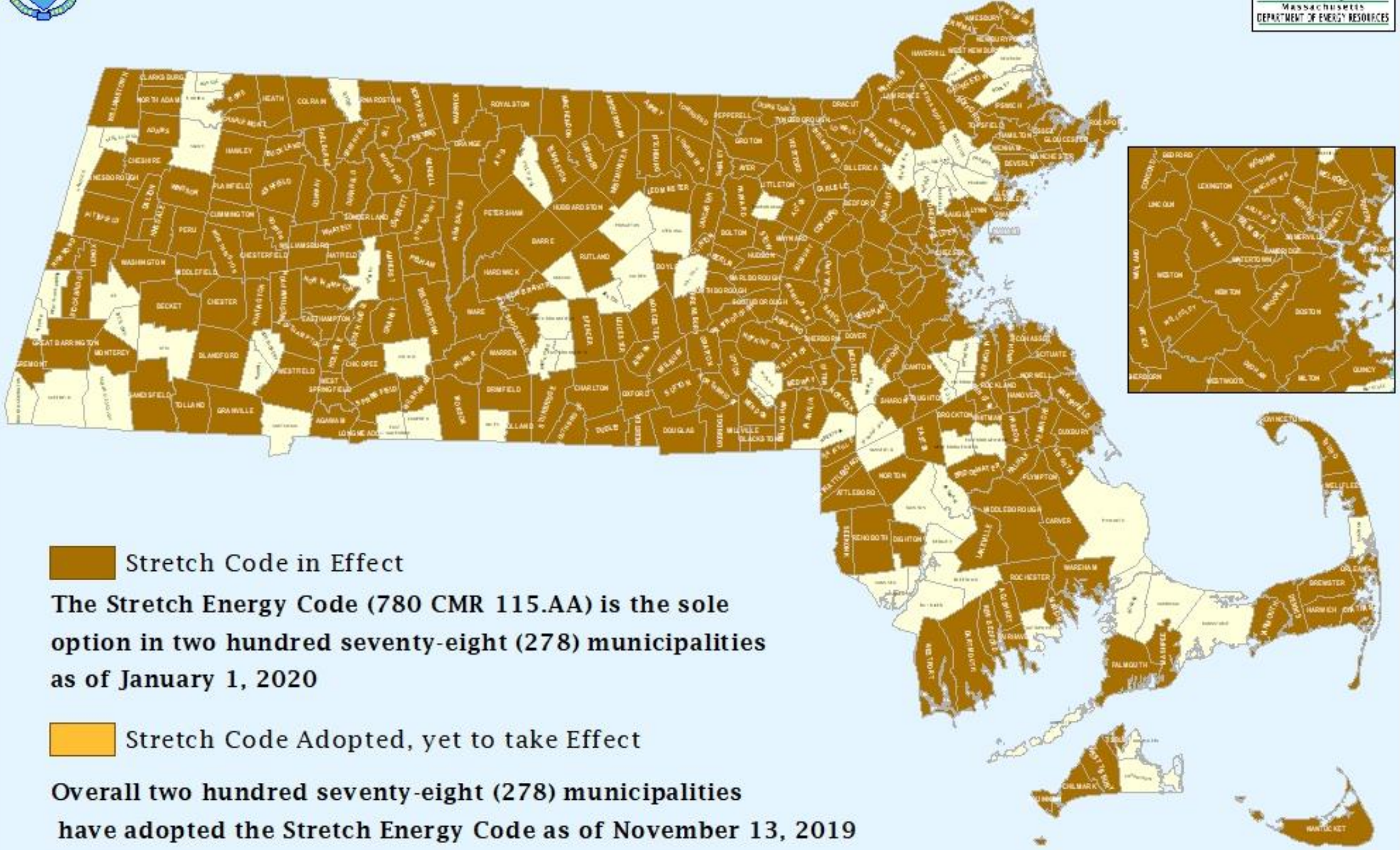


Stretch Code Adoption, by Community
November & December 2009



Newton						
Cambridge						

Massachusetts
DEPARTMENT OF ENERGY RESOURCES



Stretch Code in Effect

The Stretch Energy Code (780 CMR 115.AA) is the sole option in two hundred seventy-eight (278) municipalities as of January 1, 2020

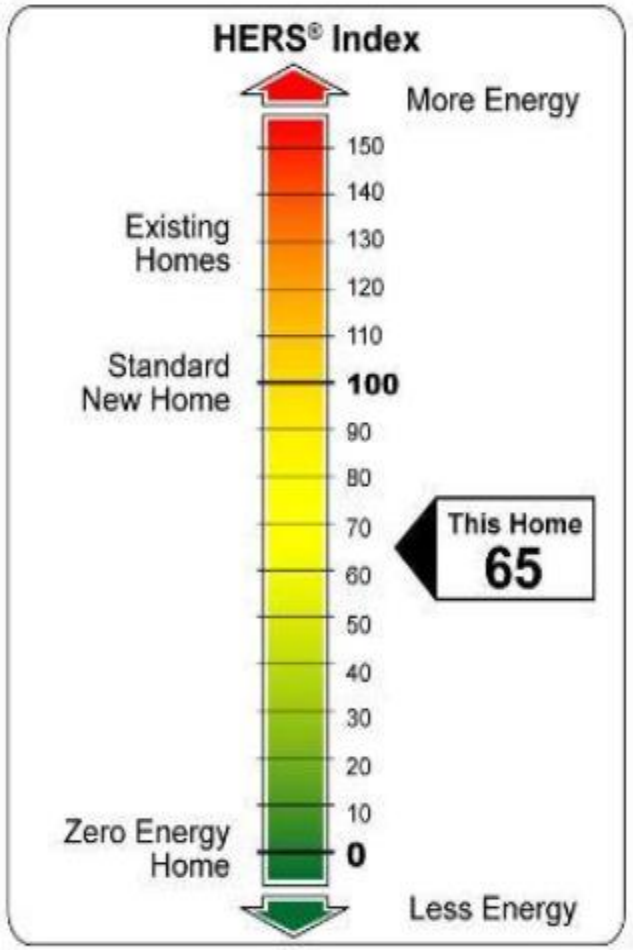
Stretch Code Adopted, yet to take Effect

