

The Homeowner's Guide to Energy Efficient Windows



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Introduction

Energy efficiency is not a new concept; organizations and people have begun to modify their lifestyles and buildings by being more conservative when it comes to their energy use whether it's simply unplugging appliances or turning off the lights when they leave the room.

If you're building or remodeling your home and swapping out old windows with new ones, you're probably browsing through energy efficient windows because, let's face it, long gone are the days of thin windows that hike up your energy bills.

However, searching for energy efficiency may not make for a thrilling shopping experience, so you're probably choosing new windows based on their appearance, something that catches your attention and excites your inner interior designer.

But, you don't have to sacrifice your home's aesthetics for energy efficiency or break your budget doing it!

If you've already started browsing for new windows to update your home then you may have noticed various acronyms, abbreviations or numbers in the corners of the windows.

Those capture the different ratings of the window and are there to help you in your decision-making process.

In this guide, you'll learn about these ratings and how you can easily understand them for a quicker and more relaxed shopping experience. You'll also learn other helpful insights for energy efficient windows, including:

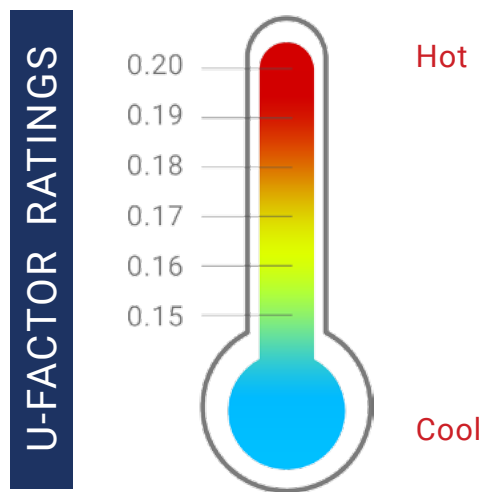
- ✓ How energy efficient windows work
- ✓ What types of energy efficient windows are available
- ✓ Various energy efficient window treatments
- ✓ The financial savings of energy efficient windows
- ✓ Additional ways to enhance your energy efficient windows

Breaking Down Your Energy Efficient Window Ratings

The National Fenestration Ratings Council (NFRC) is an organization that sponsors energy efficiency certifications and labeling for windows and other home or building installation pieces.

Before a product can be labeled as an ENERGY STAR® product, it has to pass specific fenestration tests in accordance with the NFRC. Energy efficient windows are generally tested on the following six energy performance ratings.

ENERGY STAR® is a U.S. Environmental Protection Agency voluntary program that helps businesses and individuals save money and protect our climate through superior energy efficiency.



U-factor

This rating is based on how well your window prevents heat from escaping your home, or a building.

It is typically measured between 0.15 and 1.20; the lower the rating, the better the window is at keeping heat inside.

R-value

Many people can easily confuse a window's U-factor with its R-value. Just remember that R-value rates the window's resistance to heat loss and measures its conductance and resistance while U-factor measures and rates the transfer of heat.

Solar Heat Gain Coefficient (SHGC)

The Solar Heat Gain Coefficient rating tells you how much heat from the sun the window is able to block. Its ratings range from 0-1 and the lower the rating, the more heat from the sun it blocks.

The SHGC rating is great to keep in mind when purchasing a window if you reside in a hot climate since it can drastically improve the temperature regulation of your home during the warmer seasons.

Visible Transmittance (VT)

Your window's Visible Transmittance rating is how much light your window lets through. This rating is between 0-1, and the higher your VT rating, the more daylight your window would potentially let through.

Air Leakage

Air leakage is an important rating because it measures how much air can leak through your window and into, or out of, your home; it is measured on a 0.1- 0.3 scale. You should try to aim for a window with a lower rating to help regulate your home's temperature and not waste air conditioning or heating costs.

This is also an optional display rating, so you may not see it on some energy efficient windows; however, there's no harm in asking your local window and door dealer or even contacting the manufacturer to find out.

Condensation Resistance

This is another optional rating that may or may not be displayed on an energy efficient window. Due to the tighter seal installing new windows provides, your windows may be subject to condensation.

This rating tells you how well your window resists condensation from building up and is shown on a scale of 1-100. A rating closer to 100 means that the window is better at resisting condensation.



How Energy Efficient Windows Work

Now that you know the details of energy efficient window ratings, you may be curious as to how they work.

If you didn't gather by the way energy efficient windows are rated, their main function is to reduce your energy bills by providing more insulation. This helps to better regulate and maintain your home's temperature without making your air conditioning work overtime.

The U-factor explained earlier plays an important role because it measures the rate of heat transfer.

There are a variety of ways that windows can either lose or gain heat as outlined below.

1

Conduction

Conduction occurs when there is a difference in temperature, enabling heat transmission through the window's glass.

2

Convection

Convection transfers heat when hot air moves away from the heat source.

3

Radiation

Radiation is essentially the amount of sunlight penetrating through your glass pane.

