

MASSACHUSETTS Energy Code Technical Support



2018 IECC Changes and New Massachusetts Amendments – Commercial Buildings^{1,2}

Code Section	Topic	Description of Change
Chapter 1 – Scope and Administration		
[MA] C103.2	Information on Construction Documents	Solar-ready zones (Appendix CA) and EV Ready Space (C405.10) must be shown on the construction documents. Previously, solar-ready rooftop language was found in MA amendments to Chapter 4.
Chapter 2 - Definitions		
C202 General Definitions		
[MA] C202	New Definitions: EVs	Electric vehicles, Electric vehicle supply equipment, electric vehicle charging space
	New Definitions: Misc.	Cavity insulation, Luminaire-level lighting control, NEMA Design A-C Motor, voltage drop
	Revised Definitions	Skylight, Fenestration, Computer room, Air barrier
Chapter 4 – Commercial Energy Efficiency		
C401 General		
[MA] C401.2	Application	When using any ASHRAE 90.1 compliance path (including Stretch Code) permit applicants must also comply with several Massachusetts amended IECC sections
		Permit applicants in Stretch Code communities must continue using ASHRAE 90.1-2013, whereas ASHRAE 90.1 users in non-stretch communities must use the 2016 version.
		Eliminates the <i>Total Building Performance</i> compliance option (formerly Section C407) and adds two new compliance options for multi-family buildings – see <i>C407 Building Performance Certification Methods</i> below.

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[MA] C401.2.3	Performance Rating Method for Source Energy	Updates the Massachusetts-specific Site to Source Fuel Conversion Factors that must be used when permit applicants choose the ASHRAE 90.1 Appendix G <i>Source Energy Method</i> . Also specifies calculation methods and approved software for determining source energy consumption and usage intensity for on- and off-site combined heat and power.
[MA] C401.2.4	Performance Rating Method Baseline Building Vertical Fenestration	Adds multi-family as a building area type to ASHRAE 90.1 Appendix G Table G3.1.1-1 <i>Baseline Building Vertical Fenestration Percentage of Gross Above-Grade-Wall Area</i>
C402 Building Envelope Requirements		
Table C402.1.3	R-value Method	Requires R-5 under-slab insulation for heated slabs
Table C402.1.4	U-factor Method	Adds a U-factor requirement for garage doors with <14% glazing (0.31)
C402.2.5	Below-grade Walls	New section that requires below-grade wall insulation to extend 10 feet below ground level or to the lowest floor of the conditioned space, whichever is less.
C402.2.7	Airspaces	New section that requires enclosing air spaces if they are included as part of thermal envelope insulation calculations or modeling.
[MA] C402.3	Solar-ready Zone	Roof Solar Reflectance and Thermal Emittance are replaced with Rooftop Solar Readiness (Mandatory) per Appendix CA. See <i>Appendix CA Solar-Ready Zone</i> below.
Table C402.4	Building Envelope Fenestration Max. U-Factor & SHGC	Reduced fenestration SHGC values
C402.5.1.1	Air Barrier Construction	Adds language regarding sealing materials allowing from expansion, contraction and mechanical vibration. Other minor language changes.
C402.5.3	Rooms Containing Fuel-burning Appliances	Text reorganized for clarification. No substantive changes to requirements.
C403 Building Mechanical Systems		

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Code Section	Topic	Description of Change
C403.4	Heating and Cooling System Controls (Mandatory)	Multiple locations where language is changed from controls shall be “capable of” to “configured to”
C403.7.6	Automatic Control of HVAC Systems Serving Guestrooms (Mandatory)	New automatic setpoint and ventilation control requirements for Group R-1 buildings containing more than 50 guestrooms
C404 Service Water Heating (Mandatory)		
Table C404.2	Minimum Performance of Water-Heating Equipment	Updated to current federal water heater efficiencies
C405 Electrical Power and Lighting Systems		
C405.2	Lighting Controls (Mandatory)	Adds luminaire level lighting control (LLLC) option for compliance with lighting controls requirements.
C405.2.1	Occupant Sensor Controls	Occupancy sensors now required in open plan office areas (not just private offices)
C405.2.1.1	Occupant Sensor Control Function	Automatic off reduced from 30 minutes to 20 minutes from when occupants have left the space.
C405.2.1.3	Occupant Sensor Control Function in Open plan Offices	Occupancy sensors must control general lighting in zones not greater than 600 square feet.
[MA] C405.2.2.1	Time-switch Control Function	Spaces with time-switch controls must meet the lighting-reduction control requirements in C405.2.2.2, which requires manual controls to achieve a 50% lighting reduction
[MA] C405.2.3	Daylight-responsive Controls	Lowens the threshold for when daylight-responsive controls are required from 150 W per daylight zone to 100 W
[MA] C405.2.3.1	Daylight-responsive Control Function	Lowens the threshold from 150 W to 100 W for an exception allowing some lighting in daylight zones to be controlled together with lighting in a daylight zone facing a different cardinal direction
[MA] C405.3.2(1)	Interior Lighting Power: Building Area Method	Replaces the lighting power density table with a new table containing lower LPDs for most building area types.

