BORDERLAND
WINDOWS & DOORS

• WHEN SHOULD YOU REPLACE YOUR WINDOWS?

The energy loss associated with older windows compared to modern double-paned windows with argon gas and titanium coatings is astounding because as much as 25% of your air conditioning or heating is lost through your windows if they're not in good shape. If you have single-pane windows, you're losing money right through the glass as well.

The amount of dirt and dust that comes through the windows lets you know just how inefficient they are and how easy it is for air to escape in and out around the frame.

Damage to the window frame, or any drafts that can be felt from just walking by, compromise the energy efficiency of your home and can cost you hard-earned money in maintaining climate control constantly. Broken hardware or locks on windows that prevent it from being closed properly and securely not only compromise the energy efficiency, but also the safety of your home and belongings.

• THE BENEFITS OF REPLACING YOUR WINDOWS:

ENERGY SAVINGS - Assuming you are installing good, energy-efficient windows, and you are planning to stay in your home for a few more years, you can expect to get about 70% return on replacement window projects. If your home is well insulated, you can expect to save 15-35% on your heating and cooling bills.[1]

TAX CREDITS - The government also has tax credits available for homeowners who upgrade their windows to certain energy efficient windows, with Energy Star ratings below a 0.30, that can help alleviate some of the cost of the windows. Tax credits have varied year-by-year so it would be best to check what credits are available when you are ready to replace your windows.

INCREASE PROPERTY VALUES - The cost of window replacement can be fully recovered by the market value being that energy efficiency increases home market value by about $20 for every $1 reduction in annual fuel bills.[2]

"...if all residential windows in the United States were replaced with ENERGY STAR qualifying models, the nation would save $134 billion in energy costs over the next 15 years.[2]"

• WHY A PROFESSIONAL INSTALLATION MATTERS:

A bad installation can compromise the effectiveness of even the best windows. A reputable contractor who has good references, proper insurance, a solid business record and certified installers can make a world of difference. The primary difference is cost - if the installation is done poorly, it could create expensive repairs down the road.[3]

Many different types and makes of windows have been used over the years and because of this, the installation process may differ depending on the style of window that is being replaced; whether the windows being removed are wood style, old-style metal crank windows, and metal aluminum windows.

Once the right person or company is found, assess your window needs. Typical need considerations are energy efficiency (Energy Star government efficiency rating), the level of maintenance required and a window's overall appearance.

[1] "New Windows are Worth the Investment." WTHR Indianapolis. http://www.wthr.com/story/14596909/getting-the-most-back-on-home-improvements-windows?.

[2] "Window Replacement Symposium: Analysis of Breakout Group Responses. (2005)" National Center for Healthy Housing. Page 10-13. November 2005.

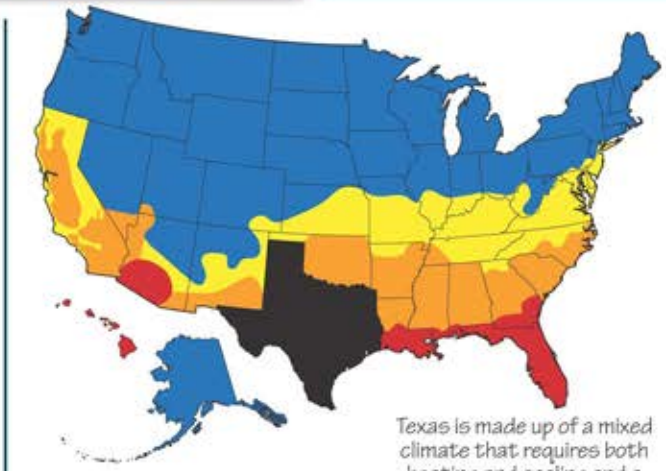
[3] "How to Avoid Potential Problems with Replacement Windows." Angie's List.com. http://www.angieslist.com/windows/.

