Part 1: Overview

2025 Commercial Stretch Code

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Your local electric and natural gas utilities and energy efficiency service provider are taking strides in energy efficiency: Berkshire Gas, Cape Light Compact, Eversource, Liberty, National Grid and Unitil.

As one, we form Mass Save®, with the common goal of helping residents and businesses across Massachusetts save money and energy, leading our state to a clean and energy efficient future.

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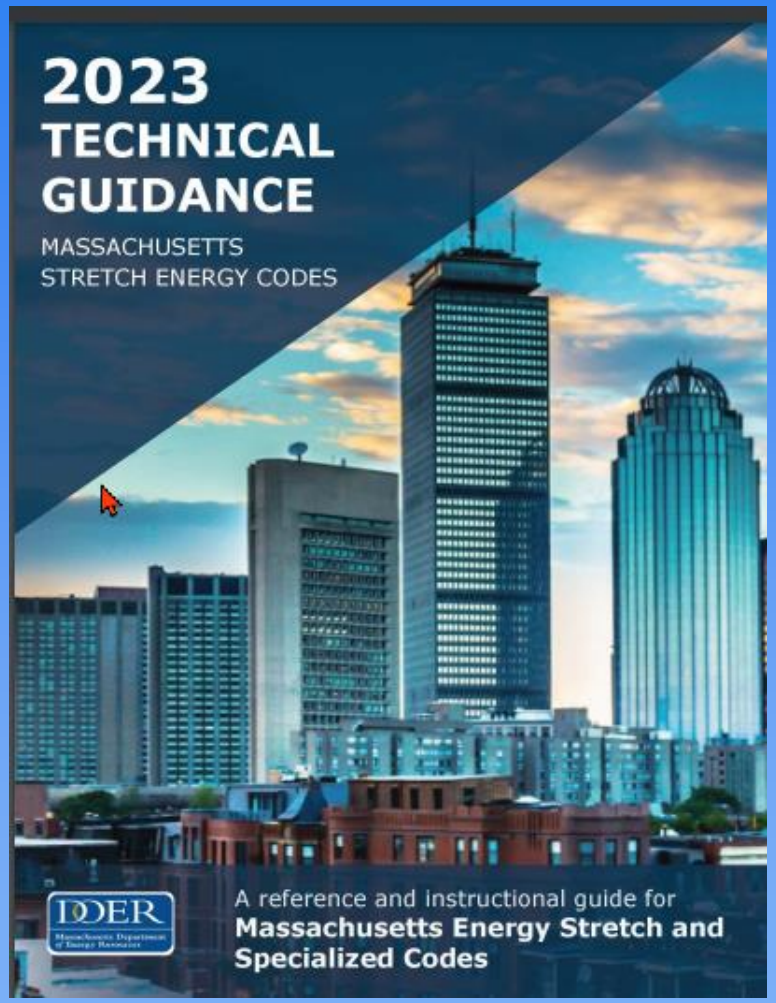
Massachusetts Department of Energy Resources (DOER)

Some of the content of this course is sourced from 2023 Technical Guidance provided by Massachusetts Department of Energy Resources (DOER)



Source: MA DOER

Presented by:

PSD

Moving Energy Efficiency Forward

We combine building science with technology to help utility companies, program implementers, and building performance professionals achieve energy savings.

Agenda

- Introduction
- Massachusetts Energy Code
- 2025 Commercial Stretch Energy Code Requirements
- Commercial Energy Efficiency
- Compliance Pathways
- Existing Buildings
- Appendix CB Solar Ready
- EV Ready
- Municipal Opt-In Specialized Stretch Code
- Summary

Learning Objectives

- Understand the nuances of the new Commercial Stretch Code.
- Gain knowledge of the different compliance pathways and new performance requirements under the Commercial Stretch Code.
- Comprehend the impact of thermal bridging on the overall Building Thermal Envelope.
- Understand how the Commercial Stretch Code applies to existing buildings and addresses additions, alterations, and changes in use.

Poll Question #1

Which of the following best describes your field of work?

A. Builder
B. Architect
C. Code Official
D. HERS Rater
E. Passive House Consultant

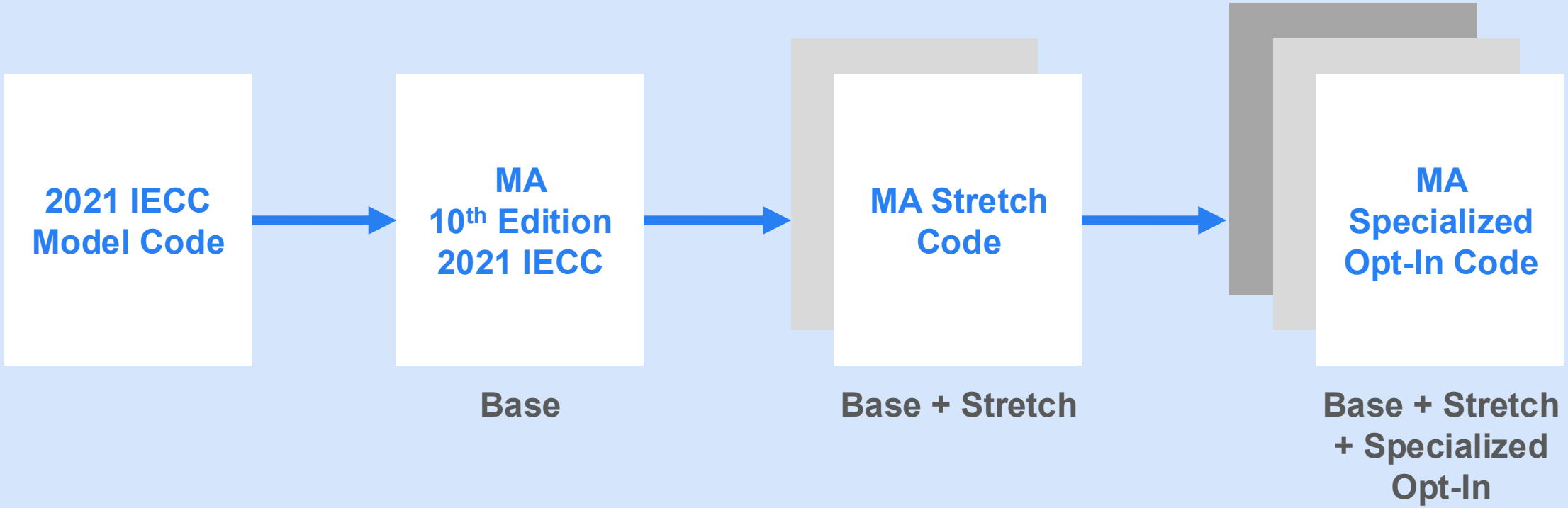
2025 Massachusetts Commercial Energy Code

Base Code	Stretch Code	Specialized Code
2021 IECC w/MA Amendments; 780 CMR Chapter 11R (residential) & 780 CMR Chapter 13 (commercial) 780 CMR 10th Edition is the current MA Building Code	2021 IECC w/MA Amendments; 225 CMR Chapter 22 (residential) & 225 CMR Chapter 23 (commercial)	2021 IECC w/MA Amendments; 225 CMR Chapter 22 + Appendix RC (residential) & 225 CMR Chapter 23 + Appendix CC (commercial)

Source: MA DOER

Current Energy Code Options

The 2025 Massachusetts Energy Code



Overview of Changes

February 14, 2025

- Stretch code updates have gone into effect as of 2/14/25
- Impacts buildings with permit dates after July 1, 2024
- Maximum HERS Index decreased from 52 to 42 for new construction

Update to Stretch Code

Update to Stretch code:

- Introduced new Embodied Carbon Credit for new construction
- Maximum HERS Index revised for large alterations and additions