Overall two hundred seventy-eight (278) municipalities have adopted the Stretch Energy Code as of November 13, 2019

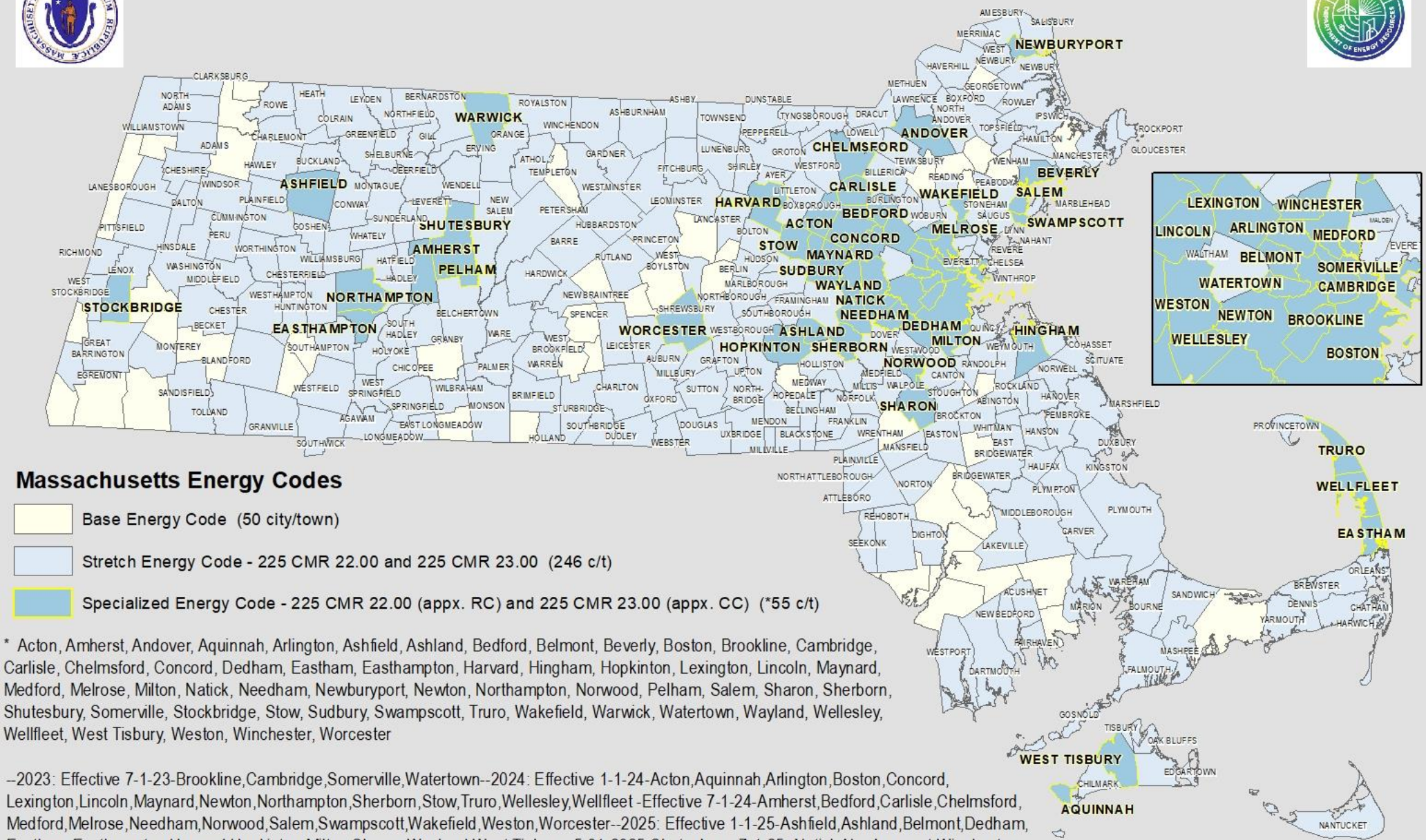
DOER 3-11-20, jpfister

2018 - mature Stretch Code adoption

- Over 80% of MA population opted into Stretch Code, remainder on base code (IECC 2015)
  - Stretch code required HERS ratings and testing
  - DOER funded training for building officials, trades and designers for 5 years, before transferring to Mass Save utility programs
  - There were concerns that the IECC was stalled, (IECC 2015 and 2018)
    - Key MA amendments: Solar ready, EV ready, Passive house option, HERS not ERI, AppxG. for large C&I



Massachusetts Building Energy Code Adoption by Municipality



Massachusetts Energy Codes

- Base Energy Code (50 city/town)
- Stretch Energy Code - 225 CMR 22.00 and 225 CMR 23.00 (246 c/t)
- Specialized Energy Code - 225 CMR 22.00 (appx. RC) and 225 CMR 23.00 (appx. CC) (*55 c/t)

* Acton, Amherst, Andover, Aquinnah, Arlington, Ashfield, Ashland, Bedford, Belmont, Beverly, Boston, Brookline, Cambridge, Carlisle, Chelmsford, Concord, Dedham, Eastham, Easthampton, Harvard, Hingham, Hopkinton, Lexington, Lincoln, Maynard, Medford, Melrose, Milton, Natick, Needham, Newburyport, Newton, Northampton, Norwood, Pelham, Salem, Sharon, Sherborn, Shutesbury, Somerville, Stockbridge, Stow, Sudbury, Swampscott, Truro, Wakefield, Warwick, Watertown, Wayland, Wellesley, Wellfleet, West Tisbury, Weston, Winchester, Worcester

