Saving Windows, Saving Money:

Achieving Home Energy Efficiency Through Low-Cost Retrofit

A new report produced by the Preservation Green Lab of the National Trust for Historic Preservation provides breakthrough guidance for homeowners, designers and building professionals about the relative financial and energy tradeoffs between replacing and repairing older, less-efficient windows.

The study, ***Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement***, concludes that several retrofit strategies deliver essentially the same energy savings as full window replacement—but at a fraction of the cost. Applying 80 years of scientific research using sophisticated energy simulations, the research team finds that saving and retrofitting old windows is the more cost effective way to achieve energy savings and to lower a home's carbon footprint.

These results complement recent research by the Preservation Green Lab that showed building reuse almost always offers environmental savings over demolition and new construction.

Home energy consumption is a big concern at the national and household level. Residential buildings are responsible for approximately 20 percent of total energy use and carbon dioxide emissions in the U.S. Most of these buildings are single-family homes where heating and cooling is the largest use of energy, and where windows are a major factor in home energy efficiency. Americans spend over $17 billion annually on heating and cooling.

National Trust *for* Historic Preservation
Preservation Green Lab

The report's key findings include:

RETROFITTING SAVES MONEY.

Almost every retrofit strategy, from weather stripping and sealing, to installing exterior storm windows or interior cellular shades, offers a better return on investment than outright window replacement. Simple rates of return for window retrofit measures ranged from 3 percent to 4 percent for most regions studied, nearly double that of new, energy efficient windows.

RETROFITTING SAVES ENERGY.

Several retrofit measures perform as well as new replacement windows. Specifically, interior window panels and the combination of exterior storm windows and cellular blinds essentially match the energy savings of new, efficient replacement windows. (See energy savings comparison chart on Page 3.)

Interior storm panel.

Image courtesy of: Environmental Window Solutions, LLC

CLIMATE DOESN'T (REALLY) CHANGE THE FINDINGS.

In both hot and cold climate regions, cost analysis revealed that retrofitting generally provided a higher return on investment than replacement windows—though climate did impact which retrofitting option(s) performed the best.

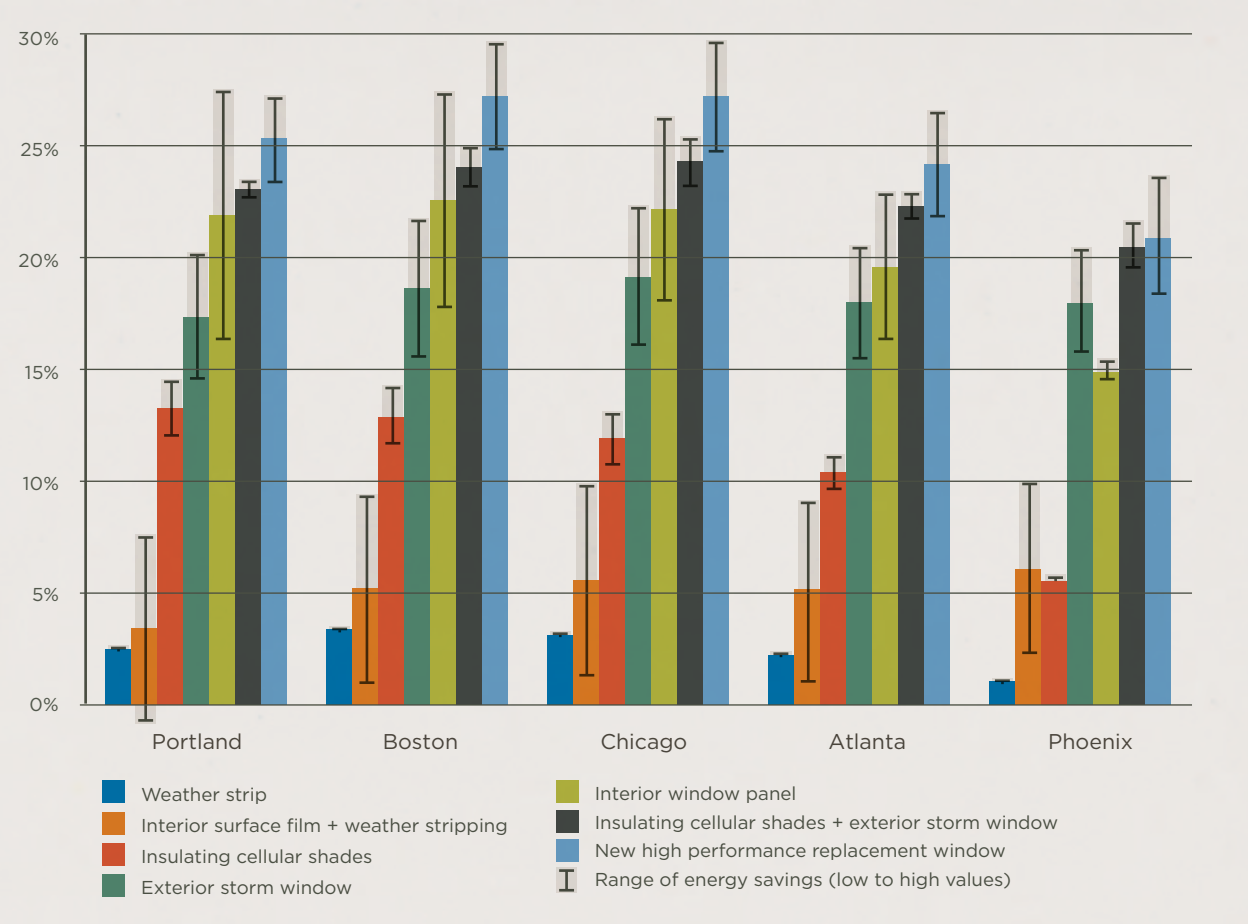
THE BOTTOM LINE: DON'T ASSUME YOU NEED NEW WINDOWS.

For years it has been commonly assumed that replacement windows alone provide the greatest energy-saving benefit. This study's results refute that notion, giving budget-conscious consumers viable alternatives that cost much less than window replacement. The findings are especially important in the context of historic homes, where retrofitting windows can help maintain the visual appeal and historic integrity.

Download the full report: www.preservationnation.org/saving-windows-saving-money

The report was funded by The National Park Service's National Center for Preservation Technology and Training. Research support was provided by Cascadia Green Building Council and Ecotope, a consultancy focused on energy efficiency and sustainability.

Annual Percent Energy Savings For Various Window Upgrade Options



Note: Percentage savings are not intended to predict actual savings. Instead, the results are meant to be used to evaluate the relative performance of measures where other more cost-effective energy saving strategies have been implemented first.

ABOUT THE PRESERVATION GREEN LAB

The Preservation Green Lab is a sustainability think tank and national leader in efforts to advance the reuse and retrofit of older and historic buildings. A project of the National Trust for Historic Preservation, the Green Lab was launched in 2009 and is based in Seattle, Wash. Learn more at www.preservationnation.org/greenlab

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