All-electric homes qualify for a three-point increase in maximum HERS Index

MA Base Energy Code

The Base Energy Code is…

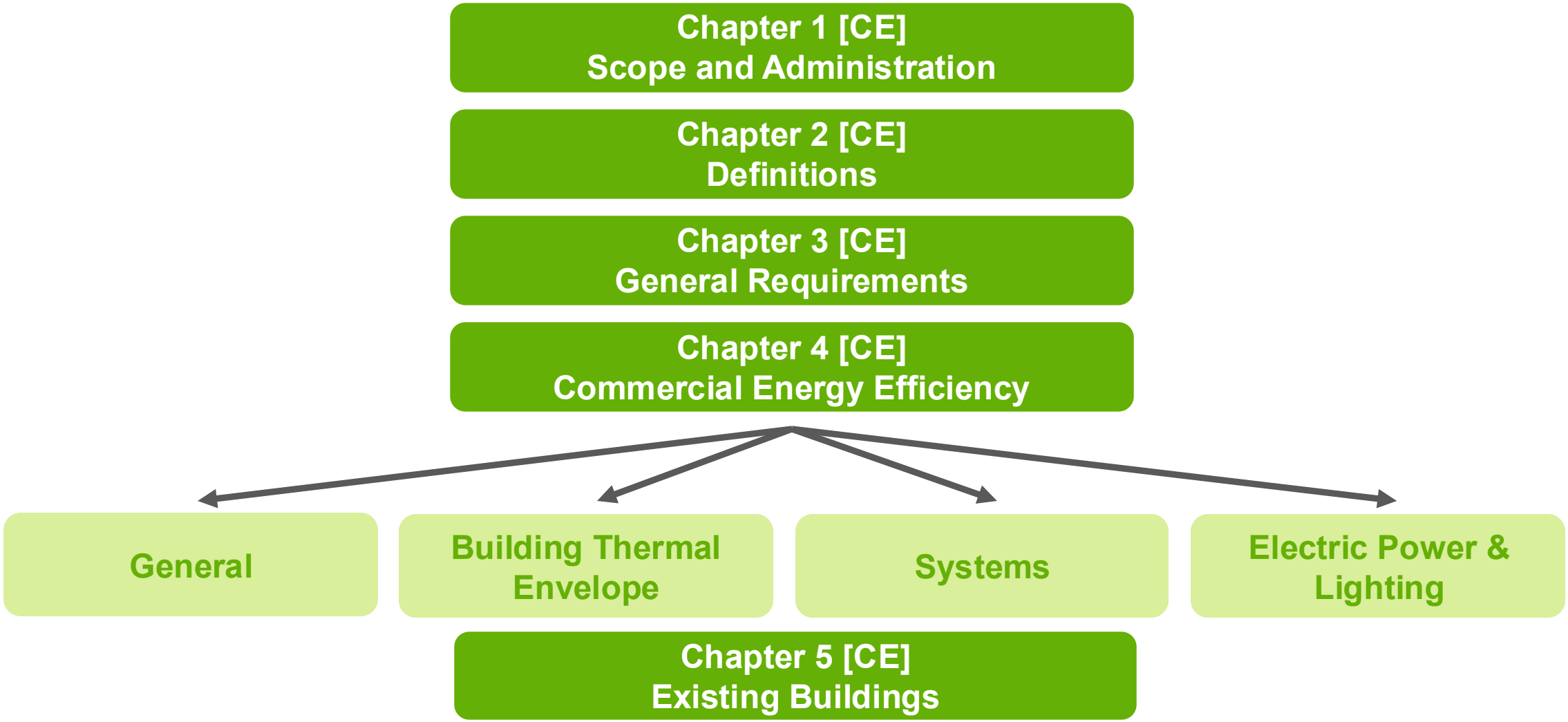
- The default statewide energy code
- Based on the 2021 IECC
- Provides a base level of energy savings
- Found in ***Chapter 13: Energy Efficiency Amendments*** of the MA State Building Code (CMR 780)

Commercial Code Application

All buildings other than:

- Detached one- and two-family dwellings,
- Townhouses
- Group R-2, R-3, R-4 buildings three stories or less in above grade height.

Commercial Provisions



Poll Question #2

The Base Energy Code, found in the 10th Edition of the Massachusetts State Building Code (780 CMR), is based on which version of the IECC?:

2009 IECC

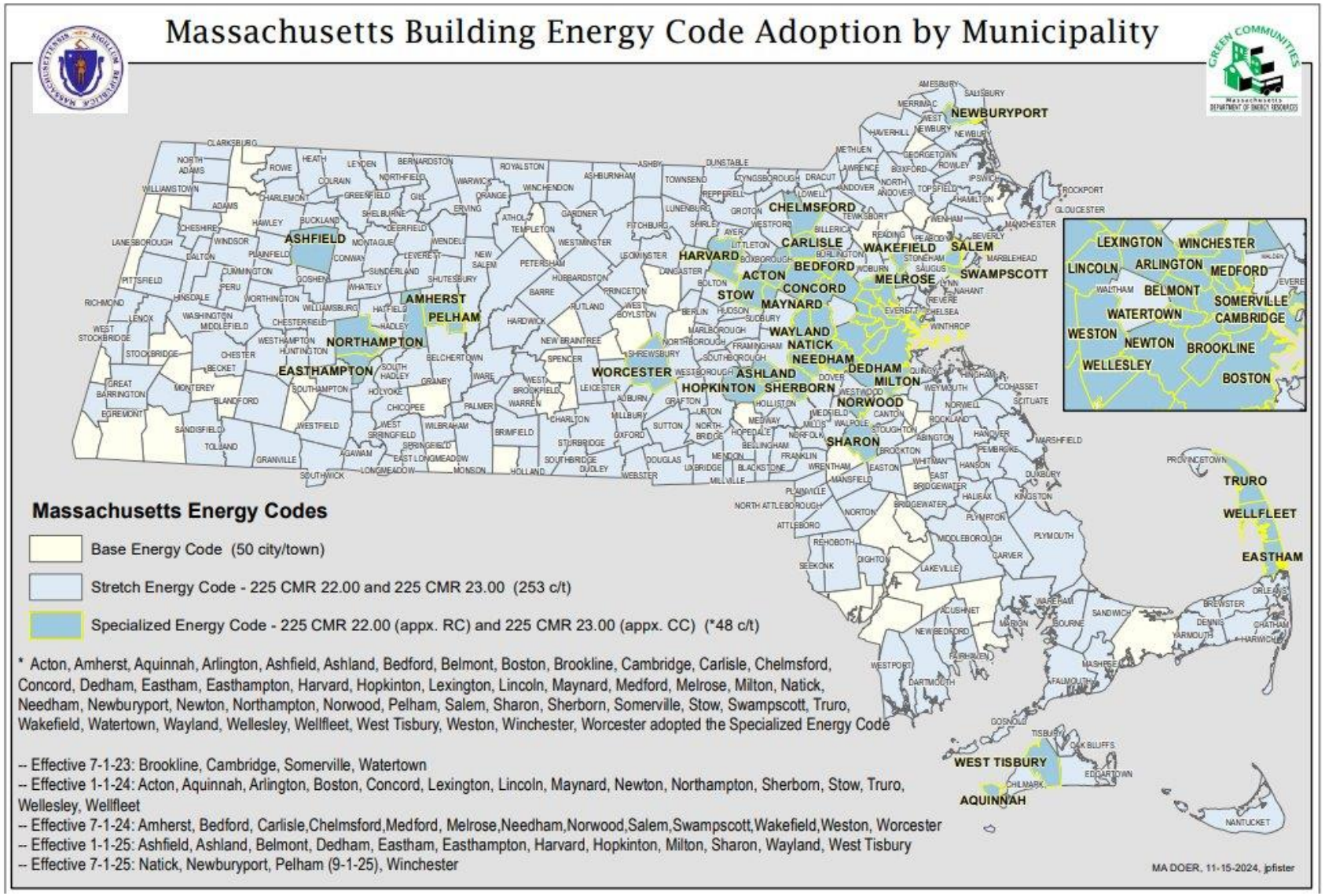
2015 IECC

2018 IECC

2021 IECC

2025 Commercial Stretch Code Overview

Stretch Code Communities



Source: MA DOER

Specialized Opt-In Code

- IECC 2021 w/ MA Amendments
- Stretch Code Amendments
- Specialized Code Appendices

Changes

Old Stretch Code		New Stretch Code
Mandates site energy reduction		Focus on heating and cooling demand reduction
10% reduction	Replaced with →	Major heating reductions
Buildings over 100,000 sq ft		All Building sizes
No change for additions, alterations		Includes additions, alterations

Poll Question #3

The Municipal Opt-in Specialized Energy Code is an overlay code of both the Stretch Code and the 2021 IECC

A. True

B. False

Stretch Code Requirements

Summary of Minor Code Changes

These are straightforward changes and not a comprehensive list.

Code Section	Summary of Measure
C103.2	Adds documentation requirements for Solar Ready, EV Ready Spaces, ventilation rate for Relative Performance (see Additional Information for more guidance), and Mixed-Fuel systems' plans for electrification for the Specialized Code. Clarification of COMcheck submittal documentation.
C202	Adds definitions for All-Electric Building, Automatic Load Management System, Class 3 Exhaust, Class 4 Exhaust, Clean Biomass Heating System, Combustion Equipment, Glazed Wall System, Dedicated Outdoor Air System, Electric Vehicle, Electric Vehicle Ready Parking Space, Enthalpy Recovery Ratio, Exempt Exhaust, Fuel Gas, Fuel Oil, Mixed-Fuel Building, Other Exhaust, Sensible Energy Recovery Ratio, Spandrel Section, Thermal Bridge
C402.2.4.1	Insulation Installation, Delete C402.2.4.1 Exception
C402.2.8	New section listing specifications for fireplaces.
C402.4	Lowers fixed and operable U-factors and makes performance documentation explicit for all fenestration.
C402.6	Approved Calculation Software Tools, Allows MA Stretch COMcheck
C405.2	Lowers existing threshold requiring controls in daylight zones to 100W.
Appendix CB	Solar-Ready Zone – Commercial, included without modification

Simple code measures that don't require further explanation. Refer to code for specific requirements.

