

North Central Texas
Council of Governments

**Recommended Amendments to the
2021 International Energy Conservation Code
And the energy provisions of the
2021 International Residential Code**
North Central Texas Council of Governments Region
(Climate Zone 2 & 3 of the IECC)

The following sections, paragraphs, and sentences of the *2021 International Energy Conservation Code* (IECC) are hereby amended as follows: Standard type is text from the IECC. Underlined type is text inserted. ~~Lined through type is deleted text from IECC.~~ A double (**) asterisk at the beginning of a section identifies an amendment carried over from the 2018 edition of the code and a triple (***) asterisk identifies a new or revised amendment with the 2021 code. Section numbers in parenthesis represent the corresponding numbers of the energy provisions of the *2021 International Residential Code* for parallel amendments.

2021 IECC (Energy Provisions of the 2021 IRC)

*****Section 105.2 Required Inspections; Changed numbering and to read as follows:**

R105.2.1 Footing and foundation inspection.

Inspections associated with footings and foundations shall verify compliance with the code as to R-value, location, thickness, depth of burial and protection of insulation as required by the code and approved plans and specifications.

R105.2.2 Framing and Air Barrier rough-in inspection.

Inspections at framing and rough-in shall be made before application of interior finish insulation and shall verify compliance with the code as to: ~~types of insulation and corresponding R-values and their correct location and proper installation; fenestration properties such as U-factor and SHGC and proper installation;~~ air leakage controls as required by the code; and approved plans and specifications.

R105.2.3 Insulation and Fenestration rough-in inspection.

Inspections at framing and rough-in shall be made before application of interior finish and shall verify compliance with the code as to: types of insulation and corresponding R-values and their correct location and proper installation; fenestration properties such as U-factor and SHGC and proper installation.

R105.2.34 Plumbing rough-in inspection.

Inspections at plumbing rough-in shall verify compliance as required by the code and approved plans and specifications as to types of insulation and corresponding R-values and protection and required controls.

R105.2.45 Mechanical rough-in inspection.

Inspections at mechanical rough-in shall verify compliance as required by the code and approved plans and specifications as to installed HVAC equipment type and size, required controls, system insulation and corresponding R-value, system air leakage control, programmable thermostats, dampers, whole-house ventilation, and minimum fan efficiency.

Exception: Systems serving multiple dwelling units shall be inspected in accordance with Section C105.2.4.

R105.2.56 Final inspection.



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The building shall have a final inspection and shall not be occupied until approved. The final inspection shall include verification of the installation of all required building systems, equipment and controls and their proper operation and the required number of high-efficacy lamps and fixtures.

*****Section C102; add Section C102.1.2 (N1101.4.1) to read as follows:**

C102.1.2 Alternative compliance. A building certified by a national, state, or local accredited energy efficiency program and determined by the Energy Systems Laboratory to be in compliance with the energy efficiency requirements of this section may, at the option of the Code Official, be considered in compliance. The United States Environmental Protection Agency's Energy Star Program certification of energy code equivalency shall be considered in compliance.

*****Section R102 General; add R102.1.2(N1101.4.1) to read as follows:**

R102.1.2 (N1101.4.1) Alternative compliance. A building certified by a national, state, or local accredited energy efficiency program and determined by the Energy Systems Laboratory to be in compliance with the energy efficiency requirements of this section may, at the option of the Code Official, be considered in compliance. The United States Environmental Protection Agency's Energy Star Program certification of energy code equivalency shall be considered in compliance. Regardless of the program or the path to compliance, each 1- and 2-family dwelling shall be tested for building thermal envelope air leakage, duct leakage, and mechanical ventilation airflow as prescribed in Section R402.4.1.2 (N1102.4.1.2), R403.3.3 (N1103.3.3), and R403.6.3 (N1103.6.3) respectively.

(Reason: This amendment is added to allow alternative compliance in accordance with Texas HB 1365, 78th Legislature. Codified in Chapter 388 Texas Building Energy Performance Standards: §388.003(i). The last sentence to Section R102.1.2 (N1101.4.1) was added to ensure that every house is tested in accordance with the mandatory provisions of the code.)

