

Gorell ENERGY STAR[®] Training Program



What is ENERGY STAR®?

ENERGY STAR is a dynamic government/industry program designed to help individuals and businesses protect the environment through superior energy efficiency. The program helps consumers quickly and easily identify energy-efficient products that help save money and protect the environment for future generations.

In 1992, the EPA introduced ENERGY STAR as a voluntary labeling program designed to identify energy-efficient computers and monitors. Through 1995, EPA expanded the program to include additional office equipment, as well as residential heating and cooling products. In 1996, EPA partnered with the U.S. Department of Energy for specific product categories. The ENERGY STAR label is now displayed on over 40 product categories, including major appliances, office equipment, home lighting, home electronics, windows and more.

The ENERGY STAR Windows Program was created in 1999. Not all windows qualify for the ENERGY STAR label. They must first be tested by an independent laboratory to meet stringent criteria pertaining to energy efficiency and light transmittance. The ratings they achieve differ because of variables such as the glass used, style, and product design and construction.

ENERGY STAR labeled windows help reduce energy costs, increase a home's comfort, and protect against UV damage. These products are also better for the environment—because they reduce green house gas emissions—and for the country because they reduce the America's dependency on foreign oil.

Anatomy of an Energy-Efficient Window

Windows must meet minimum performance criteria during testing to qualify for the ENERGY STAR label. The insulating properties of the entire window determine whether or not a window can be ENERGY STAR labeled. Windows with clear single-pane glass can't achieve the ratings necessary to qualify for ENERGY STAR labeling. High-performance glass systems, which consist of double- or triple-insulating glass, low-emissivity (Low-E) coatings and an inert gas between the glass panes, are typically necessary for windows to comply with ENERGY STAR requirements.



Frame Materials—ENERGY STAR qualified windows can be constructed of vinyl, fiberglass, wood or other composite frame materials.

Multiple Glass Panes—Single-pane windows are not able to meet the criteria necessary to qualify for the ENERGY STAR label. To achieve greater efficiency, windows must incorporate double- or triple-insulating glass combined with a high-performance Low-E glass.

Low-E Coatings—This film—comprised of microscopically thin, virtually invisible, metal or metallic oxide layers—is applied to the glass surfaces of the window or door to help keep heat inside in winter and outside in summer.

Inert Gas Fill—Odorless, colorless, non-toxic gases such as argon or krypton are inserted and sealed between the glass panes to improve the insulating properties of the window.

Spacer System—Spacers ensure that the window's glass panes are the appropriate distance apart. Spacer systems are constructed of aluminum, steel, composites, fiberglass or vinyl. Warm-edge spacers help lower a product's overall U-value and reduce the likelihood of condensation.

All window styles—including single-hung, double-hung, sliding, picture, casement and awning—can qualify for the ENERGY STAR label if they are submitted for testing. Windows can also be purchased with various options, such as contoured internal grids and numerous finishes, and still qualify for the ENERGY STAR label. Some options, however, can affect a product's performance ratings and cause the product to not meet the strict criteria for ENERGY STAR labeling.

What is the National Fenestration Ratings Council?

To qualify for the ENERGY STAR label, windows must be tested by an independent laboratory that is approved by the National Fenestration Ratings Council (NFRC). The NFRC is a non-profit organization created by the U.S. government to rate window, door and skylight performance. The organization's primary goal is to provide accurate and consistent information—"leveling the playing field" when comparing the energy performance of fenestration products.

The NFRC has established a voluntary national energy performance rating and labeling system for fenestration products. The NFRC rates the following:

U-FACTOR is a measure of rate of heat loss through a product and shows how well a fenestration product insulates. U-factor ratings generally fall between 0.20 and 1.20. The lower the U-factor—or U-value—of a window, the lower the heat loss.

SOLAR HEAT GAIN COEFFICIENT is a measure of rate of heat gain that passes through a product and shows how well the product blocks heat caused by sunlight. SHGC is expressed as a number between 0 and 1. The lower the SHGC, the less solar heat the product allows to pass through it. Blocking solar heat gain is particularly important during the summer season because it reduces the time cooling systems must run.

