From the foundation to the appliances and everything in between, there are a number of considerations when creating a sustainable home. One element in particular that can have a significant sustainability impact is your property's windows.

The way a window is made and how the product is sourced is one element of sustainability, and the other is energy efficiency. Many window manufacturers have eco-friendly products, so it's easy to find windows that can make your building more sustainable and energy efficient. Here is a brief guide on the benefits of using sustainable window frames and styles in your residential or commercial property, as well as the most sustainable materials and types of glass styles.

Benefits of Having Sustainable Windows

A significant amount of energy flows in and out of a building through its windows. While installing sustainable windows may be more expensive up front, the energy savings will likely be worth it in the long run. Research suggests sustainable home products can help save a lot of money on your heating and cooling bills. In fact, sustainable windows may save you up to 50% on energy bills.

Additionally, quality and sustainable windows can help increase the value of your home. And, it’s overall better for the environment.

Most Sustainable Window Frame Materials

Cost and efficiency of sustainable windows vary. Some are less expensive but don’t have best eco-friendliness, while others may be more expensive but can save significant dollars in energy bills.

- **Fiberglass** is one of the top materials to use when it comes to sustainable window frames. It’s more energy efficient than other options, requires a low level of maintenance, and is durable and long lasting. Fiberglass is made from sand that has been spun into pieces of glass, and sand is plentiful and renewable, making it more sustainable for the environment. Look for frames that contain foam insulation within the frame cavities for the best efficiency.
- **Vinyl** is a second sustainable material. It’s also low maintenance but also the most cost-efficient. It can come in a variety of colors and options, is durable, has a long life span, and the material can be recycled.

- **Wood** is also a good option, but sustainably sourcing wood for commercial products can be difficult so you'll want to ensure it is certified and approved as sustainably sourced (approved for use by the U.S. Forest Stewardship Council). Wood frames must also be treated regularly and inspected for water damage, which can develop mold. While it's a more expensive option, these frames are also recyclable.
- **Aluminum and composite** are inexpensive and require minimal maintenance, but the material conducts heat, so they are less energy efficient than other options. Cost, energy-efficiency, and level of eco-friendliness can vary by manufacturer.

Types of Sustainable Glass for Windows

There are essentially three types of sustainable glass you can use for windows:

- **Insulated glass:** Insulated glass is triple or quadruple pane, meaning there are three to four individual pieces of glass in the window with air space between them. The air offers insulation, giving these windows great thermal performance.
- **Low-E glass:** Low-emissivity glass is coated with an invisible layer of silver that helps protect the interior of the room from solar energy. These can be designed to hold heat out or hold heat in (depending on your climate), making them largely efficient.
- **Argon glass**: With these windows, argon gas is added inside Low-E glass with two panes. This adds insulation between panes, making them more efficient. Argon gas is also a better insulator than air.

Certifications and Ratings

When shopping for sustainable window frames and styles, look specifically for these certifications and ratings:

- **R- and U-Values.** R-value measures the insulation properties of a material. The higher the value, the greater for insulation ability. U-values measure the energy efficiency of windows. The lower the number, the better.
- **National Fenestration Rating Council (NFRC),** which shows U-value, solar heat gain, and visible light transmittance values.
- **Energy Star**, which is sponsored by the EPA and Department of Energy to promote energy-efficient products.