

HERS Certificate Review Guide

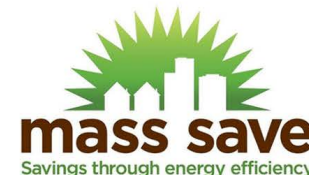
This Home Energy Rating System (HERS) Certificate Review Guide offers code enforcement officials guidance on how to understand HERS Certificates to support energy code plan review and compliance for residential building projects.

The Massachusetts Energy Stretch Code 225 CMR 22 requires that a majority of new residential buildings achieve HERS Ratings to show energy code compliance in accordance with R401.2.3.*

All HERS-rated projects are subject to the mandatory provisions outlined in Table R406.2, as well as the maximum Energy Rating Index values specified in Table R406.5. Not all mandatory

requirements will be reflected on the HERS certificate or related documentation; therefore, visual inspections and/or photo documentation are still required in accordance with Section R105.

In the example provided below, we have a new 2,400 square foot 3-bedroom all-electric home in Methuen, MA that uses a ducted air source heat pump, a heat pump water heater, and an ERV for ventilation.



*R-use buildings without individually separate dwelling units (such as single room occupancies) can opt to use the prescriptive path for compliance in accordance with R401.2.1; and any building can also choose to follow the Passive House Building Certification Option in accordance with R401.2.2.

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Energy Code Compliance Paths Requirements

Table R406.5
Maximum Energy Rating Index

Clean Energy Application	Maximum HERS Index Score			
	New Construction Permits after July 1, 2024	New Construction with R406.5.2 Embodied Carbon Credit	Accessory Dwelling Units	Major Alterations, Additions, or Change of Use
Mixed-Fuel Building	42	45	52	65
Solar Electric Generation*	42	45	55	70
All-Electric Building†	45	48	55	70
Solar Electric* & All-Electric Building†	45	48	58	75

*Solar Electric Generation = Solar photovoltaic array rated at 4kW or higher

†Buildings electing to be all-electric and utilizing trade-offs for clean energy systems per R406.5.1 to achieve an increase in maximum HERS Index, must meet the efficiencies of R408.2.2 and R408.2.3 for primary heating and domestic hot water equipment.

Table R406.2
Requirements for Energy Rating Index

General	
R401.3	Certificate
Building Thermal Envelope	
R402.1.1	Vapor retarder
R402.2.3	Eave baffle
R402.2.4.1	Access hatches and doors
R402.2.10.1	Crawl space wall insulation installation
R402.4.1.1	Installation
R402.4.1.2	Testing
Mechanical	
R403.1	Controls
R403.3	Ducts (except R403.3.2, R403.3.3.3, 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
R403.8	System serving multiple dwelling units
R403.9	Snow and ice melt systems
R403.10	Energy consumption of pools and spas
R403.11	Portable spas
R403.12	Residential pools and permanent residential spas
Electrical Power and Lighting Systems	
R404.1	Lighting Equipment
R404.2	Interior lighting controls
R404.4	Wiring for electric vehicle charging spaces

HERS Certificate

Home Energy Rating Certificate

Projected Report
Based on Plans



Rating Date: 2025-07-03

Registry ID:

Ekotrope ID: LbpOoekv

HERS® Index Score:

Annual Savings

Home:
123 Massachusetts St
Methuen, MA 01844

Builder:
John Smith

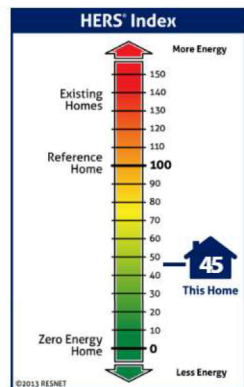
\$2,696

*Relative to an average U.S. home

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	13.9	\$529
Cooling	1.1	\$43
Hot Water	3.3	\$126
Lights/Appliances	21.1	\$803
Service Charges		\$84
Generation (e.g. Solar)	0.0	\$0
Total:	39.4	\$1,586



Home Feature Summary:

