

Replacement Window Energy Efficiency Guide

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Today's best energy-efficient windows can reduce your heating and cooling bills and make your home more comfortable. High-performance windows are built from energy-efficient frame materials, UV-reflective glass, and double or triple panes with argon or another inert gas fill that slows heat transfer. Special high-performance window seals and glass panel spacers are used to further increase the energy efficiency of top-quality windows. The most energy-efficient windows can reduce your carbon footprint more than any other single change you can make in your home.

What Are Energy Efficient Windows?

Energy-efficiency experts estimate that a staggering 70% of electricity waste in U.S. homes is through windows and doors. So, it's clear enough that increasing the energy efficiency of your home's windows will result in savings on your energy bills, and you will have a more comfortable home throughout all seasons of the year. Here are the performance features and ratings that define energy-efficient windows:

U-Factor

The U-factor (or U-Value) of a window is the measure of its rate of heat transfer between the inside and the outside of your window. More specifically, the U-factor measures the window's insular value. U-factor values usually fall within the range from about 0.15 to 1.25. The lower the U-factor, the better the window performs as an insulator to slow the transfer of heat and keep the warmth inside your home. A lower amount of heat transferring through the window means a higher level of energy efficiency.

Solar Heat Gain Coefficient (SHGC)

The SHGC of a window is the measurement of its performance in minimizing the amount of solar radiation in the form of heat entering your house. Combining energy efficiency features in manufacturing a window can significantly increase its SHGC rating. For example, adding low-E glass, double or triple panes, insulating gas like argon, high-quality spacers, and other options lowers the solar heat gain coefficient, which is the goal for a home's SHGC in any climate.

Visible Transmission (VT)

Windows with high-VT glass allow abundant natural light into a home. This can reduce electricity costs by minimizing the use of electrical lighting in the daytime. The recommended VT value for window glass is between around 60% to 80%.

Energy Star Windows

The EPA's Energy Star® program provides objective information about the energy efficiency of windows and other construction components, appliances, electrical devices, and other products. The program is designed to help consumers make informed decisions on products and minimize their energy waste. Certain SHGC ratings and U-factors must be achieved for a particular climate region in order for products to qualify as Energy Star windows.

Multiple Glass Panes

Currently, the most effective approach to maximizing energy efficiency in windows is using double or triple glass panes filled with inert gas. The multiple glass panes are coated with an undetectable reflective material to minimize heat absorption and transfer from sunlight into the home. Special high-performance spacers and seals are used to optimize the window's efficiency.

Insulating Gas Fill

Insulating gasses are used in high-performance windows to maximize energy efficiency by filling spaces between double or triple glass panels. Argon or krypton gas, or other inert gasses are sealed into the spaces between the glass layers to improve a window's thermal effectiveness by slowing heat transfer through it.

Low-E Coating

Many homeowners want to let abundant natural light flow into their homes, but they naturally also want to minimize damaging ultraviolet (UV) rays. Low-E glass coating adds more protection by reflecting UV and infrared sun rays, further reducing the heat transfer rate while still allowing the visible light you want to pass through your windows into your house.

Window Styles

The configurations of the windows you select can make a big difference in the amount of heat escaping or penetrating into your home through them. For example, depending on the location of the window in your home, a large single-pane picture window is likely to be much less energy-efficient than a smaller double-pane window.

Window Framing Materials

The window frame material you select will impact the level of energy efficiency your windows can deliver. Energy-efficient window frames can be manufactured from one of the several most commonly used framing materials currently available. The three most popular frame materials are aluminum, vinyl, and wood. Of the three, vinyl replacement windows have consistently proven to be the most durable and deliver the highest performance in energy efficiency.

Window Energy Efficiency in Your Home

Naturally, for example, north-facing windows in northeastern Michigan are likely to lose more heat than identical west-facing windows in southwestern Arizona. Talk with your architectural design adviser for recommendations on the best locations for windows in your home for your climate. Window maintenance also affects performance over time, so inspect your windows routinely and follow the manufacturer's recommendations for proper care.

Best Energy Efficient Windows for Homes

Advanced Window Products in Salt Lake City, Utah manufactures today's state-of-the-art energy-efficient replacement windows for residential installation. Our window installation specialists are all factory-trained and hold multiple industry certifications, including Energy Star® certification. We provide a satisfaction guarantee and one of our industry's best double lifetime warranties.

Buying factory-direct from Advanced assures our customers of the best product quality and service and eliminates the risk of warranty issues from handling by a third-party retailer.

Call the window energy-efficiency experts at Advanced Window Products at (801) 505-9622, or use our online contact form to request a free in-home estimate!

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