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All current NAPC members who serve as city staff to preservation commissions are encouraged to distribute articles in The Alliance Review to commission members and other staff and elected officials within your member organization.

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The National Alliance of Preservation Commissions (NAPC) is seeking volunteers to help advance its mission of providing education and technical assistance to local preservationists, particularly those involved in the work of local preservation commissions. Volunteers may serve on a variety of committees and in other capacities that take advantage of their individual skills and experiences. Editorial and production work on The Alliance Review, membership recruitment and retention, resources development, education programs and technical assistance are just a few of the possibilities. Join us today to make a difference in the future of preservation by contacting NAPC at 757-802-4141 or director@napcommissions.org.
This issue is focused on several basic items about historic windows, primarily wood windows and the reasons (or excuses) people may have for replacing them wholesale. Oftentimes that’s the best option, but, with the right guidance and resources, historic wood windows can be repaired for a fraction of the cost of replacing them with something similar. We start with a recent question about them on our listserv, NAPC-L, and follow that with a summary of the Preservation Green Lab’s extensive study on retrofitting windows. Then we have a few window basic features about the myths of replacing windows, how to repair and restore, and what the future looks like for composite window materials.

We take an alternative look at reviewing window replacements for anyone who has that task, and we learn about a wonderful window cooperative program in Springfield, Massachusetts. We’re debuting a couple of new features in this issue. The first is “Tools for the Online Preservationist,” and we hope to present a new one in every future issue. The second is meant to spark discussion amongst preservationists, whether professional staff or volunteer commissioners. We’re calling it “What if we thought further about...” If you feel compelled to respond to it, please do so on NAPC-L. Finally, we’re excited to announce the call for nominations for the Commissions Excellence Awards in this issue. We hope you will nominate your local commission or a valued employee for one of the awards. As always, we welcome feedback on The Alliance Review and suggestions for future topics.
What They’re Saying on NAPC-L: Cost Of Repairing vs. Replacing Wood Windows

From Scott Slagor, Preservation Planner, City of Ypsilanti
I know that in the long run it is always better to repair than replace for a myriad of reasons. My challenge is convincing property owners. I have a property owner who wants to replace 15 wood windows. They claim their energy bills are too high and that repairing the windows would be too expensive but have not actually compared the cost of repairing. They are proposing spending over $25,000 on new windows. I suspect they would save money by repairing the windows and installing storms. Are there recent studies/reports to back me up? A lot of our supporting window articles are ten or twenty years old and the window replacement companies claim to have advanced their technology since then. If the HDC denies the window replacement, I suspect there will be backlash, so I want to be able to provide the most up-to-date information possible.

From Marygrace L. Goddu, Historic Preservation Officer, City of Olympia
It’s a long way from a “study” but in Olympia we have done a simple cost estimate exercise, asking local companies that do restoration and repair to estimate their cost given a simple, standard scenario, so we can help homeowners with what to expect in terms of costs to repair/restore. We included the cost to create a storm window as well. It didn’t take long to email four local companies for cost estimates and put together averages. Costs are likely to vary around the country, but for what it’s worth: In the Olympia area, complete restoration of a double-hung six-over-one wood sash window in really poor condition would average about $1,100 per window. For more typical repairs, costs would run about $800 per window. Adding a wood storm window would cost about $450. An estimate for 15 windows plus storms might be in the range of $20k, on the high side, well below the estimate for all new vinyl. This does not take into account the added bonus of long-term life-cycle value of the wood versus vinyl.

A last note: By our estimates, appropriate wood window replacements in our area run about $1000 per window, installed, for the same scenario as above (6 over 1 double hung). These of course can be made with double-glazed panes, eliminating the cost for storms.

From Katrina Ringler, Grants Manager / CLG Coordinator, Kansas Historical Society
The Cost Comparison Tool commissioned by the City of Hutchinson, KS has been pretty helpful for at least comparing options in our region. There are versions for both residential and commercial buildings. See https://hutchgov.com/1513/Cost-Comparison-Tool.
From Vicki Birenberg, AICP, Certified Local Government Program and Planning Coordinator, Kentucky Heritage Council

This popular window replacement graphic (Figure 1) has been in circulation for quite a number of years now, and our office still uses it. I do not know if it has been updated (but I would be interested in getting a copy if it has).

From Dan Brown, Historic Sites Program Director, Tennessee Historical Commission

There are NAPC publications on historic window replacement myths, online sources, and window repair reasons why—also an informational sheet with graphics. http://napcommissions.org/technical-assistance/

From Sean Denniston, Clark County (WA) Historic Preservation Commission

Of course the windows installer says that. I think that in these cases, it is best to ensure that the owner has actual information instead of just a vague notion of “expensive.” The big obstacle is the time issue. Restoring looks great over the lifecycle when you show that those new windows will need to be replaced over and over while the wood windows can continue to be restored. The problem is that most owners don’t care about lifecycle costs. We recently had a building come through our commission and the fact that they would spend more money over time simply didn’t matter because they could only consider first costs.

From John Smoley, Ph.D., Development Services Division, City of Minneapolis

To Sean’s point about lifecycle cost, check out the flyer (Figure 2) that I received in the mail several nights ago. I’d be curious to ask a window replacement sales rep the typical span of time before they go back to past clients & try to sell them replacement windows all over again.
From Tim Askin, Senior Planner, Historic Preservation Commission, City of Milwaukee

I’m surprised “Saving Windows, Saving Money” hasn’t come up yet! Tested in all the major climate zones of the continental US. SAVING WINDOWS, SAVING MONEY – We’ll be sure this is on our website under resources and send you the link. (See the article in this issue to get the link).

From Lisa Craig, Lodi Historical Society

Annapolis MD completed energy audits on 11 contributing buildings which resulted in reports stating it would take 30+ years to recover investment in new windows. I have some slides in a PowerPoint about this. Contact me offline at lcraiggroup@gmail.com if you’d like information.