VISIBLE LIGHT TRANSMITTANCE measures the amount of light the product lets through. It is expressed as a number between 0 and 1. The higher the VLT, the more light you see.

AIR LEAKAGE is a measure of rate at which air passes through spaces in the window. It is measured in cubic feet of air passing through one square foot of window area per minute, and typically falls in a range between 0.1 and 0.3. The lower the AL value, the less air that will be transferred through the product. Picture windows are typically the most airtight type of window because they are glazed directly to the window frame—and therefore have less potential for leakage. Casement windows, which feature full-compression seals, are also very airtight.

Air leakage is an optional rating and manufacturers can choose not to include it on their labels.

Understanding U-Values and R-Values

R-values, whole-product U-values and center-of-glass U-values can be confusing for both professionals and homeowners. It's imperative to make consumers recognize that, when selecting products and determining the type of glass that will be used in them, the only performance criterion that should be considered is whole-product U-value.

Whole-product U-values are an indication of the performance of the product's glass and its other components and characteristics. The thermal properties of the frame, spacer system, weather stripping and even grids, if the product has them, all have a bearing on the product's whole-unit U-value. Whole-product U-values are the only form of measurement recognized and accepted by the ENERGY STAR program for determining whether products qualify for the ENERGY STAR label.

To arrive at a whole-product U-value, a particular model—in a specified, pre-determined size—is tested by an independent testing laboratory, and measurements are acquired from as many as 20 different locations on the product. In addition to the center of the glass, other locations include various points on the glass and around the sash and master frame.

A related—and often confusing—form of measurement is center-of-glass U-value. This measurement always appears better (i.e., a lower number) than whole-product U-values, because it's based solely on the most thermally efficient section of the product. All operable windows leak some air or they would be impossible to operate. The key is the overall product design, which is what dictates whole-product U-value.

Some professionals use center-of-glass U-values because they say these values are easier to acquire and use compared to whole-product U-values. However, a center-of-glass U-value is a measurement of ONLY one spot on the glass. The U-value will be the same for that glass, regardless of the type of product the glass is in or what size that product is. It is NOT a measurement of the rest of the product, and does not reflect the thermal efficiency of the frame, spacer system and other components—only a small portion of the glass. ENERGY STAR does not consider center-of-glass U-value an acceptable measurement standard because it is not an accurate reflection of the performance of the entire product.

Another, older form of measuring a product's thermal efficiency is R-value. R-values became well known when insulation manufacturers used them in advertising their products. Basically, R-value is the measure of the resistance of heat flow. R-values are an appropriate form of measurement for products like roof and wall insulation—but not fenestration products.

The higher an R-value, the better the material is at insulating a home. Because the U-value is the reciprocal of the R-value, you can divide 1 by the R-value to determine the U-value. For example, an R-value of 4 is equal to a U-value of .25 ($1/4 = .25$).

R-values are typically shown as center-of-glass measurements, so they can be misleading as well.

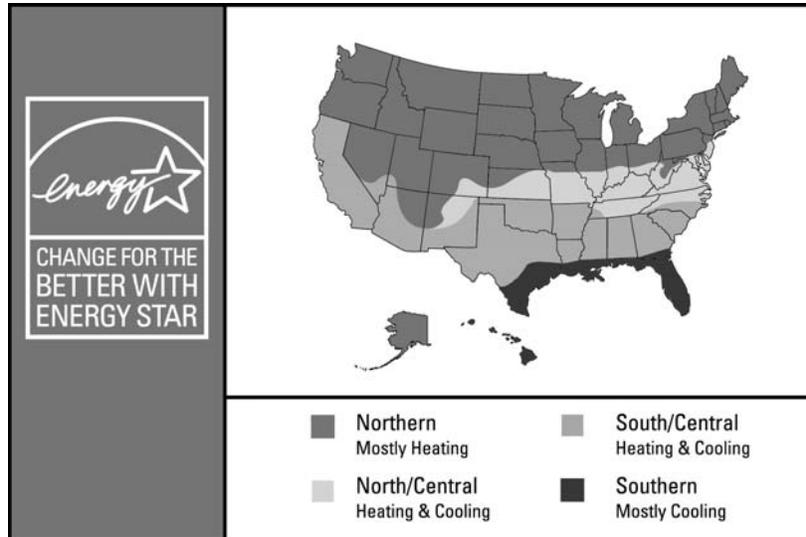
ENERGY STAR Performance Criteria

The ENERGY STAR criteria for residential windows and doors are tailored to four climate zones. A window's energy efficiency for a particular climate is based on its impact on heat gain and loss in cold weather and heat gain in warm weather. The four climate zones for ENERGY STAR qualified windows and doors are:

- Northern (mostly heating)
- North/Central (heating and cooling)
- South/Central (heating and cooling)
- Southern (mostly cooling)

The qualification criteria for these ENERGY STAR climate zones – as well as the map showing the boundaries for each zone – follow:

Climate Zone	U-Factor	Solar Heat Gain
Northern	0.35 or less	Any
North/Central	0.40 or less	0.55 or less
South/Central	0.40 or less	0.40 or less
Southern	0.65 or less	0.40 or less



Please note that if a state encompasses more than one climate zone, ENERGY STAR offers a spreadsheet that gives climate zone by county. This “Climate Zone Finder” is available at www.energystar.gov/index.cfm?c=manuf_res.pt_windows.

What Benefits Can the ENERGY STAR Program Offer Window Dealers?

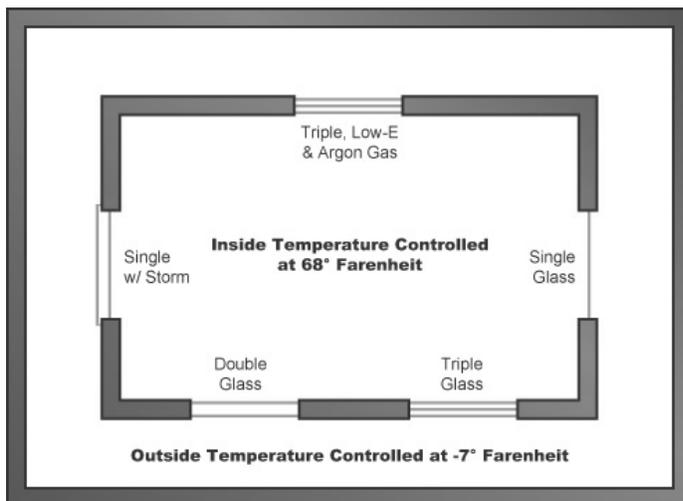
Dealers can benefit greatly from working with an ENERGY STAR Manufacturing Partner such as Gorell. Gorell strives to promote the program in numerous ways—from providing an extremely high percentage of ENERGY STAR qualified windows to offering its dealers an extensive array of marketing resources designed to promote ENERGY STAR and educate consumers about ENERGY STAR.

Gorell is dedicated to manufacturing premium-quality, highly efficient window and door products designed to last a lifetime. Gorell products are engineered specifically for energy efficiency, and 92 percent of the company’s product line qualifies for the ENERGY STAR label. To ensure that both dealers and homeowners gain recognition of the label and Gorell ENERGY STAR qualified products, every Gorell ENERGY STAR

qualified model is specifically computer labeled. Gorell also focuses on consumer education in a number of other areas, including its web sites, literature and other promotional efforts.

Window professionals can significantly increase their window and door sales by selling Gorell ENERGY STAR qualified products—and they'll also enjoy many happy repeat customers. Gorell ENERGY STAR qualified windows practically sell themselves because they offer consumers numerous benefits, including lower energy costs. Promoting the following unique advantages can help sell more ENERGY STAR qualified windows:

- **REDUCE HOME ENERGY COSTS:** Heat gain and loss through windows and doors account for up to 50 percent of a home's heating and cooling needs, so quality windows can make a real difference. The Low-E coatings on ENERGY STAR qualified products reflect heat back inside during cold weather—so homes stay warmer—and reflect outside heat away from windows during warm weather so that homes stay cooler. These coatings reduce the amount of time that heating and cooling systems need to run—which means lower energy costs!
- **ENJOY ENHANCED COMFORT:** ENERGY STAR qualified products help homes maintain a more constant temperature and allow homeowners to be more comfortable in their homes. The University of Illinois constructed a room within a room to test the thermal efficiency of different glass configurations in windows. Review the diagrams below to see the difference ENERGY STAR qualified windows make on the inside surface of the glass.



