

■ Window Basics ■ Window Upgrades ■ Window Treatments

- ☑ **Save money** — In winter, much of a home's heat escapes through drafty, poorly insulated windows. In summer, unshaded windows can cause over 40% of a home's air conditioning costs.
- ☑ **Increase comfort** — Energy efficient windows increase comfort in winter and summer.
- ☑ **Reduce glare and noise** — Many energy-saving window treatments help block outside noise and can be used to control glare.
- ☑ **Value** — Most options will repay their cost quickly and provide years of energy savings as well as increase the beauty of a home. Many measures are also easy to retrofit to an existing home.
- ☑ **Health** — Energy efficient windows have less condensation which reduces mold growth.

Basics

- **Place the major glass areas on the south side.** South-facing windows receive the most sunlight in winter. The area of south-facing glass should not exceed 20% of the floor area. Avoid east and west windows — they get the most sun in summer. Place windows on the north side for natural lighting and ventilation.
- **Choose windows which seal tightly.** Windows should have an air leakage rating of .3 cubic feet per minute (cfm) or less per foot of sash.
- **Seal the rough openings** of windows and doors with a low-expansion spray foam sealant or compressible backer rod and caulk. Caulk interior and exterior trim.
- **Use insulated windows.** Whether double-paned or single-paned with a storm window, insulated windows reduce heat loss in winter and heat gain in summer. They also block outside noise, reduce condensation, and increase comfort.

High Performance Windows

Low-Emissivity — This invisible metallic coating on window glass reflects heat. Low-E windows screen out ultraviolet light which reduces problems with fading and improve winter comfort by increasing the temperature of interior glass surfaces.

*Additional Cost** = \$2.00 to 4.00 per square foot*
Annual Energy Savings = \$0.30 to 0.55 per square foot

Gas-filled — An inert gas is used in the airspace between the panes of glass in a Low-E window to increase the insulating value.

*Additional Cost** = \$2.50 to 4.50 per square foot*
Annual Energy Savings = \$0.40 to 0.70 per square foot

Double-paned Window

Two panes of glass are used to create an airspace which cuts heat loss.

Additional Cost = \$0.50 to 2.00 per square foot*
Annual Energy Savings = \$0.40 to 0.70 per square foot

Single-paned with Storm Window

Use storms only with single-paned windows. Weatherstrip and seal primary windows before adding storms. Exterior storm windows are installed on the outside of single-paned primary windows and usually have operable glass sashes. Interior storm windows are usually made of plastic.

EXTERIOR STORM

Additional Cost = \$1.50 to 4.00 per square foot
Annual Energy Savings = \$0.40 to 0.70 per square foot

INTERIOR STORM

Additional Cost = \$2.00 to 10.00 per square foot
Annual Energy Savings = \$0.40 to 0.70 per square foot

Insulating Window Treatments

Curtains, shades and shutters can be used to improve the energy performance of windows. Options range from custom-made shades to do-it-yourself pop-in shutters. The window insulation should form an airtight seal around the window, and be easy to operate and durable.

Additional Cost = \$0.50 to 10.00 per square foot
Annual Energy Savings = \$0.25 to 0.80 per square foot

Sun Control

Keeping direct sunlight out of a home can greatly improve summer comfort and lower air conditioning costs. In winter, sunlight helps heat a home, but still needs to be controlled to prevent glare.

Solar Shade Screen— This fiberglass insect screen has a special weave that blocks up to 70% of direct sunlight, yet still allows ventilation and a view to the outside. Shade screens must go on the outside of windows.

Additional Cost = \$0.40 to 0.70 per square foot
Annual Energy Savings = \$0.25 to .40 per square foot

Interior shades— Roller blinds and curtains with light-colored backs can reflect unwanted sunlight back through a window.

Additional Cost = \$0.20 to 0.70 per square foot
Annual Energy Savings = \$0.20 to 0.40 per square foot

Reflective films — These films are applied to the interior of glass surfaces and reflect heat back through a window. They are best suited for problem windows on east and west sides which cannot be shaded by other measures. Check with window manufacturers before installing on double-paned windows.

Additional Cost = \$1.00 to 4.00 per square foot
Annual Energy Savings = \$0.15 to 0.40 per square foot

*Compared to single-paned window **Compared to double-paned windows