

What Replacement Windows Can't Replace: The Real Cost of Removing Historic Windows

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Sustainability looks even better through a restored window.

For all the brilliance reflected in efforts to preserve historic buildings in the U.S., the issue of replacing windows rather than restoring them remains singularly unresolved. Proponents on both sides of the issue may easily become frustrated by a dearth of useful data, as well as conflicting information, or misinformation, promulgated by manufacturers. Indeed, it often seems that many preservation practitioners and building owners remain in the sway of advertising claiming that the first order of business is to replace old windows. In the context of preservation and sustainability, however, it is well worth reconsidering this approach.

Sustainability and Authenticity

In considering alternatives to replacing historic windows, one needs to keep in mind two important elements: sustainability and authenticity. Sustainability (building green) and historic preservation are a natural marriage, so long as one remains mindful that sustainability is not just about energy conservation.¹ Preservation and sustainability involve myriad elements that can work in symbiotic and synchronized ways toward a favorable outcome. For example, preservation work is more labor- than material-intensive, which benefits local economies; natural ventilation afforded via operable windows can reduce the size of mechanical equipment, especially of air-conditioning; and salvaging historic materials, such as wood sash, obviates the need to harvest live trees and other natural resources for the manufacture of replacement units.

Similarly, retaining and celebrating authenticity is one key element of an exemplary preservation program. No one should take lightly the option of discarding authentic historic materials —

in this case, windows — without fully evaluating the consequences. Once authentic material is lost, it is lost forever. It does not matter how accurate the replacement window, it never reflects the nuances of the original.

Taking the Long View

Historic windows possess aesthetic and material attributes that simply cannot be replaced by modern replacement windows. Like preserving whole buildings, restoring historic windows is a solid step forward into the realm of sustainability. The present approach to sustainability, however, still too often focuses on new construction and issues such as “intelligent” windows and energy efficiency, while overlooking other important, holistic benefits of preserving historic windows, such as the following:

- Conservation of embodied energy (i.e., the sum total of the energy required to extract raw materials, manufacture, transport, and install building products). Preserving historic windows not only conserves their embodied energy, it also eliminates the need to spend energy on replacement windows. Aluminum and vinyl — the materials used in many replacement windows — and new glass itself possess levels of embodied energy that are among the highest of most building materials (Fig. 1).²
- Reduction of environmental costs. Reusing historic windows reduces environmental costs by eliminating the need for removal and disposal of existing units, as well as manufacture and transportation of new units. Also, many replacement units are manufactured with such materials as

Fig. 1. Comparative values of the embodied-energy levels of common building materials. Note that glass and aluminum (i.e., principal components of many replacement windows) are ranked among the highest levels of embodied energy, while most historic materials tend to possess much lower levels. Courtesy of Ted Kesik, Canadian Architect's Architectural Science Forum, Perspectives on Sustainability.