ENERGY STAR PARTNER

7355 Remcon Cir, Suite 102 · El Paso, Texas 79912
(915) 833-0400 · info@borderlandwindows.com

BBB

BORDERLAND
WINDOWS & DOORS



Texas is made up of a mixed climate that requires both heating and cooling and a cooling dominated climate.

ENERGY STAR® Zones

- Northern Climate Zone (mostly heating)
- North/Central Climate Zone (heating & cooling)
- South/Central Climate Zone (heating & cooling)
- Southern Climate Zone (mostly cooling)

Benefits of High Performance Windows

Heating and Cooling Season Savings
Low-E coatings, gas-fills, and insulating spacers and frames result in a lower U-factor, meaning less winter heat loss. Many low-E coatings also reduce solar heat gain.

Improved Daylight and View
Many low-E coatings can reduce solar heat gain significantly with a minimal loss of visible light (compared to older tints and films).

Improved Comfort
With a low U-factor, window temperatures are more moderate and there are fewer cold drafts. With a lower solar heat gain coefficient (SHGC), there is less discomfort from the summer sun.

Less Condensation
Frame, spacer and glazing materials that resist heat conduction do not become as cold and this results in less condensation.

Reduced Fading
Coatings on glass or plastic films within the window assembly can significantly reduce the ultraviolet (UV) and other solar radiation which causes fading of fabrics and furnishings.

Lower Mechanical Equipment Costs
Using windows that reduce solar heat gain (low SHGC) may allow for smaller, less expensive cooling equipment. Windows with a very low U-factor may ensure winter comfort even without the need for heat registers near the windows.

Visit www.efficientwindows.org for more information on the benefits of efficient windows, how windows work, how to select an efficient window, and what manufacturers provide efficient products.

1. Meet the Energy Code and Look for the ENERGY STAR®

Windows must meet the locally applicable energy code requirements. Windows that are ENERGY STAR qualified typically meet or exceed energy code requirements. To verify if specific window energy properties comply with the local code requirements, go to Step 2.

2. Look for Efficient Properties on the NFRC Label

The National Fenestration Rating Council (NFRC) label is needed for verification of energy code compliance (www.nfrc.org). The NFRC label displays whole-window energy properties and appears on all fenestration products which are part of the ENERGY STAR program. For typical cost savings from efficient windows in a specific location, go to Step 3.

3. Compare Annual Energy Costs for a Typical House

Use computer simulations for a typical 2150 square-foot house to compare the annual energy performance of different window types. A comparison of the energy performance of a set of windows for this climate begins on Page 3.

4. Customize Energy Use for a Specific House

A computer simulation program, such as RESFEN (windows.lbl.gov/software), lets you compare window performance options by calculating performance based on utility rates for your climate, house design options, and window design options.

5. Ensure Proper Installation

Proper installation is necessary for optimal window performance, to ensure an airtight fit and avoid water leakage. Always follow manufacturers installation guidelines and use trained professionals for window installation.

7355 Remcon Cir., Suite 102 · El Paso, Texas 79912
(915) 833-0400 · info@borderlandwindows.com

BORDERLAND
WINDOWS & DOORS

Look for the ENERGY STAR

Recommendations in the Northern Zone (mostly heating)

U-factor	SHGC
Windows: U≤0.30 **Skylights: U≤0.55** If windows provide good access to winter solar heat gain (SHGC 0.40 or higher and southern orientation), a U-factor of 0.32 is also acceptable. For superior insulation, windows with a U-factor of 0.22 or less are available.	**No requirement.** If air conditioning is not a concern, look for a high SHGC (0.30-0.60) so that winter solar heat gains can offset a portion of the heating energy need. If cooling is a significant concern and no shading is available, select windows with a SHGC less than 0.40. Select skylights with a SHGC of 0.40 or less.

Recommendations in the North/Central Zone (heating & cooling)

U-factor	SHGC
Windows: U≤0.32 **Skylights: U≤0.55** The larger your heating bill, the more important a low U-factor becomes. For superior insulation, windows with a U-factor of 0.22 or less are available.	**Windows: SHGC≤0.40** **Skylights: SHGC≤0.40** If you have significant air conditioning costs or summer overheating problems, look for SHGC values of 0.30 or less. While windows with lower SHGC values reduce summer cooling demand, they also reduce free winter solar heat gain.