Section R202 (N1101.6) Definitions; add the following definition:

****PROJECTION FACTOR.** The ratio of the horizontal depth of the overhang, eave or permanently attached shading device, divided by the distance measured vertically from the bottom of the fenestration glazing to the underside of the overhang, eave or permanently attached shading device.

(Reason: The amendment to Section 402.3.2 (N1102.3.2) Glazed fenestration SHGC was proposed by the TAB. ESL determined the proposal to be not less restrictive than the 2015 IECC. This added definition is necessary as part of that amendment. The amendment will provide additional options for SHGC selection.)

Section R202 (N1101.6) Definitions; add the following definition:

****DYNAMIC GLAZING.** Any fenestration product that has the fully reversible ability to change its performance properties, including U-factor, solar heat gain coefficient (SHGC), or visible transmittance (VT).

(Reason: This term is referenced in Section R402.3.2. This definition of DYNAMIC GLAZING is also found in the Commercial provisions of the code.)

*****Table 402.1.2 Maximum Assembly/Climate Zone items: amend table as follows.**



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| Climate Zone | Fenestration U-Factor ^f | Ceiling U-Factor |
|--------------|------------------------------------|----------------------|
| 2 | .40 | 0.26-0.29 |
| 3 | 0.30 0.32 | 0.26-0.29 |

***Table 402.1.3 Insulation/Climate Zone items: amend table as follows.

| Climate Zone | Fenestration U-Factor ^{b,i} | Ceiling R-Value | Wood Frame Wall R-Value | Slab R-Value & Depth |
|--------------|--------------------------------------|-----------------|-------------------------|----------------------|
| 2 | .40 | 49-42 | 13 or 0 + 10 | 0 |
| 3 | 0.30 0.32 | 49-42 | 19 or 13+53ci, 0+15 | 10ci, 2-ft 0 |

(Reason: Amended table to meet current building techniques, market conditions and product availability. Amended to avoid conflict between North Texas termite zone and slab R value in code.)

***Section C402.5.2 Dwelling and sleeping unit enclosure testing. Added the underlined to read as follows

C402.5.2 Dwelling and sleeping unit enclosure testing. The building thermal envelope shall be tested in accordance with ASTM E779, ANSI/RESNET/ICC 380, ASTM E1827 or an equivalent method approved by the code official. The measured air leakage shall not exceed 0.30 cfm/ft² (1.5 Us m²) of the testing unit enclosure area at a pressure differential of 0.2 inch water gauge (50 Pa). Where multiple dwelling units or sleeping units or other occupiable conditioned spaces are contained within one building thermal envelope, each unit shall be considered an individual testing unit, and the building air leakage shall be the weighted average of all testing unit results, weighted by each testing unit's enclosure area. Units shall be tested separately with an unguarded blower door test as follows:

1. Where buildings have fewer than eight testing units, each testing unit shall be tested.
2. For buildings with eight or more testing units, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a ground floor unit, a middle floor unit, and a unit with the largest testing unit enclosure area. For each tested unit that exceeds the maximum air leakage rate, an additional ~~two~~ three units shall be tested, including a mixture of testing unit types and locations.

(Reason: For many multifamily (R2 classifications) projects, it is very costly and time consuming to test each dwelling unit for projects where there may be dozens of dwelling units in each building. Considering that the same tradesman generally constructs a building, it is reasonable to deem that construction practices are consistent and that if a reasonable sampling of units tested pass then all units would pass. These amendments are in line with RESNET sampling guidelines.)

***Section R402.4.1 Building thermal envelope; add section R402.4.1.4 to read as follows

R402.4.1.4 Sampling options for R2 multifamily dwelling units. For buildings with eight or more testing units that must be tested as required by R402.1.2 or R402.1.3, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a ground floor unit, a middle floor unit, and a unit with the largest testing unit enclosure area. For each tested unit that exceeds the maximum air leakage rate, an additional three units shall be tested, including a mixture of testing unit



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types and locations. Where buildings have fewer than eight testing units, each testing unit shall be tested.