Glass System	U-Value	Inside Temp.
Single Pane Glass	1.13	10.4° F
Single w/ storm window	.94	17.0° F
Double-Insulated Glass	.58	40.4° F
Regular Triple Glass	.40	51.0° F
Triple, Low-E & Argon	.27	63.7° F

- **PROTECT INTERIOR DRAPERIES AND FURNISHINGS:** Many organic materials, such as carpet and draperies, fade with exposure to sunlight. The most harmful type of radiation in sunlight is ultraviolet (UV) rays, which are the most energetic and thus most likely to break chemical bonds, which leads to fading. ENERGY STAR qualified windows with Low-E coatings on the glass can reduce the UV transmitted by up to 95%. This will significantly reduce fading for many modern furnishings. It is, however, important to note that there are other factors that can still cause some fading.
 - **PROTECT THE ENVIRONMENT:** Because energy is produced by burning fossil fuels like coal, oil and natural gas, home energy consumption contributes to producing nearly 20% of air pollution. ENERGY STAR qualified windows reduce fossil fuel burning and green house gas emissions. This helps to fight air pollution and perhaps even global warming. Energy efficiency also helps the economy, by saving consumers and businesses millions of dollars in energy costs. In just one year, ENERGY STAR products helped Americans save enough energy to power 20 million homes and avoid greenhouse gas emissions equivalent to the amount produced by 18 million cars. These products also saved \$9 billion in energy costs.
-

The Benefits of a Window Dealer being an ENERGY STAR Retail Partner

As an ENERGY STAR retail partner, a company gains credibility for being associated with a national government program. Other benefits include:

- A listing on the store locator on the ENERGY STAR web site, where many consumers visit to determine who makes and offers ENERGY STAR products.
- Access to ENERGY STAR logos—which more than one in three Americans recognize as a trusted symbol for energy efficiency and savings—from the ENERGY STAR web site.
- Periodic e-mail updates about ENERGY STAR for windows, doors and skylights, and new sales and marketing tools and resources.
- Eligibility to compete for ENERGY STAR's Retail Partner of the Year Award.

There are also marketing materials available to retail partners, through both Gorell and ENERGY STAR. The ENERGY STAR web site offers fact sheets, graphics and other items to help promote energy-efficient products. Gorell's ENERGY STAR Initiative CD provides dealers with a special brochure, an ENERGY STAR TV commercial and much, much more!

Gorell dealers who partner with ENERGY STAR can promote ENERGY STAR qualified windows by using the well-recognized ENERGY STAR logo in newspaper and television

advertising, signage for samples and displays, in-home sales presentations, showroom signage and literature.

Gorell also encourages dealers to continue to take advantage of its ENERGY STAR Partner of the Year Award by promoting the fact that they offer windows from the only manufacturer that won the national fenestration award in 2004. Gorell has developed a template press release, new four-page ENERGY STAR Partner of the Year brochure, labels for window samples and displays, posters, banners and other resources to help dealers promote the award. In addition, every ENERGY STAR qualified Gorell window shipped carries the ENERGY STAR label. Dealers can also incorporate select graphics into their own literature, advertising, etc., to further promote Gorell ENERGY STAR qualified windows.

There is no cost to a dealer to become a retail partner. Gorell dealers interested in joining as a retail partner should contact Melanie Thomas at 724-465-1800 Ext. 6701 or email her at mthomas@gorell.com.

ENERGY STAR Logo Usage Guidelines

Companies that partner with ENERGY STAR gain access to the ENERGY STAR logos and promotional marks. Each of the four ENERGY STAR marks—promotional mark, certification mark, linkage phrase mark and partnership mark—are designed for a specific purpose. ENERGY STAR has developed strict guidelines that partners must abide by when using these ENERGY STAR marks.

Tips for Writing and Talking About ENERGY STAR

When writing or talking about:

THE ENERGY STAR PROGRAM

- Always write ENERGY STAR in all capital letters
- Use the ENERGY STAR with the registered trademark symbol in superscript for the first mention of ENERGY STAR in any print piece.