4

Air Leakage

Air leakage occurs when the window is poorly sealed, and both indoor and outdoor air seeps through the window.



Energy Efficient Window Treatments

The performance of an energy efficient window is closely related to its design or treatments. That being said, the following are a variety of treatments that enhance and sometimes even create, a window's energy efficiency.

Low-e Coatings

Low-e stands for low emissivity. This window treatment has insulated glazing that reduces the window's U-factor and may reduce its visible transmittance.

This coating controls the heat transfer through the window and can last anywhere from 10-15 years.

You may notice that a low-e coated window costs a bit

more than an average window; however, it saves you about 30-50% in energy bills over time.

Tint

Tinted windows are probably the most common window treatment. Tinting your home windows parallel the same reasoning why you would want to tint your car windows, including:

- ✓ Better interior temperature regulation
- ✓ Reduction in the amount of sun shining in, or visible transmittance (VT)

Having tinted windows in your home won't eliminate the heat that passes through the tint, or U-factor, but it will reduce the amount of heat from the sun and the visible transmittance while absorbing some of the sun's radiation.

Argon Gas

Argon gas fills the inner layer(s) between two or more window panes. This is an ideal window treatment if you want your windows to have more resistance to heat flow than air.

Insulated Glass

Insulated glass has an air tight seal between multiple panes of glass that are spaced out.

The idea or result of having insulated glass in your home is to lower the U-factor and Solar Heat Gain Coefficient.

Reflective Coating

Reflective coatings are used on windows to reduce the transmission of heat from the sun; however, this treatment tends to block more light than heat.

Having reflective coatings on your windows will reduce the visible transmittance, glares, and Solar Heat Gain Coefficient.

Spectrally Selective Coatings

This window treatment is, simply put, a special variation of a low-e coating.

Homeowners typically choose to install spectrally selective coatings for reflecting heat while allowing more sunshine in to naturally illuminate their home.

These special coatings can filter out about 40-70% of the heat that is typically transferred through insulated window glass without losing light transmission.

If you want a window with a low U-factor and a reduced Solar Heat Gain Coefficient but allow for high visible transmittance, then you may want windows with spectrally selective coatings.





Energy Efficient Window Savings

Even though there is a myriad of energy efficient windows homeowners can choose from, each of them helps to reduce energy bills in different ways.

Windows are responsible for average homes losing up to 30% of their heating or cooling energy.

When you purchase energy efficient windows, you end up saving money rather than losing it!

The average payback period, depending on the type of windows you choose, can range anywhere from 2-10 years.

Your initial cost will probably be a bit higher, but that cost is offset by reduced energy bills and less expensive air conditioning and heating systems.





↑ Mesh window screens



↑ Awnings



↑ Sunshades



↑ Drapes/curtains

Additional Ways to Improve Your Energy Use

There are plenty of energy efficient windows you can install in your home to reduce your energy consumption and lower your energy bills.

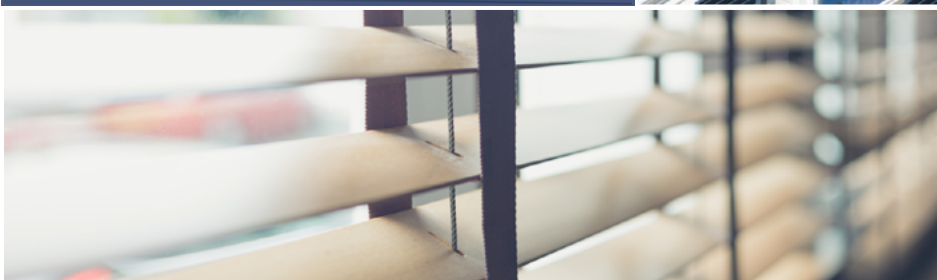
There are also some additional ways you can reduce your energy bills and help your home maintain a comfortable temperature. Take a look at some of these fun and functional ways to help reduce your energy consumption.



↑ Storm panels



↓ Shutters



↑ Blinds



↓ Shades

Conclusion

Whether you're renovating your home or building a new home, installing energy efficient windows drastically reduces your energy bills, and they pay for themselves in the long run.

There are numerous energy efficient window treatments to choose from and each benefit homeowners in different ways.


So, when you start your window shopping adventure, draft a list of what you want from your windows.

Maybe it's less sunlight or maybe it's more sunlight without the sun's heat beating through the glass.

Then, once you have your window must-haves, you're ready to start shopping!


Don't forget to pay attention to the window ratings, and if a rating isn't listed, don't hesitate to ask your local window and door dealer or contact the window manufacturer.

Resources

 [Tinted or Low-E Glass: Which One is Right for Your Home?](#)

 [Understanding Your Energy Efficient Window Label](#)

 [Understanding Window and Door Warranties](#)

 [3 Summer Saving Features of Energy Efficient Windows](#)

 [5 Questions to Ask Before You Buy](#)

 [Brochure for Impact and Energy Efficient Windows](#)

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