

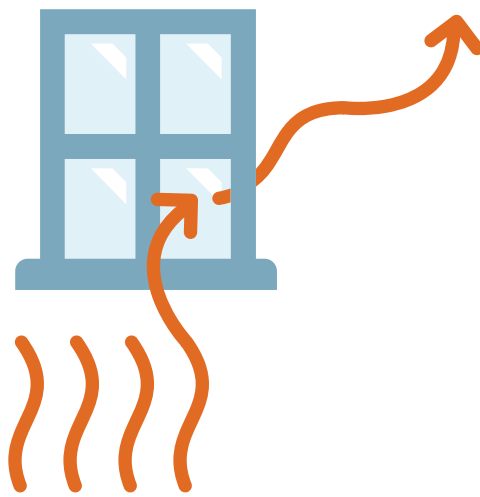
HI-R LOW-E WINDOW RETROFIT SYSTEM

OPPORTUNITY

How much energy is lost through inefficient windows in commercial buildings?

23% ENERGY

used to heat & cool buildings is lost through inefficient windows¹



TECHNOLOGY

How do Window Panel Retrofits save energy?

IMPROVE THERMAL PERFORMANCE

with low-E window panels

PRE-MANUFACTURED

like storm windows; simplifying installation

M&V

Where did Measurement and Verification occur?

LAWRENCE BERKELEY NATIONAL LABORATORY assessed the impact of Hi-R Low-e window panel retrofits provided by Serious Energy in a Provo, Utah federal office building.

RESULTS

How did Window Panel Retrofits perform in M&V?

41% HEATING SAVINGS IN WINTER²

estimated savings for entire building heating and cooling: 11%³

QUICK INSTALLATION⁴

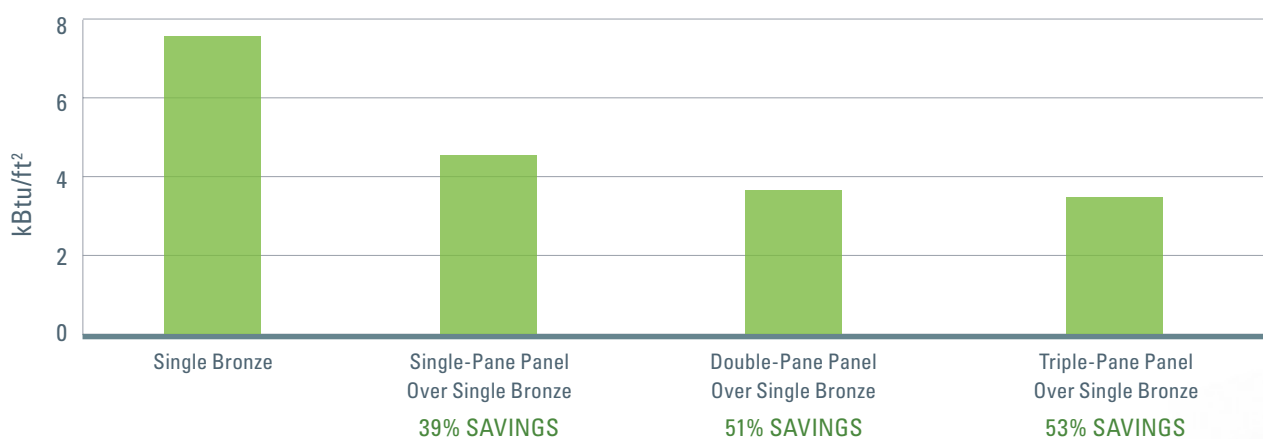
improved visual and thermal comfort⁵

<9 YEARS

payback for triple-pane; double-pane will be shorter⁶

Savings Diminish with Triple-Pane Hi-R Window Panel Retrofit

COMFEN results compared to base configuration of single pane with bronze film



DEPLOYMENT

Where does M&V recommend deploying Window Panel Retrofits?

BUILDINGS IN COLD CLIMATES WITH SINGLE-PANE WINDOWS

Double-pane retrofits recommended, as triple-pane offers diminishing returns

Site-specific evaluation is critical

¹Highly Insulating Window Panel Attachment Retrofit. Charlie Curcija, Howdy Goudey, Robin Mitchell, Erin Dickerhoff (LBNL), December 2013, p.3 ²Ibid, p.26 ³Ibid, p.39 ⁴Ibid, p.7 ⁵Ibid, p.26,35 ⁶Ibid, p.2