Home Type:	Single family detached
Model:	N/A
Community:	N/A
Conditioned Floor Area:	2,400 ft²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 8.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 16 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 3 UEF
House Tightness:	1.75 ACH50
Ventilation:	76 CFM • 62 Watts • ERV
Duct Leakage to Outside:	25 CFM @ 25Pa (1.04 / 100 ft³)
Above Grade Walls:	R-21
Ceiling:	Attic, R-61
Window Type:	U-Value: 0.16, SHGC: 0.22
Foundation Walls:	N/A
Framed Floor:	R-32

This home meets or exceeds the criteria of the following:

Massachusetts Stretch Code

Rating Completed by:

Energy Rater: Michael Rossi
RESNET ID:

Rating Company: Performance Systems Development
950 Danby Road Ithaca NY, 14850

Rating Provider: Performance Systems Development_TESTING
124 Brindley Street, Ithaca NY 14850
607-277-6240



Michael Rossi, Certified Energy Rater
Date: 7/3/25 at 12:31 PM



Ekotrope RATER - Version:4.2.3.3662

The Energy Rating Disclosure for this home is available from the Approved Rating Provider.
This report does not constitute any warranty or guarantee.



The HERS Index has to be less than the values indicated in Table R406.5.



“This home meets or exceeds the criteria of the following.” Please note that this is not required in Massachusetts because the Ekotrope Software and the MA Code Requirements may not be aligned when updates to the stretch code come out. There may be future alignment since the Ekotrope software recently introduced specification for different construction types, like New Construction, ADUs, and Major Alterations. Please check with the MA DOER on any updates on the requirements for this section as they become available.



Projected reports are based on plans and should be submitted prior to a building permit for compliance with R406.7.2.1. Final Reports are based on Rated Features of the home and should be used prior to the Final Certificate of Occupancy for compliance with R406.7.2.2.



House Tightness: This value has to be less than or equal to 5 ACH50 as per R402.4.1.2, which is met with the measured 1.75 ACH50. Note that infiltration is measured in Cubic Feet Per Minute (CFM) when depressurized to 50 Pascals (CFM50), which is converted to Air Changes Per Hour at 50 Pascals (ACH50) so some reports may note a CFM50 value here instead. The following equation can be used to convert CFM50 to ACH50:

$$\text{ACH50} = (\text{CFM50} * 60) / \text{Volume.}$$

The volume can be found on the HERS Rated Home Summary Report.

HERS Certificate

Home Energy Rating Certificate

Projected Report
Based on Plans



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HERS® Index Score:

Annual Savings

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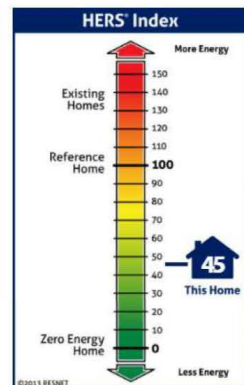
Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
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Cooling	1.1	\$43
Hot Water	3.3	\$126
Lights/Appliances	21.1	\$803
Service Charges		\$84
Generation (e.g. Solar)	0.0	\$0
Total:	39.4	\$1,586



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Massachusetts Stretch Code



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Ventilation:	76 CFM • 62 Watts • ERV
Duct Leakage to Outside:	25 CFM @ 25Pa (1.04 / 100 ft³)
Above Grade Walls:	R-21
Ceiling:	Attic, R-61
Window Type:	U-Value: 0.16, SHGC: 0.22
Foundation Walls:	N/A
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Michael Rossi, Certified Energy Rater
Date: 7/3/25 at 12:31 PM



Primary Heating System, Primary Cooling System, and Primary Water Heating: Please note-in order to allow this project to be considered all electric in R406.5.1 and use a HERS Score of 45, these values must be the minimum specified in R408.2.2 and R408.2.3 as per Section R401.2.5. Because a ducted heat pump is used, the requirement for the heating and cooling system is a minimum of 8.1 HSPF2 and 15.2 SEER2, which is met using the specified equipment of 8.5 HSPF2 and 16 SEER2. For water heating, the minimum required efficiency is 2.0 UEF, which is met with the specified equipment of 3.0 UEF.



Ventilation: This section needs to specify an ERV or HRV as per Section R403.6.1; and meet the minimum flow in CFM outlined in Section R403.6.



