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Preserving Forest Grove

Newsletter of the Historic Landmarks Board

The Case for (Against) Old Window Replacement

By
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There are any number of places a typical vintage homeowner might decide to spend money to make his or her home more energy efficient. Among these, expenditures on windows seem to top the list.

Replacement Windows: Big Business

While it may make sense to consider old windows as a weak link, realistically, windows account for only 15-22 percent–or about one-fifth–of a single-story home's total energy loss. The largest culprits of inefficiency remain losses through the attic and ceiling and through leaky ductwork.

But taking advantage of that one-fifth of total home energy loss is big business. Marketing of replacement windows has been aggressive –and effective–over the last few decades. One need look no further than our older neighborhoods to see the effect this perhaps well-intentioned but hugely destructive practice has wrought.

Since the first fully-constructed replacement windows entered the market some 30 years ago, the marketing behind the industry has been quite successful in convincing homeowners that old, drafty windows need to be replaced. Through an inherently unfair comparison process, the superior efficiency of a modern, new vinyl window versus a neglected, traditional wood window is made to appear beyond doubt. In reality though, this is not necessarily the case.

There is a piece of the expense calculation that is almost always ignored: How long will it take to recoup the investment? If energy savings is generously assumed to be a couple hundred dollars per year, modern window units will likely need to be replaced again well before the return on investment has been met. In fact, according to *A Green Old House* blog (http://agreenoldhouse.blogspot.com), "While replacement windows could save you about $50 a month on your heating or cooling bills, those savings come after you spend $12,000, on average, for replacement windows for the typical home. So if you heat or cool your home, say, six months a year, the savings are about $300 annually. At that rate, it would take 40 years to recoup in energy savings the amount of money spent on the new windows!"

Heat Transfer and U Values

Again according to *A Green Old House* blog: "New windows will often have a life span of just 10 to 20 years. Historic and older windows, when properly maintained, can last for many more decades. Furthermore, studies have shown that with proper weatherization and use of a good storm window, older windows can be made nearly as energy efficient as new windows–even in severe climates such as the Northeast."

There have been exhaustive studies that support this thesis. For example, there is a paper entitled *The Effects of Energy Efficient Treatments on Historic Windows*, published

in January 2011. This scientific study was performed in a test home in a historic district in Boulder, Colorado. It focused on "empirical testing of the energy efficiency and economy of a range of options for upgrading the energy performance of historic windows." Old double-hung windows' heat transfer characteristics were tested before and after retrofitting and then compared to new vinyl windows.

Here are some of the authors' results (recall that U values are a measure of how much heat escapes a building element. A lower U value is better). U value from an old double-hung window: 0.78. U value from a retrofitted double-hung window: 0.48. U value from a new vinyl window: 0.36. U value from a retrofitted double-hung window outfitted with a new storm window (no insulation added): 0.19. Add insulation and this value drops to 0.17. This is actually half the U value of a new vinyl window.

The author, plying his trade

Lifetime Warranties & Planned Obsolescence

A replacement window salesman might make wild claims of superior performance and offer lifetime warranties on his product. In fact, there is a good chance that the company selling the windows may not even be in business in another 10 years (according to the Organisation for Economic Co-operation and Development 58% of US service sector businesses fail within seven years).

There is also planned obsolescence, the practice of purposefully engineering modes of failure into a product. Some new window units are intentionally designed to break down in order to ensure a replacement sale. In recent years evidence has been mounting regarding replacement windows and their alarming failure rates. Window efficiency can decline 25-32 percent over a ten year period as joinery breaks down and inert gas glazing units develop leaks.

Appearance-wise, surfaces can become chalky and attract dirt and dust leaving them grimy and difficult, if not impossible, to clean. Once a vinyl window has started to deteriorate, the unit must be replaced. As yet, there exists no economical way to refurbish this type of window. Even higher-end replacements that employ metal or vinyl cladding over a wood base have had cracking problems. This facilitates moisture wicking into the space between the materials which in turn leads to mold and rot.

Here in the Pacific Northwest rot comes into the picture through another route. Many window replacement units are manufactured in the Southeast where the local lumber, a species of pine, performs quite well; however, when put into service in the Pacific Northwest this material tends to rot and degrades far quicker than where it was harvested.