Figure 2: Coupon for new windows!
Homeowners and design professionals seeking to upgrade the performance and efficiency of existing windows are faced with many choices—from simple, low cost, do-it-yourself solutions such as window films and weather stripping to replacing older windows with new ones that require investments costing tens of thousands of dollars. Often these decisions are made without a clear understanding of the range of options available, an evaluation of the ability of these options to provide energy and cost savings, or proper consideration for the historic character of the existing windows.

This study builds on previous research and examines multiple window improvement options, comparing the relative energy, carbon, and cost savings of various choices across multiple climate regions. Results of this analysis demonstrate that a number of existing window retrofit strategies come very close to the energy performance of high-performance replacement windows at a fraction of the cost.

Key Findings

Retrofit measures can achieve performance results comparable to new replacement windows.

There are readily-available retrofit measures that can achieve energy savings within the range of savings expected from new, high performance replacement windows. This challenges the common assumption that replacement windows alone provide the greatest benefit to homeowners.

Figure 1 shows that for all cities, at least one and often two of the selected measures can achieve energy savings within the range of savings expected from new, high performance replacement windows. Specifically, interior window panels, exterior storm windows combined with cellular...
Almost every retrofit option offers a better return on investment than replacement windows.

Energy savings alone should not influence decisions to upgrade windows without consideration of initial investment. For all climates, the cost analysis shows that new, high performance windows are by far the most costly measure, averaging approximately $30,000 for materials, installation, and general construction commonly required for an existing home. In cold climates, all other retrofit measures, with the exception of weather stripping and heat reducing surface films, offer a higher average return on investment when compared to new, efficient replacement windows.

In hot climates, all of the study retrofit measures offer a better average return on investment than new windows, with the exception of weather stripping.

Study Objectives and Approach

In recent years, awareness around energy use and its financial and environmental impacts have placed buildings in the spotlight. Residential buildings alone are responsible for approximately 20 percent of total U.S. energy use and carbon dioxide emissions. The vast majority of these buildings are single-family homes where heating and cooling represent the largest use of energy. Windows are one important aspect of how heat loss (and gain) affects a home’s operational efficiency and cumulatively represent over $17 billion in annual U.S. household expenditures on heating and cooling.
In this study, computer simulation is used to model energy use in a typical, prototype home both before and after window improvements. Several commercially available window improvement options were analyzed ranging from simple, low cost applications to more expensive options representing the highest energy performance on the market. The study analyzed energy, cost, and carbon savings for seven selected measures: weather stripping existing windows; interior window panels; exterior storm windows; insulating cellular shades; a combination of exterior storm windows and insulating cellular shades; interior-applied surface films; and new, high performance replacement windows.

Variations in climate and regional energy grids were addressed by evaluating the home’s performance in five U.S. cities—Boston, Atlanta, Chicago, Phoenix, and Portland. A thorough cost analysis allowed for the comparison of average return on investment for each window option in each of the cities.

**Recommendations and Conclusion**

Findings from this study demonstrate that upgrading windows (specifically older, single-pane models) with high performance enhancements can result in substantial energy savings across a variety of climate zones. Selecting options that retain and retrofit existing windows are the most cost-effective way to achieve these energy savings and to lower a home’s carbon footprint. Due to the cost and complexity of upgrading windows, however, these options are not likely to be the first intervention that homeowners undertake. For many older homes, non-window-related interventions—including air sealing, adding insulation, and upgrading heating and cooling systems—offer easier and lower cost solutions to reducing energy bills.

**Financial Comparison of Various Window Upgrade Options for Boston**

![Graph showing financial comparison of various window upgrade options for Boston](image)

**Figure 2:**
Due to high utility costs and high heating and cooling loads, window upgrade options in Boston generally produced the highest return on investment of any of the regions studied. Simple financial analysis such as Return on Investment (ROI) provides a decision making framework to allow informed choices between options for a given location.
In addition to providing insights into the energy performance and investment costs of window options, the study’s findings reinforce several additional benefits in choosing to retrofit existing windows rather than replace them. Retrofits extend the life of existing windows, avoid production of new materials, and reduce waste. Additionally, wood windows are often a character defining feature of older homes, and conserving them helps to preserve the historic integrity of a home. The Secretary of the Interior’s Standards for the Treatment of Historic Properties and the Secretary of the Interior’s Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings offer guidance on how best to approach the preservation of windows in historically designated homes, or homes that may be eligible for listing.

Selecting the most appropriate measure for upgrading windows requires a detailed understanding of climate and energy costs in addition to window performance and installation costs. This study provides a valuable analysis of these variables that can be used to help inform the decision to improve the energy performance of and reduce the carbon dioxide emissions from older and historic single-family homes.

To view the full report, go to https://www.ncptt.nps.gov/blog/saving-windows-saving-money/.
Common Window (Industry) Myths

The Myth: Vinyl is “maintenance free” (and will outlast wood).

“Maintenance free” is a popular term used by vinyl window manufacturers to promote their use; but since vinyl is susceptible to seasonal fluctuations, weathering, and constant operation, this claim is misleading. Vinyl windows are made with stock parts that quickly become outmoded, making them difficult, if not impossible, to repair if a spring breaks or a seal fails. Typically, the whole unit must be replaced if a single part is compromised and, given that the average life span of double-glazed window seals are about 12-15 years, you end up paying a lot (and often) for that “maintenance free” claim. In addition, vinyl, more so than wood, metal or fiberglass, is prone to warping and fading in high temperatures.

Historic wood windows, by contrast, were built to be repaired (piecemeal) over time. Developed in a world without Home Depot, wood windows were once comparatively expensive and not readily available off-the-shelf. Older wood sash windows are fairly simple constructions which could be easily maintained and repaired, usually with basic homeowner skills. Keep your historic old-growth wood windows well glazed and painted and they can last 100 years or more. Want to repair a historic wood window? Tools, parts, and materials can be found at your local hardware store; know-how online.

The Myth: Old wood windows = high heating bills.

Replacement window manufacturers will often compare their product to a historic wood window that has not been restored or maintained, and a deteriorated window (of any type) will undoubtedly be drafty and inefficient. In most cases, however, a well-maintained, properly functioning, weather-stripped wood window combined with a quality storm window will have the same (or better) insulating properties as a new double-glazed replacement window.