Courtesy of DOER: 2023 Technical Guidance, Massachusetts Stretch Energy Codes

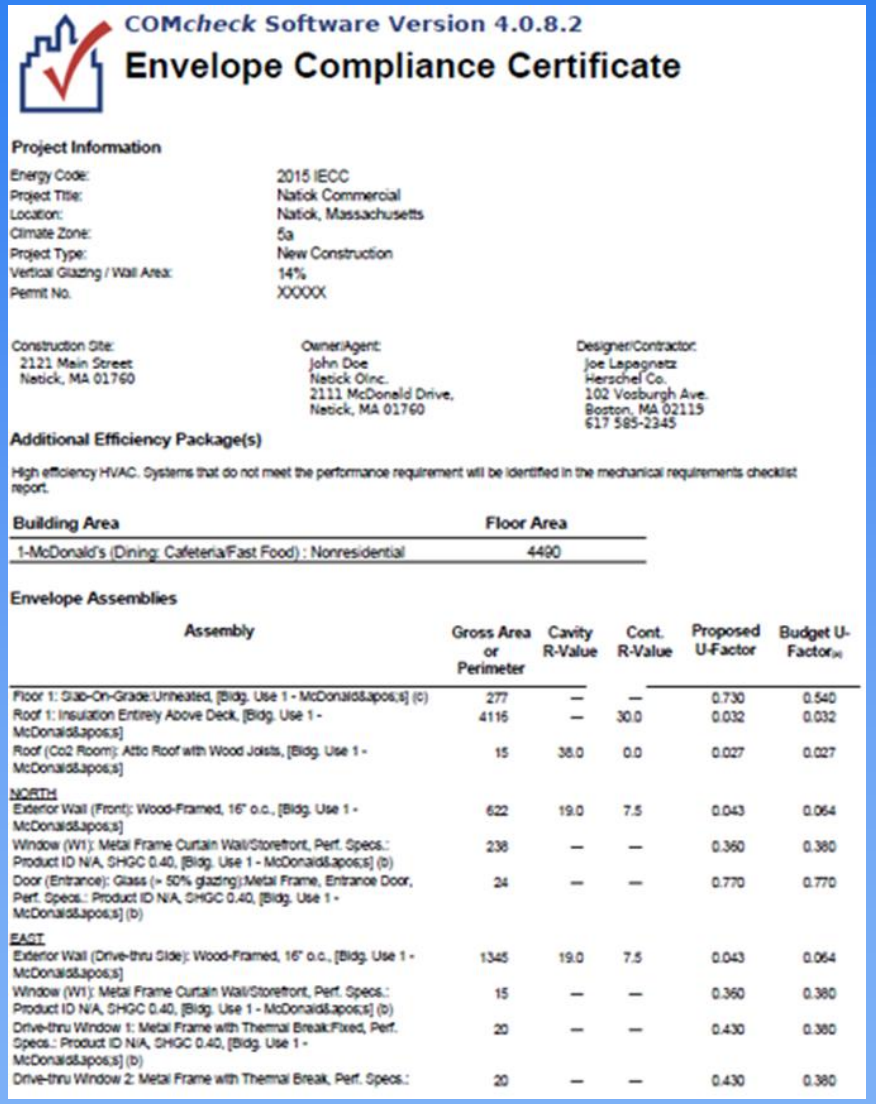
Construction Documents

New Requirements to be included on Construction Documents (CDs)

- Solar Ready Roof Zone or Potential Solar Zone Area
- EV Ready Spaces
- Relative Performance Pathway ventilation documentation, schedules, and calculations
- For Opt-in Communities – electric HVAC retrofit design
- District Energy System Order of Conditions issued by the DOER, if applicable

Other Information on Construction Documents

- Energy compliance path
- Thermal Bridging Derating Calculations (if over 20,000 sf) or COMcheck envelope information (if under 20,000 sf)
- Fenestration U-factor and SHGC
- Fenestration Calculations
- Mechanical system design criteria
- Mechanical and service water-heating systems and equipment types, sizes and efficiencies
- Economizer description
- Equipment and system controls
- Fan motor horsepower (hp) and controls
- Duct sealing, duct and pipe insulation and location
- Lighting fixture schedule with wattage and control narrative
- Location of daylight zones on floor plans
- Air barrier and air sealing details, including the location of the air barrier



COMcheck Software Version 4.0.8.2

Envelope Compliance Certificate

Project Information

Energy Code:	2015 IECC
Project Title:	Natick Commercial
Location:	Natick, Massachusetts
Climate Zone:	5a
Project Type:	New Construction
Vertical Glazing / Wall Area:	14%
Permit No.	XXXXX

Construction Site:
2121 Main Street
Natick, MA 01760

Owner/Agent:
John Doe
Natick Olnc.
2111 McDonald Drive,
Natick, MA 01760

Designer/Contractor:
Joe Lapegnetz
Herschel Co.
102 Vosburgh Ave.
Boston, MA 02115
617 585-2345

Additional Efficiency Package(s)

High efficiency HVAC. Systems that do not meet the performance requirement will be identified in the mechanical requirements checklist report.

Building Area	Floor Area
1-McDonald's (Dining: Cafeteria/Fast Food) : Nonresidential	4490

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor[a]
Floor 1: Slab-On-Grade:Unheated, [Bldg. Use 1 - McDonald's] (c)	277	—	—	0.730	0.540
Roof 1: Insulation Entirely Above Deck, [Bldg. Use 1 - McDonald's]	4116	—	30.0	0.032	0.032
Roof (Co2 Room): Attic Roof with Wood Joists, [Bldg. Use 1 - McDonald's]	15	38.0	0.0	0.027	0.027
NORTH					
Exterior Wall (Front): Wood-Framed, 16" o.c., [Bldg. Use 1 - McDonald's]	622	19.0	7.5	0.043	0.064
Window (W1): Metal Frame Curtain Wall/Storefront, Perf. Specs.: Product ID N/A, SHGC 0.40, [Bldg. Use 1 - McDonald's] (b)	238	—	—	0.360	0.380
Door (Entrance): Glass (> 50% glazing):Metal Frame, Entrance Door, Perf. Specs.: Product ID N/A, SHGC 0.40, [Bldg. Use 1 - McDonald's] (b)	24	—	—	0.770	0.770
EAST					
Exterior Wall (Drive-thru Side): Wood-Framed, 16" o.c., [Bldg. Use 1 - McDonald's]	1345	19.0	7.5	0.043	0.064
Window (W1): Metal Frame Curtain Wall/Storefront, Perf. Specs.: Product ID N/A, SHGC 0.40, [Bldg. Use 1 - McDonald's] (b)	15	—	—	0.360	0.380
Drive-thru Window 1: Metal Frame with Thermal Break:Fixed, Perf. Specs.: Product ID N/A, SHGC 0.40, [Bldg. Use 1 - McDonald's] (b)	20	—	—	0.430	0.380
Drive-thru Window 2: Metal Frame with Thermal Break, Perf. Specs.:	20	—	—	0.430	0.380

Source: COMcheck-web

COMcheck Required

For projects up to 20,000 ft^2 Permits Shall Include Completed COMcheck including:

- Envelope Compliance Certificate
- Lighting Compliance Certificate
- Mechanical Compliance Certificates
- Plan Review/Inspection Checklist

Exception:

Buildings following either of the Certified Performance Standard Compliance pathways in Section C401.2.2 (Passive House or HERS Compliance). In the case of buildings over 20,000-sf which are showing compliance with C401.2.2 for only a portion of the building, this exception does not apply to the portion of the building which is not showing compliance with Section C401.2.2.

COMcheck-Web™

COMcheck-Web simplifies commercial and high-rise residential energy code compliance.

energycode.pnl.gov/COMcheckWeb/

Construction Documents for Projects Over 20,000 ft^2

For projects greater than 20,000 ft^2	Completed COMcheck Lighting and Mechanical Compliance Certificates, and a Plan Review Inspection Checklist.
Relative Performance Compliance	Completed calculations performed in accordance with latest edition of Massachusetts Stretch Energy Code Technical Guidance, Attachment B, ASHRAE Appendix G Relative Performance Simulation Guidelines.
Targeted Performance Compliance	Completed calculations performed in accordance with latest edition of Massachusetts Stretch Energy Code Technical Guidance, Attachment C, Targeted Performance Simulation Guidelines

For projects over 20,000 ft^2, COMcheck may not be used for envelope compliance. Per Section C103.2(2), backstop compliance and thermal bridge derating calculations performed in accordance with latest edition of Massachusetts Stretch Energy Code Technical Guidance, Attachment A, Envelope Performance and Thermal Bridge Derating shall be provided.

Definitions

- Chapter 2 as always includes definitions of terms/words related to the scope applicable to this code.
- Helps maintain the context in which the terms are being used.
- Some new definitions in the version include:
  - Dedicated Outdoor Air System (DOAS)
  - District Energy System
  - District Energy System, Heat Recovery Enabled
  - District Energy System Order of Conditions
  - Efficient Electrification
  - Thermal Bridge
  - Spandrel Section
  - Tenant Fit Out Zone
  - Enthalpy Recovery Ratio
  - Sensible Energy Recovery Ratio
  - Sensible Recovery Efficiency
  - Total Recovery Efficiency
  - Automatic Load Management System (ALMS)
  - Thermal Distribution Efficiency

Poll Question #4

Which of the following is a new requirement to be depicted on the Construction Documents submitted for permitting?

