INTERNATIONAL ENERGY CONSERVATION CODE PLAN CHECK

2021 IECC: Residential Buildings (RE)

For this code, **residential buildings** include detached one- or two-family dwellings, multiple single-family dwellings (townhouse), or Group R-2, R-3 or R-4 buildings three stories or less in height above grade plane.

INSTRUCTIONS: Determine compliance option (A, B, or C) below used for the submitted plan and then verify plan compliance based on requirements for the identified compliance option. Refer to **Energy Code Plan Check & Inspection Resources** at continuousinsulation.org/plan-review to help facilitate effective plan checking and inspections.

OPTION A: Section R401.2.1 Prescriptive Compliance

The **Prescriptive Compliance** option requires compliance with Sections R401 through R404.

1. Per **Section R402.1**, check and follow the applicable prescriptive compliance option used for the opaque portions of the proposed building thermal envelope shown on the submitted construction plan (see **Section R103 Construction Documents**):

   - **R402.1.1** Vapor retarder – Verify that the wall assembly design and insulation strategy complies with the vapor retarder provisions of Section R702.7 of the International Residential Code (IRC). (For a free on-line tool to coordinate energy code insulation and building code vapor retarder compliance, refer to wall calculators.)

     ☐ Pass ☐ Fail ☐ More information required

   - **R402.1.2** Insulation and fenestration criteria – Verify compliance of opaque assemblies with U-factors of Table R402.1.2 and fenestration U-factor and SHGC based on product certification per **Section R303.1.3**. For proposed assembly U-factors, request documentation of measurements (test data), calculations, or an approved source as needed to verify compliance.

     ☐ Pass ☐ Fail ☐ More information required

   - **R402.1.3** R-value Alternative – Verify compliance with insulation R-value options of Table R402.1.3 for the applicable Climate Zone. These are pre-determined alternatives that comply with the required U-factors of Section R402.1.2. Also, verify that the R-value provided for cavity and continuous insulation components comply with **Section R402.1.4** R-value computation. (For a free on-line tool to determine wall assembly R-value and U-factor compliance, refer to wall calculators.)

     ☐ Pass ☐ Fail ☐ More information required

   - **R402.1.5** Total UA alternative – verify envelope assembly trade-offs (if used) comply with calculations and requirements of Section R402.1.5 by adequate documentation of analysis and comparison to measures shown on submitted construction plans for building envelope (see **Section R103** Construction Documents). Generally, a **REScheck** analysis and report (or similar) provides means for verification. ☐ Pass ☐ Fail ☐ More information required

   Note: **Section R303 .1** gives the code official authority to evaluate any material, system, or component to determine if it is identified "in a manner that will allow a determination of compliance with the applicable provisions of this code." For evaluation of material R-values where the basis is questionable, refer to this Quick Guide: R-value Compliance Determinations.

2. Verify that specified fenestration, including glazed fenestration, opaque doors, and sunrooms, comply with **Section R402.3**. ☐ Pass ☐ Fail

   Note: If **Section R402.1.5** is used for prescriptive compliance of the overall building thermal envelope, fenestration should be addressed in that method and may vary from requirements in **Section R402.1.2** and **Section R402.3**, but must not exceed the maximum area weighted U-factor and SHGC per **Section R402.5**.

3. Verify that air leakage of the building complies with **Section R402.4** following prescriptive air barrier construction requirements and by whole building air leakage testing. ☐ Pass ☐ Fail

   Note: Verify whole building air leakage (blower door) test results comply with maximum air leakage limits when completed later in the construction process.

4. Verify compliance with **Section R403** Systems, including controls such as a programmable thermostat, ductwork location and air leakage sealing and testing, piping insulation, hot water systems, mechanical ventilation, equipment sizing and efficiency, and others as applicable. ☐ Pass ☐ Fail

5. Verify compliance with **Section R404** Electric Power and Lighting Systems, including use of high-efficacy lighting sources and lighting controls. ☐ Pass ☐ Fail

6. Verify compliance with **Section R408** Additional Efficiency Package Options with use of one of the five additional efficiency package options of **Section R408.2**. ☐ Pass ☐ Fail

7. Verify compliance with **Section R401.3** by a permanent certificate installed in the building indicating all of the listed energy efficiency measures employed in compliance with the code and the approved construction documents. ☐ Pass ☐ Fail

OPTION B: Section R401.2.2 Total Building Performance

The **Total Building Performance** option requires compliance with Section R405.

Refer to **Section R405** and submitted whole building simulation documentation (**Section R405.3**) to determine plan compliance with the proposed design as modeled. At a minimum:

☐ Verify modeling software tool used for compliance meets requirements of **Section R405.3.1** and **Section R405.5** as include with a submitted compliance report in accordance with **Section R405.3**.

☐ Verify that mandatory requirements of the table in **Section R405.2** have been satisfied by the modeling documents and included on the proposed construction plans and that the reported energy cost of proposed design is not greater than the energy cost of the standard reference design.

☐ Verify that the standard reference design (baseline for performance) and the proposed design comply with the requirements of Table R405.4.2(1) in **Section R405.4**, particularly in cases where the standard reference design is indicated to be the same as the proposed design.

☐ Verify that the submitted construction plan contains measures and features consistent with the proposed design as described in the submitted documentation per **Section R405.3**.

☐ Verify that the fenestration area-weighted U-factor and SHGC are not greater than the maximums permitted in **Section R402.5**.

☐ Where the building does not comply with prescriptive requirements (see Option A), verify that required performance is provided by other means (e.g., improved thermal envelope, reduced air exchange rate, or other measures in Table R405.4.2(1) where the standard reference design is not required to match the proposed design).

OPTION C: Section R401.2.3 Energy Rating Index (ERI)

The **Energy Rating Index (ERI)** option requires compliance with Section R406.

Refer to **Section R406** and submitted documentation of energy rating software tool and compliance report in accordance with **Section R406.7** by an approved third party (e.g., a certified rater) in accordance with **Section R406.6**.

☐ Verify that the proposed rated design ERI score complies with the maximum ERI score of Table R406.5 for the applicable climate zone in accordance with **Section R406.5**.

> **Note:** A confirmed compliance report after completion of construction is required to obtain a certificate of occupancy in accordance with **Section R406.7.2.2** and it also should include evidence that inspections were conducted to confirm that the rated design energy features were included and properly installed in the home.

☐ Verify that the building thermal envelope complies with the requirements of **Section R406.3** to address two cases: (1) where on-site renewable energy is not included or (2) where on-site renewable energy is included in the ERI score submitted to demonstrate compliance.

> **Note:** In the latter case, the building thermal envelope must be at least equivalent to prescriptive compliance in accordance with the 2015 IECC. In the former case, it must not be greater (worse) than 1.15 x UA of a prescriptively designed home per the 2021 IECC.]

☐ Verify that a renewable energy certificate (REC) is owned by or retired on behalf of the home owner per **Section R406.7.3**, or is conveyed to the owner by contract. This requirement ensures that the renewable energy credit is not "sold" for use on other building projects or purposes resulting in "double counting" of the renewable energy resource.

☐ Request additional documentation of the proposed rated design and reference design in accordance with **Section R406.7.4** where needed to verify the completeness and accuracy of the design for compliance purposes and where not otherwise addressed in required compliance report of **Section R406.7.2**.