--2023: Effective 7-1-23-Brookline,Cambridge,Somerville,Watertown--2024: Effective 1-1-24-Acton,Aquinnah,Arlington,Boston,Concord, Lexington,Lincoln,Maynard,Newton,Northampton,Sherborn,Stow,Truro,Wellesley,Wellfleet -Effective 7-1-24-Amherst,Bedford,Carlisle,Chelmsford, Medford,Melrose,Needham,Norwood,Salem,Swampscott,Wakefield,Weston,Worcester--2025: Effective 1-1-25-Ashfield,Ashland,Belmont,Dedham, Eastham,Easthampton,Harvard,Hopkinton,Milton,Sharon,Wayland,West Tisbury -5-31-2025-Shutesbury; 7-1-25- Natick,Newburyport,Winchester; -9-1-25-Pelham,Sudbury--2026: Effective 1-1-26- Beverly,Hingham,Stockbridge,Warwick -Effective 7-1-26, Andover

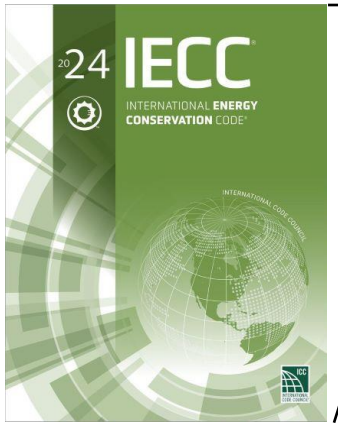
MA DOER, 8-18-2025, jpfister

2026 - Specialized and Stretch Code Era

- 2023 Specialized Code as new ‘net zero’ top tier, introduced Solar and/or Passive house requirements for some buildings.
  - Currently adopted in 31% of MA, Stretch code 60%, Base code 9%
- Stretch code & Specialized code – based on ‘Thermal Code’ energy performance principles
- BBRS reviewing 2024 IECC and cutting large parts of R405, R408, C406 to reduce complexity
  - Building officials still concerned about lack of training and increasing complexity in the IECC and ASHRAE energy codes
  - Working assumption: IECC and ASHRAE are stalled on net zero codes.

Stretch code only as good as your ingredients

1. Performance-based
   – e.g. HERS, 90.1 appG, Passivehouse
2. Less complexity
   - e.g. R408 3 options not 51 (2024 IECC)
3. 3rd party testing
   – duct leakage, air leakage (BPI or HERS rater)
4. Certification = Quality assurance: HERS & Passivehouse
4. Address gaps in the code
   – e.g. Thermal bridging, energy recovery
5. Support the energy transition
   – e.g. EV ready, Solar ready
6. Recognize and incentivize reduced embodied carbon



IECC standard code

Massachusetts' Amendments

modest changes

Adds "thermal" performance

Adds "thermal" performance **and** electrification

Base Code

Stretch Code

Specialized Code

MA Thermal Code

What do we ~~want~~ need from our Energy Codes?

Comfort

Resilience

Easy Electrification

Grid-friendly

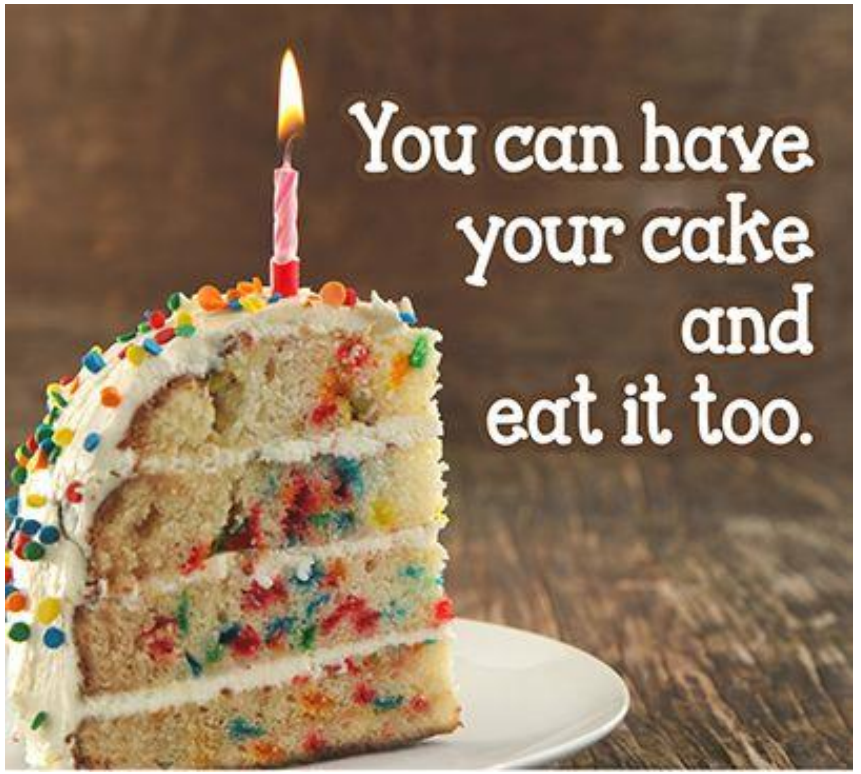
+ cost effective: lower life cycle cost for <u>all</u> building types

https://www.mass.gov/info-details/final-stretch-code-guideline-materials?auHash=cyHdJ0-aKeSKJLbQxVafygKhfAQT_0NW7kiF-sgWGMk#stretch-energy-code-study-report