A. Solar Ready Zone

B. Thermal Boundary

C. Air Barrier

D. Ventilation documentation, schedules, and calculations

Commercial Energy Efficiency

Compliance Pathways

Prescriptive Compliance
Nonresidential buildings ≤ 20,000 ft^2

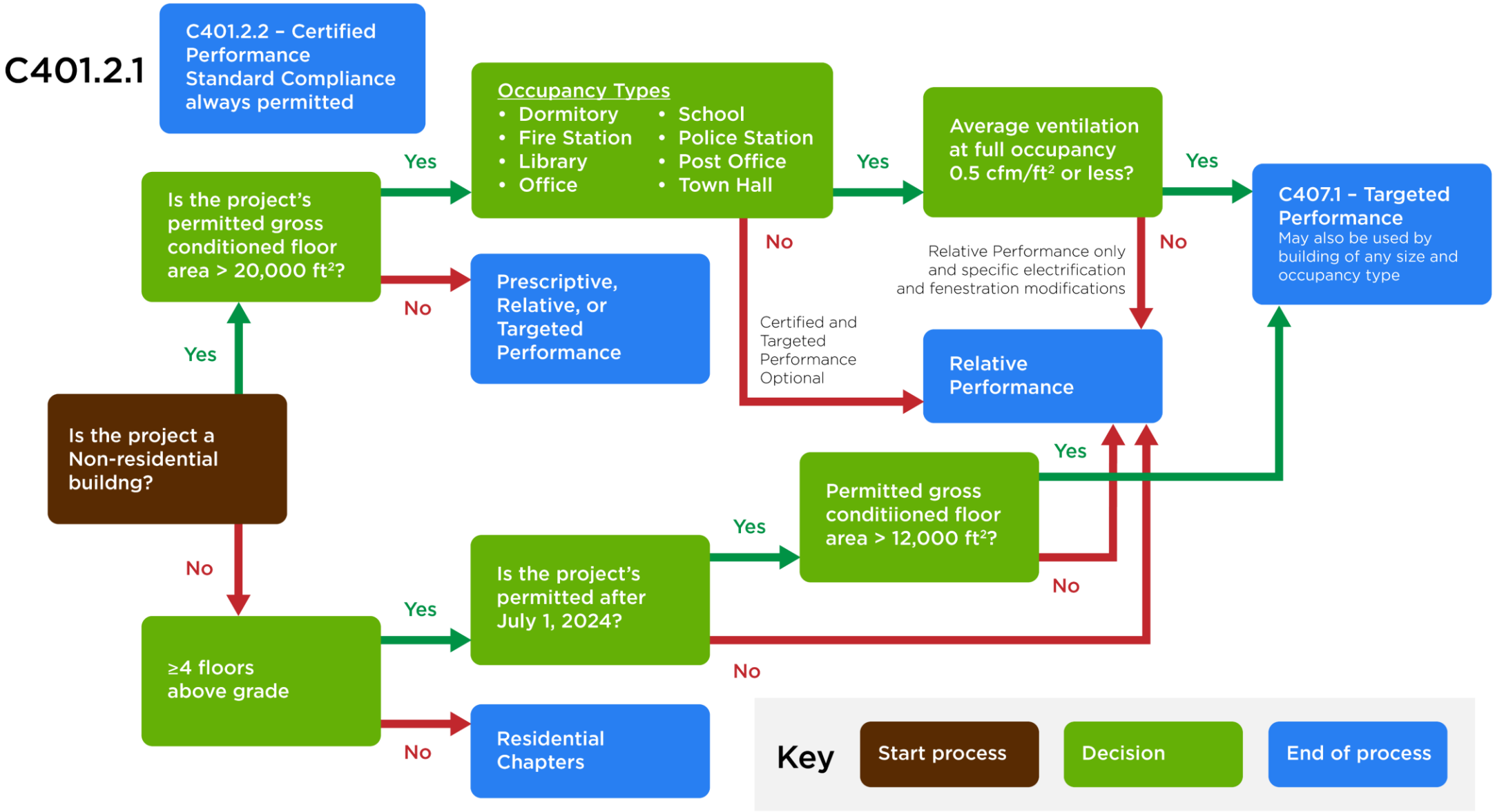
Targeted Performance Compliance
Dormitories, fire stations, libraries, offices, schools, police stations, post offices and town halls over 20,000 ft^2 and having average ventilation at full occupancy of 0.5 cfm/ft^2 or less

Relative Performance Compliance
Buildings not required to use Targeted Performance are permitted to use this path

Certified Performance - Passive House
All buildings or spaces are permitted to use Passive House compliance

Certified Performance - HERS Compliance
All Group R buildings and Group R spaces in buildings with multiple dwelling units are permitted to use HERS compliance

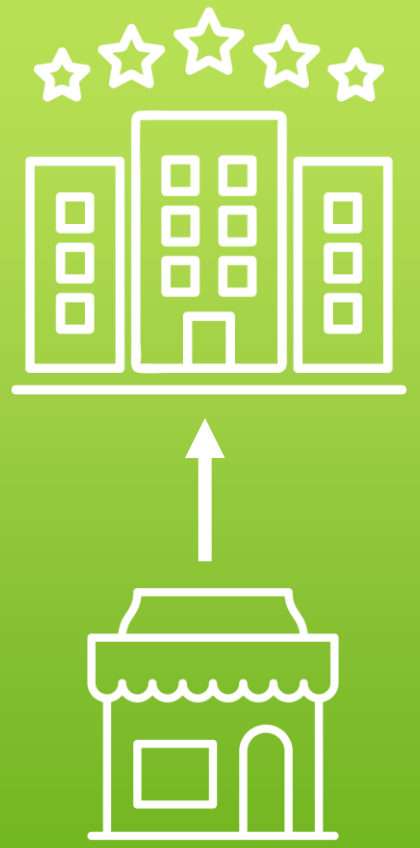
Compliance Path Flow Chart



Source: MA DOER

Mixed Use Buildings

- Where there are 2 or more uses within a building each use shall separately and independently show compliance
- Where different compliance paths are required – each use shall follow the appropriate path
- Exception: Enclosed or unenclosed parking garages that are part of a larger building may follow the Prescriptive Compliance path even where they exceed 20,000 ft^2.



IBC

Group R

The use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I for when no regulated by the International Residential Code

IBC

Group M

The use of a building or structure, or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares, or merchandise incidental to such purposes and where the public has access

Thermal Envelope Certificate

The 2021 IECC requires a permanent thermal envelope certificate to be posted in the furnace or utility room.

Information required includes:

- R-Values for the envelope components
- U-factors and SHGCs of fenestration
- Results from any building envelope air leakage testing performed on the building

Energy Code Compliance Certificate

mass save

Energy Code Edition _____

Compliance Path _____

Building Thermal Envelope

Ceiling R-Value: _____
Roof R-Value: _____
Wall R-Value: _____
Slab R-Value: _____
Basement Wall R-Value: _____
Crawl Wall R-Value: _____
Floor R-Value: _____
Window U-Factor: _____
Window SHGC: _____
Air Infiltration Rate: _____

Mechanical Systems

Duct R-Value: _____
Duct Leakage Rate: _____
Heating Equip Eff: _____
Cooling Equip Eff: _____

Photovoltaic System

Capacity: _____
Inverter Eff: _____
Panel Tilt: _____
Panel Orientation: _____

Energy Rating Index

With Onsite Power: _____

W/O Onsite Power: _____

Address: _____ **Date:** _____

Builder or Design Professional Signature: _____

THIS LABEL MUST BE PERMANENTLY AFFIXED BY HOME BUILDERS TO THE BREAKER PANEL ON ALL NEW RESIDENTIAL BUILDINGS.

Building Envelope Thermal Requirement

- Insulation R-Value is no longer permitted.
- Vertical assemblies must meet an area-weighted U-factor
- COMcheck –Web is approved for Prescriptive Compliance
- Thermal Bridging mitigation is required – more on that later
- Table C402.1.4 – Assembly U-Factors

C402.1.4 Assembly *U*-factor, *C*-Factor or *F*-Factor-Based Method

Building thermal envelope opaque assemblies shall meet the requirements of Sections C402.2 and C402.4 based on the climate zone spec
Building thermal envelope opaque assemblies intended to comply on an assembly *U*-, *C*- or *F*-factor basis shall have a *U*-, *C*- or *F*-factor not
specified in Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing *Group R* occupancies shall use the *U*-, *C*-
"*Group R*" column of Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing occupancies other than *Group*
F-factor from the "All other" column of Table C402.1.4

TABLE C402.1.4

OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, *U*-FACTOR METHOD[a, b]

CLIMATE	0 AND 1	2	3	4 EXCEPT MARINE	5 AND MARINE 4	6	7

R-13 + R-10ci → U-0.055

Source: PSD

Component Performance Alternative

- This section allows for more flexible glazing limits.
- Differentiates between low glazed and high glazed wall systems
- Tradeoffs between roof/floors and walls/windows are not allowed.
- “Intra-vertical” tradeoffs are allowed
- Thermal Bridging still must be addressed – more on that later
- Provides U-factor area-weighting for Prescriptive Compliance
- Prepares inputs for Appendix G calculations

Air Leakage – Thermal Envelope (C402.5)