According to the U.S. Department of Energy, most of your house’s heat loss and air infiltration happens through the roof, walls and floor; only 10-15% of energy loss is through the windows. Notably, the single-pane glass isn’t the issue here. Most of that heat loss is due to problems with the window surrounds or mis-fitted sash. Wood itself is a better insulator than any other available window material. Keep the window in good repair, fit it correctly in its jamb, caulk joints and seams, add an exterior (or interior) storm window, and your historic window will be just as energy efficient as anything on the market today.

The Myth: Replacement windows are the more sustainable option.

With growing awareness of climate change and increased demand for sustainable building materials, replacement window manufacturers often tout the energy savings associated with their product, offering their replacement windows as a “green” choice. The argument that a replacement window is inherently more sustainable than a restored wood window is, at best, problematic. As discussed above, a properly maintained wood window com-
bined with a quality storm window can reach the same levels of energy efficiency as any new window available today. As importantly, the embodied energy of the existing wood window automatically makes it the more sustainable option. Repairing and maintaining an existing window demands less material, less labor, and has less of an industrial and transportation impact on the environment than a new window ever could.

Also as mentioned above, historic wood windows built with old-growth lumber and quality craftsmanship, will last considerably longer than replacement models, mostly because old-growth wood is durable and rot resistant, and the windows are made to be easily repaired. The same can’t be said for vinyl or new-growth wood replacement windows. Not only are the new window constructions more complex and not typically reparable, but new-growth wood is more susceptible to rot and deterioration. So even when you replace like-for-like, the window’s durability, and sustainability, is diminished.

The Myth: Old wood windows are highly susceptible to rot.

Even old-growth wood windows will deteriorate if they are not maintained. Any natural material that is left exposed to weather and sunlight will begin to break down. However, basic maintenance including cleaning, painting, caulking, and glazing will ensure a long-lasting window. Often, a wood window may appear to be in rough shape, when a more thorough investigation reveals that only the paint has failed, or the sash needs a little wood repair work, or glazing has cracked in places and needs replacing. If a wood window has become inoperable, surprisingly often it’s because previous homeowners didn’t know how to maintain it and ended up painting it shut. (At least the paint protected it from the elements.) Just keep in mind that historic wood windows have a high quality
of craftsmanship and were constructed from old
growth lumber; they were built to last. Invest a little
time and effort, you’ll be richly rewarded.

The Myth: Why restore an old wood window if it
has to be covered with a modern storm window?
Storm windows have actually been in common
use for over a century, originally made of wood
and applied seasonally. But it’s true that modern
exterior storm windows can conceal the character
of historic window sash. Helpfully, there are many
quality options available in today’s market that are
more appropriate for historic buildings. Interior
storm windows, which achieve the same energy
efficiency with no impact on historic character, are
increasingly popular and widely available.

The Myth: Replacement windows look just like
historic wood windows.
When comparing the two side-by-side, this is a
fairly easy myth to debunk. A window industry rep
will often make this claim when the snap-in grids
or simulated divided lites in a replacement model
match the existing muntin design of the original
wood windows. But thin, flat snap-in grids or simu-
lated divided lites tend to be more two-dimensional
and almost always look inserted or applied. They
are shallower in depth, create different visual cues
with shadow and texture, and typically lack the
detailed profiles found on historic windows. Materi-
als such as vinyl or synthetic cladding are shiny,
glossy or overly smooth, presenting a colder and
newer appearance than that of traditional wood. In
addition, installation of replacement windows typi-
cally involves additional framing that reduces the
rough opening of the window, ultimately increas-
ing the heaviness of surrounding trim. All of these
differences, no matter how individually minor, will
cumulatively impact the character of a historic build-
ing in very noticeable ways.

The Myth: It is more expensive to restore an old
wood window than to replace it.
The cost of restoring a historic wood window can
vary widely, and there is no guarantee that restor-
ing a wood window will be immediately cheaper
than replacing it. Studies have shown, however,
that the actual investment return for new replace-
ment windows can take decades. In that span of
time, it is likely that these windows will have to be
Contractor or window restoration specialist should be able to identify lead paint and treat it appropriately. Often, stable lead paint can be encapsulated with lead-free paint to comply with applicable laws. With proper precautions and safety measures, historic wood windows with lead paint can be made safe for daily use.

For more information on lead paint hazards in historic buildings, refer to Preservation Brief 37: Appropriate Methods of Reducing Lead-Paint Hazards in Historic Housing from the National Park Service: http://www.nps.gov/history/hps/TPS/briefs/brief37.htm

The Myth: Old wood windows have lead paint and should be discarded.
The first half of that sentence is probably true. Any house built before 1978 likely contains some lead paint. That was the year lead was removed from nearly all commercial paints by law. However, with appropriate training, the right materials and a fair amount of caution, lead paint can be removed from historic sash without posing serious health hazards.

Inexpensive lead test kits are available at local hardware stores, and local municipalities often have guidelines for safe and effective lead-paint removal. The key is to avoid sanding or scraping areas of lead paint, causing the paint to become airborne, flakey or dust-like. If breathed-in or ingested, the lead in the paint dust could build up in the bloodstream and cause dangerous health issues. If you don’t feel comfortable learning how to remove lead paint safely, an experienced contractor or window restoration specialist should be able to identify lead paint and treat it appropriately. Often, stable lead paint can be encapsulated with lead-free paint to comply with applicable laws. With proper precautions and safety measures, historic wood windows with lead paint can be made safe for daily use.
Window Repair and Restoration Basics

By Preservation Pennsylvania

The good news is that older windows can be repaired! Traditional windows are made from individual parts, which are pieced together to make the window. Each piece of the window can be individually repaired or even replaced. If the glass is broken, you can replace it. If the bottom rail or sill is rotted, you can repair or replace them. All is not lost! Just because the condition of a window is poor does not mean that it needs to be replaced.

