

Staff comments as supported by the Energy TAC – September 30, 2016

HB 535 – Section 34

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."

2016 Supplement (Code Fixes) to the 5th Edition (2014) Florida Building Code “Effective – July 1, 2016)

R406 Energy Rating Index Compliance Alternative. Add Section R406 to read as follows:

SECTION R406 ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

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

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. 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.**

Exception: 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 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*.

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. 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*.

R406.5 Verification by approved agency. Verification of compliance with Section R406 shall be completed by an *approved* third party, [in accordance with Florida Statutes 553.990 \(Building Energy Efficiency Rating System\)](#).

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 R406.6.1 through R406.6.3.

R406.6.1 Compliance software tools.

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 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 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.

TABLE R406.4 MAXIMUM ENERGY RATING INDEX

CLIMATE ZONE	ENERGY RATING INDEX
1	52 58
2	52 58
3	51
4	54

5	55
6	54
7	53
8	53

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 R406.7.1 through R406.7.3.

R406.7.1 Minimum capabilities. Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI 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*.

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 Specific approval. Performance analysis tools meeting the applicable sections of Section R406 shall be *approved*. 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 Input values. When calculations require input values not specified by Sections R402, R403, R404 and R405 of the 2015 International Energy Conservation Code, those input values shall be taken from an approved source.

6th Edition (2017) Florida Building Code, Energy Conservation

Deferred modifications – July 19, 2016 (Energy TAC) and August 16, 2016 (Commission)

EN6727 (Status TAC – 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.~~

EN 6933 (TAC – 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.

ERI Workgroup's Recommendations

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.

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*.~~

Staff Comment as supported by the Energy TAC:

Revise mod EN6727 for consistency with the ERI Workgroup's recommendations as follows:

EN6727 (Status TAC – AS)

Energy TAC – Support staff comments and no support to G4, 5 and 6.

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~~ this 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 ~~this code~~ the 2015 International Energy Conservation Code.

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EN 6933 (TAC – NAR)

Energy TAC – No support to G8, 9 and 10

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

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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.

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