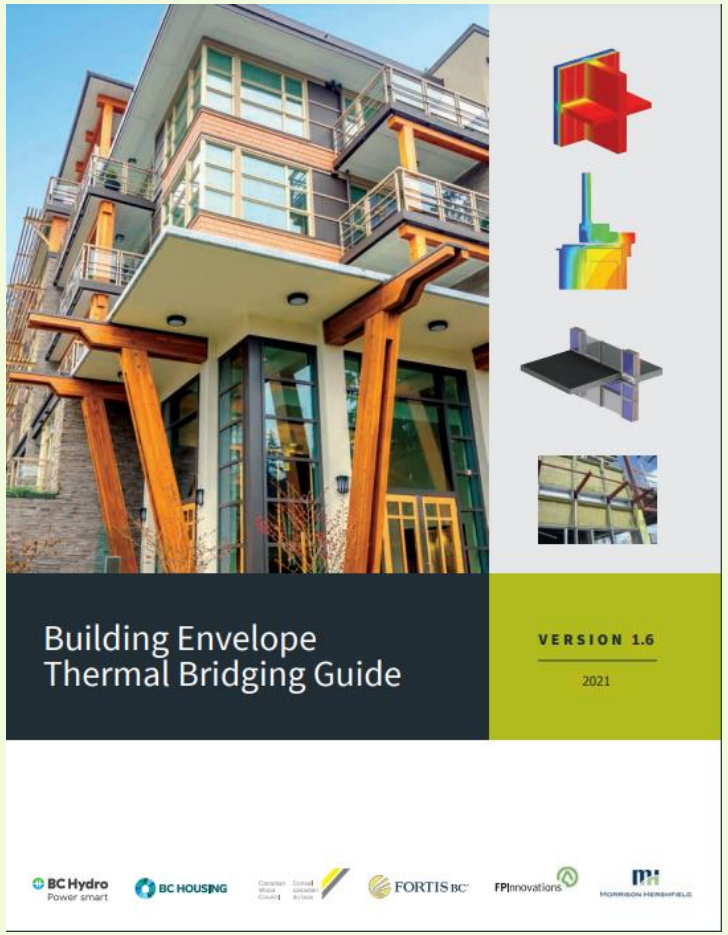
- Air Leakage Testing is Mandatory
- All Prescriptive and Performance Compliance pathways require compliance
- Two testing options:
  - Whole-building
  - Dwelling units
- Max. Allowance: 0.35cfm/ft^2 @ 75Pa
- Group R and I buildings can be compartmentalized.

Source: Building America Solutions Center

Source: PSD

C402.7 Derating and Thermal Bridging

- New section – includes exterior insulation layers.
- Also addressed opaque portions of glazed wall systems
- Required for all Prescriptive and Performance paths.
- Must include method and selections on Construction Documents (CDs)
- Reference: “Building Envelope Thermal Bridging Guide by BC Hydro/BS Housing Research Center)



Source: PSD

Source: PSD

C403.7.5: Kitchen Exhaust Systems

For New Buildings, replacement air in the exhaust hood cavity must not exceed 10% of the exhaust airflow rate.

Conditioned supply air to any space shall not exceed the greater of the ventilation rate for heating or cooling, or the hood exhaust flow minus available transfer air from adjacent spaces.

- If the kitchen hood exhaust airflow exceeds 5,000 cfm, the hood must be factory-built, UL 710 listed, and meet specific airflow reduction or energy recovery requirements.
- For hoods over appliances with different duty ratings, the maximum airflow is based on the highest rating, unless 75% of replacement air is transfer air.

Lighting for Dwelling Units

- 90% (min) High Efficacy lighting is required in all permanently installed lighting
- Exceptions Appliance lighting

High-efficacy light sources:

- Lamps with at least 65 lumens per watt
- Luminaires with at least 45 lumens per watt

Occupancy Sensor Controls

Required areas added:

- Corridors
- Warehouse Storage Areas
- Must incorporate a manual off switch

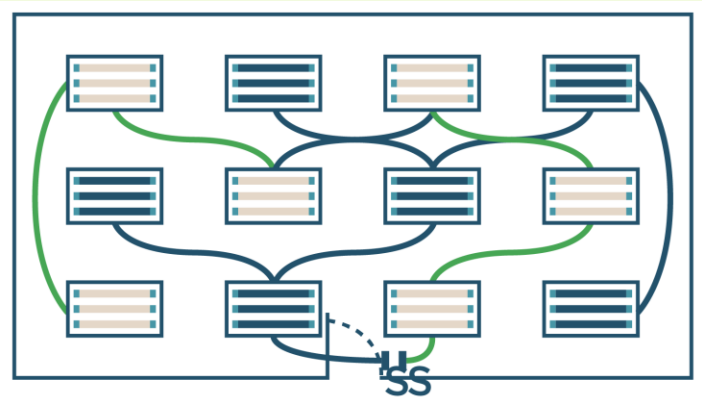
Source: PSD

Light-Reduction Controls

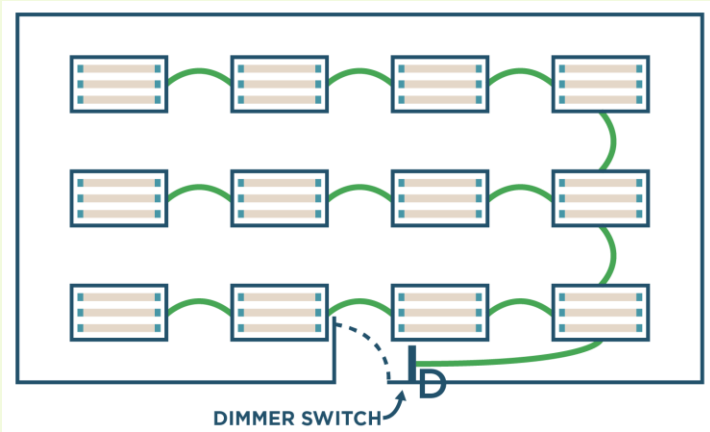
Light Reduction Controls must allow the occupant to reduce connected lighting load

- By **not less than** 50%
- In a reasonably uniform illumination pattern

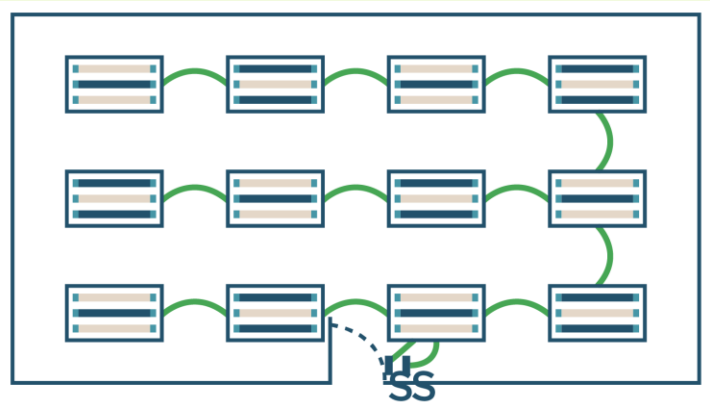
Alternating Luminaires



Dimming



Alternating Lamps



Exception: Light Reduction Control Not required in daylight zones with daylight responsive controls complying with C405.2.3

C405.11 Automatic Receptacle Control

50% of all 125V 15-and 200amp receptacles installed in:

- Offices
- Conference Rooms
- Rooms used for printing
- Breakrooms
- Classrooms
- Workstations

