







Moving Energy Efficiency Forward

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

























MA Stretch Energy Code The residential Stretch Energy Code... Is developed by the MA Department of Energy Resources (DOER) Results in greater energy savings . than the Base Energy Code Requires new homes and large • additions and alterations to receive a HERS Rating or Passive House certification • Requires compliance with 2021 IECC "mandatory" provisions (Passive House excluded) Is adopted at the level of the local • jurisdiction













Change of Occupancy or Use

Section R505

Any space that is converted to a dwelling unit or portion thereof from another use or occupancy shall comply with this code

To be treated similar to additions (R502)

"Any unconditioned or low-energy space that is altered to become a conditioned space shall comply with Section R502"



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Historic Buildings

R501.6 Energy code does not apply *provided*:

- A report is submitted to the code official demonstrating that compliance with a provision would threaten, degrade or destroy the historic form, fabric or function of the building
- The report must be signed by one of the following:
 - o Owner
 - Registered design professional
 - Rep of the State Historic Preservation Office or historic preservation AHJ



























	2018 IECC	2021 IECC	
FENESTRATION U-FACTOR	0.30	0.30	
SKYLIGHT U-FACTOR	0.55	0.55	
GLAZED FENESTRATION SHGC	NR	0.40	
CEILING R-VALUE	49	60	
WOOD FRAME WALL R-VALUE	20 or 13+5	30 or 20+5ci or 13+10ci or 0+20ci	
MASS WALL R-VALUE	13/17	13/17	
FLOOR R-VALUE	30	30	
BASEMENT WALL R-VALUE	15/19	15ci or 19 or 13+5ci	
SLAB R-VALUE & DEPTH	10, 2ft.	10ci and 4'	
CRAWL SPACE WALL R-VALUE	15/19	15ci or 19 or13+5ci	













Prescriptive Compliance

Mechanical System Pipe Insulation

Mechanical system piping capable of carrying fluids greater than 105° or less than 55° shall be insulated to an R-value of not less than R-3.



















Large Additions – Maximum Energy Rating Index (Table 406.5)							
Clean Energy Application	New Construction Starts January 1,	New Construction Permits	Major Alterations, Additions, and Changes.				
	2023, until June 30, 2024	After July 1, 2024	Starts January 1, 2023				
Mixed-Fuel Building	52	42	52				
Solar Electric Generation*	55	42	55				
All-Electric Building	ilding 55 45		55				
Solar Electric* and All-Electric Building	58	45	58				



	Section	lex – Mandatory Requ		
		General	ZING INSUNS	
	R401.3	Certificate		
Formerly Listed		Building Thermal Envelope		
and the second	R402.1.1	Vapor retarder		
as Mandatory	R402.2.3	Eave Baffle		
	R402.2.4.1	Access hatches and doors		
Requirements	R402.2.10.1	Crawl space wall insulation installation		
	R402.4.1.1	Installation		
	R402.4.1.2	Testing		
Now in One Table		Mechanical		
i is ill the survey it.	R403.1	Controls		
	R403.3	Ducts (except R403.3.2, R403.3.3, and R403.3.6)		
	R403.4	Mechanical system piping insulation		
	R403.5.1	Heated water circulation and temperature maintenance systems		
	R403.5.3	Drain water heat recovery units		
	R403.6.1	Heat or energy recovery ventilation (HRV/ERV)		
	R403.7	Equipment sizing and efficiency rating		
III III III III	R403.8	System serving multiple dwelling units		
	R403.9	Snow and ice melt systems	LANKS WEIGHT STREET	
	R403.10	Energy consumption of pools and spas		
IN THE OWNER OF THE OWNER OF	R403.11	Portable spas		
III III/	R403.12	Residential pools and permanent residential spas		
		Electrical Power and Lighting Systems		











RB101.1 General. These provisions shall be applicable for **ALL** new construction, **except additions 1,000 sq ft and under**.

Exceptions

- Buildings and dwelling units complying with Appendix RC
 - Section RC102 (Zero energy pathway)
 - Section RC105 (Solarroof zone)







Solar-Ready Zone – Solar-Ready Zone Area - Townhouses

RB103.3 Solar-ready zone area

Townhouses with a total floor area less than or equal to 2,000 square feet

Minimum solar-ready zone area = 150sq ft

This is exclusive of mandatory access or set back areas as required by the MA Fire Code



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Poll Question #3

Roofs of single-family homes must contain Solar-Ready Zones meeting which of the following criteria? Choose all that apply.

- A. A total area of not less than 300 square feet
- B. Individual zones not less than 40 square feet
- C. Individual zones not less than 80 square feet
- D. Widths of not less than 4 feet
- E. Widths of not less than 5 feet

















Case Study 3 Continued

Conversion of Unconditioned Space to Conditioned Space

Proposed Project

- ✓ Finish Existing Basement
- ✓ Proposed Finished Area = 1248 Sq. Ft.

Code Assessment:

- ✓ Classified as "Large Addition"
- ✓ HERS Index Compliance per Section R502.1
- ✓ HERS 52 max. per Table R406.5*
- ✓ Both existing house and addition to be included in HERS

* Can increase the HERS allowed by incorporating Energy Efficiency Packages









Existing Buildings Summary

- For additions over 1000 square feet or 100% of the existing square footage require a HERS Rating per Table 406.5.
- Additions 1000 square feet and under, follow chapter 5 for existing buildings
- Solar Ready applies only to additions over 1000 square feet.
- Additions 1000 square feet and under do not require a blower door test
- Historical buildings can still apply for exemptions if the work would affect the historical nature of the building.
- EV Ready does not apply to existing buildings

Low Rise/Repair & Additions

Incentives for energy efficient building and renovating

- Single Family Homes
- Multi-Family 3 stories and residential-metered heat
- New Construction
- Major Renovations and Large Additions
- Residential Energy Code
- Residential HVAC and DHW Systems only
- On-site testing and verification completed by program-approved HERS Raters
- Incentives for commercially metered buildings/units are not available



Details at: www.masssave.com/en/saving/residential-rebates/new-construction





mass save

Gut Renovations and Additions

- Renovations are ideally at least 50% gut projects
- Substantial HVAC changes
- Clear project scope
- Small jobs like kitchen/bath remodels are not a good fit
- Additions should be at least 500 SF

Participants include Builders, **Developers & Homeowners**

Program-approved HERS Rating companies

Access to Mass Save 0% interest **HEAT Loan**

Up to 7 years and \$25,000

Process Similar to LR with addition of Preliminary Inspection



