

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

American National Standard

Residential Energy Services Network, Inc.
P.O. Box 4561
Oceanside, CA 92052-4561

International Code Council
500 New Jersey Avenue, NW, 6th Floor
Washington, D.C. 20001

First Published March 7, 2014
Republished January 2016

American National Standards Institute 1899
L Street, NW, 11th Floor Washington, D.C.
20036

©Residential Energy Services Network, 2015. All rights reserved.



RESNET Standards Development Committee 300

Brett Dillon, Chair*
Terry Clausing*
Philip Fairey*
Dean Gamble*
C.R. Herro*
Kristof Irwin*

Kelly Parker*
Jim Petersen*
Dave Roberts*
Michael Strohecker*
Rebecca Troutfetter*
Iain Walker*

* Denotes members of voting status when the document was approved for publication

RESNET Standards Management Board

Philip Fairey, Chair
Wes Davis
Brett Dillon

David B. Goldstein
Jim Petersen

Richard W. Dixon, *Manager of Standards*

*This Standard first approved for publication on
December 20, 2013, by the RESNET Standards Management Board.*

*This second publication of the Standard integrates editorial changes identified in the
amendment proceeding for ANSI/RESNET/ICC 301-2014 Addendum B-2015 including the
Standard's designation and title changes approved on November 17, 2015, by the RESNET
Standards Management Board*

SPECIAL NOTE

This ANSI/RESNET/ICC Standard is a voluntary consensus standard developed under the auspices of the Residential Energy Services Network (RESNET) in accordance with RESNET's *Standards Development Policy and Procedures Manual*, Version 1.1, January 2, 2012. RESNET is an American National Standards Institute (ANSI) Accredited Standards Developer. Consensus is defined by ANSI as "substantial agreement reached by directly and materially affected interest categories". This signifies the concurrence of more than a simple majority but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution. Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory.

RESNET obtains consensus through participation of its national members, associated societies, and public review.

The first publication of this standard was designated and titled ANSI/RESNET 301-2014 Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using the HERS Index. The designation and title were changed to 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 as noted in the amendment proceeding for ANSI/RESNET/ICC 301-2014 Addendum B-2015. This

second publication of the Standard incorporates the designation and title changes and other non-substantive editorial changes to the first publication.

This Standard is under continuous maintenance. In accordance with Section 10.9 of the *RESNET Standard Development Policy and Procedures Manual*, continuous maintenance proposals should be submitted to the Manager of Standards.

The Manager of Standards should be contacted for:

- a. Interpretation of the contents of this Standard
- b. Participation in the next review of the Standard
- c. Offering constructive criticism for improving the Standard
- d. Permission to reprint portions of the Standard

Contents

Forward (Informative)	1
1. Purpose.....	2
2. Scope.....	2
3. Definitions.....	2
3.1. General.....	2
3.2. Definitions ^A	2
3.3. Acronyms.....	9
4. Home Energy Rating Calculation Procedures.....	10
4.1. Determining the Energy Rating Index.....	10
4.1.1. Calculating End Use Loads.....	10
4.1.2. Calculating the Energy Rating Index.....	11
4.2. Energy Rating Reference Home and Rated Home Configuration.....	12
4.2.1. General Requirements.....	12
4.2.2. Residence Specifications. ^A	12
4.3. Operating Condition Assumptions.....	33
4.3.1. Programmable Thermostats.....	33
4.3.2. Local Climate.....	33
4.3.3. HVAC Sizing.....	33
4.3.4. Air Source Heat Pumps.....	35
4.3.5. Ground Source Heat Pumps.....	35
4.3.6. Fossil Fuel Fired Furnaces and Boilers.....	36
4.3.7. Natural Ventilation.....	36
4.3.8. Whole House Fans.....	36
4.4. Minimum Rated Features.....	37
4.4.1. Data Sources.....	37
4.4.2. Standard Features.....	37
4.5. Existing Home Retrofit Savings.....	42
4.5.1. Baseline Existing Home.....	42
4.5.2. Improved Home.....	43
4.5.3. Standard Operating Conditions.....	43
4.5.4. Energy Savings Calculation.....	45
4.6. Economic Cost Effectiveness.....	45
4.6.1. Calculation of Ratio Parameters.....	46
4.6.2. Standard Economic Inputs.....	47
5. Certification and Labeling.....	49
5.1. Rating Requirements.....	49
5.1.1. General.....	49
5.1.2. Savings Estimates.....	50
5.1.3. Reports.....	52
5.1.4. Rating Types.....	53
5.2. Innovative Design Requests ^B	54
5.3. Labeling.....	54
6. Normative References ^A	55
7. Informative References.....	56
Annex X – ECM Guidelines (Informative)	X-1

Note: Superscript A indicates see ANSI/RESNET/ICC 301-2014 Addendum A-2015 Domestic Hot Water Systems. Superscript B indicates see ANSI/RESNET/ICC Addendum B-2015 Innovative Design Requests. Addenda located at <http://www.resnet.us/blog/resnet-consensus-standards/>

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

Forward (Informative)

This Standard provides a consistent, uniform methodology for evaluating and labeling the energy performance of residences. 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 called the Energy Rating Index. Where the energy performance of the actual home and the reference home are equal, the Energy Rating Index is 100 and where the actual home requires no net purchased energy annually, the Energy Rating Index is 0 (zero).

The Energy Rating Reference Home used for this comparative analysis has the energy attributes of the 2006 International Energy Conservation Code (IECC) *Standard Reference Design*. Thus, the Energy Rating Index is relative to the minimum building energy efficiency requirements of the 2006 IECC. As a result, the Energy Rating Reference Home performance will not comport with state or local building codes that differ in stringency from the 2006 IECC. Where local building energy codes are less stringent than the 2006 IECC, the Energy Rating Index for the local standard will be greater than 100 and where local building energy codes that are more stringent than the 2006 IECC, the Energy Rating Index for the local standard will be less than 100. Because the Energy Rating Index score accounts for all lighting, appliances and miscellaneous energy loads, there is never a 1-to-1 correspondence between code compliance (even under the 2006 IECC) and an Energy Rating Index score of 100.

This Standard contains both normative and informative material. The body of the Standard is normative and must be complied with to conform to the Standard. Informative materials are not mandatory and are limited to this forward, footnotes, references and annexes, all of which are clearly marked as informative.

The designation and title of this Standard were revised effective November 17, 2015. The original designation, “ANSI/RESNET 301-2014”, was revised to “ANSI/RESNET/ICC 301-2014”. The title, “Standard for the Calculation and Labeling of Low-Rise Residential Buildings using the HERS Index”, was revised to “Standard for the Calculation and Labeling of Low-Rise Residential Buildings using the Energy Rating Index”. All references to “HERS” within the Standard were revised to “Energy Rating”. The change in designation adds recognition of the International Code Council (ICC) as a sponsor of the Standard. Non-substantive editorial changes to ANSI/RESNET 301-2014 noted in the amendment proceeding for ANSI/RESNET/ICC 301-2014 Addendum B-2015 and in the “Special Note” above are published in this edition.