

## Window Energy Efficiency Checklist

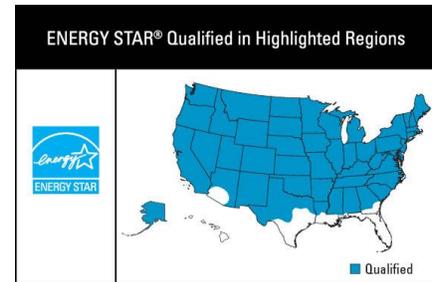
While most new windows have labels indicating their energy properties, such information is not often available for existing windows. Here is a simple checklist of what energy efficiency information to look for on windows, depending on what indicators are available:

- Do the windows have energy performance labels?
- Is there other information on window performance?
- No labels or data available? What can a visual inspection of the windows tell?
- What window energy performance can be assumed in case of a doubt?

### Window energy performance labels

**ENERGY STAR label**

The ENERGY STAR label indicates that a window meets energy performance recommendations by the U.S. Department of Energy. As these recommendations recognize variation in climate zones, the label includes a map showing where in the country the window qualifies.



**National Fenestration Rating Council (NFRC) label**

The NFRC label includes ratings for heat loss (U-factor), solar heat gain, and more. The NFRC ratings and labels are relied upon to compare one product to another as well as to determine energy code compliance and whether a window meets ENERGY STAR criteria (see next page).



### No ENERGY STAR or NFRC labels?

#### Is there other information on window performance?

**Certificate on the electrical panel**

Energy codes may require a certificate in the electrical panel stating the energy efficiency of building components, including window NFRC ratings.

**Information from the manufacturer**

The window manufacturer should be able to give more information on the windows. To help you trace the manufacturer and product line, the windows may have an etching on the corner of the glass or a permanent label affixed to the head, side or sill of the product. The permanent label may be hidden from view unless the window is in an open position.

### No labels or data available? → Visual inspection of the windows

**How many panes of glass?**

With each pane of glass comes additional energy efficiency.

**What frame material?**

Metal-framed windows tend to insulate less well than windows with wood or vinyl frames.

The tables on the next page show approximate U-factor and SHGC values you can assume based on the number of panes and the frame material.

**Does the window glass have low-E coatings?**

Low-E coatings are invisible heat barriers that improve window energy efficiency. The most certain way of identifying these coatings is to use a low-E detector device. Energy auditors may be equipped with these. With some practice, you may also be able to identify low-E glass with a lighter flame or white card. Hold either of these up to the glass and look for the two reflections from each pane of glass. If one of these looks bluer than the other it indicates the presence of a low-E coating on that surface.

**Airtight fit and weatherstripping?**

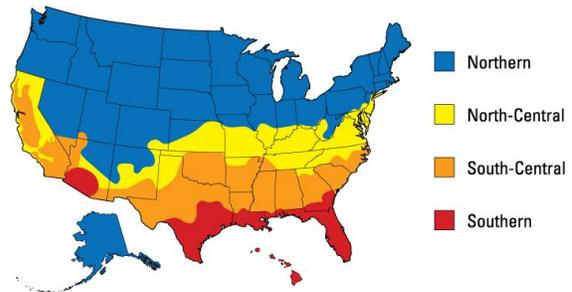
A tight fit of the sashes and weatherstripping are important for air tightness. Air may also leak between the interface of the frame and the wall, so proper sealing during installation is crucial – though this can be hard to check with existing windows.

**Assessing U-factor and solar heat gain coefficient, and what to assume in case of a doubt**

The **U-factor** is a measure of non-solar heat transfer (e.g. heat escaping in the winter). A lower U-factor is better (less heat loss). The **SHGC** indicates how much heat from the sun enters through a window. A low SHGC is most important in hot climates.

The U-factor and SHGC of a window are shown on the NFRC label. ENERGY STAR windows meet the recommended values shown here:

ENERGY STAR Windows Criteria			
Climate Zone	U-factor	SHGC	
Northern	≤0.30	Any	Prescriptive
	≤0.31	≥0.35	Equivalent
	≤0.32	≥0.40	Performance
North-Central	≤0.32	≤0.40	
South-Central	≤0.35	≤0.30	
South	≤0.60	≤0.27	



If no NFRC ratings or ENERGY STAR labels are available, the table below shows approximate U-factor and SHGC values you can assume depending on the number of panes and the frame material. These values are based on the International Energy Conservation Code and do not take into account features that you may not be able to verify such as low-E coatings, gas fills, etc.

U-factor and SHGC in case of a doubt			
Frame type	Value	Single pane	Double pane
<b>Metal</b> (e.g. aluminum)	U-factor	1.20	0.80
	SHGC	0.80	0.70
<b>Wood/vinyl</b> (incl. metal clad)	U-factor	0.95	0.55
	SHGC	0.80	0.70

As you can see, the U-factor and SHGC of ENERGY STAR windows differ significantly from the typical performance of conventional windows without energy efficiency features. This is why, when compared to conventional double-pane windows, ENERGY STAR windows are estimated to save about \$70 to \$250 per year in the average home. See [www.energystar.gov](http://www.energystar.gov).

For more information on window energy efficiency: [www.efficientwindows.org](http://www.efficientwindows.org)