Proposed Modification to the Florida Building Code, 5th Edition (2014) Energy Conservation on Renewables in the Energy Rating Index (ERI) Path

Amanda Hickman, InterCode Incorporated submits the following proposal on behalf of the Leading Builders of America (LBA)

Add the following new text:

R406.4.1 On-site renewable power production. Where renewable power produced on-site is provided, the contribution of on-site renewable power that is permitted to be credited to the ERI shall not exceed the factors specified in Table R406.4.1.

ADD NEW TABLE R406.4.1

TABLE R406.4.1
Maximum On-site Renewable Power Production Credit

Factor for Maximum On-Site Renewable Power Production Permitted to be Applied to ERI Calculation[1]	ERI for Rated Design[2]
0.00	65 or higher
0.05	64
0.10	63
0.15	62
0.20	61
0.25	60
0.30	59
0.35	58
0.40	57
0.45	56
0.50	55
0.55	54
0.60	53
0.65	52
0.70	51
0.75	50
0.80	49
0.85	48
0.90	47
0.95	46
1.00	45 or lower

1 Where on-site renewable power is provided, the calculations of the *approved* software shall be permitted to be modified using the factors in Table R406.4.1, as follows:

Purchased Energy fraction = [(Total Energy Use) - (On-site Renewable Power Production – (On-site Renewable Power Production* (1 – factor from Table R406.4.1)))] / (Total Energy Use)

2 ERI for rated designs shall comply with Table 406.4.

Also revise as follows:

R406.6.2 Compliance report. Compliance software tools shall generate a report that documents that the *ERI* 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 residential building.
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, including the contribution of renewable power produced on-site applied to the *ERI*, entered by the user necessary to reproduce the results.
3. Name of individual completing the compliance report.
4. Name and version of the compliance software tool.

Exception: Multiple orientations. Where 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 (north, east, south and west) cardinal orientations.

REASON:

This proposal creates an easy to enforce method that recognizes the usefulness of on-site renewable power production, but LIMITS THE CREDIT FOR RENEWABLE POWER PRODUCED ON-SITE THAT MAY BE APPLIED TO THE CALCULATION OF THE ERI.

The Energy Code cannot be inconsistent with the federal policy that encourages national energy independence and the use of on-site renewable power production, particularly in residential buildings. This proposal creates an easy to enforce method that recognizes on-site renewable power production, but limits for renewable power produced on-site that may be applied in the calculation of the ERI. It creates an easy to enforce, code compliant pathway to net zero homes, which is the stated goal of our federal energy policy, without sacrificing the energy efficiency gains from previous code cycles that are currently in the IECC.

A method for calculating for on-site renewable power in the ERI is not currently required anywhere in Section 406. This proposal does NOT require on-site renewable power production to be calculated in the ERI. It only limits how much on-site renewable power is allowed to be considered in calculating the ERI if, and when, the designer chooses to incorporate on-site renewable power in the total energy use of the rated design.

The new Table R406.4.1 promotes both energy conservation and energy production. It

accomplishes this by driving improvements in the building enclosure and installed mechanical systems in order to qualify for greater contributions from the production of on-site renewable power, while maintaining the envelope requirements and mandatory measures in the 2009 IECC envelope.

Homes currently have to meet the mandatory requirements of the 2009 IECC. That does not change with the implementation of the new Table R406.4.1. Compliance with the 2009 are the "backstop" provisions to ensure that the building itself is efficient.

The Method –

The proposed new Table 406.4.1 starts crediting on-site renewable power at an ERI of 64 and moves in 5% increments per integer until 100% of on-site power produced may be applied to the ERI. The factors in Table R406.4.1 represent those 5% increments.

An ERI of 65 without renewable on-site power production was selected for the Table R406.4.1 because it is the AVERAGE HERS RATING of over 610,000 new homes built since 2012 as reported by RESNET. It represents where most communities are today, and keeps the IECC consistent with current practice, which facilitates code adoptions.

The new Table R406.4.1 is also designed to account for ERI scores that states and local jurisdiction may adopt that are both above and below the ERI values listed on Table R406.4. Table R406.4 recognizes that not all states and local jurisdictions are adopting the ERI scores contained in the 2015 IECC. The values in Table R406.4.1 can be applied to these higher ERI scores, which would limit on-site power production consistently from state to state regardless of the ERI adopted by the states. Table R406.4 also "future proof" the ERI to account for more stringent ERI scores in later versions of the IECC.

The Code Enforcer –

Enforcement of compliance with Table R406.4.1 is extremely easy. The code official or plan reviewer only has to verify that the ERI required for the climate zone in Table R406.4 has been documented and is identified in the compliance report.

The code official or plan reviewer only needs to verify that that the percentage of on-site renewable power cited in the compliance report does not exceed the limits listed for the "ERI for the Rated Design" in new Table R406.4.1.

There is a companion proposal embedded in this public comment to require that the factor used for on-site renewable power in the ERI is found in the compliance report.

To be clear, the code official, the consumer, the designer, or the builder will NEVER NEED TO USE THIS CALCULATION. It is an adjustment that would be incorporated into the approved software used to determine the ERI.

The Conclusion –

This proposal creates a compliance method that is easy to enforce and a design tool that is easy to use. Enabling new paths to achieve energy efficiency creating new opportunities for even greater innovation is part of the stated purpose of the Energy Code. This is yet another option.

the most stringent yet flexible of all the compliance options within the code, for both consumers and builders. Although only 5% of NEW homes had the capability to produce renewable power on-site, renewable energy for residences is gaining steadily in popularity because the cost and technology is steadily improving.

Using renewable energy, PV for example, can help reduce the compliance costs for builders, making homes more affordable to build and to live in. Other renewable technologies will become available and affordable in the future. It makes sense to have at least one pathway in the IECC that recognizes and accommodates the trends of the future.

In summary, this 5% sliding scale method drives improvements in the building enclosure/envelope and in efficient mechanical systems in order to earn greater ERI contributions from the production of renewable on-site power.

Most importantly, it creates an easy to enforce, code compliant pathway to net zero homes, which is the stated goal of our federal energy policy, without sacrificing the energy efficiency gains from previous code cycles that are currently in the IECC.