PRODUCT QUALIFICATION

- State that a product is “ENERGY STAR qualified” or “has earned the ENERGY STAR.”
- Do NOT say that a product is ENERGY STAR compliant, certified or rated.
- State that a product meets “ENERGY STAR guidelines,” “ENERGY STAR specifications,” or “ENERGY STAR performance levels.”
- Do not say that a product “meets ENERGY STAR standards,” “is EPA/DOE approved,” or “is EPA/DOE endorsed.”

PARTNERSHIP

- Use “ENERGY STAR partner” to describe your organization’s role in ENERGY STAR if the company has signed a partnership agreement with ENERGY STAR. Alternately, partners and other organizations may use “a company participating in ENERGY STAR” or “a company promoting ENERGY STAR.”
- Do not use “ENERGY STAR company,” “a company endorsed by EPA/DOE,” or “an EPA/DOE approved seller of ENERGY STAR equipment,” to describe your company’s role in ENERGY STAR.

Complete ENERGY STAR logo usage guidelines are available at www.energystar.gov/linkage.

LINKAGE PHRASE MARK: Should be used on promotional materials (e.g., product literature, advertisements, point-of-purchase [POP] materials, web sites) when placed in a general location and not associated with a specific product. This is the preferred logo for newspaper advertisements and similar marketing. (For partner and non-partner use)



This is the mark Gorell dealers must use if they are not an ENERGY STAR retail partner. These images can be downloaded at www.energystar.gov/linkage.



PROMOTIONAL MARK: Should be used in promotional materials (e.g., product literature, advertisements, POP materials, web sites) that specifically describe or promote all or part of the ENERGY STAR program or educational materials that describe ENERGY STAR. (For partner use only)



CERTIFICATION MARK: Should be used in promotional materials (e.g., product literature, advertisements, POP materials, web sites) to identify a qualified product. The mark must be placed on or next to an image or name of a qualified product. The product name or model number must accompany the image. (For partner use only)



PARTNERSHIP MARKS: Should be used on web site home pages, stationary, annual reports, and similar non-promotional public documents to promote an organization's commitment to and partnership with ENERGY STAR. The corporate name of the partner should appear on the same page as the partnership mark. This mark can also be used on product literature if only listing professional affiliations or accreditations. (For partner use only)



Interesting ENERGY STAR Facts

- National savings estimates for using ENERGY STAR qualified windows in the home*
 - Choose ENERGY STAR and save \$125-\$340 per year when replacing single-pane windows
 - Choose ENERGY STAR and save \$20-\$70 per year more than with double-pane, clear glass replacement windows.
 - Choose ENERGY STAR and save \$20-\$65 per year more than with double-pane, clear glass new-construction windows.
- In a typical home, more than 45% of the annual energy budget is consumed by heating and cooling.
- 19% of energy expended in the U.S. is used by homes, costing America's households more than \$135 billion annually. The typical house is responsible for twice as much air pollution as the typical car.
- The average household spends \$1,900 each year on energy bills. By choosing ENERGY STAR qualified products, homeowners can cut this by over 30%, saving \$400 each year.
- If homeowners everywhere replaced their windows with ENERGY STAR qualified windows, over 105 billion kilowatt hours could be saved per year—that's enough to power all the homes in Pittsburgh, PA, for 95 years!
- If ENERGY STAR qualified windows are not used as replacement windows over the next 15 years, over 80 million acres of trees (an area roughly the size of Georgia and Florida) would have to be planted to absorb all of the carbon dioxide that would need to be produced from power generation.

Other Resources for ENERGY STAR Education:

- ENERGY STAR—www.energystar.gov
- National Fenestration Ratings Council—www.nfrc.org
- Efficient Windows Collaborative—www.efficientwindows.org
- Alliance to Save Energy—www.ase.org
- Buy Energy Efficient—www.buyenergyefficient.org

*U.S. Department of Energy. Savings estimates based on population-weighted regional average annual energy use for a 2,000 square-foot, single-story detached house with 15% glazing, gas heat and electric air conditioning. Estimates use state average utility rates. Actual savings will vary by climate region and home characteristics.