2024 IECC Residential Energy Code Performance vs Prescriptive Compliance

Rhode Island Energy™
Efficiency Programs

What is performance compliance?

Performance compliance is demonstrated through calculations using energy modeling software to estimate a building's projected energy usage. This type of analysis offers flexibility and potential cost optimization in design choices compared to prescriptive compliance where specific components must meet set values. Energy models can identify potential design improvements early, enabling more informed decisions not only for building assemblies but also for HVAC systems and sizing. Additionally, they can enhance a home's marketability by highlighting its energy efficiency to potential buyers, helping them understand the anticipated operational costs before making a purchase. There are two performance compliance paths:

- Simulated Building Performance N1105 (R405) compares a proposed design to a predetermined baseline (standard reference design).
- Energy Rating Index (ERI) N1106 (R406) establishes a score that measures a building's energy efficiency, with a lower number indicating better performance.

References: 2024 IRC Chapter 11 – N1105 (R405) Simulated Building Performance, N1106 (R406) Energy Rating Index Compliance Alternative

What is a HERS score?

The Home Energy Rating System (HERS) is a type of Energy Rating Index (ERI) that is widely recognized in the building industry and can be accepted as an alternative to the ERI path provided the HERS score meets or exceeds the performance standards required by the code. A HERS score is similar to the concept of miles per gallon for automobiles, except a lower score represents a more efficient building. A HERS score of 100 represents a home built according to meet the national model energy code in 2006. Therefore, a HERS score of 52 would mean that the home uses 48% less energy than the same size home built to the 2006 standard.

What is prescriptive compliance?

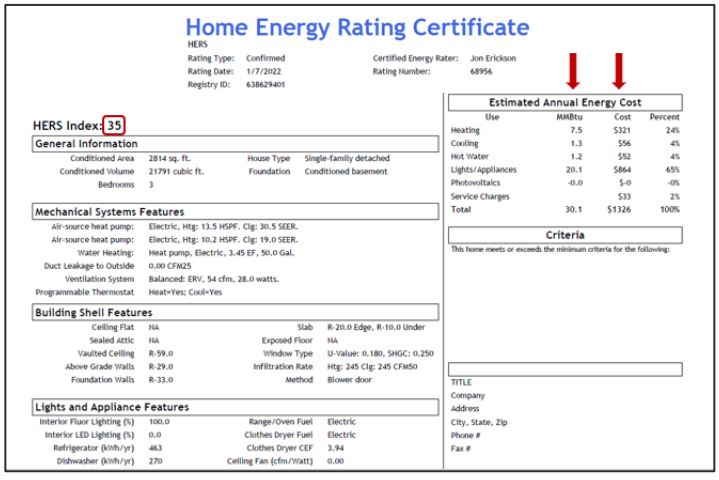
Using the prescriptive compliance path, builders follow the U-factor guidelines established in TABLE N1102.1.2 (R402.1.2) or the R-Value guidelines established in TABLE 1102.1.3 (R402.1.3). Alternatively, builders can use the Component Performance Alternative N1102.1.5 (R402.1.5). This method treats the building's thermal enclosure as a single integrated system rather than evaluating individual components (walls, floors, slabs, roofs, windows, etc.) separately. The Department of Energy's free REScheck software is commonly used to demonstrate compliance with this method.

References: 2024 IRC Chapter 11 - TABLE N1102.1.2 (R402.1.2), TABLE 1102.1.3 (R402.1.3), N1102.1.5 (R402.1.5)

What's new in the 2024 IECC?

All projects using the prescriptive compliance pathway must also earn credits chosen from the list of additional energy requirements in section N1108 (R408). Ten credits are required for buildings less than 5,000 ft^2 and fifteen credits for buildings greater than 5,000 ft^2. Builders choose from a list of options that include enhanced thermal envelope, more efficient HVAC, more efficient hot water systems and distribution, more efficient space conditioning, improved air sealing, etc.

Reference: 2024 IRC Chapter 11 - N1108 (R408) Additional Efficiency Requirements



Home Energy Rating Certificate

HERS

Rating Type: Confirmed
Rating Date: 1/7/2022
Registry ID: 638629401
Certified Energy Rater: Jon Erickson
Rating Number: 68956

HERS Index: 35

General Information

Conditioned Area	2814 sq. ft.	House Type	Single-family detached
Conditioned Volume	21791 cubic ft.	Foundation	Conditioned basement
Bedrooms	3		

Mechanical Systems Features

Air-source heat pump:	Electric, Htg: 13.5 HSPF, Clg: 30.5 SEER.
Air-source heat pump:	Electric, Htg: 10.2 HSPF, Clg: 19.0 SEER.
Water Heating:	Heat pump, Electric, 3.45 EF, 50.0 Gal.
Duct Leakage to Outside	0.00 CFM25
Ventilation System	Balanced: ERV, 54 cfm, 28.0 watts.
Programmable Thermostat	Heat=Yes; Cool=Yes

Building Shell Features

Ceiling Flat	NA	Slab	R-20.0 Edge, R-10.0 Under
Sealed Attic	NA	Exposed Floor	NA
Vaulted Ceiling	R-59.0	Window Type	U-Value: 0.180, SHGC: 0.250
Above Grade Walls	R-29.0	Infiltration Rate	Htg: 245 Clg: 245 CFM50
Foundation Walls	R-33.0	Method	Blower door

Lights and Appliance Features

Interior Floor Lighting (%)	100.0	Range/Oven Fuel	Electric
Interior LED Lighting (%)	0.0	Clothes Dryer Fuel	Electric
Refrigerator (kWh/yr)	463	Clothes Dryer CEF	3.94
Dishwasher (kWh/yr)	270	Ceiling Fan (cfm/Watt)	0.00

Estimated Annual Energy Cost

Use	MMBtu	Cost	Percent
Heating	7.5	$321	24%
Cooling	1.3	$56	4%
Hot Water	1.2	$52	4%
Lights/Appliances	20.1	$864	65%
Photovoltaics	-0.0	$-0	-0%
Service Charges		$33	2%
Total	30.1	$1326	100%

Criteria

This home meets or exceeds the minimum criteria for the following:

TITLE
Company
Address
City, State, Zip
Phone #
Fax #

Figure 1: A Home Energy Rating Certificate