



Historic Wood Windows

A Tip Sheet from the National Trust for Historic Preservation's HOPE Crew

Historic windows are among the most important elements of a building. Simple repairs and routine maintenance coupled with storm windows make for energy efficiency that in most cases matches, if not exceeds, the efficiency of replacement windows. Workshops throughout the country have taught participants easy ways to care for historic windows as pictured above. Historic preservation can—and should—be an important component of any effort to promote sustainable development. The conservation and improvement of our existing built resources, including reuse of historic and older buildings, greening the existing building stock, and reinvestment in older and historic communities, is crucial to combating climate change.

Introduction

There is an epidemic spreading across the country. In the name of energy efficiency and environmental responsibility, replacement window manufacturers are convincing people to replace their historic wood windows. The result is the rapid erosion of a building's character, the waste of a historic resource, and a potential net loss in energy conservation. Typically, replacement windows are vinyl, aluminum, or a composite with wood, and none will last as long as the original window. Repairing, rather than replacing, wood windows is most likely to be the “greener option” and a more sustainable building practice.

Research shows that most traditionally designed wood-frame buildings lose more heat through the roof and un-insulated walls than through the windows.¹ A historic wood window, properly maintained and fitted with a storm window, can be just as energy efficient as a new window.² Replacing a historic single-pane window also may not save you much money in the long run. While the exact figure will vary depending on the type of window installed and whether or not a storm window is used, studies have found that it could take 100 years or more for a replacement window to pay for itself in energy savings.³ According to information published in an *Old House Journal* article, it could take 240 years to recoup the cost of replacing a single-pane-window-storm window combination with a low-e glass double pane thermal replacement window.⁴ Also, a historic wood window can easily last more than 100, years while a new window

Basic Maintenance

There are many practical books and magazine articles to guide a handy person in the basic maintenance of wood windows. Several publications are listed in the references section of this tip sheet. To get you started, here are some of the keys to many years—and generations—of life with older wood windows.

1. Keep the exterior surfaces painted, including the glazing putty. Paint protects the wood and putty from water and extends their service life. Be especially attentive to horizontal surfaces where water may collect.
2. Glazing putty will eventually dry out and is meant to be periodically replaced. You can do spot repairs initially, but eventually it will be easier to re-glaze the whole sash.
3. Keep movable surfaces, such as the inside jamb, free of paint buildup so that the sash can slide freely.
4. If your sashes are hung with cord, keep the rope free of paint. This will improve the window's operability. Cord will eventually dry out and break but can be replaced. When replacing the cord, you can also re-hang the weights so that the sash will be balanced.

¹ Rypkema (2006); James et al (1996); Klems (2002).

² James et al (1996); Klems (2002).

³ Sedovic & Gotthelf (2005); <https://www.lenfant.org/eblasts/October2011/WhatReplacementWindowsCan'tReplace.pdf>

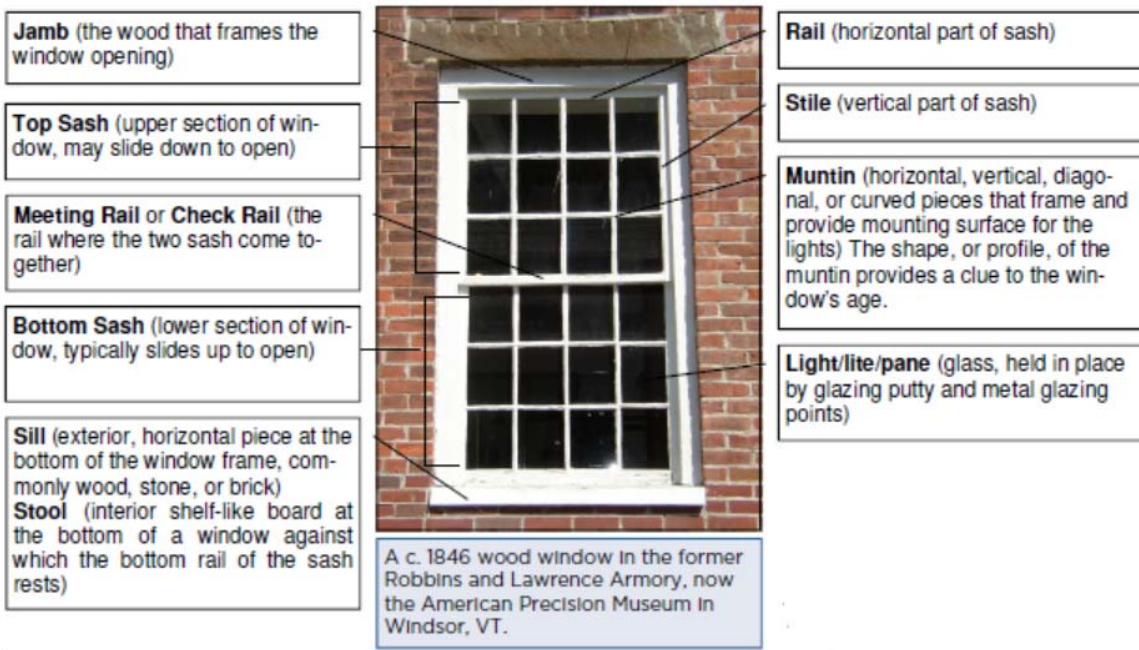
⁴ Poore, Patricia “The Case for Repairing Wood Windows.” *Old House Journal* (August 2020).

