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ANSI/RESNET/ICC 301- 2014: Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index

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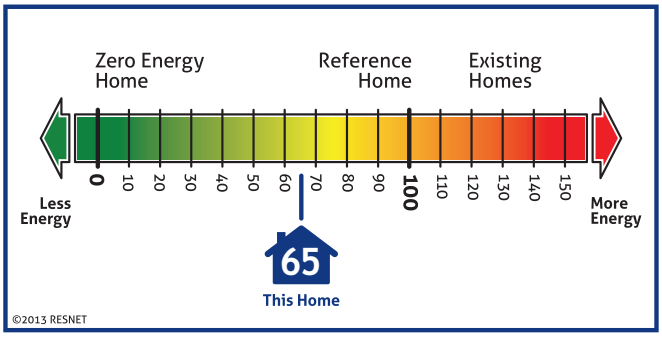
WHAT IS ANSI/RESNET/ICC 301-2014?

ANSI/RESNET/ICC 301-2014[1] (Standard 301) is a nationally recognized standard that provides a uniform and consistent methodology for evaluating and labeling the energy performance of one- and two-family residences and dwelling units in residential buildings three stories or less in height above grade. The methodology compares the energy performance of an actual home with the energy performance of a reference home of the same geometry, resulting in a relative energy rating, or score, called the Energy Rating Index (ERI).

The ERI score is defined as a numerical score where 100 is equivalent to the 2006 International Energy Conservation Code (IECC) and 0 is equivalent to a net-zero home, as shown in Figure 1. Each integer value on the scale represents a one percent change in the total energy use of the rated design relative to the total energy use of the ERI reference design.

Figure 1



WHAT DOES ANSI/RESNET/ICC 301-2014 INCLUDE?

REFERENCE AND RATED HOME SPECIFICATIONS

Standard 301 details the procedures necessary for determining a home energy rating calculation, including equations for calculating end use loads and the energy rating index, as well as the configurations, specifications, and analysis required for the reference and rated home. Additionally, Standard 301 provides guidance for estimating the annual purchased energy consumption for heating, cooling, and water heating, and specifies the default values and efficiencies for the home features included in calculating the ERI score.

Minimum rated features of a home include:

- Building envelope features
- Water heating
- Space heating and cooling systems
- Passive solar
- Solar domestic water heating
- Appliances
- One-site power production

Guidance for determining existing home retrofit savings and economic cost effectiveness are included as well. For determining energy savings for existing home retrofits, Standard 301 outlines the necessary procedure for comparing a baseline existing home with an improved home. Home energy ratings conducted to evaluate energy saving improvements to a home for the purpose of an energy improvement loan or energy efficient mortgage should use the guidance provided by Standard 301 for determining economic cost effectiveness.

CERTIFICATION AND LABELING STANDARDS

Standard 301 establishes minimum uniform standards for certifying and labeling home energy performance using the Energy Rating Index. These include minimum requirements of the home energy rating process, standard methods for estimating energy use, energy cost and pollution emission savings, minimum reporting requirements, and specification of the types of ratings that are performed in accordance with Standard 301.

STANDARD 301 AND THE IECC

The IECC has established the ERI performance path, based on Standard 301, as an option for achieving energy code compliance. States and jurisdictions adopting the IECC are permitted to specify which qualifying ERI method it will use; ANSI/RESNET/ICC 301-2014 is the existing compliant ERI method and provides guidance to the building, design and enforcement industry on calculating ERI scores.

[1] http://www.resnet.us/blog/wp-content/uploads/2016/01/ANSI-RESNET-ICC_301-2014-Second-Edition-Publish-Version.pdf

The ERI scores required in Section R406 of the 2015 IECC are:

Climate	2015 IECC ERI Score
Zones 1 – 2	52
Zone 3	51
Zone 4	54
Zone 5	55
Zone 6	54
Zones 7 – 8	53

The 2015 IECC includes language from Standard 301, including the development of the Energy Rating Index (Section R406.3), compliance software tool approval (Section R406.6.1), and the minimum capabilities of the software used to determine an ERI for a project (R406.7.1). Inclusion of Standard 301 in future versions of the IECC simplifies code language by striking duplicate provisions and ensures that the ERI approach is deployed using a standardized process from a consensus document.

ANSI/RESNET/ICC 301- 2014 is available online at www.resnet.us.