Sometimes it is overwhelming to look at your windows and imagine tackling the project of fixing them. It seems easier to just call someone who will come and replace them with new ones. While that may be easier, in most cases, it’s not better.

Start by looking at your windows and determining what condition they are really in. Use a notebook or spreadsheet to help you. Go window by window, part by part. Let your inner critic shine and note what’s wrong with each window. Take pictures as you go. You may be surprised to find that your windows are not all in horrible condition like the one that first caught your attention. The location of a window on the building often makes a big difference in its condition. Those on the south and west sides of the building, which face the harshest sun, tend to suffer more from peeling paint and dried-out glazing putty, while windows on the north and east sides tend to have more problems with rot from moisture getting trapped in the joints or sitting on flat surfaces.

Talk to a qualified professional who can tell you what needs to be done to address the problems you identified. If you want, they can also give you an estimate to do the work. In the hands of a qualified contractor, repairing your windows can
be just as easy as replacing them. There are a number of things that your contractor can do for you. If the glazing is failing, they can reglaze your windows for you (or you can do it yourself). If elements of the window are deteriorated or failing, they can perform Dutchman or epoxy repairs, or they can replace the individual part – be it a muntin, rail, sill or whole sash – for you.

Preservation work is labor intensive as opposed to materials intensive. This means that the money you spend to repair your windows is paying for skilled labor, rather than buying new materials that are having an impact on the environment.

**Restoration**

For the most part, routine maintenance and occasional repairs will be sufficient to keep your windows in good condition. However, from time to time (probably every 50-100 years), the layers of paint and grime build up to a point where they are no longer stable, or major repairs are needed. When your windows require restoration, your contractor will do the following:

**Disassemble window unit and remove window sash.** They’ll remove the stop that holds the window sash in, and then disconnect the sash cord and weights that allow the window to move up and down. They’ll put a temporary window (or board) in the window opening and take the sash with them back to their shop.

**Remove existing paint and putty.** In their workshop, they’ll remove the existing paint and glazing putty. Most professionals seem to prefer using steam because it makes relatively quick work of the paint removal without negatively impacting the window sash. Other methods, such as heat or chemical paint strippers, may be acceptable as well.
Conduct repairs. Once the paint and glazing compound have been removed, they’ll take the glass out. Then they’ll conduct any necessary repairs, such as gluing and re-pegging joints, replacing broken muntins or damaged rails, or replacing broken glass. In the hands of a qualified carpenter or contractor, any historic window can be fixed.

Apply oil-based primer with a brush. After the repairs have been made and the sash has been sanded, they will prepare the wood for primer. This involves the application of a combination of linseed oil and turpentine, often several layers. Once the surface is ready, they’ll apply one coat of oil-based primer with a brush and allow it to dry.

Replace the glass and paint. When the primer has dried, they will create a bed of glazing putty to set the glass in, and then install glazing points to hold the glass in place. The window will then be sealed with additional glazing putty. Once the putty has cured, they will prime it using oil-based primer, and then apply two coats of high-quality paint.

Reinstall the windows. Before reinstalling the windows, the contractor will make any necessary repairs or modifications to the window frame. They can repair or replace rotted sills or pieces of the frame or trim. They will make sure your pulleys and other hardware are working properly. In addition to prepping, priming and painting the frame, they can add weather stripping, if so desired.
They will then reinstall the window sash, replacing the cords (sometimes with chain upon request) and adjusting the weights, as needed. Some contractors even apply wax to make the windows easier to open and close. If you would like to be able to clean the outside of your window easily, ask your contractor to reinstall the stop using a screw in a threaded barrel so that you can easily remove the stop and swing the sash in for cleaning.

Once the restoration is complete, your windows will be as good as new...or better! All lead paint will have been removed, eliminating that problem completely. You’ll have windows that were made to fit your home, from materials that are durable and have no environmental impact.
Pam Howland founded a small business that combines saving old growth wood windows from the landfill and empowering women in a safe, supportive workplace. The business links entrepreneurship with a dual mission: a sustainable environment and a more just economy. Her website’s tag line, “Old Windows, New Jobs” sums up the effort to create new economic and educational opportunities for women, as these factors impact reducing poverty and bringing health and safety to their neighborhoods.

Pam’s approach is to foster a crew of women to develop the skills of window restoration while being paid to learn the trade. The crew is led by one of their own who excels in teaching and supervising with the goal of owning her own business with other women. Over 10 years of the Old Window Workshop, 17 women have learned skills and two women are committed to ownership of this business in Springfield, Massachusetts. They are Danisha Garcia and Zobieda Gomez who are strengthened by the power of being a mother-daughter team. The attraction of being a skilled window repairer is multi-dimensional, from working with the medium to the dignity of completing a job well done, and having the satisfaction of a decent wage.

The model is simple: bidding on and winning jobs for window restoration and executing them well. The challenges are real: securing enough jobs to provide consistent, full-time employment for the crew members and training new workers to keep a full crew. Pam relies on the use of converted factory space with the Wellspring Cooperative and donating her time. The Wellspring Cooperative, an organization supporting new, community-based, worker-owned companies in inner-city...
Springfield based on the purchasing power of area anchor institutions is another excellent idea that we can replicate elsewhere.

The Old Window Workshop now has its work on several buildings in Springfield, and throughout the western half of Massachusetts. The crew repairs, strengthens and reinstalls historic glazing when possible. Pam’s solution to replacing windows in one manufacturing building with large industrial steel sash was the installation of insulation panels made of transparent shrink-wrap on both sides of a wood frame. After visiting with Pam, talking with the women window restorers and seeing some of the projects early in 2019, I vowed to suggest that a similar program be started where I live. That project is still on my to-do list. But I am devoted to the concept and Pam has offered to mentor others who want to make use of her experience in women-owned, worker-owned reuse of old windows. Can you envision a cooperative window restoration in your community that improves lives and sustains the environment?

To learn more about the Old Window Workshop, visit http://www.oldwindowworkshop.com/.