Ekotrope RATER - Version:4.2.3.3662

The Energy Rating Disclosure for this home is available from the Approved Rating Provider. This report does not constitute any warranty or guarantee.

Sample HERS Certificate

123 Massachusetts St, Methuen, MA

HERS® Index Score:
45

Rating Date: Jul 3, 2025

HERS Registry ID:

Annual Estimates:

Electric (kWh): 11,545.0

CO2 (Tons): 3.1

Approx. Energy Cost: \$1,585

Rating Company:

Performance Systems
Development

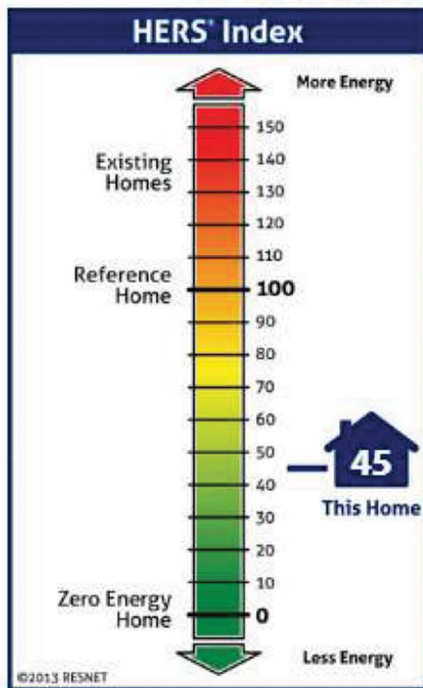
Rating Provider:

Performance Systems
Development_TESTING

Rating Provider Address:

124 Brindley Street, Ithaca NY
14850

UNCONFIRMED



Home Feature Summary:

Single family detached, 3
bedrooms, 2,400 ft²

Heating: 8.5 HSPF2

Cooling: 16 SEER2

Hot Water: 3 UEF

Air Leakage: 1.75 ACH50

Ventilation: 76 CFM • 62 W • ERV

Duct LTO:
25 CFM @ 25Pa (1.04 / 100 ft²)

Above Grade Walls: R-21

Ceiling: Attic, R-61

Window: U: 0.16 • SHGC: 0.22

Foundation Walls: N/A

This sample certificate can be used to document some of the requirements of Section R401.3, but some information may not be included on this certificate, like item 7, "the code edition under which the structure was permitted and the compliance path used". In addition to this certificate generated with the HERS Report, Mass Save has another tool that can be used to meet all of the requirements of R401.3 which is included below and can be found on their website here:

www.masssave.com/trade-partners/-/media/4C09B712E94B4E3690FA8C8FDC286B1B.ashx

Energy Code Compliance Certificate



Energy Code Edition	_____	Compliance Path	_____
Building Thermal Envelope		Mechanical Systems	
Ceiling R-Value:	_____	Duct R-Value:	_____
Roof R-Value:	_____	Duct Leakage Rate:	_____
Wall R-Value:	_____	Heating Equip Eff:	_____
Slab R-Value:	_____	Cooling Equip Eff:	_____
Basement Wall R-Value:	_____	Photovoltaic System	
Crawl Wall R-Value:	_____	Capacity:	_____
Floor R-Value:	_____	Inverter Eff:	_____
Window U-Factor:	_____	Panel Tilt:	_____
Window SHGC:	_____	Panel Orientation:	_____
Air Infiltration Rate:	_____		
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.

HERS Rated Home Summary

HERS Rated Home Summary

Property
123 Massachusetts St
Methuen, MA 01844

Organization
Performance Systems Development
Michael Rossi

Inspection Status
Results are projected

MA Stretch Code Compliance Tool
Initial House Design

Builder
John Smith

General Building Information

Number Of Bedrooms: 3	Number Of Floors: 2
Conditioned Floor Area: [sq. ft.]: 2,400	Has Electric Vehicle Ready Space: Yes
Unconditioned, attached garage? No	Conditioned Volume [cu. ft.]: 22,800
Total Units in Building: 1	Residence Type: Single family detached
Number of Floors in Building: N/A	Floor Number: N/A
Model: N/A	Community:
RESNET/IECC 2006-2018 Climate Zone: 5A	IECC 2021 Climate Zone: 5A

