

**NC Department of Insurance  
Office of the State Fire Marshal - Engineering Division  
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**Options for Residential Building Energy Code Compliance<sup>i</sup>**

**Code:** 2018 Energy Conservation Code

**Date:** January 13, 2020

**Section:** R401.2

**Code:** 2018 Residential Energy Conservation Code

**Section:** N1101.13

**Question:**

What are my options for energy code compliance for Residential buildings<sup>ii</sup>?

**Answer:**

Here are the Energy Code Compliance paths for Residential Buildings:

**R401.2 Compliance.** Projects shall comply with one of the following:

1. Sections R401 through R404
2. Section R405 and the provisions of Sections R401 through R404 labeled “Mandatory”
3. An energy rating index (ERI) approach of Section R406
4. North Carolina specific ResCheck shall be permitted to demonstrate compliance with this code. Envelope requirements may not be traded off against the use of high efficiency heating or cooling equipment. No tradeoff calculations are needed for required termite inspection and treatment gaps.

**Clarifications for Item #1:**

Section R401 – R404 are what is called “the prescriptive path”. This pathway includes Tables R402.1.2 and Table R402.1.4.

Please note that Section R402.1.5 Total UA alternative **is a subsection of this compliance path.**

Tables R402.1.2 and Table R402.1.4 are element-by-element requirements. If one wishes to perform trade-offs between elements, these tables are not set up for that. In order to do tradeoffs between elements, one must either use ResCheck (see discussion on that below) or Section R402.1.5 Total UA alternatives, or the Performance method of R405 or the ERI method of R406.

**Clarifications for Item #2**

Section R405 is referred to as the “performance” section. The term “performance” is sometimes misused when referring to the U-factor table of R402.1.4 or ResCheck or Section R402.1.5 Total UA alternative. In reality, Section R405 is the “performance” section for the Residential energy code.

Section R405 typically involves a computer simulation that estimates the energy usage of the standard reference design and compares it to the desired proposed design. The rules for setting up the model are outlined in Table R405.5.2(1).

### **Clarification for Item #3**

Section R406 Energy Rating Index Compliance Alternate is new for NC in the 2018 NC code cycle. It is required to be field-verified by a registered design professional OR a certified HERS rater.

R406.5 Verification. Verification of compliance with section R406 shall be performed by the registered design professional or certified HERS rater and the compliance documentation shall be provided to the code official. The code official shall inspect according to the requirements of Section R406.6.2.

The software to do this analysis needs to be compliant with ANSI RESNET ICC Standard 301-2014, as listed in R406.6.1.

### **Clarification for Item #4.**

There will **not** be a NC-Specific ResCheck<sup>iii</sup> for the 2018 NC energy code, and with the adoption of the 2018 NC Energy Code, the 2012 NC Energy Code tab in ResCheck became an invalid option. Please refer to footnote and its associated link for further information on the topic.

Since there will not be a NC-specific ResCheck, many designers have asked if it is acceptable to use the IECC 2015 Residential tab for demonstrating compliance. As an alternate method, the answer is “yes”, they can use the 2015 IECC (Residential) ResCheck for the building envelope values<sup>iv</sup>, and then follow the installation standards in the 2018 NC Energy code, such as the required air sealing and duct performance measures.

Please note there are some elements of the 2015 IECC that are more stringent than the 2018 NC Energy Code, so the user should familiarize themselves with the requirements before committing to it. The code official would still be looking for the envelope to “pass” under the 2015 IECC guidelines, and there is not a way to provide a work around for something other than a “pass”.

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<sup>i</sup> The language in this interpretation is largely extracted from the February 2019 Engineering Newsletter posted on the NCDOI website.

<sup>ii</sup> The code has various exceptions for certain buildings occupancies, refer to the written code for those exemptions. Some buildings are exempt by Statute; refer to the building code statute for those possible exceptions. NCGS 143-138. This interpretation is not an all-inclusive list of all possible pathways of code compliance.

<sup>iii</sup> \*Federal Register link concerning ResCheck and ComCheck Priorities <https://www.govinfo.gov/content/pkg/FR-2014-03-18/pdf/2014-05952.pdf>

<sup>iv</sup> The envelope values are slightly greater (less energy losses) than the NC values, so it is okay to exceed minimum code.