(Spoiler alert….) Recipe for Success

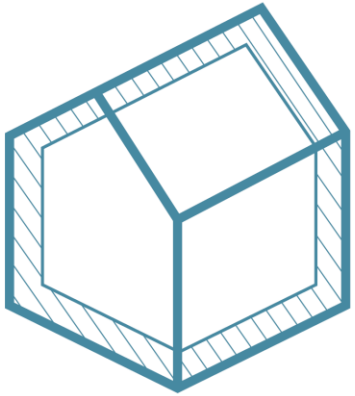
New construction that is:

High in electric calories
&
Low in electric peak loads



Potential side-effects: may reduce electric rates for all ratepayers

Thermal Code – 4 Pillars that crush heating and cooling



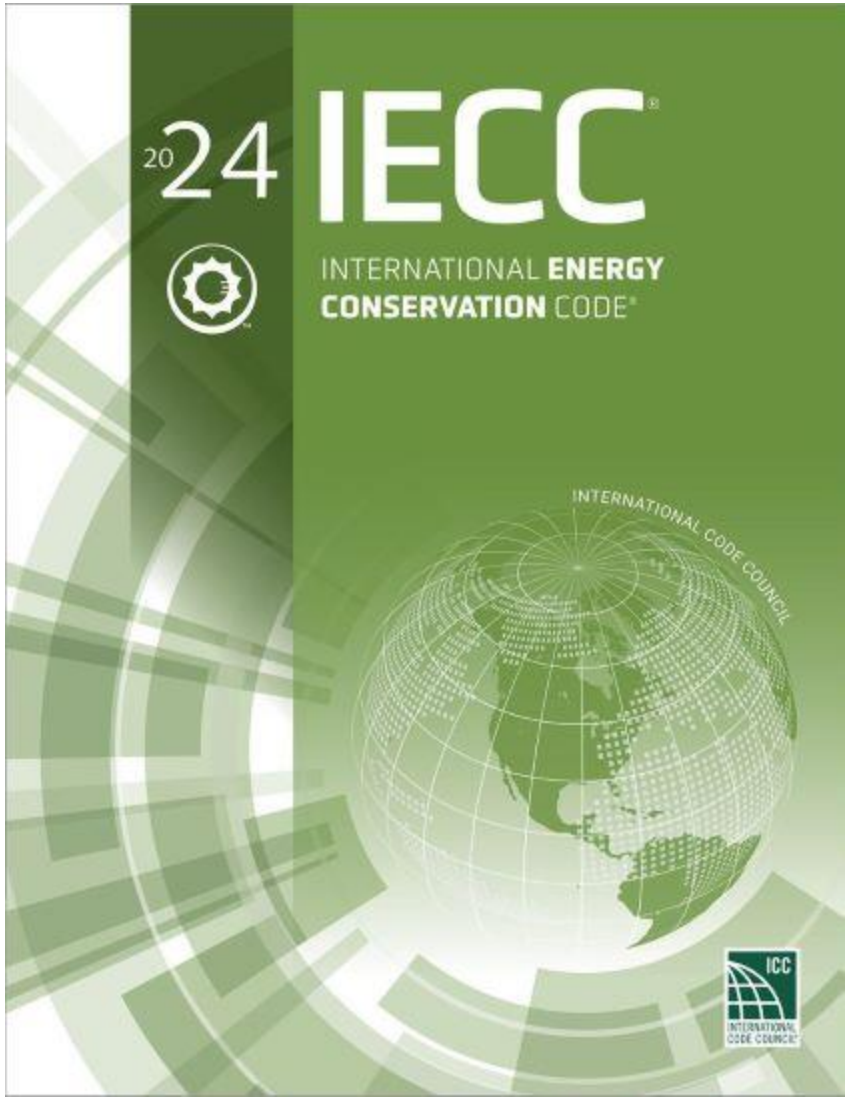
Envelope U-Value

Thermal Bridge Mitigation

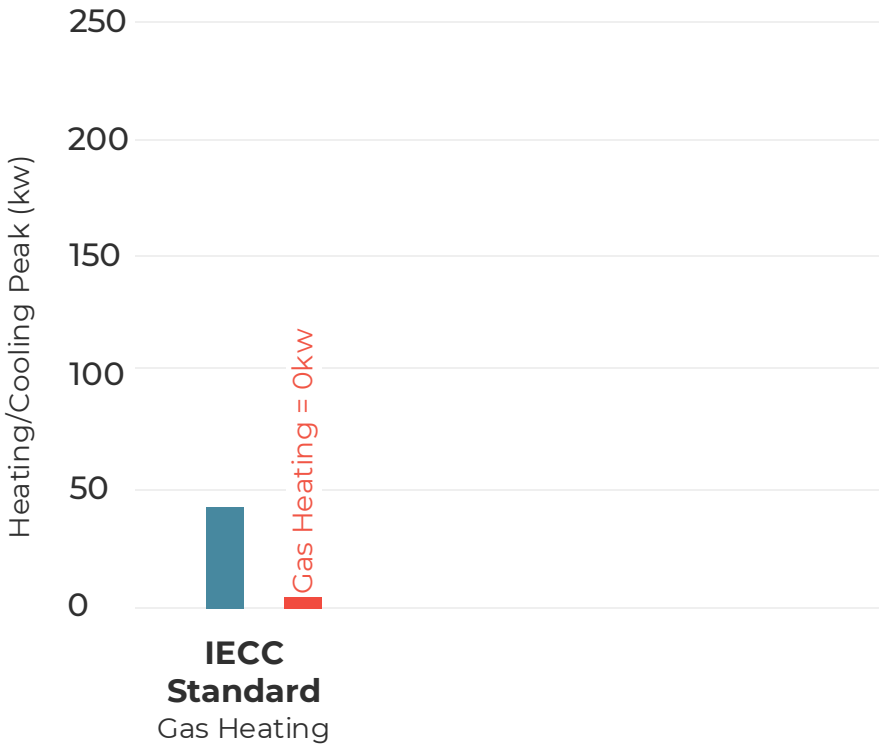
