



FLORIDA BUILDING COMMISSION

"STRONGER CODES THROUGH SCIENCE AND CONSENSUS"

ENERGY RATING INDEX WORKGROUP OPTIONS EVALUATION WORKSHEET AUGUST 17, 2016



*This document is available in alternate formats upon request to DBPR, Codes & Standards,
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**ENERGY RATING INDEX WORKGROUP
OPTIONS ACCEPTABILITY RATING WORKSHEET**

ACCEPTABILITY RATING EXERCISE OVERVIEW

During the meeting(s) Workgroup members will be asked to review existing proposed options and invited to propose any additional options relevant to the topical issues within the Workgroup’s scope. During meetings Workgroup members will be asked to rate the options for acceptability. In addition, following discussion and refinement of options, members may be asked to do additional ratings of proposed options if requested by a Workgroup member. Members should be prepared to offer specific refinements to address their reservations.

Once rated for acceptability, options(s) with a 75% or greater number of 4s and 3s in proportion to 2s and 1s will be considered preliminary consensus recommendations for inclusion in the final package of recommendations.

At any point during the process, any option may be re-evaluated and rated at the request of any Workgroup member. The status of a rated option will not be final until the final Workgroup meeting, when a vote will be taken on the entire package of consensus ranked recommendations. The Energy Rating Index Workgroup’s consensus recommendations will be submitted to the Commission for consideration.

The following scale will be utilized for the ranking exercises:

ACCEPTABILITY RATING SCALE	4= <i>Acceptable</i>, I agree	3= <i>Acceptable</i>, I agree with <i>minor</i> <i>reservations</i>	2= <i>Not Acceptable</i>, I don’t agree unless <i>major</i> <i>reservations</i> addressed	1= <i>Not</i> <i>Acceptable</i>
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KEY TO SYMBOLS

SYMBOL	MEANING OF SYMBOL
Ⓢ	Proposed Option
ⓐ	Consensus Ranked Option

CRITERIA FOR EVALUATING/RATING PROPOSED OPTIONS

Effective Options are SMART

CRITERIA	EXPLANATION
S SPECIFIC	It is detailed enough so that anyone reading the <i>Option</i> will know what is intended to be accomplished.
M MEASURABLE	The end result can be identified in terms of quantity, quality, acceptable standards, etc. You know you have a measurable <i>Option</i> when it states in objective terms the end result or product.
A ATTAINABLE	The <i>Option</i> is feasible. Are there resources available, or likely to become available for implementing the <i>Option</i> ?
R RELEVANT	The <i>Option</i> is relevant to the Commission’s mission, purpose and charge.
T TIME-FRAMED	There are milestones with a specific date attached to the completion.

**ENERGY RATING INDEX
ALTERNATIVE PERFORMANCE PATH FOR DEMONSTRATING COMPLIANCE
WITH THE FLORIDA BUILDING CODE, ENERGY CONSERVATION**

Section 34 of HB 535 requires that the Florida Building Commission shall adopt into the Florida Building Code, 5th Edition (2014) Energy Conservation, the following:

"Section 406 relating to the Alternative Performance Path, Energy Rating Index of the 2015 International Energy Conservation Code (IECC) may be used except as follows for Table R406.4 as an option for demonstrating compliance with the Florida Building Code, Energy Conservation. TABLE R406.4 MAXIMUM ENERGY RATING INDEX shall reflect the following energy rating index: for Climate Zone 1, an index of 58; for Climate Zone 2, an index of 58. The Florida Building Commission shall continue its current adoption process of the 2015 IECC and determine by October 1, 2016, whether onsite renewable power generation may be used for compliance. The commission must also determine whether onsite renewable power generation may be used for a period longer than three years but not more than six consecutive years."

MEETING I—JULY 20, 2016

ISSUE #1: WHETHER ONSITE RENEWABLE POWER GENERATION SHOULD BE AN OPTION TO ACHIEVE COMPLIANCE WHEN USING THE ERI PATH (COUNTED TOWARD THE ERI SCORE ADOPTED INTO THE CODE).

