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Energy Star's new glass is superior to generic low-e glass

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Proposed revisions to the Department of Energy's Energy Star glass performance standards scheduled to debut as early as 2009 should make clear that generic low-e glass no longer represents a level of energy efficiency required to "transform the market", a key charter of the agency's Energy Star program.

Commercial developers interested in maximum energy efficiency and in achieving LEED Green Building Rating System certification need to know that not all glass is equally effective as a green construction and renovation product. They will benefit from increased awareness of alternative glass technologies that are superior to generic low-e insulating glass and available now.

Because generic low-e glass provides maximum insulating performance of about R-4 in a world in which R-19 insulated walls are the norm, there's a dramatic performance gap between what low-e glass provides and what green building practices promise in saving energy and reducing carbon emissions.

Despite heavily insulated walls and ceilings and the popularity of low-e glass, 25%-35% of the energy used in buildings is wasted due to inefficient glass. So, it should come as no surprise that glass is responsible for >10% of the total carbon emissions in the US annually and is a major contributor to global warming.

The truth is that low-e glass thermal performance has reached practical limits. A low-e coating reflects heat, reducing heat transfer between panes of glass and thereby improving insulation performance. The "e" in low-e, which stands for "emissivity", is the ability of a surface to radiate energy. Low-e coatings are rated for the amount of heat they radiate -- the lower the number, the less heat is radiated and the better the insulation performance of the glass.

Coated glass is commonly available today with emissivity ratings below 0.03, and lowering emissivity from 0.03 to 0.00 will have a negligible incremental improvement on window performance. Clearly, further improvements in glass thermal performance will not come from improvements in low-e coatings. Additionally, low-e coated glass has become a minimum performance baseline and no longer represents a path to "improved" energy performance. The incremental performance benefit of using low-e glass is ZERO, because it is already assumed as a required product.

Part two will appear in the February, 15th edition of The New England Real Estate Journal, in the CDE section.

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