Not every wood window can be repaired and there are situations where replacement is appropriate. However, many historic wood windows can and should be repaired, especially if the windows were manufactured before about 1940. Wood windows made before this time were constructed with individual parts, each of which can be repaired or replaced. The wood itself is denser and of higher quality than what is grown today, and it is generally more rot- and warp resistant than modern wood.

These are just some of the practical reasons to repair rather than replace historic wood windows. In addition, repairing the historic window helps maintain a building's authenticity. Once original material is removed from a building, it is gone forever. There are many more benefits to repairing your wood windows, so keep reading.

Wood Window Basics

Using this 12-over-12 double hung wood window as our example, here are the basic terms used for wood window parts. This window is called 12-over-12 because there are 12 panes of glass in each sash. Both sashes are moveable so it is called double-hung. If only the bottom sash moves, it is called single-hung.⁵



⁵ Garvin (2002). Source for Muntin definition.

My Windows Are Old and Drafty, Why Shouldn't I Buy New Ones?

1. More heat is typically lost through your roof and un-insulated walls than through your windows. Adding just 3 and 1/2 inches of insulation in your attic can save more energy than replacing your windows.⁶
2. Replacement windows are called “replacement” for a reason. Manufacturers often offer lifetime warranties for their windows. What they don't make clear is that 30% of the time, a replacement window will be replaced within 10 years.⁷
3. Replacement windows that contain vinyl or PVC are toxic to produce and create toxic by-products. Installing these in your house is not a ‘green’ approach.⁸
4. If your wood windows are 60 years old or older, chances are that the wood they are made of is old growth—dense and durable wood that is now scarce. Even high-quality new wood windows, except for mahogany, won't last as long as historic wood windows.
5. Studies have demonstrated that a historic wood window, properly maintained, weather-stripped and with a storm window, can be just as energy efficient as a new window.⁹
6. According to studies, it can take 240 years to recoup enough money in energy savings to pay back the cost of installing replacement windows.¹⁰
7. Each year, Americans demolish 200,000 buildings. That is 124 million tons of debris, or enough waste to construct a wall 30 feet high and 30 feet thick around the entire U.S. coastline.¹¹ Every window that goes into the dump is adding to this problem.
8. With a little bit of practice, it can be easy—and inexpensive—to repair and maintain your wood windows.
9. Not a DIY-er? There are people near you who can do it for you. Hiring a skilled tradesperson to repair your windows fuels the local economy.¹² For more resources visit the Historic Trades resource page on the National Trust's Preservation Leadership Forum:
<https://forum.savingplaces.org/historic-trades>
10. Historic wood windows are an important part of what give your older building character

⁶ Rypkema (2006);

⁷ Ibid.

⁸ Sedovic (2005).

⁹ Ibid.

¹⁰ Calculations from www.historichomeworks.com. Accessed 2009.

¹¹ Hadley (2006).

¹² www.historichomeworks.com. Accessed 2009.

Winter Tips

Most of the heat transfer occurs around the perimeter of the sash rather than through the glass. So, the tighter the seal around the window and between the upper and lower sash, the more energy efficient the window will be. Here are some tips to help you save on your heating bills.