Action: The Workgroup voted unanimously, 18 – 0 in favor, to conceptually* support the use of onsite renewable power generation as an option to achieve compliance when using the ERI path (counted toward the ERI score adopted into the Code).

ISSUE #2: THE AMOUNT OF TIME ONSITE RENEWABLE POWER GENERATION CAN BE USED AS AN OPTION FOR ACHIEVING COMPLIANCE WHEN USING THE ERI PATH.

Action: The Workgroup voted unanimously, 18 – 0 in favor, to recommend that there not be a time stipulation for any approved Code modification providing for the use of onsite renewable power generation. The Workgroup agreed that since the Legislation appeared to stipulate a timeframe of between 3 – 6 years that the Commission should request the maximum time of 6 years, request that the Legislature clarify their intent in this regard, and recommend to the Legislature that there should not be any timeframes associated with this provision.

MEETING II—AUGUST 17, 2016

ISSUE #3: THE AMOUNT OF ONSITE RENEWABLE POWER GENERATION THAT CAN BE CREDITED TOWARD THE ERI SCORE.

Options for Workgroup Evaluation Regarding Issue #3

A.) [Bassett] One hundred percent of the amount of onsite renewable power generation can be credited toward the ERI score.

	AVERAGE RATING	4— <i>Acceptable</i>	3— <i>Minor Reservations</i>	2— <i>Major Reservations</i>	1— <i>Not Acceptable</i>
<i>Initial Rating</i>					

Comments and/or Reservations:

B.) [Stroer] The amount of onsite renewable power generation that can be credited toward the ERI score shall not be greater than 8 Energy Rating Index (ERI) points.

	AVERAGE RATING	4— <i>Acceptable</i>	3— <i>Minor Reservations</i>	2— <i>Major Reservations</i>	1— <i>Not Acceptable</i>
<i>Initial Rating</i>					

Comments and/or Reservations:

C.) [Burk/FDACS] “Onsite renewable energy generation shall offset five points toward the ERI score.”

	AVERAGE RATING	4— <i>Acceptable</i>	3— <i>Minor Reservations</i>	2— <i>Major Reservations</i>	1— <i>Not Acceptable</i>
<i>Initial Rating</i>					

Comments and/or Reservations:

D.) [Calleja] On-Site Renewable Energy is allowed to be included in the ERI simulation to achieve a Maximum score of 58 **provided** that the building is modeled **without** the Renewables (to ensure minimum efficiencies are met) and it also achieves a Maximum score of 61. The number 61 is subject to change after technical debate and simulations that prove that it corresponds to similar passing scores using the 405 Performance methodology.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

E.) [Strawn] R406.2 Mandatory requirements. Compliance with this section requires that the provisions identified in Sections R401.2 through R404 labeled as “mandatory” and Section 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 402.1.1 or 402.1.3 of the 2009 International Energy Conservation Code.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

F.) [Ranck] Presenting the Submittal as a Code Modification (R406.3 & R406.4)

R406.3 Energy Rating Index. The Energy Rating Index (ERI) shall be 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 *residential building* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1-percent 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*, and shall include the effect of on-site power production once the envelop and equipment requirements of the 5th Edition of the Florida Building Code, Energy Conservation have been satisfied.

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 when compared to the *ERI reference design*. Credit shall be allowed for on-site power production once the envelop and equipment requirements of the 5th Edition of the Florida Building Code, Energy Conservation have been satisfied.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

<i>Comments and/or Reservations:</i>

G.) [Power] *Modify R406.2 of the 2015 IECC to read as follows for the 6th Edition of the FBC:*

R406.2 Mandatory requirements. Compliance with this Section requires that the mandatory provisions identified in Section R401.2 and R403.5.3 be met. When on-site renewable power generation is used to comply with Section R406, the building thermal envelope shall meet or exceed the efficiency levels including Solar Heat Gain Coefficient in Tables R402.1.2 or R402.1.4* of this code. When on-site renewable power generation is not used to comply with Section R406, the building thermal envelope shall meet or exceed the efficiency levels including Solar Heat Gain Coefficient in Tables R402.1.1 or R402.1.3 of the 2009 International Energy Conservation Code.

