

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
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Window Replacement for Residential Buildings

Code: 2018 NC Energy Conservation Code
Section: R503.1.1.1

Date: October 17, 2018

Code: 2018 NC Residential Code
Section: N1109.1.1

Code: 2018 NC Existing Building Code
Section: 610.3

Question:

How does the energy conservation code address requirements for glazed fenestration (window) replacement with respect to requirements for U-factor and SHGC for “Residential Buildings”?

Answer:

The U-factor and SHGC requirements for replacement of existing windows are dependent on the extent of the repair or alteration of the existing window assembly. The NC Energy Conservation Code Section R503.1.1.1 and the NC Residential Code Section N1109.1.1 indicate “Where an entire existing fenestration unit is replaced with a new fenestration product, including frame, sash, and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC in Table R402.1.2” and Table N1102.1,2, as applicable.

Generally, the glazed fenestration U-factor and SHGC requirements of Table R402.1.2 or Table N1102.1.2 are invoked only when a complete existing window assembly is removed and replaced with a complete new window assembly.

Four cases are evaluated below:

- a. When replacing only a glazing pane or panes contained within an existing double hung or casement type window assembly, the installation of replacement panes would be considered a repair and may be repaired with like or more energy efficient glazing.
- b. When replacing only a window sash or sashes contained within an existing double hung or casement type window assembly, the installation of replacement sashes would be considered a repair and may be repaired with like sashes or sashes containing more energy efficient glazing.

- c. When replacing a large portion of the existing window assembly including the window sashes but retaining the existing window framing in place to receive a specially designed glazed fenestration insert assembly, the installation of the insert assembly is considered a repair and may be repaired with like material or material containing more energy efficient glazing.
- d. When replacing an entire glazed fenestration assembly (window), the new glazed fenestration assembly shall comply with the U-factor and SHGC requirements of Table R402.1.2 or Table N1102.1.2, as applicable, except as may otherwise be exempted by section R402.3.3 or N1102.3.3, as applicable.

Keywords: