



Energy loss through windows and doors

Windows and doors are often a major factor in energy loss in your home. Single paned windows that have metal frames are not well insulated and do not keep the heat in or out very well. The edges of doors and windows account for a large amount of air leakage.



Types of Windows

Windows only take up between 5-10% of a homes total surface area that is exposed to outside temperatures but account for as much as 30% of the heat lost in a home. Older homes are more susceptible to heat loss because of the structure of the windows. Your options to fix these heat losses are to either purchase new windows or to try some low cost efforts to repair the window. The idea is to purchase the most energy efficient windows possible given your budget and your specific needs. *Double and Triple Paned Windows* are designed with a trapped air space about a half an inch thick, which functions as an insulator. It works by restricting the amount of air movement, slowing down the heat loss through windows. *Low Emissivity Windows* have a clear coating on the window to reduce the heat loss or gain. This is an almost invisible coat of semi-conductor or metal oxide film that is applied directly to the glass or on a plastic film that is placed between the two windowpanes. There are two different types of Low-E coatings, hard coats and soft coats. Soft coats are the most effective at reflecting heat and are better insulators of heat. The hard coat is incorporated directly into the surface of the glass and is less likely to be mechanically damaged, so in most cases they are used in single pane storm windows. Windows that are made with low-E films are usually approximately 15-25% more costly than regular double glazed windows. They will also reduce energy loss by around 30-50%. The energy savings will pay for the higher cost of the windows in around 10 years. *Argon Gas* is a motionless gas that manufacturers use to fill the space between the panes of glass to reduce the heat loss. Argon gas is often used because it is a better insulator than air and has a relatively low cost compared to the alternatives. *Low-conductivity spacers* separate two pieces of glass when making an insulated glass unit.



Window frame

The way that the window frame is put together has a great impact on the required maintenance and life span of the window. *Aluminium frames* require little to no maintenance and generally have a long life span. *Fibreglass frames* are not very available but are high in energy efficiency. Some of these models are filled with a foam insulator to better insulate heat. *Vinyl frames* require no maintenance and perform well thermally. *Wood frames* insulate well and have a long life span but they need to be protected from the weather.

U-values let you know how much heat is getting through your window. Low U-values mean that there is very little heat getting through the window. *Solar heat gain coefficients (SHGC)* let you know how much of the sun's energy is being transferred through the window frame. Ensure that your window is installed properly by getting a professional to install it; a poorly installed window will not work as efficiently.

How to save energy with the windows you already have

If you are unable to replace your current windows, there are other ways to improve efficiency and reduce energy loss. You should install storm windows. You can install these windows on the inside or the outside. Your insulation will improve by the dead air that is trapped between the windows. There are a few different types of storm windows such as rigid plastic storm windows, which are attached to the window with a mounting strip.

There are the single pane storm windows, which are to be installed each fall and removed each spring. There are the permanent storm windows, which are more convenient than the removable type and have both screening and glass in the same unit. Temporary storm windows are plastic and are attached to the frame with tightly shrunken two-sided tape. Lastly there are window coverings such as blinds and curtains that can help lower the possibility of heat loss especially at night. Make sure that your window covering does not restrict the movement of air because it can cause the window to sweat.



Energy efficiency of Doors

Doors are part of the outer casing of the house. Like windows, doors are subject to different types of heat loss: conduction, infiltration and radiation. If you choose to purchase a door there are a few things to consider. Storm doors are very efficient and when installed properly, protect well against wind and rain.

Insulated doors are good for those who do not see storm doors as an option. Newer versions of the insulated door are usually made of foam and wood covered with metal. Doorframes are usually made of wood, dressed with metal or vinyl. Glass doors release a great deal of heat and should not be used unless necessary. If necessary, double paned low emissive glass should be used.



Limiting drafts from your doors and windows

Draft proofing can prove to be the most cost effective way to improve your energy loss. Sealing the gaps and holes between your doors and windows will help eliminate moisture problems as well as remove outside noises, not to mention reduce heat loss.

There are a few materials used to draft proof depending on the size of the gap. The two main types of weather proofing are caulking and weather-stripping. Weather-stripping is mostly used to block air-leakage around doors and moving windows. To decide on your weather-stripping you must take into consideration; the size of the gap, durability, how easy or difficult the installation will be, as well as the appearance of the actual weather-stripping. Caulking is another common method used to reduce heat loss. Caulking is not permanent and therefore will need to be repaired over time. There is caulking available for interior and for exterior purposes and each should be used for what they were meant for. Using an exterior caulking interiorly can lead to dangerous gases mixing with the air in a living space and could cause serious problems. When installing the weather stripping or caulking be sure that all installations meet your requirements and follow manufacturer's instructions.