Credit: Betsy Bradley
Composites: The New Replacement Window

By Phil Thomason

Design guidelines for most communities place an emphasis on preserving and maintaining original or historic wood windows. Studies by the Preservation Green Lab, Window Preservation Standards Collaborative and others show that keeping or restoring your old-growth wood windows and adding storm windows provides similar or better energy savings than most replacement windows. These studies also show that the cost of installing most replacement windows takes decades to recover the initial investment. Vinyl and vinyl-clad windows also have a high failure rate and often need to be replaced after ten to fifteen years.

A number of window manufacturers are now promoting “composite” windows as a better alternative than vinyl, vinyl-clad or aluminum. A recent advertisement in my local newspaper by a leading window company stated:

“Over one-third of the windows we replace are vinyl windows. Don’t make the mistake of buying vinyl windows that can warp over time and become difficult to open and close.”

In other words, “don’t buy the vinyl windows we used to sell, they don’t last. Buy our new composite windows instead.” Composite windows have been on the market since around 2000 but have only been widely manufactured and promoted within the past decade.

Instead of vinyl, composite windows are made from a blend of materials including resin and fiberglass. Some composite materials are also composed of a blend of 40% wood fiber and 60% thermoplastic polymer. Aluminum clad, wood composite windows are also on the market which...
contain wood fibers and polymers on the inside of the window frame and aluminum on the exterior. Composite windows can be purchased in a variety of colors but white is the color most often promoted. Buyers can purchase some composite windows with an optional wood veneer on the interior side of the window but not on the exterior.

As with any new product or material on the market homeowners have to weigh the initial cost versus payback on investment. Composite windows are promoted as a better alternative to vinyl and aluminum because of greater energy efficiency and strength and their ability to withstand high temperatures. The unequal expansion and contraction properties of vinyl windows can lead to seal failure and glass condensation. Because of the consistent strength of the frames and glass, composite windows are advertised to reduce seal failure and the fogging and condensation between the glass panes. However, they are also more expensive than vinyl and their life expectancy is unknown. Composite windows typically cost 10% to 30% more than vinyl or vinyl-clad windows and they are also more expensive to install. Composite windows are also more eco-friendly than vinyl with fiberglass typically containing around 60% recycled glass.

Composite windows are now an acceptable alternative for a number of historic preservation commissions and homeowners. Some composite windows have muntin bar profiles which are consistent with historic sash and casement window designs. If replacement windows are necessary for a historic building, composite windows often get the nod over vinyl, vinyl clad or aluminum clad because of their compatibility with historic wood windows. The historic preservation commissions and review boards in cities such as Indianapolis, El Paso, Jacksonville and Charlotte now approve compatible composite window designs. As with any relatively new product the life expectancy and payback of composite windows is unknown. Composite windows made of aluminum and wood fiber suggests that these materials may be longer lasting than those of resin and fiberglass. Composite windows of fiberglass may also fade over time and require repainting which would be an additional cost, although

Composite windows are designed with muntin bar profiles which resemble wood windows much more closely than aluminum, vinyl, or vinyl-clad.
powder coated aluminum can also fade if it is a dark color. The overall cost and payback of any replacement window will always compare unfavorably with preserving and maintaining historic wood windows. But for historic houses that have replacement windows which have failed or for new construction in historic districts, composite windows may be worth considering. 

Some composite windows are designed with wood veneers on the interior of the frame.

The windows on the rear of this building were either missing or deteriorated and the new composite windows were approved by the community’s historic preservation commission.
Reviewing Window Replacement: A Proposed Approach for the Small Project  

By John Sandor

Secretary of the Interior’s Standard 6 suggests that without deterioration severe enough to require replacement, a distinctive feature such as a window should be repaired. Judging exactly what constitutes such severe deterioration is no easy task. Fairly deciding what is reasonable rather than just possible can depend not only on the nature of the deterioration but also on the skills locally available to do such work and its cost. Assessing conditions from photos taken by someone who does not understand what critical conditions to focus on can further challenge the reviewer charged with evaluating a replacement request. It is not surprising that many communities do not create much of a hurdle for those seeking to replace their windows in a historically designated property.

While the assessment of whether or not a window can reasonably be repaired is probably best made in person by someone familiar with the techniques of repair, the task of evaluating the replacement window should be successfully accomplished far more easily. There are two basic questions that need to be addressed by anyone seeking approval for replacement: How will the window be installed and what will the new window look like?

The question of installation has to begin with the existing window. Will it to be removed in its entirety back to the rough opening? This means removing the exterior trim, casing or brick molding and the interior casing with all the disruption to the surrounding materials that can entail. It is, however, the approach that makes possible an installation of a new window that can best match the existing one. Where interiors are missing or interior surfaces are
Aluminum clad wood window replacement intended for rough opening installation but here inserted within an existing jamb.

Replacement window designed to be installed within the jamb. It represents about the best that can be accomplished in this way.

Original historic window in a row of like houses

A wood replacement window in the same row of house showing compromises in the proportion of the components and the way it was installed.

being replaced as part of a larger project, with rare exception it is the only approach that should be considered.

Far too often the intention is to leave the existing jambs and sill in place, removing only the sash, stops and parting bead. This leaves trim intact both inside and out, and the jambs provide a ready surface for attaching the new window. A new window unit though, has its own jamb and sill, so inserting it within an existing jamb means adding a redundant element of framing. Either glass size or some other element of the framing such as the sash sticking will be smaller than what was in place on the historic window. This will result in an unavoidable compromise in the match of the new window. Many manufacturers make a unit specifically designed for this type of installation in an attempt to minimize that compromise, and these are almost always a better choice than a unit designed for a rough-opening installation when the jamb is being left in place. Such windows are typically referred to as a pocket replacement or insert unit.

Leaving the existing jamb in place is popular with homeowners who want to avoid disruption of their interior, and it makes the installation easier for the installer and thus cheaper. It can also make sense where there are fine interior casings that might be damaged by removal and reinstallation, necessary in a rough-opening installation. Since the concern of most local review is limited to the exterior, this advantage may not be a relevant factor in a review. If the only approach to replacement of historic windows that is typically approved is the better-matching rough-opening installation, might more homeowners opt to repair the windows they have?