Exception: Supply and return ducts not completely inside the building thermal envelope shall be insulated to an R-value of not less than R-6.

**Table references to be correlated by Florida Building Commission staff.*

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
<i>Initial Rating</i>					

<i>Comments and/or Reservations:</i>

H.) [Belcher/FHBA] The FHBA recommends giving full credit for on-site renewable power generation where on-site renewable energy is used under the Energy Rating Index (ERI) Compliance Alternative.

FHBA recommends the adoption of the IECC 2015 mandatory provisions as the backstop for the ERI Compliance Alternative when utilizing on-site renewable energy sources for compliance under the ERI Compliance Alternative. FHBA recognizes the IECC 2015 permits the use of the IECC 2009 mandatory provisions for use with the ERI Compliance Alternative; however, when relying on on-site renewable energy production for compliance, FHBA recommends the use the more stringent mandatory provisions of the IECC 2015. The greater stringency would better serve the builder and consumer and while satisfying the intent of the law. The provisions of the IECC 2015 will provide continuing energy efficiency in a home in the event on-site renewable energy source is removed or becomes ineffective at a future date.

When complying with the ERI Compliance Alternative and not employing on-site renewable energy sources for compliance, the thermal envelope provisions of the IECC 2009 as stated at IECC 2015 Section R406.2 would apply.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
<i>Initial Rating</i>					

Comments and/or Reservations:

I.) [Hickman/LBA] R406.2 Mandatory requirements. Compliance with this section requires that the provisions identified in Sections R401 through R404 labeled as "mandatory" and Section R403.5.3 of the 2015 *International Energy Conservation Code* be met. For buildings that do not utilize on-site renewable power production for compliance with this section, the building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table 402.1.1 or 402.1.3 of the 2009 *International Energy Conservation Code*. For buildings that utilize on-site renewable power production for compliance with this section, the building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table R402.1.2 or Table R402.1.4 of the 2015 *International Energy Conservation Code*.

Exception: Supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-6.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
<i>Initial Rating</i>					

Comments and/or Reservations:

J.) [Hickman/LBA; and Cain/SEIA] 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:

$$\text{Purchased Energy fraction} = \frac{[(\text{Total Energy Use}) - (\text{On-site Renewable Power Production} - (\text{On-site Renewable Power Production} * (1 - \text{factor from Table R406.4.1})))]}{(\text{Total Energy Use})}$$

- 2 ERI for rated designs shall comply with Table 406.4.

	AVERAGE RATING	4— <i>Acceptable</i>	3— <i>Minor Reservations</i>	2— <i>Major Reservations</i>	1— <i>Not Acceptable</i>
<i>Initial Rating</i>					

Comments and/or Reservations:

K.) [Cain/SEIA]

Add new text as follows:

R406.4.1 (N1106.4.1) On-site power production. The power produced on-site shall be included in the calculation for determining the ERI value in accordance with ANSI ICC/RESNET 301. The contribution to the ERI calculation shall be 5% of the on-site power produced for each ERI point less than 65 as specified in Table R406.4.1.

TABLE R406.4.1 (N1106.4.1)
Credit for On-site Power Production

ENERGY RATING INDEX	PERCENT CREDIT FOR ON-SITE POWER PRODUCTION_a
65 and above	0
64	5
63	10

62	15
61	20
60	25
59	30
58	35
57	40
56	45
55	50
54	55
53	60
52	65
51	70
50	75
49	80
48	85
47	90
46	95
45 and below	100

a. Percentage of power produced on-site applied per ERI value.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

<i>Comments and/or Reservations:</i>

L.) [Hickman/LBA; and Cain/SEIA] 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.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

M.) [Cain/SEIA]

R406.6.2 (N1106.4.2) 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 percentage of power produced on-site credited 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.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

N.) [Ross] 5th Edition of the Florida Energy Code:

Renewable energy should not be considered as a compliance option for the 5th Edition for the following reasons:

1. The 5th Edition is based on the 2012 IECC, which did not include ERI as a compliance path. However, HB 535 directed the Commission to add the ERI path contained in the 2015 IECC. It must be noted that renewable energy inclusion is *not* addressed in the 2015 IECC for the ERI path.
2. The ICC Code Hearings will not be held until October 19-25, 2016 and the final outcome will be available after the conclusion of online voting, estimated for late November - early December 2016.
3. The 5th Edition is currently in effect throughout the State and has been submitted to the US Department of Energy for their review and certification. If this change is made, will the 5th Edition

need to be analyzed and re-certified?

4. Cost effectiveness has not been provided and may not be available until after the Amendment #1 Amendment initiative vote on November 8, 2016.

5.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
<i>Initial Rating</i>					

<i>Comments and/or Reservations:</i>

O.) [Ross] 6th Edition of the Florida Energy Code:

A decision on the amount of renewable energy in the 6th Edition should be deferred until Spring 2017, which does mesh with the expected posting on April 21, 2017 for the Integrated Draft 6th Edition. Additionally, at the FBC meeting on August 18, 2015, the Commission unanimously adopted a decision to **“Hold Glitch Correction Phase after the Effective Date of the 6th Edition (2017) FBC, if needed - Rulemaking via Integrated Code”**.

1. The 6th Edition development process is still underway and there is time to fulfill the code modification criteria.
2. The outcome of the IECC, Residential will be known and since the Florida Energy Code is based on the most recent version of the IECC, a better decision will be made
3. The outcome of Amendment #4 will be known, allowing a robust cost analysis of this compliance option.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
<i>Initial Rating</i>					

<i>Comments and/or Reservations:</i>

**ENERGY RATING INDEX COMPLIANCE OPTION
FOR ONSITE RENEWABLE POWER GENERATION APPLICABILITY**

a.) [Belcher/FHBA] The FHBA recommends the ERI Work Group express the intent that renewable energy refers to energy produced from natural resources such as solar energy, wind, water, and geothermal sources and not energy generated by the burning of fuels or other materials.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

b.) [Burk/FDACS] Consideration of whether different renewable power technologies should have different offset scores.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

**ENERGY RATING INDEX COMPLIANCE OPTION
FOR ONSITE RENEWABLE POWER GENERATION TIME LIMITS**

a.) [Belcher/FHBA] The FHBA recommends there be no time limit placed on the use of on-site renewable energy sources and that the Florida Building Commission request changes to the legislation removing language resulting in the perception of such time limits.

	AVERAGE RATING	4—Acceptable	3—Minor Reservations	2—Major Reservations	1—Not Acceptable
Initial Rating					

Comments and/or Reservations:

ENERGY RATING INDEX STATUS OF CODE MODIFICATIONS

EN 6727 (AS)

R406.3 Energy Rating Index.

The Energy Rating Index (ERI) shall be 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 *residential building* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1-percent change in the ~~total energy use~~ annual total normalized modified loads of the ~~rated design~~ *rated design* relative to the annual total energy use loads 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 it meets the minimum requirements of the 2006 *International Energy Conservation Code* prescriptive requirements.

~~The proposed *residential building* shall be shown to have an annual total normalized modified load less than or equal to the annual total loads of the *ERI reference design*.~~

R406.4 ERI-based compliance.

~~The ERI for the *rated design* shall be determined in accordance with ANSI/RESNET/ICC 301-2014, including Addendum A-2015, and 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 when compared to the *ERI reference design*.~~

[No other changes to Section R406.]

EN 6922 (NAR)

Revise Sections R406.3 and R406.4 as follows:

R406.3 Energy Rating Index. The Energy Rating Index (ERI) shall be 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 *residential building* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1-percent 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*, and shall not include the effect of any on-site power production.

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 when compared to the *ERI reference design*. No credit shall be allowed for on-site power production. The ERI report shall demonstrate that no on-site power production has been incorporated into the ERI calculation.