Envelope Components

Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location	Effective R-value
Framed Floor	R30, x16, Hardwood	1	Above Grade	1,200.0 ft²	Uninsulated Unconditioned Basement	28.966

Rim Joist

Name	Library Type	Surface Area	Location	Effective Insulation R-value
Rim Joist	R 21.0	143.0 ft²	Exposed Exterior	21.00

Wall

Name	Library Type	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
Wall	R21,FG1,6-16	Medium	0.75	2,431.0 ft²	Exposed Exterior	18.082

Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
EAST Window / Glass Door	0.16/0.22	Wall		Yes	0	0	0	East	90.0 ft²
NORTH Window / Glass Door	0.16/0.22	Wall		Yes	0	0	0	North	90.0 ft²
SOUTH Window / Glass Door	0.16/0.22	Wall		Yes	0	0	0	South	90.0 ft²
WEST Window / Glass Door	0.16/0.22	Wall		Yes	0	0	0	West	90.0 ft²

Glazing Library List

Name	Shgc	U-factor
0.16/0.22	0.22	0.160

Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location	Effective R-value
Opaque Door	Fiberglass Door	Wall		0.9	0.75	Medium	40.0 ft²	Exposed Exterior	3.00

A Please note that the conditioned floor area used in a HERS Rating may not always match the exact square footage from the plans, this is because the measurements for ratings will be from the exterior walls.

B General Building Information – Has EV Ready Space indicates compliance with R404.4.

C This conditioned volume can be used to calculate the ACH50 value when the CFM50 value is provided for air infiltration.

D Library Type: Raters use naming mechanisms for envelope and mechanical assemblies used in their HERS Model. These naming conventions can be confusing, but typically follow the structure as indicated in the component name itself, where the entry name: “R21,FG1, 6-16” indicates an R21 Fiberglass Batt, that is inspected to Grade 1 installation quality, and is in a 2 by 6 cavity that is 16 inches on center. Different companies may have different naming conventions for their library entries, so if you want more information you can reach out to the HERS Rater for more detailed information of the content used in their model assemblies.

E Please note that the effective R-value of an assembly might be different from the listed product R-Value, this is because the effective R-value takes into consideration everything in the assembly, including the cavity insulation, sheathing, drywall, etc., so even though this is technically an R21 Fiberglass Batt, the effective R-Value is only R18.082 when factoring in the other components of the assembly.

HERS Rated Home Summary



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123 Massachusetts St
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Roof Insulation

Name	Library Type	Attic Exterior Area [ft²]	Clay or Concrete Roof Tiles	Does the Roof have Eaves?	Effective R-Value after eaves	Surface Color	Solar Absorptance	Surface Area	Location
Roof	R60 Attic	1,320	No	No	-	Medium	0.75	1,200.0 ft²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R60 Attic	No	61.567

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1.75 ACH at 50 Pa	Blower-door tested	4

Mechanicals, Lights & Water

Mechanical Ventilation

Ventilation Type	Ventilation Rate [ft³/Minute]	Operational hours per day	Fan Watts	Runs once every three hours	Energy Recovery Percent	Model Number	Manufacturer
ERV	76 CFM	24	62 Watts	Yes	80		

Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	100	0	100	0	100

Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
ASHP	MA Sample ASHP 8.5HSPF2,16SEER2		100%	100%	0%	Conditioned Space
HPWH	MA Sample 50gal 3 UEF HPWH		0%	0%	100%	Unconditioned Basement /Crawlspace

Equipment Type: MA Sample 50gal 3 UEF HPWH

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	3 UEF
Tank Capacity (gal.)	50

Equipment Type: MA Sample ASHP 8.5HSPF2,16SEER2

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	ECM (Variable Speed)
Heat Pump System Type	Ducted Split System
Heating Efficiency	8.5 HSPF2
Heating Capacity [kBtu/h]	27.4
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 Adjusted Efficiency
Use default Supplemental Heat	No
Supplemental Heat [kW]	0
Cooling Efficiency	16 SEER2
Cooling Capacity [kBtu/h]	13.8

A The requirements for mechanical ventilation are highlighted here again for compliance with R403.6 and R403.6.1. Note that the Sensible Recovery Efficiency is listed here as 80%, which is better than the code required 65% as noted in Section R403.6.1.2, so it complies with the code. We can determine that section R403.6.1.2 is applicable instead of R403.6.1.1 since this system has an airflow rate of 76 cfm, which is less than 300 cfm. If it is over 300 cfm, the system would trigger the provisions for large systems in R403.6.1.1.

