RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

Setting the Standards for Home Energy Efficiency

Results of RESNET Board Executive Committee Electronic Ballot on Adoption of RESNET Guidance on Adopting the 2018 IECC

August 17, 2018

Shall the RESNET Board Executive Committee authorize RESNET staff to release the August 14, 2018 draft of the "RESNET Guidance on Adopting the 2018 International Energy Conservation Code?

Yes (4)	No (0)	Abstain (0)	Not Voting (1)
Dave Bell			Nancy St, Hilaire*
Philip Fairey			
Matt Gingrich			
Roy Honican			

*Nancy St. Hilaire is on vacation and unable to vote.

RESNET staff was authorized to release the guidance.

Attachment A

Draft
RESNET Guidance on Adopting the 2018 International Energy Conservation Code (IECC)

Why adopt the 2018 IECC?

RESNET supports states and municipalities adopting the 2018 IECC when considering the move to an updated version of the energy code. The 2018 IECC represents approximately 16% energy savings versus the 2009 IECC, and clarifies many aspects of implementation of the code versus the 2012 and 2015 IECC versions.

Furthermore, for states and municipalities that desire to adopt a version of the code that incorporates the Energy Rating Index (ERI) as a compliance option, the published ERI scores for the 2018 IECC represent better researched and accessible compliance targets that are more in-line with the energy efficiency requirements of both the Prescriptive and Simulated Performance Alternative compliance paths of the code.

However, there is an important modification that RESNET recommends to the model 2018 IECC for states and municipalities looking to adopt a code with the ERI included. **RESNET strongly recommends that states and municipalities amend the model 2018 IECC to strike the language in Section R406.3 that modifies the ERI *Reference Design* ventilation rate.**

Why amend the 2018 IECC?

RESNET supports the code development and voting process of the International Code Council (ICC), its voting members, and the greater public who contribute to amendments for each cycle of the IECC. However, RESNET asserts that the specification of Section R406.3 related to the *Reference Design* ventilation rate creates unintended consequences for the ERI score that were not contemplated at the time.
The specification in Section R406.3 related to the *Reference Design* ventilation rate was proposed as a modification at the final hearing on the 2018 IECC just prior to voting. This modification did not go through the standard public comment and committee process that most amendments must go through to be incorporated for publication. The modification to Section R406.3 changed the ventilation rate for the ERI *Reference Design*, resulting in a ventilation rate that is lower than that prescribed in the ERI calculation standard - ANSI/RESNET/ICC 301-2014. The issue with this change is as follows:

1. The modification altered the ERI calculation Standard. ANSI/RESNET/ICC 301-2014 is a published American National Standard, and cannot be amended by the ICC and its voting members.

   Therefore, the change to section R406.3 relating to the *Reference Design* ventilation rate results in a non-conforming ERI calculation and cannot be appropriately referred to

as an ERI. Rather, it is more appropriately referred to as a “2018 IECC R406 compliance score”.

While this may seem like semantics, this change is quite impactful. It unintentionally undermined the intent of using the ANSI/RESNET/ICC 301-2014 standard as the reference standard for calculating the ERI. Additionally, it results in a substantial change to the calculation of 2018 IECC R406 compliance scores.

2. The modification changes only the ERI *Reference Design* ventilation rate; it does not modify the specification of ANSI/RESNET/ICC 301-2014 for the *Rated Design* ventilation rate.

   The *Rated Design* is required by ANSI/RESNET/ICC 301-2014 to comply with the ASHRAE 62.2-2013 ventilation rate for indoor air quality, which with tight homes is often greater than the rate prescribed by R406.3. The result of this discrepancy in ventilation rates for the *Reference Design* and *Rated Design* is that the calculated 2018 IECC R406 compliance scores will almost always be 3-10 points larger than the scores calculated in accordance with ANSI/RESNET/ICC 301-2014.

   The reason for the resulting larger scores is because the ERI calculation is an efficiency calculation comparing the *Rated Design* to a *Reference Design* case for all of the minimum rated features that impact the energy use of a home.