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Code Section	Topic	Description of Change
[MA] C405.3.2(2)	Interior Lighting Power: Space-by-space Method	Replaces the lighting power density table with a new table containing lower LPDs for most building area types.
[MA] C405.10	Electric Vehicle Charging Spaces (Mandatory)	Requires Group A-1, B, E, I, M, and R buildings with 15 or more parking spaces to provide one EV Ready Space.
C406 Additional Efficiency Packages		
[MA] C406.1	Requirements	Clarifies that all projects, including those complying with ASHRAE 90.1 must meet the requirements of this section. Increases the required number of Additional Efficiency Packages from two (previous MA amendment) to three. Also increases the number of package options from six to ten, including enhanced envelope performance (C406.8), reduced air infiltration (C406.9), renewable space heating (C406.10), and Type IV heavy timber construction (C406.11)
[MA] C406.3	Reduced lighting Power	Requires light power densities to be not greater than 90% of the Massachusetts-amended LPDs
[MA] C406.4	Enhanced Digital Lighting Controls	Removes individual user controls from the required functions of a fixture controlled through a digital control
[MA] C406.7.1	High-efficiency Service Water Heating	Adds electric air source heat pump water-heating to list of systems that qualify as high-efficiency service water heating equipment
C407 Building Performance Certification Method		
[MA] C407	Building Performance Certification Method	Eliminates the <i>IECC Total Building Performance</i> compliance method. ASHRAE 90.1 is now the only source for performance-based compliance in the IECC. Adds a new section, <i>Building Performance Certification Methods</i> . See C407.1.1 through C407.6 below.
[MA] C407.1.1	Energy Rating Index (ERI) for Multi-family Buildings	Allows ERI for multi-family buildings up to 5 stories
[MA] C407.1.2	Passive House Institute US or Passive House Institute	Passive House option now requires Passive House certification, not just meeting the heating energy use per square foot requirement

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[MA] C407.2	Mandatory Requirements	Requires all commercial mandatory requirements in C402.3-C405 be met when using C407 (C407.2)
[MA] C407.4	Compliance Software Tools	Sets additional modeling, software, verification, and documentation requirements for these two optional paths (C407.3 – C407.6)
[MA] C407.5	Documentation	Outlines documentation requirements when complying with Section C407
[MA] C407.6	Verification by Approved Agency	Third-party verification must be completed by either a certified HERS Rater when using the ERI option or a certified Passive House Consultant when using the Passive House option
Appendix CA – Solar-Ready Zoned		
CA103.1	General	Requires compliance with Section CA for buildings up to five stories and removes a qualifying minimum roof size
		Assembly group A- and H-building are no longer exempt
		The shading exemption has increased from 50% to 70%
CA103.3	Solar-ready Zone Area	Total solar-ready zone shall not be less than 40% of calculated roof area
CA103.4	Obstructions	“Note” stating that solar-ready requirements would not require redesign or reconfiguration has been removed
CA103.5	Roof Loads and Documentation	A collateral dead load of not less than 5 psf shall be included in design calculations for solar-ready zone

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Previously Adopted Massachusetts Amendments (still in effect)^{1,2}

Code Section	Topic	Description of Change
Chapter 4 – Commercial Energy Efficiency		
C402 Building Envelope Requirements		
[MA] C402.1.5	Component Performance Alternative	Compliance with this section is required for all ASHRAE Appendix G -2013 & 2016 users
[MA] C402.2.4	Slab-on-grade Perimeter Insulation	Removes slab perimeter insulation exception for slabs greater than 24 inches below grade (prescriptive)
[MA] C402.5.1.2.1	Air Barrier Compliance Options – Materials	Removes masonry constructed of clay or shale from the list of approved air sealing materials
[MA] C402.5.1.2.2	Air Barrier Compliance Options - Assemblies	Removes masonry walls constructed of clay or shale from the list of approved air sealed assemblies (C402.5.1.2.2)
[MA] C402.6	Approved Calculation Software Tools	Specifies COMcheck as an approved calculation software tool for meeting envelope insulation requirements when using ASHRAE 90.1 or the IECC. Allows for the use of COMcheck, which is required per MA amended IRC 107.2.6, to show compliance with C401.2 options 1 or 2 (C402.6)
Appendix AA – Stretch Energy Code		
AA103 New Buildings		
AA103.2	Stretch Energy Code	Requires buildings over 100,000 ft ² or supermarkets, labs and conditioned warehouses over 40,000 ft ² demonstrate that building energy use is at least 10% below 90.1-2013 Appendix G. Note: Per C401.2, projects in stretch code communities must also meet Massachusetts amended IECC Sections C401.2, C402.1.5, C402.3, C405.3, C405.4, C405.10 and C406)

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