DRAFT CODE CHANGE PROPOSAL

SECTION R406

ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

R406.1 Scope. This section establishes criteria for compliance using an Energy Rating Index analysis.

R406.2 Mandatory requirements. Compliance with this section requires that the mandatory provisions identified in Section R401.2 and R403.5.3 be met. The building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table 402.1.2 or 402.1.4 of the *2009 International Energy Conservation Code*.

Exceptions:

1. All supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-6.

R406.3 Energy Rating Index. The ERI shall be determined in accordance with ANSI/RESNET/ICC 301-2014~~.based on a numerical integer value that is based on a linear scale constructed such that the *ERI reference design* has an Index value of 100 and a home that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a one percent (1%) change in the total energy use of the *rated design* relative to the total energy use of the *ERI reference design*. The ERI shall consider all energy used in the residential building.~~

~~**R406.3.1 ERI Reference Design.** The *ERI reference design* shall be configured such that is it meets the minimum requirements of the 2006 International Energy Conservation Code prescriptive requirements~~

~~The proposed residence shall be shown to have an annual total normalized Modified Loads that are less than or equal to the annual total Loads of the *ERI reference design.*~~

R406.4 ERI based compliance. Compliance based on an ERI analysis requires that the *rated design* be shown to have an ERI less than or equal to the appropriate value listed in Table R406.4.

Table R406.4 Maximum Energy Rating Index

Climate Zone	Energy Rating Index
1	52

2	52
3	51
4	54
5	55
6	54
7	53
8	53

R406.5 Verification by approved agency. Verification of compliance with Section R406 shall be completed by an *approved* third party.

R406.6 Documentation. Documentation of the software used to determine the ERI and the parameters for the residential building shall be in accordance with Sections R406.6.1through R406.6.~~3~~5.

R406.6.1 Compliance software tools. Software tools used for determining the ERI shall be Approved Software Rating Tools in accordance with ANSI/RESNET/ICC 301-2014. ~~Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the *code official*.~~

R406.6.2 Compliance report. Compliance software tools shall generate a report that documents that the energy rating index of the *rated design* complies with Sections R406.3 and R406.4. The compliance documentation shall include the following information:

1. Address or other identification of the residence;
2. An inspection checklist documenting the building component characteristics of the *rated design*. The inspection checklist shall show results for both the *ERI reference design* and the *rated design,* and shall document all inputs entered by the user necessary to reproduce the results;
3. Name of individual completing the compliance report; and
4. Name and version of the compliance software tool.

Exception: Multiple orientations. When an otherwise identical building model is offered in multiple orientations, compliance for any orientation shall be permitted by documenting that the building meets the performance requirements in each of the four cardinal (north, east, south and west) orientations.

R406.6.3 Additional documentation. The *code official* shall be permitted to require the following documents:

1. Documentation of the building component characteristics of the *ERI reference design.*
2. A certification signed by the builder providing the building component characteristics of the *rated design.*
3. Documentation of the actual values used in the software calculations for the *rated design.*

~~**R406.7 Calculation software tools.** Calculation software, where used, shall be in accordance with Sections R406.7.1through R406.7.3.~~

~~**R406.7.1 Minimum capabilities.** Calculation procedures used to comply with this section shall be software tools capable of calculating the energy rating index as described in Section R406.3, and shall include the following capabilities:~~

~~1. Computer generation of the *ERI reference design* using only the input for the *rated design*.~~

~~The calculation procedure shall not allow the user to directly modify the building component characteristics of the *ERI reference design*.~~

~~2. Calculation of whole-building (as a single *zone)* sizing for the heating and cooling equipment in the *ERI reference design* residence in accordance with Section R403.7.~~

~~3. Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating and air-conditioning equipment based on climate and equipment sizing.~~

~~4. Printed *code official* inspection checklist listing each of the *rated design* component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.~~

~~**R406.7.2** **R406.6.4** **Specific approval.** Performance analysis tools meeting the applicable sections of Section R406 shall be *approved*. Documentation demonstrating the approval of performance analysis tools in accordance with Section R406.6.1 shall be provided to the *code official*. ~~Tools are permitted to be *approved* based on meeting a specified threshold for a jurisdiction. The *code official* shall approve tools for a specified application or limited scope.~~

~~**R406.7.3** **R406.6.5** **Input values.** When calculations require input values not specified by Sections R402, R403, R404 and R405, those input values shall be taken from ANSI/RESNET/ICC 301-2014. ~~from an *approved* source~~.

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

number	Title
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 First Published March 7, 2014 Republished January 2016. Addendum A-2015 and Addendum B-2015

Reason Statement

During the 2015 code development cycle, a collaborative code change proposal (RE188-13) to include the ERI approach in the code was submitted by the Institute for Market Transformation, Natural Resources Defense Council and Britt/Makela Group. The ERI approach was adopted in the code as Section R406 and is currently being adopted by states and local jurisdictions.

The collaborative team based the ERI code language on the yet to be approved standard ANSI/RESNET/ICC-301. This required the team to include language from the standard concerning the development of the Energy Rating Index (see Section R406.3), compliance software tool approval (R406.6.1) and the minimum capabilities of the software used to determine an ERI for a project (R406.7.1). Overall the language that was included in the proposal provides the basic concepts for developing a program to meet the ERI approach but referencing the RESNET/ICC-301 would ensure that the ERI approach is deployed using a standardized process from a consensus document.

This proposal references RESNET/ICC – 301 RESNET/ICC – 301 and strikes all language in C406 that is duplicated in the Standard or that is no longer needed in the code because the concept is covered in the Standard.

RESNET/ICC - 301 *Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index* 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). Per the provisions of R406, 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.