RED1-65-22

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2024 International Energy Conservation Code [RE Project]

CHAPTER 2 [RE]
DEFINITIONS

SECTION R202
GENERAL DEFINITIONS

Revise as follows:

ENERGY RATING INDEX (ERI). A numerical integer value that represents the relative energy performance of a *rated design* ~~Rated Home~~ or constructed *dwelling unit* as compared with the energy performance of the *ERI Reference Design*, where an ERI value of 100 represents the energy performance of the *ERI Reference Design* and an ERI value of 0 represents a *rated design* or constructed *dwelling unit* ~~home~~ with zero net energy performance.

ERI REFERENCE DESIGN. A version of the *rated design* that meets the minimum requirements of the 2006 *International Energy Conservation Code*.

Revise as follows:

RATED DESIGN. A description of the proposed ~~*building*~~ *dwelling unit* used to determine the energy rating index.

CHAPTER 4 [RE]
RESIDENTIAL ENERGY EFFICIENCY

SECTION R406
ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

Revise as follows:

R406.1 Scope. This section establishes criteria for compliance using an Energy Rating Index (ERI) analysis. Such analysis shall be limited to *dwelling units*. Spaces other than *dwelling units* in Group R-2, R-3, or R-4 buildings shall comply with Sections ~~R401~~ R402 through R404.

R406.2 ERI compliance. Compliance based on the ERI requires that the *rated design* and as-built *dwelling unit* meet~~s~~ all of the following:

1. The requirements of the sections indicated within Table R406.2.
2. Maximum ERI values indicated in Table R406.5.

TABLE R406.2 REQUIREMENTS FOR ENERGY RATING INDEX

a. Reference to a code section includes all of the relative subsections except as indicated in the table.

R406.3 Building thermal envelope. The proposed total building thermal envelope UA, which is sum of *U*-factor times assembly area, shall be less than or equal to the building thermal envelope UA using the prescriptive *U*-factors from Table R402.1.2 multiplied by 1.08 in Climate Zones 0, 1, and 2, and by 1.15 in Climates Zones 3 through 8, in accordance with Equation 4-3. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

(Equation 4-3)

$$\text{For Climate Zones 0-2: } UA_{\text{Proposed design}} \leq 1.08 \times UA_{\text{Prescriptive reference design}}$$

$$\text{For Climate Zones 3-8: } UA_{\text{Proposed design}} \leq 1.15 \times UA_{\text{Prescriptive reference design}}$$

R406.4 Energy Rating Index. The Energy Rating Index (ERI) shall be determined in accordance with ANSI/RESNET/ICC 301. The mechanical ventilation rates used for the purpose of determining the ERI shall not be construed to establish minimum ventilation requirements for compliance with this code.
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*.

Revise as follows:

R406.5 ERI-based compliance. Compliance based on an ERI analysis requires that the *rated ~~proposed~~ design* and each confirmed as-built *dwelling unit* be shown to have an ERI less than or equal to the appropriate value indicated in Table R406.5 when compared to the *ERI reference design as follows:*

1. Where on-site renewables are not installed, the maximum ENERGY RATING INDEX NOT INCLUDING OPP applies.
2. Where on-site renewables are installed, the maximum ENERGY RATING INDEX INCLUDING OPP applies.

Exceptions:

1. Where the ERI analysis excludes OPP, the maximum ENERGY RATING INDEX NOT INCLUDING OPP shall be permitted.

2. For buildings with twenty or more *dwelling units*, where *approved* by the code official, compliance shall be permitted using the Average Dwelling Unit Energy Rating Index, as calculated in accordance with ANSI/RESNET/ICC 301.

TABLE R406.5 MAXIMUM ENERGY RATING INDEX

Revise as follows:

R406.6 Verification by approved agency. Verification of compliance with Section R406 as outlined in Sections R406.4 and R406.5~~6~~ shall be completed by an *approved* third party. Verification of compliance with Section R406.2 shall be completed by the authority having jurisdiction or an *approved* third-party inspection agency in accordance with Section R105.4.

