



## **Making Your Windows Work for You**

By Tom Lienhard, PE, CEM

Windows offer many benefits to our homes, but they can be the single biggest area of summer heat gain or winter heat loss in the home, accounting for up to 25 percent of your energy bill.

So, how do you know if you need new windows? Look for air leaks that make it uncomfortable to sit by a window during the summer or winter, condensation or fogging on or inside the window panes, or difficulty opening or closing your windows.

In climates such as ours with seasonal extremes, consider double or triple-pane windows with low-emissivity, or low-E, glass coating, which is a microscopically thin, virtually invisible metal or metallic oxide layer on the surface of one or more of the panes of glass. The low-E coating reduces the infrared radiation from a warm pane of glass to a cooler pane, thereby lowering the U-factor of the window. U-factor is the degree to which a window transfers heat – the smaller the number, the better.

U-factors for standard new windows run from .25 to .35, but make sure you check the U-factor when ordering windows, as some rebates apply only when a U-factor is under a certain maximum value. New window technology is available with U-factors in the 0.1 range, which is equivalent to an R-10 in insulation. Look into these “super windows” if you are installing a number of windows with southern and western exposures.

Keep in mind when selecting new windows that the cooling, heating and lighting needs on each side of your home can vary. There are three performance characteristics available for windows, which may be used differently depending on the exposures in your home:

- A U-factor of .32 or lower should be chosen for all exposures to reduce heating losses.
- A SHGC (solar heat gain coefficient) should be low for southern and western exposures to reduce cooling needs
- The VT (visible transmittance) should be high for north-facing windows, allowing in light. As always, look for the ENERGY STAR label.



Installation plays an important role in the effectiveness of your windows. Be sure to have them installed by a trained professional according to the manufacturer's instructions. Otherwise, your warranty may not be valid.

#### **Equipment Rebates and Incentives**

Some electric and natural gas utilities offer rebates and incentives for customers making energy efficiency upgrades to their home or business. It could pay to find out what your energy provider offers.

#### **Tax Credits**

Also, find out how the stimulus package has affected Federal Tax Credits for Energy Efficiency at [www.energystar.gov](http://www.energystar.gov).

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