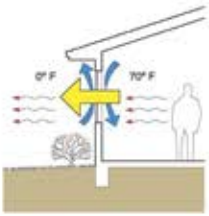
Recommendations in the South/Central Zone (heating & cooling)

U-factor	SHGC
Windows: U≤0.35 **Skylights: U≤0.57** The larger your heating bill, the more important a low U-factor becomes.	**Windows: SHGC≤0.30** **Skylights: SHGC≤0.30** Windows with low SHGC values reduce summer cooling and overheating. However, they also reduce winter solar heat gain.

Recommendations in the Southern Zone (mostly cooling)

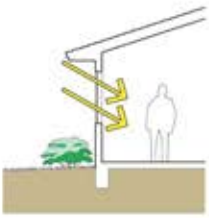
U-factor	SHGC
Windows: U≤0.60 **Skylights: U≤0.70** A low U-factor is useful during cold days when heating is needed. A low U-factor is also helpful during hot days when it is important to keep the heat out, but it is less important than SHGC in warm climates.	**Windows: SHGC≤0.27** **Skylights: SHGC≤0.30** A low SHGC is the most important window property in warm climates.

Look for Efficient Window Properties on the NFRC Label

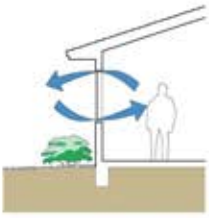


U-Factor
The rate of heat loss is indicated in terms of the U-factor (U-value). This rate of non-solar heat loss or gain through a whole window assembly is measured in Btu/hr-sf-°F. The lower the U-factor, the greater a window's resistance to heat flow and the better its insulating value.

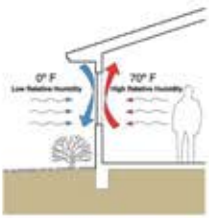
Solar Heat Gain Coefficient (SHGC)
The SHGC is the fraction of incident solar radiation admitted through a window. SHGC is expressed as a number between 0 and 1. The lower a window's solar heat gain coefficient, the less solar heat it transmits. Whether a higher or lower SHGC is desirable depends on the climate, orientation, shading conditions, and other factors.



Visible Transmittance (VT)
The VT is an optical property that indicates the amount of visible light transmitted. VT is a whole window rating and includes the impact of the frame which does not transmit any visible light. While VT theoretically varies between 0 and 1, most values are between 0.3 and 0.7. The higher the VT, the more light is transmitted.



Air Leakage (AL)
AL is expressed in cubic feet of air passing through a square foot of window area (cfm/sf). The lower the AL, the less air will pass through cracks in the assembly. AL is very important, but not as important as U-factor and SHGC. AL is an optional rating on the NFRC label.



Condensation Resistance (CR)
CR measures how well a window resists the formation of condensation on the inside surface. CR is expressed as a number between 1 and 100. The higher the number, the better a product is able to resist condensation. CR is meant to compare products and their potential for condensation formation. CR is an optional rating on the NFRC label.

7355 Remcon Cir., Suite 102 · El Paso, Texas 79912
(915) 833-0400 · info@borderlandwindows.com

BORDERLAND
WINDOWS & DOORS

Comparing Window Performance in El Paso, Texas

The annual energy performance figures shown here assume a typical existing 1700 sq. ft. single-story house with 15% window-to-floor area. The windows are equally distributed on all four sides of the house and include typical shading (partially deployed interior shades, overhangs, trees and neighboring buildings).

