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SOME THOUGHTS ON REPLACING HISTORIC WOOD WINDOWS

I've got leaky one hundred-year old windows, what are the best replacements?

The short answer is that replacement windows are *not* generally a good option for most owners of old buildings.

Energy Savings. How can I reduce my heating bill?

Although not mentioned in advertisements for replacement windows, heat loss through well-maintained old windows with good storm windows is at least equivalent to and often *less* than heat loss through new replacement windows.¹ Since maintaining windows and adding storm windows is less expensive than replacement windows, the cost-effective remedy for leaky old windows is maintenance and storm windows.

Comfort. My windows are drafty. What should I do?

See above. Maintenance and storm windows are cost-effective. Leaking of cold air around moveable sash is a major factor contributing to heat loss. Many replacement windows are drafty and cold because stock units don't fit properly into old out-of-square openings.

Manufacturers of replacement windows use insulated glass and rely on weatherstripping to reduce infiltration. Weatherstripping must be flexible to be effective but modern weatherstripping is usually made from plastic products which age rapidly, becoming hard and brittle.

On old wood windows, the stops (strips of wood holding the sash in place) can be adjusted to minimize infiltration and an independent storm window protects the crack around the operable sash of the prime window further reducing infiltration. If you wish to weatherstrip your wood windows it can be done with brass or zinc which lasts many decades; the actual expected life is unknown because examples of worn out traditional weatherstripping are uncommon.

Durability. My windows are worn out; how long will a modern replacement window last?

We don't know but hints can be gleaned from manufacturers' warranties. Warranties strictly limit both flaws covered and amount of compensation; they are written to protect the supplier, not the buyer. For example, one nationally prominent manufacturer lists as warranty exclusions: "Defects or damage caused by the effects of air pollution, exposure to harmful chemicals or *normal weathering*." [Emphasis added]. It is fair to say that manufacturers are not convinced

¹ R values are used to evaluate windows. The higher the number, the greater the resistance to heat flow: high is good, low is bad. According to industry standards, replacement windows with standard insulating glass have an R value of about 1.8. A properly maintained old window with a good storm window has an R value of about 2; this value can be improved by installing modern high-tech glass, but not enough to pay for the upgrade.

their windows are durable. We suggest owners plan on ten to twenty years before their replacement windows need to be replaced.

The only true measure of durability is life in service. Replacement windows should not be considered tested in service until they are at least ten years old. Ask the supplier of any replacement window for examples of installations at least ten years old. If they are able to provide exact matches (unlikely, since flaws are constantly being discovered and window designs constantly changed), interview owners to determine satisfaction with the product. Existing wood windows have been proven in service. They can be repaired, almost always, at less than half the cost of replacement windows. Once properly repaired, their expected service life is at least equal to their present age, generally fifty to one hundred years.

Repair. Who can fix my windows?

Old windows can generally be repaired by the average carpenter or competent do-it-yourselfer, at a reasonable cost, using common carpenter's tools. Modern vinyl and aluminum replacement windows can not be repaired using normal carpenter's tools and skills. Repair is normally so expensive manufacturers' warranties reserve the right to give you a replacement window rather than repair the defective one, and exclude installation labor costs from the warranty coverage.

Insulated Glass. Should I have insulated, argon filled, or low-e glass?

We do not recommend special glass for old windows. The space between a prime window and its storm window is generally more than an inch and so more effective at stopping heat loss than insulated glass. Clear window glass is relatively inexpensive and, when broken, can be easily replaced one pane at a time.

New windows are generally equipped with insulated glass: a glued-together sandwich of outer glass, a spacer, and inner glass. The thin air space (usually less than half an inch) between the panes of insulated glass limits its effectiveness. Special techniques such as using an inert gas in lieu of air and various coatings on the glass only marginally increase the very low insulating value of insulated glass. When the glue at the edge fails it is relatively expensive to replace; replacement often includes an entire sash and costs go up if coatings or inert gasses are required.

Sustainability. Do replacement windows meet sustainability goals ("building green")?

No! Retaining rather than discarding fulfills sustainability goals: it recovers and preserves embodied energy used to produce, deliver and install original windows, avoids wasting energy removing and transporting discarded windows, and reduces landfill needs. As a bonus, the repair of existing windows uses more local labor and less imported materials than replacements, benefiting our local economy.

Conclusion. With a little TLC you can continue to enjoy your original windows for many years. Except in the most extreme cases of deterioration, existing windows should be repaired and supplemented with storm windows rather than tossed out for modern replacements. Repair is the most cost effective, energy saving, sustainable, and architecturally appropriate solution to your leaky old windows.