Low Air Infiltration

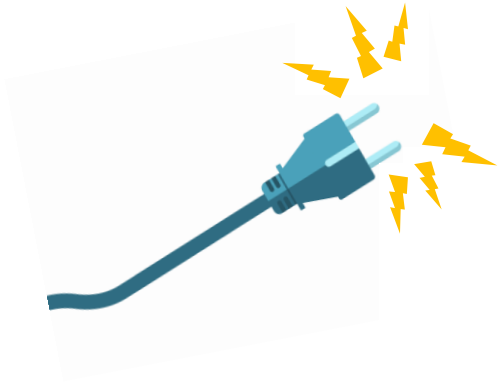
Ventilation Energy Recovery

How well does the IECC code deal with reducing heating and peak loads?



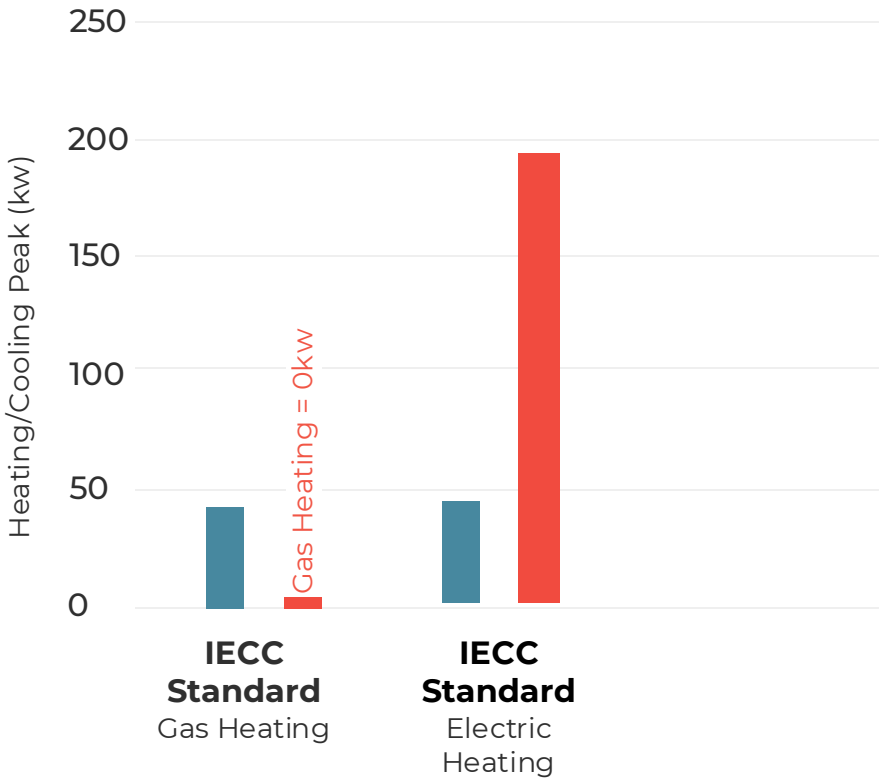
What is “grid-friendliness” ?

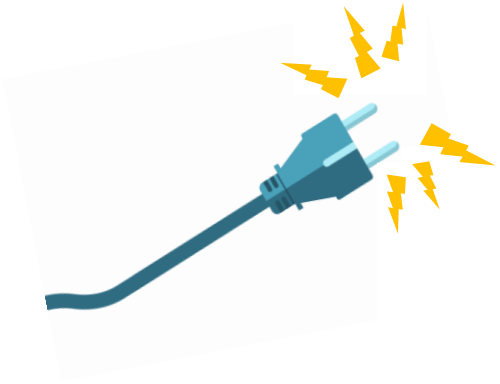




Example Load on Electric Grid due to Heating/Cooling in a school

What is “grid-friendliness” ?