25% of branch circuit feeder to modular workstations not shown on CDs

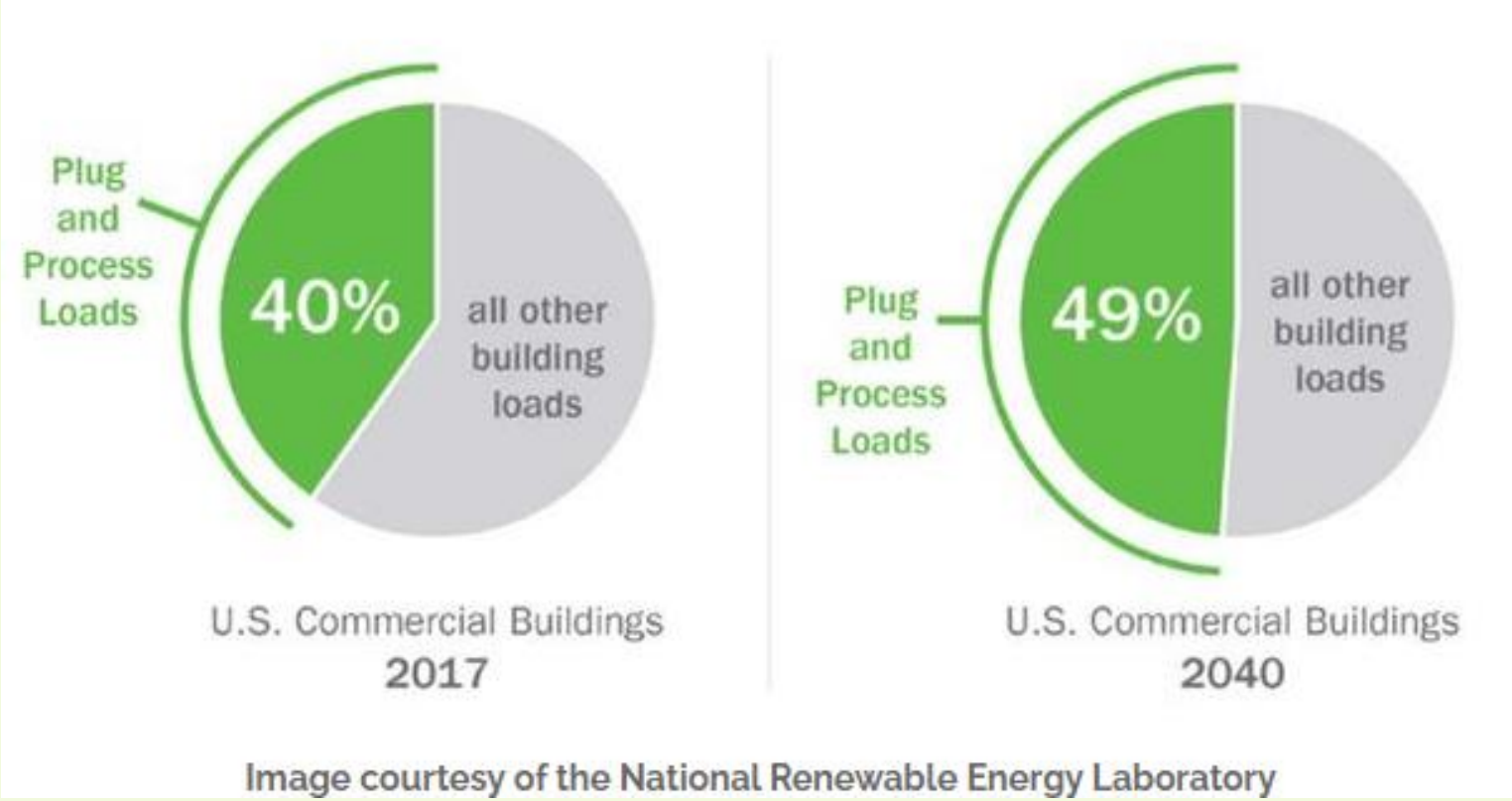


Image courtesy of the National Renewable Energy Laboratory

C405.12
Energy Monitoring

Required in new buildings w/ CFA of ≥ 25,000 ft^2

Systems must:

- Measure
- Monitor
- Record
- Report consumption data

C406 Additional Efficiency Requirements

1. C406.1 -New Buildings are required to achieve a min. of 15 credits
2. C406.2 - Tenant Spaces are required to achieve a min. of 10 credits

Credits based on Table C406.1

TABLE C406.1(1)

ADDITIONAL ENERGY EFFICIENCY CREDITS FOR GROUP B OCCUPANCIES

SECTION	CLIMATE ZONE																
	0A & 1A	0B & 1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.2.2: 5% cooling efficiency improvement	6	6	5	5	4	4	3	3	3	2	2	2	1	2	2	2	1
C406.2.3: Renewable space heating	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15	1	1	2	2	NA	1

Source: MA DOER

Poll Question #5

Under the stretch code the envelope on all commercial buildings must be tested for air leakage based on a maximum rate of 0.35cfm/ft^2 @ 75Pa.

A. True

B. False

Compliance Paths

Compliance Paths

Scenario	Pathway Name	What CODE and SOFTWARE
Less than 20,000 ft^2	**Prescriptive**	Based on IECC 2021, No modeling, can use COMcheck Web MA Stretch version
Over 20,000 ft^2 and residential, office, dorm, fire station, library, school, police station, post office, or town hall	**"Targeted" performance**	TEDI path – can use Equest (or other) model – show heating/cooling demand below limits
More than 20,000 ft^2 and not use above, or any use for high ventilation building	**"Relative" performance**	ASHRAE 90.1 Appendix G – can use Equest (or other) model – show EUI improvement over baseline
Passivehouse	**Passivehouse**	Passivehouse Certified – can use WUFI or PHPP models, and certify with PHIUS or PHI
HERS (Group R Buildings)	**HERS**	HERS Certified, work with HERS rater – can use Ekotrope or REMrate

Courtesy of DOER: 2023 Technical Guidance, Massachusetts Stretch Energy Codes

Compliance Paths

C402	Building Envelope Requirements
C403	Building Mechanical Systems
C404	Service Water Heating
C405	Electrical Power and Lighting Systems
C406	Additional Efficiency Requirements
C408	Maintenance Information and System Commissioning

C402-C406 + C408 Prescriptive

Prescriptive Compliance

Total Building Performance Certification Method

Has been replaced – Four Stretch Code Performance-based compliance options

- Targeted Performance Simulation
- ASHRAE 90.1 2019 Appendix G
- Passive House
- HERS

Targeted Performance Pathway (TEDI)

Stretch Code now directly regulated heating and cooling demand for:

- Office
- Municipal buildings
- Schools
- Residential Buildings

Courtesy of DOER: 2023 Technical Guidance, Massachusetts Stretch Energy Codes

Important: even though they have the same units, TEDI is not the same as energy use intensity (EUI)

TEDI is demand while EUI is consumption

Heating TEDI

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

Cooling TEDI

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

Targeted Performance Pathway (TEDI) Continued

"Targeted" performance pathway (e.g. "TEDI"), must be used if one of the building use types is over 20,000 ft^2 (12,000 ft^2 for Multi-family)

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

Courtesy of DOER: 2023 Technical Guidance, Massachusetts Stretch Energy Codes

The same models currently used for stretch code compliance also produce TEDI information

IES

EnergyPlus

eQUEST

Relative Performance Pathway (ASHRAE 90.1 Appendix G)

- Relative Performance Pathway (aka ASHRAE Appendix G)
  - Ventil to > 0.5 cfm/sf OR
  - A building occupancy or type other than listed for Targeted Compliance
- Can show site energy use reduction per Table 4.2.1.1 of ASHRAE 2019
- Must size heat pumps for 25% of peak space heating when RPP is used due to high ventilation rate.

Overview of Changes

July 2024

- Maximum HERS Index decreased from 52 to 42 for new construction

All-electric homes qualify for a three-point increase in maximum HERS Index

February 14, 2025

Update to Stretch code:

- Introduced new Embodied Carbon Credit for new construction
- Maximum HERS Index revised for large alterations and additions

Poll Question #6

The project consists of a Dormitory, 35,000 ft^2 of conditioned floor area. What is the appropriate compliance path?

A. Prescriptive

B. Targeted Performance

C. Relative Performance

D. ASHRAE 90.1, 2016 Appendix G

Existing Buildings

Existing Buildings – Chapter [CE] 5

Controls:

- Alteration
- Repair
- Addition
- Change of Occupancy of Existing Buildings/Structures

Intent is to allow existing buildings to continue as is – as long as lawfully constructed

Appendix CB Solar-Ready Zone Commercial

Appendix CB

Appendix CB – Solar-Ready Zone – Commercial

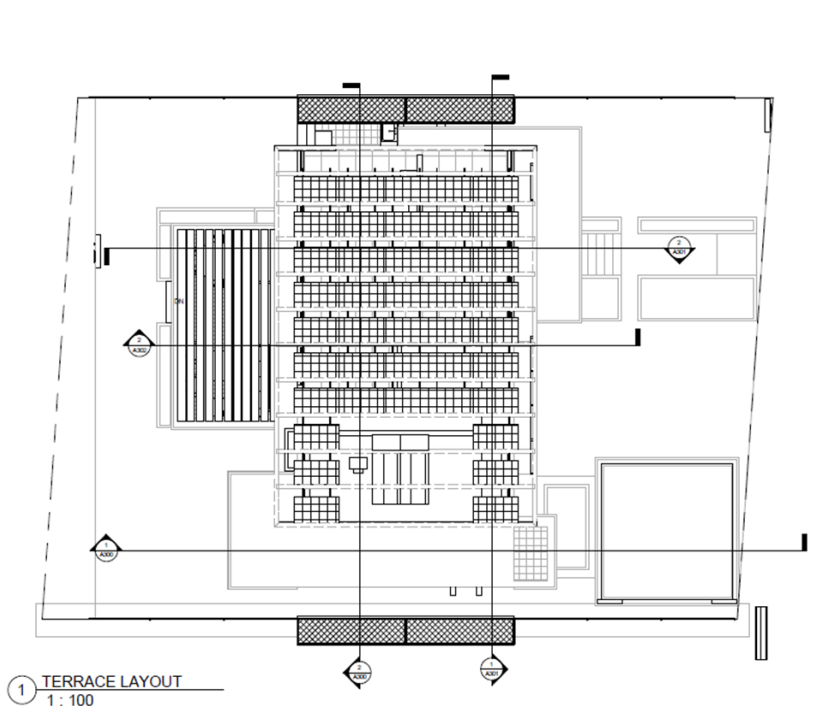
- Adopted Unamended from 2021 IECC Appendix CB
- Ability to plan ahead
- Solar-ready zones and roof load documentation helps solar contractors with future installs
- Easy identification of unobstructed areas
- Easy identification of pathway to run conduits and wiring

CB101 Scope

CB101.1 General

These provisions shall be applicable to new construction, not additions

Appendix CB: Solar-Ready Provisions



Source: PSD

New in 2021:

Applies to all Commercial and Multifamily Buildings (>3 stories)

- Solar-Ready Zone – roofs of buildings 5 stories and less in height above the grade plane and oriented between 110 degrees and 270 degrees of true north or have low slope roofs
- Solar-Ready Zone Area – Total area shall not be less that 40% of the gross roof area. Can be a single area or several smaller areas. Each area must be at least 5’ in width.
- Obstructions – The Solar ready zone shall be free from obstructions including pipes, vents, ducts, equipment, skylights and roof-mounted equipment. Objects may include taller portions of the building, parapets, chimneys, antennas, signage, trees and roof plantings

Source: PSD

Appendix CB: Solar-Ready Provisions

- Roof Loads and Documentation – Structural design loads shall be indicated on the CDs. A dead load of 5 PSF shall be included in the gravity load calculations.
- Interconnection Pathway – CDs shall delineate pathways for routing of conduit or piping the solar-ready zone to the electric service panel
- Electric Energy Storage System-Ready Area – the floor area share not be less than 2’ x 4’. The locations and layout shall be depicted on the CDs
- Electric Service Reserved Space – the main electric service panel shall have a reserved space to allow installation of a dual-pole breaker
- Construction Documentation Certificate – a permanent certificate showing the solar-ready zone, the structural loading, the interconnection pathway is to be posted by the electrical distribution panel

Poll Question #7

Renovations of an existing building requires identification of a solar ready zone

A. True

B. False

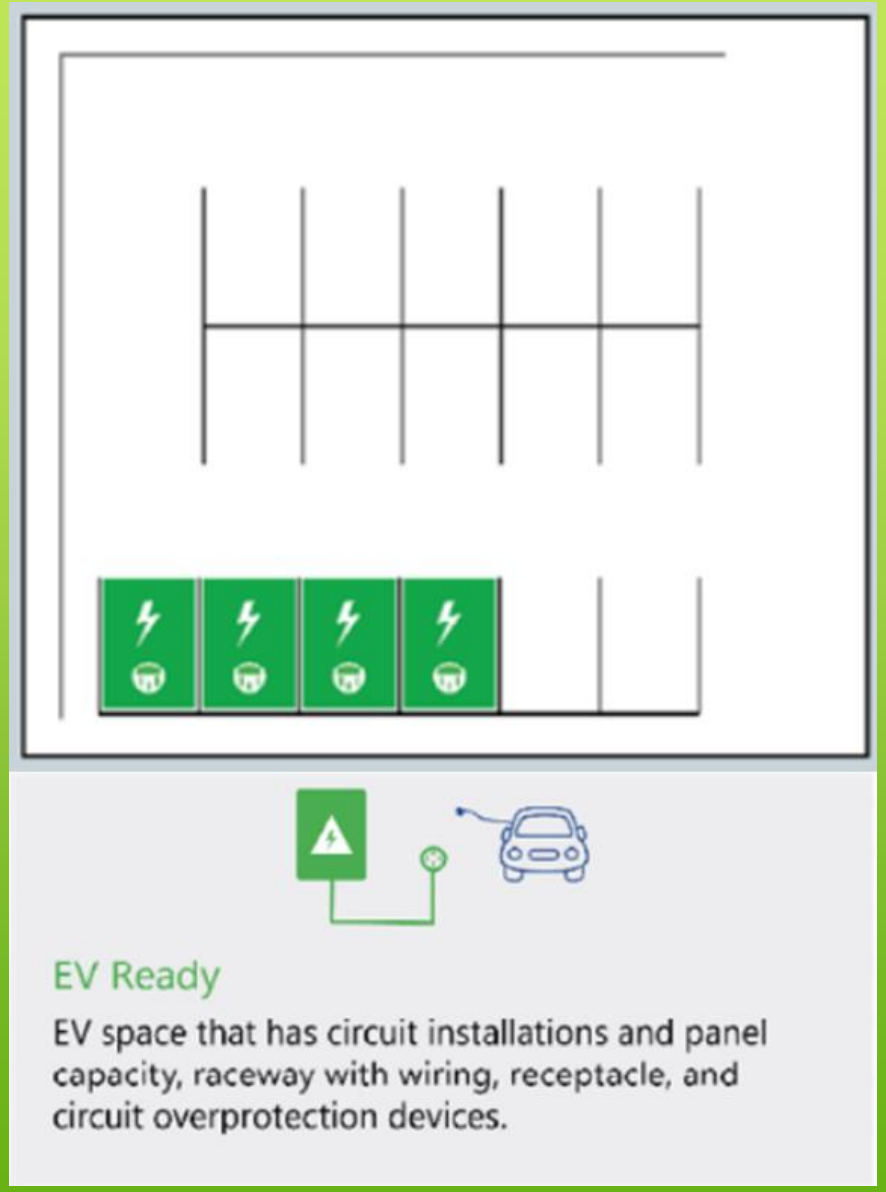
EV Ready

EV Ready Parking Spaces

("EV Ready Spaces")

EV Ready Spaces shall be provided in accordance with Table C405.13

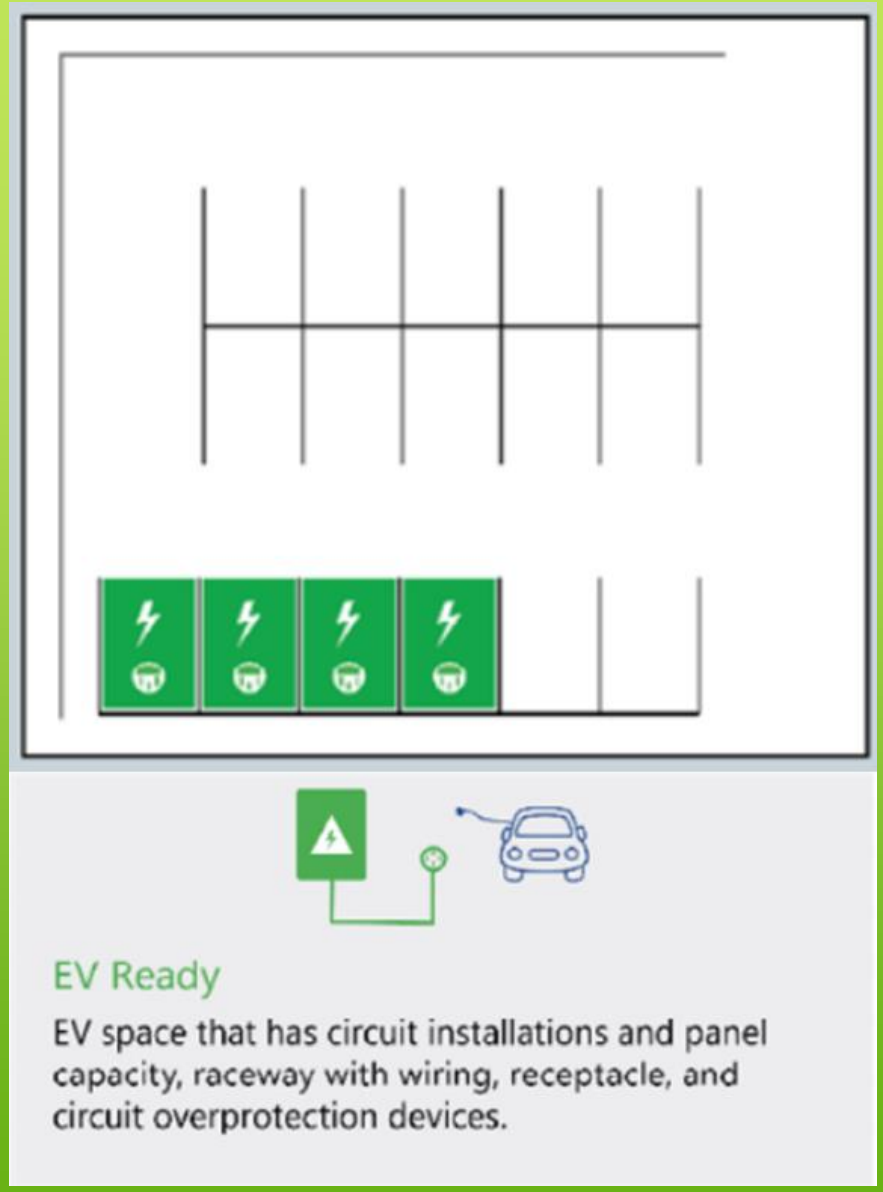
- AC Level II spaces
- The dedicated branch circuit shall be identified as "EV READY" in the service panel or subpanel directory, and the termination location shall be marked as "EV READY."
- The circuit shall terminate in a NEMA receptacle, outlet or a Society of Automotive Engineers (SAE) standard J1772 or SAE J3400 electrical connector.



Source: NORESCO

EV Ready Parking Spaces

- Automatic Load Management System (ALMS) can be used to service multiple spaces using a higher amperage circuit
- CDs to show details and calculations
- EV Spaces are required for all compliance paths.