(Reason: For many multifamily (R2 classifications) projects, it is very costly and time consuming to test each dwelling unit for projects where there may be dozens of dwelling units in each building. Considering that the same tradesman generally constructs a building, it is reasonable to deem that construction practices are consistent and that if a reasonable sampling of units tested pass then all units would pass. These amendments are in line with the commercial provisions of the commercial 2021 IECC and RESNET sampling guidelines.)

*****Section R403.3 Ducts; add section R403.3.8 to read as follows**

R403.3.8 Sampling options for R2 multifamily dwelling units. For buildings with eight or more testing units that must be tested as required by R403.3.5, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a ground floor unit, a middle floor unit, and a unit with the largest testing unit floor area. For each tested unit that exceeds the maximum duct leakage rate, an additional three units shall be tested, including a mixture of testing unit types and locations. Where buildings have fewer than eight testing units, each testing unit shall be tested.

(Reason: For many multifamily (R2 classifications) projects, it is very costly and time consuming to test each dwelling unit for projects where there may be dozens of dwelling units in each building. Considering that the same tradesman generally constructs a building, it is reasonable to deem that construction practices are consistent and that if a reasonable sampling of units tested pass, then all units would pass. These amendments are in line with the commercial provisions of the commercial 2021 IECC and RESNET sampling guidelines.)

*****Section R403.6 Mechanical Ventilation; add section R403.6.4 to read as follows**

R403.6.4 Sampling options for R2 multifamily dwelling units. For buildings with eight or more testing units that must be tested as required by R403.6.3, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a ground floor unit, a middle floor unit, and a unit with the largest testing unit floor area. For each tested unit that does not meet the minimum ventilation rate, an additional three units shall be tested, including a mixture of testing unit types and locations. Where buildings have fewer than eight testing units, each testing unit shall be tested.

(Reason: For many multifamily (R2 classifications) projects, it is very costly and time consuming to test each dwelling unit for projects where there may be dozens of dwelling units in each building. Considering that the same tradesman generally constructs a building, it is reasonable to deem that construction practices are consistent and that if a reasonable sampling of units tested pass, then all units would pass. These amendments are in line with the commercial provisions of the commercial 2021 IECC and RESNET sampling guidelines.)

*****R405.2 Performance-based compliance. Added to underlined to read as follows.**

R405.2 Performance-based compliance. Compliance based on total building performance requires that a *proposed design* meets all of the following:

1. The requirements of the sections indicated within Table R405.2.
2. The building thermal envelope greater than or equal to levels of efficiency and solar heat gain coefficients in Table R402.1.1 or R402.1.3 of the 2009 *International Energy Conservation Code*.



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3. An annual energy cost that is less than or equal to the annual energy cost of the 2021 standard reference design or 8% less than the annual energy cost of the 2018 standard reference design. Energy prices shall be taken from a source *approved* by the code official, such as the Department of Energy, Energy Information Administration's State Energy Data System Prices and Expenditures reports. Code officials shall be permitted to require time-of-use pricing in energy cost calculations.

Exception: The energy use based on source energy expressed in Btu or Btu per square foot of *conditioned floor area* shall be permitted to be substituted for the energy cost. The source energy multiplier for electricity shall be 3.16. The source energy multiplier for fuels other than electricity shall be 1.1.

(Reason: At the time of the approval of these recommended amendments, software to calculate and show compliance with section R405 of the 2021 IECC was not available. The underlined amendment allows an alternative option to show compliance until software is available.)

*****Section R401.2.5 Additional Energy efficiency; deleted in its entirety.**

(Reason: The deletion is based on the Complexity of the section and lack of tools to verify compliance and due to conflict with HB2439, 86th Regular Session)

*****Section R408 ADDITIONAL EFFICIENCY PACKAGE OPTIONS; deleted in its entirety.**

(Reason: The deletion is based on the omission of R401.2.5 and R408 no longer applies and due to conflict with HB2439, 86th Regular Session.)

