Efficient Windows Collaborative

Highly Insulating Windows

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What are highly insulating windows?

There is no specific definition of when a window is highly insulating, but as it is used here the term corresponds to windows with a U-factor of around 0.2 or less. This represents the cutting edge of window products. Typically these windows are triple pane, with advanced features such as gas fills, advanced spacers, and low-E coatings.

How much energy do highly insulating windows save?

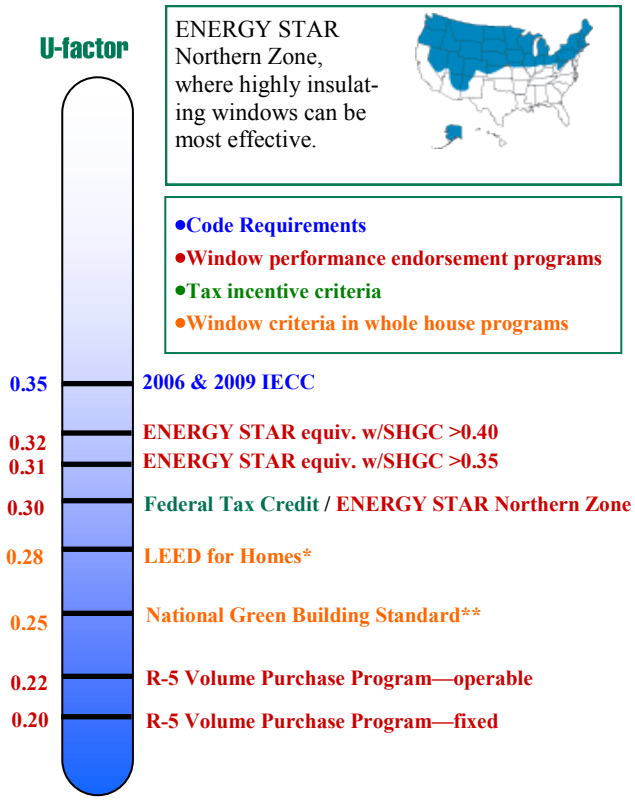
Savings of highly insulating vary by climate. These windows will save the most energy in climates with significant winter heating needs. The energy savings of highly insulating windows, as compared to windows that are compliant with modern energy codes, are shown for three sample cities in the graphs at the bottom of this page. More detailed savings estimates, including other locations and baseline windows, can be found on the website for the Department of Energy's (DOE) Window Volume Purchase Program. A more detailed tool is also available by contacting the Efficient Windows Collaborative at ewc@ase.org.

Resources:

- www.windowsvolumepurchase.org
- http://www1.eere.energy.gov/buildings/windowsvolumepurchase/index.html
- www.efficientwindows.org/
- http://www.passivhaustagung.de/Passive_House_E/windows_passive_houses_06.html

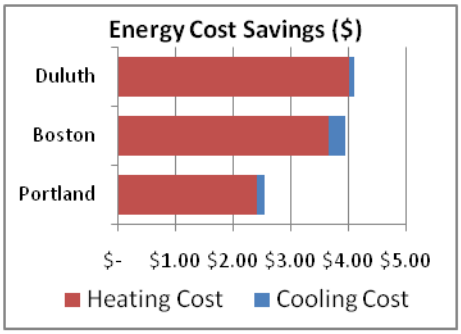
Maximum U-factor Requirements, Various Programs

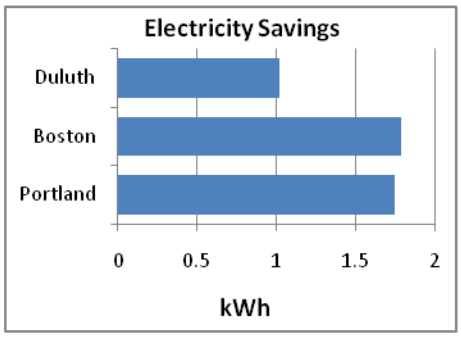
The diagram below shows the U-factor thresholds of a selection of standards and programs that may differentiate energy-efficient windows in the marketplace. When relevant, these specifications correspond to the ENERGY STAR Northern zone or the IECC zones 5-8, which are the most relevant for considering highly insulating windows.

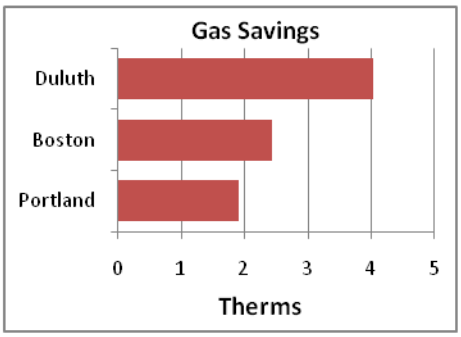


**criteria for the highest number of credits. If window-to-floor area exceeds 18%, more stringent criteria apply.*
***criteria for the highest number of points.*

Annual Savings per 3'X5' U-0.22 window compared to double-pane low-E—new construction, gas heating







The savings estimates here are derived from the Highly Insulating or Low-E Storm Windows Energy Savings Estimator, available at www.windowsvolumepurchase.org. A more detailed version of this tool is available for incentive program managers and other interested parties by contacting the Efficient Windows Collaborative at ewc@ase.org. The baseline window has a U-factor of 0.35 and SHGC of 0.35, while the upgrade window has a U-factor of 0.22 and SHGC of 0.30. Windows are equally distributed on all four sides and include typical shading.