Source: NORESCO

EV Ready Spaces

Table C405.13 EV Ready Space Requirements

Occupancy Classification Group	Minimum percentage of EV-Ready Spaces	EV Charging Performance Requirements
Group R and Group B	20%	40-amp dedicated branch circuit or larger branch circuit with ALMS in accordance with Table C405.13.1
All Other Occupancies	10%	40-amp dedicated branch circuit or larger branch circuit with ALMS in accordance with Table C405.13.1

Poll Question #8

Automatic Load Management System (ALMS) can be used to service multiple spaces using a higher amperage circuit.

A. True

B. False

Appendix CC Massachusetts Municipal Opt-In Specialized Stretch Code 2025

APPENDIX CC - MASSACHUSETTS MUNICIPAL OPT-IN SPECIALIZED ENERGY CODE 2025

COMMERCIAL BUILDING PROVISIONS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. The provisions contained in this appendix together with referenced sections from the Stretch energy code constitute the Specialized opt-in code for commercial buildings, and may be adopted by a city or town together with the Residential Specialized code Appendix RC as their stretch energy code. When adopted by the local municipality, the provisions in this appendix are mandatory in combination with the IECC2021 with Massachusetts Stretch code amendments.

Municipal Specialized Opt-In Code

The Specialized Stretch Code…

- Includes net-zero building performance standards
- Is designed to achieve MA GHG emissions limits
- Requires compliance with the Stretch Code
- Requires pre-wiring for future electrification of space and water heating for buildings with fossil fuels
- Is adopted at the local level but is NOT required for participation in Green Communities

Compliance

New Buildings Shall Demonstrate Compliance:

- Zero Energy Pathway
- All-Electric Pathway
- Mixed Fuel Pathway

Commercial Overview Summary

- New commercial provisions offer opportunities to save energy and decarbonization
- Prescriptive R-values have been replaced by U-factors in determining compliance
- Target Performance pathway considers the energy demand when determining compliance
- Thermal bridging at walls is being addressed
- Additional mechanical systems efficiencies are part of the new code.
- COMcheck is still required for most compliance pathways
- Relative Performance compliance pathway is based on ASHRAE 90.1-2019, Appendix G

Mass Save Incentive Programs

Residential Rebates and Incentives

Rebates for appliances, heating systems and more.

www.masssave.com/en/residential/rebates-and-incentives

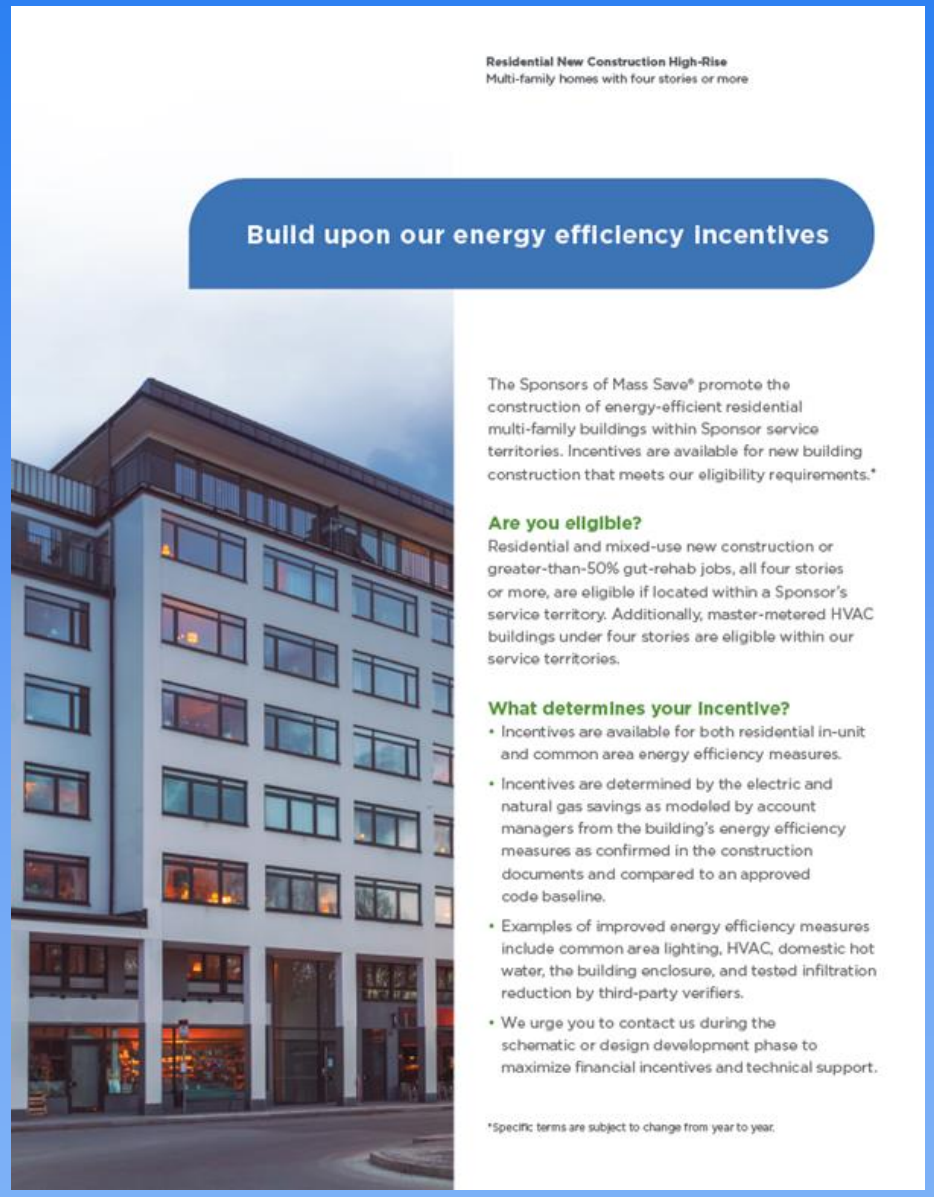
High-Rise Path Overview

Eligibility

- 4+ stories and 5+ units with residential-metered heat
- All multi-family with commercially-metered heat
- New construction and ≥ 50% rehab projects
- Must register prior to construction start

Enrollment process

- Work with a dedicated ICF Account Manager
- Verification completed utilizing architect and/or engineer approved submittals



Residential New Construction High-Rise
Multi-family homes with four stories or more

Build upon our energy efficiency incentives

The Sponsors of Mass Save® promote the construction of energy-efficient residential multi-family buildings within Sponsor service territories. Incentives are available for new building construction that meets our eligibility requirements.*

Are you eligible?
Residential and mixed-use new construction or greater-than-50% gut-rehab jobs, all four stories or more, are eligible if located within a Sponsor's service territory. Additionally, master-metered HVAC buildings under four stories are eligible within our service territories.

What determines your incentive?

- Incentives are available for both residential in-unit and common area energy efficiency measures.
- Incentives are determined by the electric and natural gas savings as modeled by account managers from the building's energy efficiency measures as confirmed in the construction documents and compared to an approved code baseline.
- Examples of improved energy efficiency measures include common area lighting, HVAC, domestic hot water, the building enclosure, and tested infiltration reduction by third-party verifiers.
- We urge you to contact us during the schematic or design development phase to maximize financial incentives and technical support.

*Specific terms are subject to change from year to year.

Available Incentives

- Provides incentives for both residential in-unit and common area energy savings.
- Building Envelope
- Domestic Hot Water Production
- HVAC Systems
- Motors & Drives
- Lighting & Controls
- Plumbing Fixtures
- And more

Passive House

- Multifamily PH projects of 5+ units
- New Construction
- Residential / Commercial Energy Code
- Commercial and residential HVAC & DHW configurations
- Verification completed utilizing 3rd Party Verifier and architect and/or engineer approved submittals

Residential New Construction Passive House
Multi-family buildings with five units or more

Take energy efficiency to a new level with Passive House.

Passive House building techniques address energy usage and resiliency, resulting in significant and long-lasting primary energy savings compared to homes built to conventional building codes. The Sponsors of Mass Save® provide technical support in the form of feasibility studies and energy modeling as well as financial incentives to cover the incremental cost of building to, or exceeding, Passive House standards. We structured our offerings to reduce the risk a developer may perceive in pursuing Passive House standards by providing incentive payments aligned with the feasibility, design, and construction phases.

Eligibility and requirements for participation

The Mass Save Passive House incentive offer is available to projects that enroll during the early stages of design, prior to reaching 100% schematic design. Eligible projects are multi-family projects with five or more units that are pursuing Passive House certification and agree to monitor and provide the Sponsors with whole-building gas and electric consumption as well as on-site generation production.

A Passive House consultant certified through either the Passive House Institute (PHI) or Passive House Institute US (PHIUS) needs to be hired to conduct a feasibility study and to serve as consultant to the project throughout the design and certification process. A project is eligible to receive post-construction incentives only if it achieves at least pre-certification. If pre-certification is not achieved, the project is eligible to receive the standard Mass Save Residential New Construction incentives.

Energy Code Support

Questions about the energy code?

Energy Code Support Hotline:

855-757-9717

Energy Code Support Email:

energycodesma@psdconsulting.com

Thank you.

Massachusetts Energy Code Technical Support Program

WE ARE MASS SAVE®:

Berkshire Gas
An Avangrid company

Cape Light Compact

EVERSOURCE

Liberty

nationalgrid

Unitil