Your Vintage Wood Windows Are Good

Recently, a growing awareness about the aesthetic and historical significance of original wood windows in older houses has given rise to a number of businesses that specialize in the restoration and weatherization of these integral components of a vintage

home. Improved energy efficiency, re-use of existing materials, and inherent embodied energy retention makes restoration a greener approach and keeps PVC, a highly polluting petroleum-based product, out of the supply (and waste) stream.

Perhaps all of this has convinced you to have your original wood windows restored instead of switched out and replaced. What should you expect from the project in terms of procedure, cost and outcome?

Window servicing begins with the unit's disassembly. Trim is removed, freeing the sashes from their tracks and allowing access to the weight access panels that were cut in the jamb when the unit was originally built. (Interestingly, it is not uncommon to surprise a homeowner with the knowledge that both the lower and upper sashes are intended to move up and down. Sashes centered in the open position create a circular air flow. Hot air rises up and out through the upper sash while cooler air settles down and flows in through the lower: old-fashioned, but reliable technology.) If there are no pocket doors it becomes necessary to remove the casing or even cut a new access panel in the jamb.

Next, the sashes are inspected. Fractured glazings are replaced and any joinery repairs or putty replacements begin (failing glazing putty is one of the primary sources of wood window inefficiency). Antique wavy glass is often available to replace broken glazings. This material is typically reclaimed from older sashes that have been removed from their jambs, often after having been replaced by modern windows. These materials are available in the Portland metro area at The Rebuilding Center (http://rebuildingcenter.org) and Aurora Mills Architectural Salvage (http://www.auroramills.com).

With the window now disassembled, weatherstriping can be installed. Spring bronze weatherstriping helps balance the lateral movement of sloppy fitting sashes and aids in minimizing drafts. A snug-fitting window sash can noticeably improve thermal efficiency. Other common tasks performed while the window is taken apart include proper weight balancing, paint removal and hardware replacement. Typical service bills can range from $250 to $650 per window, depending on the degree of work performed.

Another worthwhile efficiency aid is the addition of wooden storm windows. By adding a properly fitted storm window to your existing window, a dead air space is created between the outside and inside air. Eighty-five percent of a storm window's efficiency comes from the barrier effect against strong blasts of wind. Typically, wood storm windows range in price from $260 to $350 which includes fit, hardware and painting.

Remember, your vintage wood windows are good! So, to transport your old house into the modern world of energy efficiency: insulate your attic, insulate your ceiling, fix your leaky ductwork, and…do not replace, but refurbish your beautiful wooden windows! You can call me. I will show you how.

Author Geoffery Halsey is co-owner, with Stephen Colvin, of the East Portland Sash & Carpentry Company. The two craftsmen specialize in wood window restoration and weatherization. They also address wood siding, porches, doors and water infiltration issues.

New Renovation Grant Program Eligibility Guidelines

Eligibility for a grant depends on whether your home is classified as "historic" or "historic-contributing". The Historic Landmarks Board has some funds to cover a portion of eligible projects on the exterior of your home. Examples of previously funded projects include restoring exterior architectural features, windows, foundations and porches. The Board is updating its eligibility guidelines for projects for this coming funding cycle (July 2011 – June 2012).

If you are contemplating submitting a grant application, please contact James Reitz in the Community Development Department at City Hall at jreitz@forestgrove-or.gov or 503-992-3233. Applications are due by the third Monday of each month and are reviewed at the Board's monthly meeting on the fourth Tuesday of every month, until all funds are spent.

The Forest Grove Historic Landmarks Board Grant Program

Is your house on our local register? If it is, did you know that your house is eligible for restoration / rehabilitation grant funding? The Historic Landmarks Board has funds to help you with your projects. If you are planning any exterior restoration work such as restoring architectural features or if you have structural work to do such a foundation repair, we'd love to help. We fund projects up to 50% of the cost of the job per grant. Come see us! We can also help you find historically appropriate solutions to any problems you may have.

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Preserving Forest Grove is a quarterly newsletter published by the Forest Grove Historic Landmarks Board to help fulfill its duty of public education regarding the preservation of cultural resources. If you would like to be on the mailing list, please call James Reitz at 503-992-3233, or JReitz@ci.forest-grove.or.us.

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