In the end the goal for any window replacement is to match the historic window where one survives. Comparing drawings of both the existing historic window as it exists in the wall assembly to the proposed new window as it will be installed can provide the needed information to judge the match of a replacement window, assuming the reviewer
An example showing an original window on the right, with the replacement on the left. You can see just how the left replacement is different, but how it may not matter at a normal viewing distance.

is familiar with reading such drawings. When the historic windows have already been replaced, the new replacement should be judged against a window typical of the period of the building.

Window replacement is often a stand-alone request coming from a homeowner who will present no more than a cut sheet of the new window to be used. Without requiring a professional to provide more complete measured drawings of the window in the wall assembly there is another approach that may facilitate an effective review. Most individual applicants are already dealing with a window supplier and installer who will have previously installed the proposed window unit somewhere else in an equivalent wall assembly. Thus, rather than getting more extensive drawings, a few good photos of the specific proposed window in an equivalent installation in addition to photos of the existing can provide a ready visual comparison between the existing window and the replacement.

Of course, the photos of both proposed and replacement need to be clear and large enough to see the proportions and profiles that one would expect to see in person. Instead of trying to judge from comparable drawings whether a ½ inch dimensional difference will be noticeable in the context of the whole assembly, the reviewer can make a visual comparison of the overall appearance and decide if the new window looks sufficiently similar to uphold whatever level of match the local standards require. The homeowner will not be required to secure drawings for a project where architectural services are not otherwise required, and the reviewer can make an informed qualitative judgement balancing all the little compromises that any replacement project involving modern manufactured windows will involve.
Storm Windows

By Preservation Pennsylvania

When it comes to the energy performance of windows, two panes are better than one. As a result, windows with double-pane glass are more efficient than those with a single pane of glass. But studies show, it doesn’t matter whether those two panes of glass are installed together as part of a manufactured, insulated unit, or are formed by adding a storm window (exterior or interior) to an existing or historic window.

Storm windows help reduce air leakage and improve the insulating value of existing windows. They can be installed on the interior or exterior side of windows and can be mounted permanently or for seasonal use. Industry guidelines indicate that the addition of a storm window to an existing single-glazed window will reduce the energy loss through the window area by approximately 50%. This savings applies to both heating and cooling.

Replacing existing, single-pane, leaky windows with new windows can significantly improve a building’s energy performance and reduce operational CO2 emissions. New high-performance replacement windows were found to provide an annual energy savings between 17 and 29%. However, upfront costs are substantial. Despite their effectiveness, because of their high cost, new high-performance windows offer a poor average rate of return of just 1.7%.

Exterior Storm Windows
Comparative energy savings are offered by exterior storm windows, especially when used in combination with insulating cellular shades. Exterior storm windows alone provide energy savings of 14 to 24%. When used in combination with insulating cellular shades, exterior storm windows provide an energy savings ranging from 19 to 26%. But because the cost of storm windows is
lower, the average return on investment for exterior storm windows nationwide was 3.5%. Adding the cellular shades increases both efficiency and cost and reduces return on investment slightly to an average of 3.2%. Both of these are approximately double that of the return on investment (1.7%) for high-performance replacement windows. This generally means you are achieving a nearly equivalent energy reduction at half the cost by retrofitting your historic windows with exterior storm windows rather than replacing them.

Many people find exterior storm windows to be unattractive. And they certainly can be. But there are a number of manufacturers and craftsmen who can make wood or metal storm windows that fit your window well and have a relatively limited visual appearance. It is important that they fit properly, that the meeting rail match the rail on your windows, and that the frame be as thin as possible and painted to match the surrounding window elements.

Wood storm windows can be commercially-purchased or custom-made. They can be hinged at the top and open out at the bottom to allow air in when the weather is good; they can be removable, going on in the cold months and coming off in the warm months; and they can be partially removable, where the frame remains in place year-round, but the glazing panel is removed using toggle clips, and replaced with a screen panel.

In addition to wood storms, metal (typically aluminum) storm windows are also available. Like wood windows, these can be curved, arched or otherwise customized to fit your window opening. A number of different types are available, includ-
ing: fixed, self-storing (triple-track), inside removal, or outside removal. Depending on your desired aesthetic, operation preference and budget, storm windows can be found or made to suit your needs.

### Interior Window Panels
Exterior storm windows achieve notable energy savings and serve to protect the historic window from the elements. However, interior window panels provide a slightly greater energy savings than exterior storm windows alone and are not visible from the exterior. Interior window panels can also be more easily installed and removed for ventilation or cleaning.

Often referred to as interior storm windows, interior window panels were found to provide an energy savings of approximately 14 to 27%. These were especially effective in cold climates, such as Portland, Boston and Chicago, all heating-dominated climates like that found in Pennsylvania.

As people become aware of the effectiveness and ancillary benefits of interior window panels, more and more manufacturers and installers are appearing. Some use glass, while others use flexible plexiglass. Some permanently affix the storms, while others have removable inserts. We anticipate that this market will continue to grow as the demand increases.

### A Note About Storm Windows and Condensation
Storm windows can reduce air leakage, which is good when trying to improve the energy efficiency of a home. However, it is important that the humid air that gets caught between a storm window and window is allowed to escape to the outdoors. Whether exterior or interior storms are used, the outer window unit must have weep holes (exterior storm) or allow some air leakage (historic window) to avoid condensation between the panes, and the interior part of the window/storm window pair should be airtight.
Storm windows address a number of the concerns or help achieve many of the goals of those contemplating window replacements, including:

- Energy savings
- UV reduction
- Reduced heat gain
- Noise reduction
- Sash protection
- Reduced condensation

Storm windows have consistently been one of the best ways to preserve historic wood windows. Consider them rather than replacing historic windows in your next project.
What If We Thought Further About Our Values and Power Over Window Replacement Proposals

By Betsy Bradley

As a historic preservation commissioner and practicing preservationist, I’m tired of talking about window replacement in historic buildings. Once I admitted this, I thought about how to take a fresh look at the conversations we have all had with building owners and redevelopers. I thought about our strong stance on keeping historic windows through the lenses of power relationships and our preoccupation with historic windows.