***** Section R402.4.6 Electrical and Communication outlet boxes. Delete after the first sentence to read as follows.**

~~***R402.4.6 Electrical and communication outlet boxes (air-sealed boxes). Electrical and communication outlet boxes installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. Electrical and communication outlet boxes shall be tested in accordance with NEMA OS 4, Requirements for Air Sealed Boxes for Electrical and Communication Applications, and shall have an air leakage rate of not greater than 2.0 cubic feet per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa). Electrical and communication outlet boxes shall be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4. Electrical and communication outlet boxes shall be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.~~

(Reason: Allow for alternatives and avoid requiring proprietaries products.)

*****Section R404.2 Interior Lighting Controls; deleted in its entirety.**

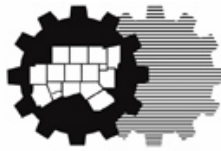
(Reason: The deletion is to eliminate confusion as the intent does not reflect what is written.)

****TABLE R406.4 (N1106.4) MAXIMUM ENERGY RATING INDEX; amend to read as follows:**

TABLE R406.4 (N1106.4) ¹
MAXIMUM ENERGY RATING INDEX

| CLIMATE ZONE | ENERGY RATING INDEX |
|--------------|---------------------|
| 2 | 52-63 |
| 3 | 52-63 |

¹ This table is effective until August 31, 2022.



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TABLE R406.4 (N1106.4) ²
MAXIMUM ENERGY RATING INDEX

| CLIMATE ZONE | ENERGY RATING INDEX |
|--------------|---------------------|
| 2 | 52-59 |
| 3 | 51-59 |

² The table is effective from September 1, 2022 to August 31, 2025.

TABLE R406.4 (N1106.4) ³
MAXIMUM ENERGY RATING INDEX

| CLIMATE ZONE | ENERGY RATING INDEX |
|--------------|---------------------|
| 2 | 52-57 |
| 3 | 51-57 |

³ The table is effective from September 1, 2025 to August 31, 2028.

TABLE R406.4 (N1106.4) ³
MAXIMUM ENERGY RATING INDEX

| CLIMATE ZONE | ENERGY RATING INDEX |
|--------------|---------------------|
| 2 | 52-55 |
| 3 | 51-55 |

⁴ This table is effective on or after September 1, 2028.

(Reason: The tables reflect the values and timetable set forth in HB 3215, 87th Regular Session Codified in Chapter 388 Texas Building Energy Performance Standards: §388.003.)

*****If Appendix RB Solar-Ready Provisions-Detached One- And Two-Family Dwellings and Townhouses is adopted by the municipality the following is recommended.**

*****Section RB103.7 Roof load documentation; deleted in its entirety.**

(Reason: Solar Panels will be nominal additional load based on new construction characteristics.)

NOTE : HB 3215 was signed into law by the Governor on June 14, 2021 as part of the 87th Regular Session Codified in Chapter 388 Texas Building Energy Performance Standards: §388.003 (i), (j), and (k). HB 3215 now allows a Home Energy Rating System Index (ex. HERS Index) utilizing ANSI/RESNET/ICC Standard 301 (as it existed on January 1, 2021) shall be considered in compliance with State law provided that:

- The single-family residence includes compliance with the Mandatory requirements of 2018 IECC Section R406.2.
- The single-family residence includes compliance with Building thermal envelope provisions of Table R402.1.2 or Table R402.1.4 of the 2018 IECC.
- The single-family residence uses an energy rating index equal of:
 - For climate zone 2:



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- 63 or lower from September 1, 2019, to August 31, 2022
 - 59 or lower on or after September 1, 2022;
 - 57 or lower on or after September 1, 2025;
 - 55 or lower on or after September 1, 2028
- For climate zone 3:
 - 63 or lower from September 1, 2019, to August 31, 2022
 - 59 or lower on or after September 1, 2022;
 - 57 or lower on or after September 1, 2025;
 - 55 or lower on or after September 1, 2028
 - For climate zone 4:
 - 67 or lower from September 1, 2019, to August 31, 2022
 - 63 or lower on or after September 1, 2022;

END