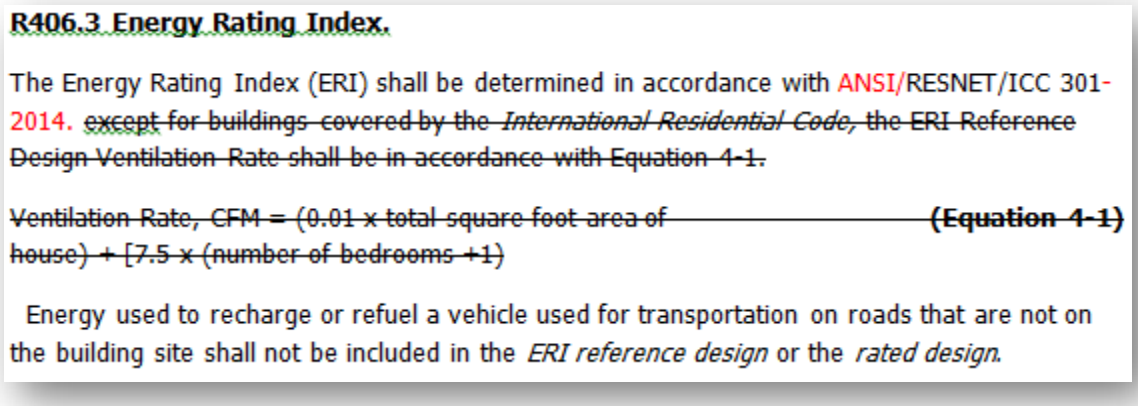
   Section R406.3 requires that the *Reference Design* have less ventilation airflow than the *Rated Design*. This means that the *Rated Design* is forced by the calculation to use more energy for mechanical ventilation than the *Reference Design*, resulting in reduced performance as compared with the *Reference Design* and thus larger 2018 IECC R406 compliance scores.

The amendment to R406.3 related to the *Reference Design* ventilation rate was the only modification to ANSI/RESNET/ICC 301-2014 related to the calculation of the ERI. Unfortunately, by only changing the ventilation rate for the *Reference Design* and not the *Rated Design*, a significant discrepancy was created between the two, resulting in significant changes to the Index score calculation.

For states and municipalities wishing to adopt an energy code that aligns with the national RESNET Home Energy Rating System (HERS) Index system, on which the ERI is modeled, adopting the 2018 IECC as written will result in calculated 2018 IECC R406 compliance scores that are larger than the HERS Index score calculated for the same home. RESNET believes this will create significant confusion for building officials, homebuilders, energy raters and anyone else invested in the energy code.

What to do to preserve the ERI calculation?

Where states and municipalities looking to adopt the 2018 IECC wish to preserve the ERI calculation as prescribed by ANSI/RESNET/ICC 301-2014 so that it aligns with the national HERS Index calculation, RESNET recommends amending the model 2018 IECC as follows:



R406.3 Energy Rating Index.

The Energy Rating Index (ERI) shall be determined in accordance with ANSI/RESNET/ICC 301-2014. ~~except for buildings covered by the *International Residential Code*, the ERI Reference Design Ventilation Rate shall be in accordance with Equation 4-1.~~

~~Ventilation Rate, CFM = (0.01 x total square foot area of house) + [7.5 x (number of bedrooms +1)~~ **~~(Equation 4-1)~~**

Energy used to recharge or refuel a vehicle used for transportation on roads that are not on the building site shall not be included in the *ERI reference design* or the *rated design*.

By amending Section R406.3 as suggested above, the ERI will be required to be calculated per ANSI/RESNET/ICC 301-2014 without any change to ventilation rates. This will result in an ERI score that aligns with the HERS Index and better represents the energy performance of homes required to comply with the R406 ERI scores specified by Table R406.4 of the 2018 IECC.

Which ventilation rate requirement is better?

RESNET acknowledges that the scientific and political discussions regarding the “correct” ventilation rate for residential homes is contentious. Neither RESNET nor standard ANSI/RESNET/ICC 301-2014 seeks to determine the correct ventilation rate for homes.

At the time ANSI/RESNET/ICC 301-2014 was published, the published American National Standard for *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings* was ASHRAE 62.2-2013. Therefore, in order to align with published American National Standards, RESNET adopted the ventilation rates prescribed by ASHRAE 62.2-2013. RESNET considers this decision to be procedural. RESNET as an organization acknowledges ventilation is important for homes that are built to modern building energy code standards, which require fairly tight envelopes. However, RESNET is neutral regarding the “correct” ventilation rate. To facilitate this neutrality, RESNET Standards do not penalize homes with ventilation rates that are less than ASHRAE 62.2-2013 Standard minimum ventilation rates but RESNET also does not provide energy credit for such homes.

Regardless of which rate may be best, the ERI calculation procedure does not establish requirements for home ventilation rates. Rather such requirements are established by building code authorities and model codes such as set forth in Section R403.6 of the 2018 IECC. The ventilation rates used in the ANSI/RESNET/ICC 301-2014 procedure do not change or modify any requirements of building codes or standards.

Recommendation for State and Local Education Campaign (not for public consumption)

In order to educate state and local jurisdictions considering the adoption of the 2018 IECC, RESNET proposes an outreach campaign. RESNET will conduct a webinar on this issue that will be recorded for future viewing. In addition, RESNET will provide individual outreach to organizations that are directly involved with state and local code adoption. This outreach will

include the six Regional Energy Efficiency Organizations (MEEA, SEEA, NEEP, NEEA, SWEEP, SPEER), the National Association of State Energy Officials (NASEO), Responsible Energy Codes Alliance, National Association of Home Builders and RESNET's Supplier Advisory Board members.