	WINDOW SYSTEM							STANDARDS		PERFORMANCE	ENERGY			COMFORT		
	ID	Panes	Glass	Frame	U-factor	SHGC	VT	ENERGY STAR	2012 IECC	Annual Energy Cost	Heat	Cool	Total	Winter	Summer	Cond.
INCLUDED IN ESTIMATE UNLESS NOTED OTHERWISE	20	3	LSG Low-E	Non-metal, Improved	≤0.22	≤0.20	≤0.40	Yes	Yes							
	17	2	LSG Low-E	Non-metal, Improved	0.23-0.30	≤0.25	0.41-0.50	Yes	Yes							
	19	3	MSG Low-E	Non-metal, Improved	≤0.22	0.21-0.40	0.41-0.50	Maybe	No							
	16	2	MSG Low-E	Non-metal, Improved	0.23-0.30	0.26-0.40	0.51-0.60	No	No							
	11	2	LSG Low-E	Metal, Improved	0.41-0.55	≤0.25	0.51-0.60	No	No							
	18	3	HSG Low-E	Non-metal, Improved	≤0.22	0.41-0.60	0.41-0.50	No	No							
	10	2	MSG Low-E	Metal, Improved	0.41-0.55	0.26-0.40	0.51-0.60	No	No							
	6	2	LSG Low-E	Metal	0.56-0.70	≤0.25	0.51-0.60	No	No							
	5	2	MSG Low-E	Metal	0.56-0.70	0.26-0.40	0.51-0.60	No	No							
	15	2	HSG Low-E	Non-metal, Improved	0.23-0.30	0.41-0.60	0.51-0.60	No	No							
	9	2	HSG Low-E	Metal, Improved	0.41-0.55	0.41-0.60	0.51-0.60	No	No							
	14	2	Tint	Non-metal	0.41-0.55	0.41-0.60	≤0.40	No	No							
	4	2	HSG Low-E	Metal	0.56-0.70	>0.60	>0.60	No	No							
	8	2	Tint	Metal, Improved	0.56-0.70	0.41-0.60	0.41-0.50	No	No							
	13	2	Clear	Non-metal	0.41-0.55	0.41-0.60	0.51-0.60	No	No							
	7	2	Clear	Metal, Improved	0.56-0.70	>0.60	>0.60	No	No							
	3	2	Tint	Metal	0.71-0.99	0.41-0.60	0.51-0.60	No	No							
	2	2	Clear	Metal	0.71-0.99	>0.60	>0.60	No	No							
	12	1	Clear	Non-metal	0.71-0.99	>0.60	>0.60	No	No							
	1	1	Clear	Metal	≥1.00	>0.60	>0.60	No	No							

$0 $200 $400 $600 $800

worst best

Note: "HSG," "MSG," and "LSG" stand for high-solar-gain, moderate-solar-gain, and low-solar-gain respectfully. "Improved" includes warm-edge spacer technology and thermally improved frame. The annual energy performance figures shown here were generated using RESFEN6 provided by Lawrence Berkeley National Laboratory. U-factor and SHGC are for the total window including frame. The costs shown here are annual costs for space heating and space cooling only and thus will be less than total utility bills. Costs for lights, appliances, hot water, cooking, and other uses are not included in these figures. The mechanical system uses a gas furnace for heating and air conditioning for cooling. Natural gas prices used are projections of the average natural gas price for the heating seasons of 2012-2014. Electricity prices used are the average electricity price for the cooling seasons of 2012-2014. All pricing information provided by the Energy Information Administration (www.eia.doe.gov). A simple comfort analysis was performed using EPW weather files for each location to determine how often the winter night and summer day temperatures exceed beyond an acceptable number of hours. The room condition contains a large, west-facing window with a single person facing the window. A large window was used because a large view factor will have a greater impact on comfort. The two extremes of summer day and winter night conditions were only considered. A simple condensation analysis was performed using heating season design temperatures for each location, performance properties of the glazing system, edge performance properties of the framing system, and interior glass temperatures of a glazing system simulated in WINDOW6 to determine if the interior glass temperature falls to a level in which condensation may occur. See the www.efficientwindows.org for more information on all the energy, comfort, and condensations metrics.

ENERGY STAR PARTNER

7355 Remcon Cir., Suite 102 · El Paso, Texas 79912
(915) 833-0400 · info@borderlandwindows.com

BBB