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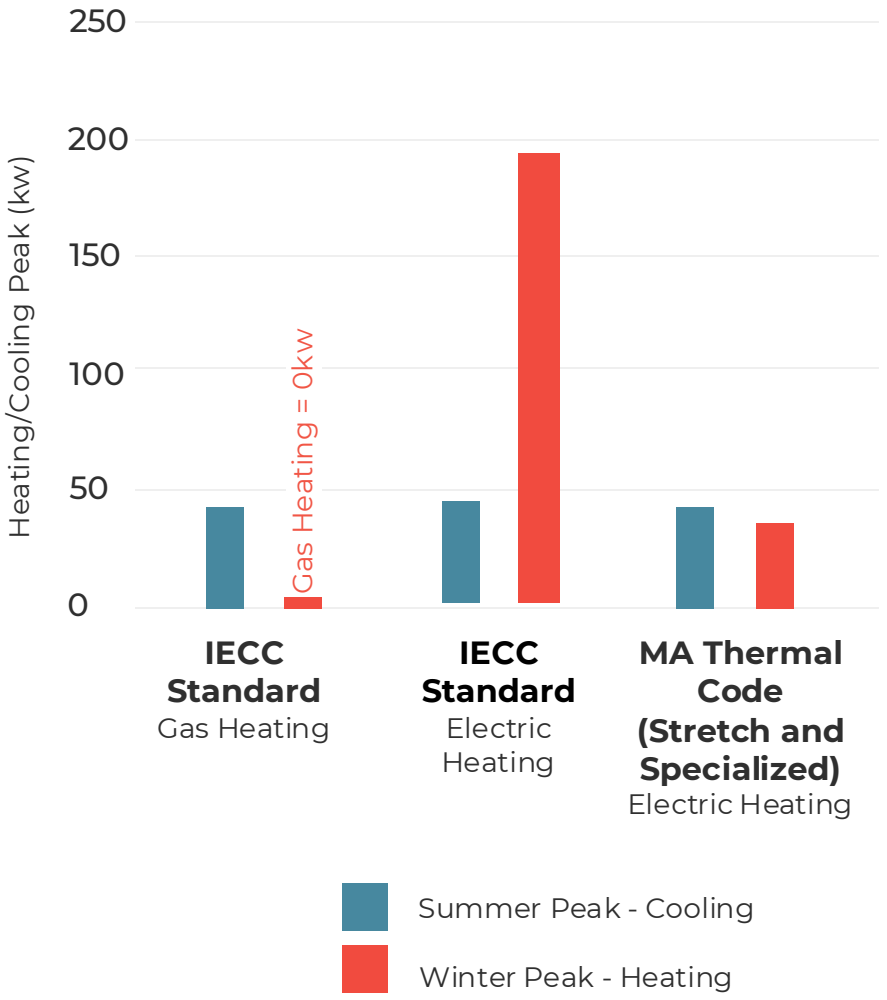
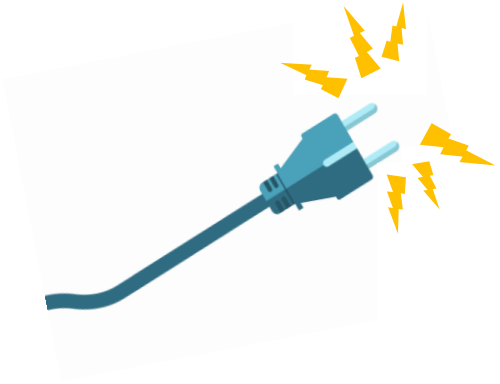


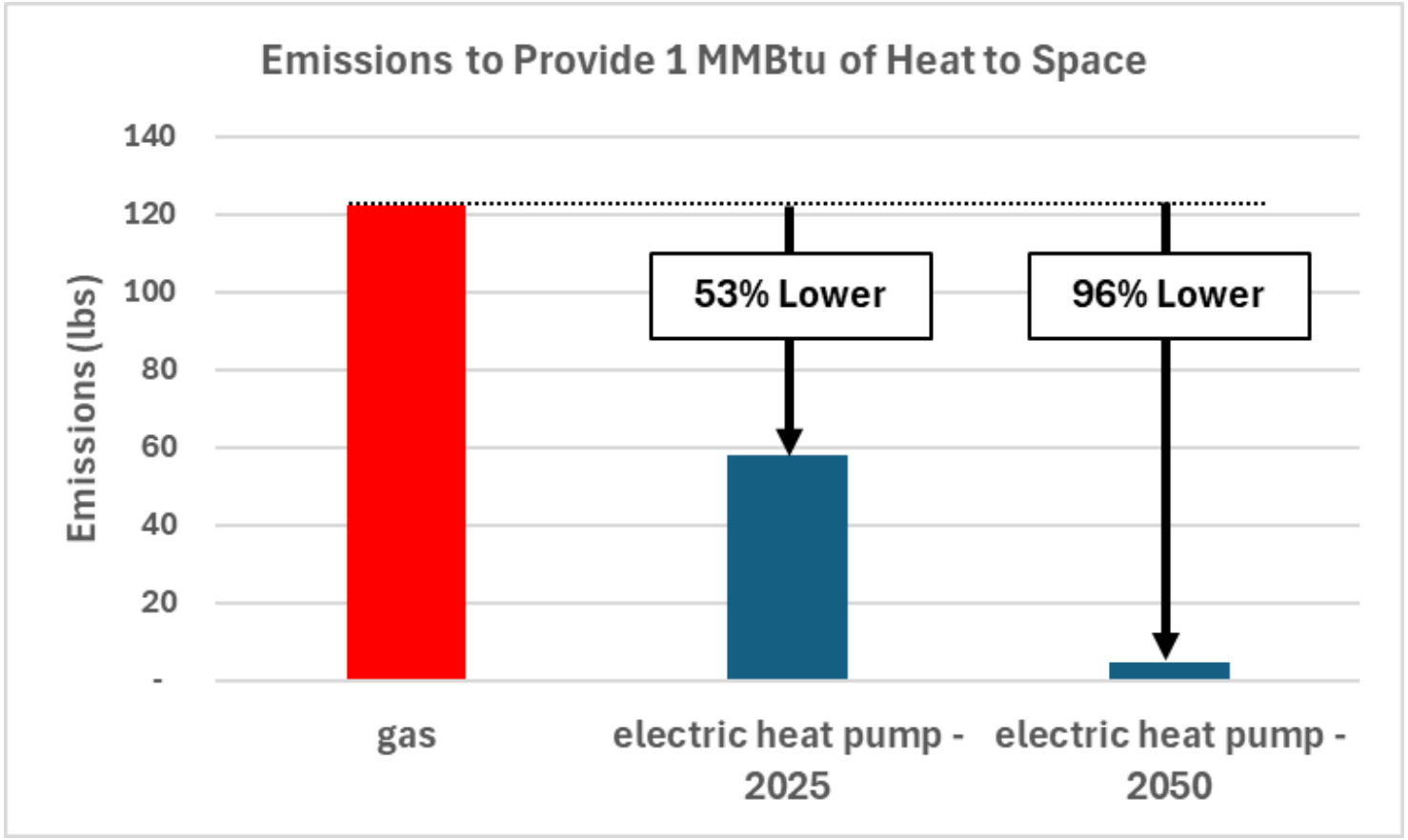


Example Load on Electric Grid due to Heating/Cooling in a school

Critical Path for GHG emissions: Electrification

Electric vs Gas heating

- 53% lower GHG in 2025
- 96% lower GHG in 2050



Based on 95% efficient natural gas boiler vs. 320% efficient air source heat pump, 2025 emission rate of 633 lbs/MWh, 2050 emission rate of 50 lbs/MWh