R406.7 Documentation. Documentation of the software used to determine the ~~ERI~~ *ERI* and the parameters for the *ERI Reference Design* ~~*residential building*~~ shall be in accordance with Sections R406.7.1 through R406.7.4.

approved software rating tools as defined by

R406.7.1 Compliance software tools. Software tools used for determining *ERI* ~~ERI~~ shall be ~~*Approved* Software Rating Tools in accordance with~~ ANSI/RESNET/ICC 301 ~~and shall have documentation that the software tool has been validated using the Class II, Tier 1 test procedure in ANSI/ASHRAE Standard 140-2017~~. Software vendors shall publish on a publicly available website documentation that the software tool has been validated using the Class II, Tier 1 test procedure in ANSI/ASHRAE Standard 140-2020.

R406.7.2 Compliance report. Compliance software tools shall generate a report that documents that the ~~home and the ERI score~~ *ERI* of the *rated design* and as-built *dwelling unit* complies with Sections R406.2, R406.3, R406.4 and R406.5~~4~~. Compliance documentation shall be created for the proposed design and shall be submitted with the application for the building permit. Confirmed compliance documents of the as-built *dwelling unit* shall be created and submitted to the code official for review before a certificate of occupancy is issued. Compliance reports shall include information in accordance with Sections R406.7.2.1 and R406.7.2.2.

R406.7.2.1 Proposed compliance report for permit application. Compliance reports submitted with the application for a building permit shall include the following:

1. Building street address, or other *building site* identification.
2. Declare ERI on title page and building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. The name and version of the compliance software tool.
5. Documentation of all inputs entered into the software used to produce the results for the *ERI reference design* and~~/or~~ the *rated design* ~~home~~.
6. A certificate indicating that the proposed design has an ERI less than or equal to the appropriate score indicated in Table R406.5 when compared to the *ERI reference design*. The certificate shall document the building component energy specifications that are included in the calculation, including: component level insulation *R*-values or *U*-factors; assumed duct system and building envelope air leakage testing results; and the type and rated efficiencies of proposed heating, cooling, mechanical ventilation, and service water-heating equipment to be installed. If on-site renewable energy systems will be installed, the certificate shall report the type and production size of the proposed system.
7. When a site-specific report is not generated, the proposed design shall be based on the worst-case orientation and configuration of the rated *dwelling unit* ~~home~~.

R406.7.2.2 Confirmed compliance report for a certificate of occupancy. A confirmed compliance report submitted for obtaining the certificate of occupancy shall be made site and address specific and include the following:

1. Building street address or other *building site* identification.
2. Declaration of ERI on title page and on building plans.
3. The name of the individual performing the analysis and generating the report.
4. The name and version of the compliance software tool.
5. Documentation of all inputs entered into the software used to produce the results for the *ERI reference design* and~~/or~~ the as-built *dwelling unit*~~rated home~~.
6. A final confirmed certificate indicating that the as-built building ~~confirmed rated design of the built home~~ complies with Sections R406.2, R406.4 and R406.5~~4~~. The certificate shall report the energy features that were confirmed to be in the building~~home~~, including: component-level insulation *R*-values or *U*-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation, and service water-heating equipment installed. Where on-site renewable energy systems have been installed on or in the building ~~home~~, the certificate shall report the type and production size of the installed system.

R406.7.3 Renewable energy certificate (REC) documentation. Where renewable energy power production is included in the calculation of an ERI, documentation shall comply with Section R404.4.

R406.7.4 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*.

R406.7.5 Specific approval. Performance analysis tools meeting the applicable subsections of Section R406 shall be *approved*. Documentation demonstrating the approval of performance analysis tools in accordance with Section R406.7.1 shall be provided.

Revise as follows:

R406.7.6 Input values. Where calculations require input values not specified by Sections R402, R403, R404 and R405, those input values shall be taken from ANSI/RESNET/ICC 301.

CHAPTER 6 [RE]
REFERENCED STANDARDS

ANSI

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

Add new standard(s) as follows:

ANSI

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

R406.7.1		ANSI/ASHRAE 140-~~2017~~ 2020 **Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs**

Reason: Similar to a clean-up proposal for R405, R406 needs to be clear for multifamily that an ERI is only performed on a dwelling unit and that common spaces are still subject to the other code requirements in R402 through R404.
In addition, for large MF, the average ERI of all dwelling units in the building should be permitted to be used to demonstrate compliance with the maximum ERI (rather than each indvidual dwelling unit being required to meet the max ERI).

Finally, some edits are made to maintain consistency, use defined terms, and underscore that the as-built dwelling unit is also required to be compliant, not just the 'rated design' ERI.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
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Bibliography: None

Workgroup Recommendation

Proposal # 1400