Hold on there, you’re thinking. But let’s ponder the arguably most common type of conversations that we have in our work: windows. I have defended historic windows for decades and highly value them myself; but I also recognize that our success rate in convincing property owners to keep their historic windows for any of the good reasons that we can cite is not as high as we wish.

If we consider what preoccupation means, we may be considering historic windows with unqualified respect or perhaps even overvaluing them. If we are truthful, we value historic and replacement-in-kind windows more than most people we come into contact with. And because we value them so, we arm ourselves with strict historic district standards that we can point to with pride to support our position. In the power differential over historic windows, we have official support and guidance and rely on standards in our defensible decision making. This sends the message to the property owner that they are just wrong about windows, particularly the relative value of new and old windows. We might win the battle over windows,
but have we gained support for the local historic
district designation and design review practice?

As we think more about how people interact with
buildings and derive meaning from them – rather
than basking in the beauty and glory of them – we
must open up our conversations about windows. A
step further in thinking in this direction would have
us be less dismissive about what historic building
owners value about their windows: ease of opera-
tion, not being perceived as the unsolved problem
for their home or business, and perhaps part of a
major investment in their homemaking and place-
keeping that they have agency over.

But how can we address windows differently with-
out stepping onto that slippery slope of relaxed
standards? We might:
• Provide more choices linked to access to
benefits and grants and thus place the decision
making in the hands of the property owner.
• Stick to the basics of not disrupting a fenestra-
tion pattern and changing the sizes of openings
as our standards.
• Think about window replacement as part of
property ownership, maintenance and manage-
ment patterns, rather than just the loss of historic
integrity.
• Adopt a tiered system of regulation for standard
and special windows with different requirements
for different types of windows.
• Get serious about deconstruction-driven removal
of wood and metal windows that can be stored
and reused elsewhere.

I’m sure we could stop far short of the opposite of
our preoccupation with windows – dismissing and
undervaluing them – and find a middle ground.
Stepping away from our early seizing of power
over windows decades ago and hanging on to
it at all costs provides opportunities to meet more
people where they are in their ownership and en-
joyment of historic buildings. We will have what
we can still define as success: historic windows in
place in many of our historic buildings. And in
others where they are not present, perhaps we
can find another valid measure of success: a
building that is cherished and in use.
TOOLS FOR THE ON-LINE PRESERVATIONIST: Windows Through Time

If you are reading this issue of The Alliance Review, you’re already invested in the preservation of old windows. But perhaps you want to learn more about why windows look the way they do? Take a “walk” through the Historic Preservation Education Foundation’s online exhibit on the history of window design.

What it is: Beginning with examples from the seventeenth century and up through the mid-twentieth century, you’ll learn how glass technology, concerns about fire, and widespread use of pattern books influenced the design of windows. Each illustrated example is accompanied with a physical description and a history of the technology and materials used to make the window. Whether you’re on the inside of historic building looking out or you’re looking at the building from the sidewalk, after a few minutes with this exhibit, you won’t look at historic windows in the same way again.

Website: https://www.hpef.us/historic-windows/ windowssthrough-time or Google “Windows through Time Exhibit”

Typical Muntin Profiles, 1740-1930s.
Call for Nominations
2020 NAPC Commission Excellence Awards

The National Alliance of Preservation Commissions is now accepting applications for the 2020 NAPC Commission Excellence Awards program to recognize and honor outstanding efforts and achievements by local preservation, historic district, and landmark commissions and boards of architectural review, as well as individual preservationists doing exemplary work at the federal, state and municipal levels.

Award presentations will be made at FORUM 2020 in Tacoma, WA, July 22-26, 2020. Award recipients will receive one complimentary registration to FORUM, a mounted award certificate, and will be featured in The Alliance Review, NAPC’s quarterly journal. Honorable mentions, if any, will receive an award certificate and one reduced registration.

Submission deadline: March 2, 2020

For information on how to submit a nomination for further details go to:
https://napcommissions.org/forum/ or email questions to Stephanie Paul at director@napcommissions.org

Student Scholarships Available
FORUM 2020, Tacoma, WA
July 22-26, 2020

The National Alliance of Preservation Commissions (NAPC) is pleased to offer scholarship support to qualified students of undergraduate and graduate-level preservation programs to attend and participate in FORUM 2020 in Tacoma, WA, July 22-26, 2020.

NAPC is committed to investing a portion of its resources to introduce students of preservation programs to NAPC through financial support and attendance at its programs and events.

To learn more about FORUM 2020, please visit our website at www.napcommissions.org/forum

NAPC’s scholarships provide:
• Registration to FORUM
• Reimbursement for qualified travel and lodging expenses (up to $400)
• Individual Membership for one year to the NAPC.

To qualify for consideration of a NAPC scholarship award, please submit your application by March 2, 2020.

All applications are to be sent electronically to Stephanie Paul, NAPC Executive Director at director@napcommissions.org
The Window Preservation Alliance (WPA) formed in 2015 with a mission “to inspire the preservation of original windows by educating the public about the beauty, craftsmanship, and energy efficiency of original windows and supporting the people and businesses who restore them.” Uniting professional window restorers around the country, the WPA provides a level of representation equal to or perhaps greater than replacement window manufacturers. With their simple motto, “Don’t replace…repair,” the WPA connects property owners wishing to save their windows with professionals who specialize in the trade. Inclusive of all who wish “to help change the conversation about windows” the WPA strives to demystify the window restoration process as well as introduce those interested in the trade to professionals who can help them grow. The WPA is a 501(c)(6) trade association governed by a
board of directors residing around the country. The organization’s website provides a wealth of resources including Top Ten Reasons to Repair or Restore Wood Windows, the Secretary of the Interior’s Standards, and reports and studies on energy efficiency. Visitors to the site can also find a running list of window preservation events hosted by the WPA or other groups around the country.