B The Lighting portion can be used to determine compliance with Section R404.1, which requires 100% high efficacy lighting.

C Equipment type provides more information about the specs used in the model, including the efficiency of the heating cooling and water heating systems which can be used to determine the minimum specified values in R401.2.5.

HERS Rated Home Summary



HERS Rated Home Summary

Property
123 Massachusetts St
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A

Distribution System

Distribution Type	Forced Air
Heating Equipment	ASHP
Cooling Equipment	ASHP
Sq. Feet Served	2,400
# Return Grilles	2
Supply Duct R Value	6
Return Duct R Value	6
Supply Duct Area [ft²]	300
Return Duct Area [ft²]	80
Leakage to Outdoors	25 CFM @ 25Pa (1.04 / 100 ft²)
Total Leakage	100 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Conditioned Space
Percent Supply Area	100
Percent Return Area	100

B

Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	95.7
At Least R3 Pipe Insulation?	Yes
Hot Water Recirculation System?	No
Drain Water Heat Recovery?	No

Appliances & Notes

Clothes Dryer

Cef	3.01
Fuel Type	Electric
Field Utilization	Timer Controls
Is Outside Conditioned Space	No
Defaults Type	HERS Reference
Is Ventless	No
Is Heat Pump	No
Clothes Dryer Available	Yes

Clothes Washer

Label Energy Rating	400 kWh/Year
Annual Gas Cost	\$27.00
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Capacity	3
Imef	1
Defaults Type	HERS Reference
Load Type	Front-load
Loads Per Week	6
Is Outside Conditioned Space	No
Clothes Washer Available	Yes

Dishwasher

Dishwasher Defaults Type	Custom
Dishwasher Size	Standard
Dishwasher Efficiency	270 kWh
Annual Gas Cost	\$33.12
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Is Outside Conditioned Space	No
Dishwasher Available	Yes

C

Appliances and Controls

Programmable thermostat?	Yes
Range/Oven Fuel	Electric
Convection Oven?	Yes
Induction Range?	Yes
Range/Oven Outside Conditioned Space?	No
Refrigerator Consumption	691 kWh/Year
Refrigerator Outside Conditioned Space?	No

Components Not Found: Foundation Wall, Foundation Wall Library List, Slab, Slab Library List, Skylight, Onsite Generation, Solar Generation, Dehumidifier, Whole House Fan, Whole House Fan Library List, HVAC Grading (Not Conducted), Ceiling Fan, Notes

A

Distribution System provides information about the duct system that can help determine the mandatory requirements of R403.3 except Sections R403.3.2, R403.3.3 and R403.3.6.

B

Water Distribution can be used to determine if the requirements of R403.5.1 and R403.5.3 are applicable to a project, and can also demonstrate compliance with R403.4 if Yes is noted for the question “At Least R3 Pipe Insulation?” You can also determine if low flow fixtures are used in the project if they are specified in water fixture type. In this example, standard fixtures have been used.

C

Appliances and Controls can demonstrate compliance with R403.1 if Yes is noted for the question “Programmable Thermostat?”

Resources

To verify if a HERS Rater is in good standing with the Residential Energy Services Network (RESNET) please visit this link, where you can search for a HERS Rater by State, Area, Company, and Name:
www.hersindex.com/rater-verification/.

If someone wants to find a HERS Rater for a project, please refer them to the following:

- RESNET Database:
www.hersindex.com/find-a-hers-rater/
- Northeast HERS Alliance (NEHERS) Database:
www.nehers.org/find-hers-rater

If you have any questions about energy code compliance in Massachusetts, please contact the Mass Save Energy Code Technical Support Hotline at **855-757-9717** or EnergyCodesMA@psdconsulting.com.

