

## Energy Compliance vs. TRUE Efficiency

A home's energy efficiency is an important factor when selecting products, but energy compliance may not equal TRUE efficiency. Why? Because windows and glass doors are measured in "U" while the remaining envelope components are measured in "R".

This document aims to point out the differences in energy rating values and how they represent the TRUE efficiency of a window or door, and help decision makers avoid "[The Energy Code Trap](#)."

### **Definitions**

**U-value/U-factor:** "The measure of heat transfer through a glass window due to differences in indoor and outdoor air temperature". In other words, a lower number indicates better energy efficiency.

**R-value:** "The measure of heat flow resistance in a material". In other words, a higher number indicates better energy efficiency.

### **TRUE Efficiency: U-value vs. R-value**

R-value is used to measure the energy efficiency of most every house envelope component, e.g. walls, slab, but not the windows or doors that are part of the same envelope. An R-value difference of 1-2 points is infinitesimal as it relates to overall efficiency and energy compliance. When reviewing a U-value as an R-value ( $R\text{-value} = 1/U\text{-value}$ ), we see that what might be considered an "inefficient" U-value is actually a negligible loss if the same value drop is applied to the wall surrounding that same window.

### **Example Conversions**

**.32 U-value = 3.1 R-value, or R-3**

**.50 U-value = 2.0 R-value, or R-2**

**1.0 U-value = 1.0 R-value, or R-1**

Although R-value is not typically used as a measurement for glazed products, both U-value and R-value measure resistance to heat transfer. Fleetwood defines both here to illustrate how a seemingly large loss in U-value does not directly correlate to notably poorer efficiency.