State Permit Data
Space Heating Electrification

(all buildings except warehouse + lab/office)

Base, Stretch, and Specialized

Year	Area	All electric HP buildings	All electric HP dwelling units
2020	3,656,000	6%	19%
2021	4,574,394	42%	84%
2022	4,851,972	88%	100%
2023	7,274,560	90%	100%
2024	9,522,349	100%	100%
2025	12,418,795	99%	97%

Mass Save **Passive House** Incentive Program: **$3,750** / unit + design support

Leyland Community
Dorchester MA
Davis Square Architects

Glen Brook Way
Medway MA
Meander Studio Collaborative

McElwain Apartments
Bridgewater MA
Prellwitz Chilinski Associates

11 E. Lenox Street
Boston MA
Haycon Construction

Walnut Street Building 2
Foxborough MA

1005 Broadway
Chelsea MA
Utile, Inc

The Loop at Mattapan Station
Boston MA
The Architectural Team

Hillside Center for Sustainability
Newburyport MA
Hall & Moskow

JJ Carroll Redevelopment
Boston MA
MASS Design Group

to date **>16,000** housing units
have pursued **PH** through **Mass Save**

State Permit Data
83% uptake where MassSave Avail

Thank you!

Questions?

Stretchcode@mass.gov

State Codes, Stretch Codes, and Voluntary Programs: Progressing on a Pathway to Net Zero Energy and Carbon

April 2026

ACEEE
Smart Energy. Clean Planet. Better Lives.

About ACEEE:

The American Council for an Energy-Efficient Economy (ACEEE), is a nonprofit research organization that develops policies to reduce energy waste and combat climate change. Its independent analysis advances investments, programs, and behaviors that use energy more effectively and help build an equitable clean energy future.

Learn more at aceee.org

ACEEE

Smart Energy. Clean Planet. Better Lives.

Presenters

Skye Gruen, Senior Manager, Buildings, ACEEE
Skye leads ACEEE's building energy codes program, focusing on advancing high-performance building energy codes and translating technical research and regulatory requirements into actionable strategies. She serves on national code and standards committees and advances national initiatives to strengthen building energy codes, including a multi-state effort to develop model residential energy codes that create a pathway to net-zero construction. Her work also supports broader research on building decarbonization, grid-interactive efficient buildings, and strategies to improve building performance, affordability, and resilience.

Next Generation Codes RECI Project Participating States and Organizations

States:

California

Colorado

Maryland

Massachusetts

New York

Washington (and Seattle)

Organizations:

ACEEE

Enterprise Community Partners

NASEO

NBI

Code Amendments

Three sets of amendments to 2024 IECC to create a pathway to net zero:

Code Amendment One-Pager: ENH vs. Near-Zero

Tier 1: Efficient New Homes

Meets DOE zero-ready spec; would qualify for $5000 federal tax credit (if reinstated)

Includes electric-ready

ERI 45

Tier 2: Near-Zero

Very-high efficiency based on Passive House standard and leading states' codes

Requires heat pumps, more efficient envelope, enhanced thermal bridge mitigation, and more

ERI 35

Tier 3: Net-Zero

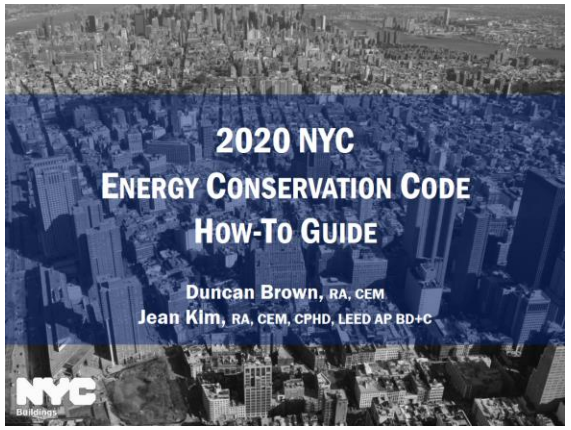
Net zero energy and/or carbon

Includes everything in Near-Zero plus renewables and storage

ERI of zero with exceptions

Path to Zero Project – Scope

1. Develop three sets of code amendments
   - Efficient New Homes – in production
   - Near-Zero – making final edits
   - Net-Zero – underway and will be completed by June 2026
2. Develop supportive material for states and localities
   - User manual
   - Analysis of costs and benefits of each package by climate zone
3. Provide technical assistance on code adoption, implementation and complementary programs such as utility programs.



Adoption of 2024 IECC

Completed

Austin

Colorado (went beyond IECC)

Illinois

New York (went beyond IECC)

California has own code well beyond IECC

Oregon has own code beyond IECC

Underway

Delaware

Maryland

Massachusetts

Minnesota

New Jersey

Washington

DC (but on hold)

Residential Stretch Codes

Have Stretch Code	Working on Stretch Code	Considering Stretch Code
Massachusetts	Illinois	Delaware
New York (had)	New York	Maryland
Colorado (new)	Oregon	New Jersey

Residential New Construction Programs

Many programs have multiple tiers and fit into more than one category

Use ENERGY STAR New Homes: CO, MA, MD, NJ

Use DOE ZERH/ENH: CO, DC, NJ

Use Passive House: DC, MA, NJ

Based on % savings relative to code: MA, MN, OR

Require all electric: CA, IL, MA

Massachusetts – Tiered Code Structure

What makes MA different

- Clear **tiered adoption structure:** Base → Stretch → Specialized
- Market-tested stretch code already dominant
- Optional net-zero pathway now deployed statewide

Where they are now

- Majority of communities on stretch code
- Net-zero code expanding
- Electrification embedded in compliance pathways

Why it matters

- Demonstrates how to move from voluntary → standard practice
- Provides replicable model for other states

Colorado – State Baseline + Local Authority

How the system works

State sets a mandatory baseline + adoption timeline

Local governments implement and can exceed requirements

Where they are now

Majority of jurisdictions on recent IECC versions

Rapid growth in electric-ready and heat pump requirements

Leading cities/counties pushing toward all-electric new construction

Why it matters

Creates a consistent floor statewide

Enables local leadership without fragmentation

Provides a path toward electrification

Washington – State-Driven Code with Targets

How the system works

State develops a **custom code exceeding IECC**

Uses points-based compliance to drive measure adoption

Efficiency-first framework (supports electrification)

Where they are now

Among the most stringent energy codes nationally

Continuous tightening through each code cycle

Where they're going

Updating to 2024 IECC-based code

Increasing stringency across envelope + systems

Statutory target: 70% reduction over 2006 WA State Code by 2031

New York – Legislative Mandate Driving Electrification

How the system works

- Builds on national model codes
- Uses state legislation to drive electrification

Where they are now

- Code exceeds 2024 IECC in several areas
- Implementation details still being finalized

Where they're going

- **Zero on-site emissions requirement enacted** (2023)
- Fossil fuel equipment phased out:
  - 2026 (small buildings)
  - 2029 (large buildings)
- All-electric requirements coming into effect this decade

New Jersey

Current constraints

- Single statewide code (no above/below local adoption)
- Limited DCA authority for stretch or net-zero codes
- Optional appendices ≠ scalable pathway

Pathways from leading states

- **Massachusetts** → tiered code structure
- **Colorado** → state baseline + local leadership
- **Washington** → state-driven code with high efficiency targets
- **New York** → legislative mandate driving electrification

What help do you need?

From other states and ACEEE

On code updates

On stretch codes

On voluntary programs

Thank you!

Skye Gruen

Senior Manager, Buildings

sgruen@aceee.org

ACEEE

Affordability and the Electric-Ready and Demand Response Appendices

Charlotte Weigel, NEEP

Affordability and the Electric-Ready and Demand Response Appendices

Electric-ready (ER) and demand response (DR) provisions in energy code future proof new buildings.

The primary goal of this project to assist jurisdictions throughout New England and the Mid-Atlantic with their decision of whether to include ER and DR provisions into their base and stretch codes.

- Potential for New Jersey to consider if they become able to adopt a stretch code.

The project will do this by examining the impacts of ER and DR provisions on affordability including:

- Quantitative assessment of impacts on costs of construction and improved cost-effectiveness of future electrification
- Qualitative review of cost savings of demand response and non-energy benefits of future electrification

Affordability and the ER and DR Appendices

2024 IECC ER and DR Appendices

Residential Appendices		Commercial Appendices	
RB	Solar-Ready	CB	Solar-ready Zone
RD	Electric Energy Storage	CG	EV charging infrastructure
RE*	EV charging infrastructure	CH	ER for space heating, water heating, cooking, dryers
RJ	DR controls for water heaters	CI	DR control for heat/cool, water heating, lighting
RK*	ER (water heater, dryer and stove) add ASHP from 2027 IECC	CJ	Electric Energy Storage
RL	RE Infrastructure		

* Rutgers completed analysis of Appendices RK and RE in 2025 which we would reference for New Jersey.

Affordability and the ER and DR Appendices – determining cost of construction

1. Ask builders/contractors/electricians to complete sample quotes on a new construction model project to gather cost data from their area
2. Price materials from lumber yards in the same area.
3. Include comparison with RS Means

Example model SF home from Massachusetts study

Project Type: Single Family Model Home
Project Location: Massachusetts
Bid Package: Electrical

Company: _____
Estimator: _____
Date: _____

Using the below information, please estimate the electrical cost of this single family model home under four different scenrios.
Please note that the electrical components varying among the scenarios are provided in the below table.
All other electrical items are assumed identical among the scenarios.

Total Conditioned Area	**2,875 SF**
Number of Floors	Basement+ 2 Floors+Attic
Number of Bedrooms	3
Number of Bathrooms	3.5

*https://hbrama.com/wp-content/uploads/2023/05/Public-Policy-for-Net-Zero-Homes-and-Affordability-Final-6-14-23.pdf

Affordability and the ER and DR Appendices – determining cost of construction

Example quote table

Component	Business as usual case	Future electrification or demand response capability	Electrical cost (labor and materials)
Heating**	Gas Furnace	Heat Pump Condenser with air handlers	
Cooling	Central A/C		
Water Heater	On-Demand Water Tank	Electric water tank (heat pump)?	
		Electric water tank + DR (heat pump)?	
Range Appliance	Gas Range	Electric Range	
Dryer	Gas Dryer	Electric Dryer	
Solar PV	NA	Min size accommodated in appendix	
BESS	NA	Min size accommodated in appendix	
EV charging	NA	EV space	

** ER for space heating is included in Appendix RK of the 2027 IECC. It is not in Appendix RK of the 2024 IECC.

Affordability and the Electric-Ready and Demand Response Appendices

Questions for this group:

- What other appendices should be prioritized for cost analysis for New Jersey to inform a stretch code?
- Are there additional building types to prioritize in an analysis for New Jersey for one or more of the Appendices?
- How can we integrate unique concerns for renters and affordable housing in New Jersey?

- Next steps:
- Meet with New Jersey study authors to understand methods, assess other existing NJ data
- Assess interest of other states in New England and Mid-Atlantic

Thank you!

Charlotte Weigel

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For more information

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Thank you for joining us