If you are interested in learning more about the WPA, please visit their website at https://windowpreservationalliance.org or find them on Facebook at https://www.facebook.com/WPAwindows/.
MINNESOTA

Peavey Plaza is a 2-acre sunken park designed by Modernist landscape architect M. Paul Friedberg and dedicated in 1975. It is regarded as one of the most important works of landscape architecture in the 20th century. The downtown Minneapolis park was recently reopened after a lengthy grass-roots effort and legal battle by preservationists. The plaza’s centerpiece was a 140-foot by 200-foot pool that could be drained when more space was needed for large events and used for ice-skating in winter. Surrounding this central water feature, Friedberg’s signature concrete and planted viewing terraces created an amphitheater-like environment shaded by honey locust trees. Corners were anchored by two fountains where water flowed down stainless-steel cylinders into a series of angular basins. The plaza served its intended purpose admirably for decades, becoming an urban oasis for downtown inhabitants and functioning as a “front yard” for the Minnesota Orchestra’s concert hall.

But the plaza did not age well, especially given Minnesota’s challenging winters. Pressure had been building on the city to update the plaza, which proposed raising it to street grade, thereby obliterating the original design. The city applied to the Minneapolis Heritage Preservation Commission for a permit to demolish Peavey Plaza. In 2012, the HPC voted 8-1 to deny the demolition application. Alarmed by the city’s controversial proposal to demolish the modernist icon, The Cultural Landscape Foundation and the Preservation Alliance of Minnesota filed a lawsuit under the Minnesota Environmental Rights Act, and they prevailed. A new design was approved by the HPC and the Minnesota SHPO that addressed accessibility issues and retained character-defining features according to the Secretary of the Interior’s Guidelines for the Treatment of Cultural Landscapes. (MN SHPO)

OREGON

Astoria’s Historic Landmarks Commission approved replacing a wooden sign about Fort Astoria with a plastic variant. The beaverboard sign was installed in 1948 at a small park at the site of the first American settlement west of the Rockies, with one side recounting the history of the fort, and the other detailing its layout. The Commission approved replacing the deteriorating wooden sign with high-density plastic, to the chagrin of local preservationists who argued the city should preserve and repair the existing sign and log supports, replacing them with like-minded materials when necessary. The city did not consider replacing them in-kind, but consulted with Lewis and Clark National Historical Park before concluding a plastic sign would be easier to maintain and not significantly change the character of the site. They included a condition to have the National Park Service perform an archaeological study of the site and pushed for the original sign to be preserved. The condition of the sign came to the forefront after concerns were raised about its dated language, with references to Jane Barnes, which the sign proclaims as “the Oregon country’s first white woman.” (The Astorian)

PENNSYLVANIA

City Council is making it harder to demolish buildings in 6 historic Philly neighborhoods. Residents of Powelton Village — a tree-lined neighborhood of Victorian townhomes — watch ever-expanding Drexel University with a wary eye. In 2017, City Council declared the storied neighborhood a “conservation district,” a designation that regulates the material and scale of new construction but does not defend against demolition. But Debra McCarty of the Powelton Village Civic Association, says the conservation district’s guardianship has not proven robust enough.

“We have seen many intact properties demolished prior to plans being approved for new construction,” said McCarty. That’s why McCarty supports a bill, introduced by Councilmember Mark Squilla, that would regulate the razing of buildings in conservation districts. The legislation would prevent the Department of Licenses and Inspections from granting demolition permits unless they are accompanied by building permits. That means a property owner can’t just knock down an old house, clearing the land for theoretical future development, unless they have a proposal for what they’ll actually do with the lot. There are currently six conservation districts in the city, covering neighborhoods like East Falls, Wissahickon, Queen Village and Overbrook Farms. (Philadelphia Tribune)
WISCONSIN

Madison’s City Council upheld on Tuesday a ruling by the Landmarks Commission that found the owner of a historic property on Langdon Street is letting it deteriorate by not making necessary improvements. The city has been urging the owner to address problems at the Suhr House, where Grover Cleveland was once entertained, since November 2016. After two years of noncompliance, the city issued their first ever ruling of demolition by neglect. Under the Historic Preservation Ordinance, the building inspector could proceed to repair a landmark, and the property owner would be responsible for the costs or as a special charge against the property. The City Council could also authorize the city to acquire the property through condemnation proceedings. (The Cap Times)

WYOMING

Casper’s Historic Preservation Commission plans to develop a historic tour app in order to better engage the public about historic resources, in part because people kept showing up with antelope. Patricia McKenzie and her husband had just renovated an old ice factory in town and kept an old sign that had been painted on the wall advertising “game processing.” But when the 2010 hunting season rolled around, the McKenzies ran into a problem. Hunters kept showing up with their trophies asking to have the meat processed. The McKenzies have a programming consultant business and a martial arts studio. So they painted over the sign. The building was recently toured by the commission whose goal is to develop a cell phone app that would give anybody who downloaded it a self-guided tour of the city’s history. They previously had a walking tour, but few of the paper copies are still available. Their plan is to translate it into an app and add to it over time, plus have the opportunity to gather data on how the public is using the app. And it wouldn’t only be historic buildings. The commission is in the process of documenting all of Casper’s “ghost signs.” Perhaps they can re-create the “game processing” sign in the app. (Casper Star Tribune)
Become part of the national network of local preservation, historic district, and landmark commissions and boards of architectural review. Organized to help local preservation programs succeed through education, advocacy, and training, the National Alliance of Preservation Commissions is the only national nonprofit organization dedicated to local preservation commissions and their work. NAPC is a source of information and support for local commissions and serves as a unifying body giving them a national voice. As a member of NAPC, you will benefit from the experience and ideas of communities throughout the United States working to protect historic districts and landmarks through local legislation, education, and advocacy.

You can also join online at http://napcommissions.org/join

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In addition to receiving all NAPC membership benefits, Professional members are listed in the NAPC Professional Network Directory at http://napcommissions.org/directory.

* Membership includes all commission members and staff. Please provide complete list of members with names, phone numbers and email address for additional digital copies.

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$30.00
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