Check the lock. Most people think the sash lock is primarily for security. It does help with security, but the lock's most important job is to ensure that the meeting rails are held tightly together. A tight fit greatly reduces air infiltration.

Weather stripping—add it or renew it. Adding weather stripping to your window can increase the window's efficiency by as much as 50%. It's an inexpensive way to boost your window's efficiency. There are many different kinds from which to choose. Refer to the articles listed at the end of this tip sheet. The staff at your local hardware store should also be able to assist you.

Storm windows—use them! There are many styles from which to choose, including storms that can be fitted on the interior of the window. Many studies have shown that a wood window in good condition fitted with a storm window can be just as energy efficient as the more expensive replacement window. Due to the thermal exchange properties of wood, there is also a growing interest in traditional wood framed storm windows as they transfer less heat than metal framed storms.

Condensation. If you find condensation on the inside of your primary window, cold air leaking through the storm window is likely the culprit. If the condensation is forming on the inside surface of the storm window, warm air from the building interior is leaking in around the primary window. When warm and cold air are present on opposite sides of glass, condensation forms (think of a cold glass of lemonade on a hot day). When condensation forms on your window glass, water can collect on the horizontal wood parts of the rails, muntins, and sill, which can lead to paint failure and rot. To reduce condensation, you need to limit the amount of leaking air. Add or replace weather stripping, make sure the sashes are meeting properly and that the sash lock is tight, and check the seal around the exterior of the storm window and caulk if necessary. When caulking around the perimeter of exterior storms it is important to leave weep holes at the bottom so that any condensation or infiltration that does occur can drain out

What About Lead?

If your windows retain paint that was applied prior to 1978, chances are there is lead paint on them. Just because there may be lead paint on the windows does not mean they are unsafe or that they need to be replaced. There are steps you can take to protect yourself and others if you suspect lead paint may be present. Before beginning work, consult your local or state ordinance to determine the legal method for handling and disposing of lead paint in your area.

- Children and pregnant women should not be allowed in the work area.
- Do not smoke or eat or drink in the area you are working in and wash your hands and face before doing so
- Wear disposable gloves and eye protection.
- Use a respirator if there is friable paint, or if you are scraping or sanding paint.
- Use a wet sanding technique to minimize dust.
- Vacuum using a HEPA filter.
- Wash your work clothes separately from your household laundry. You can also wear a Tyvek suit to protect your clothes. Take it, and your shoes, off before you leave your work area.
- Place tarps under your work surface to collect loose paint. Seal off the workspace from other rooms and from HVAC systems. Cover any furniture and other items in the work area with
- Eating a nutritious diet rich in iron and calcium will reduce the amount of lead absorbed by your body if any does happen to be ingested.
- For more tips on how to work lead-safe, see [“Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work”](#)
- and the National Park Service Brief # 37, [“Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing”](#)

Additional Resources

This list is a place to start—it is not intended to be comprehensive, nor does the inclusion of a business or organization serve as an endorsement.

- Community Preservation Coalition: <http://www.communitypreservation.org/windows>
- Leeke, John, “Save America's Windows: Caring for older and historic wood windows.” January 1, 2009 web site www.historichomeworks.com
- Mattinson, Bill, Ross DePaoloa, and Dariush Arasteh. “What Should I Do About My Windows?” Home Energy Magazine (July/August 2002):24-31. <https://eta.lbl.gov/publications/what-should-i-do-about-my-windows>
- Myers, John H. “The Repair of Historic Wooden Windows” Preservation Brief Series # 9. The National Park Service, <https://www.nps.gov/tps/how-to-preserve/briefs/9-wooden-windows.htm>
- National Park Service. “The Secretary of the Interior’s Standards for Rehabilitation” <https://www.nps.gov/tps/standards.htm>
- New England Window Restoration Alliance www.windowrestorationne.org
- Old House Journal: <https://www.oldhouseonline.com/web-exclusives/the-high-cost-of-replacement-windows/>
- Preservation Leadership Forum, National Trust for Historic Preservation: <https://forum.savingplaces.org/learn/issues/historic-trades>
- Window Preservation Alliance: <https://windowpreservationalliance.org/Library>

References

Garvin, James. A Building History of Northern New England. Hanover, NH: University Press of New England, 2002.

Hadley, James. “The Home of the Future?” ArchitectureBoston 10, no. 2 (March/April).

James, Brad, Andrew Shapiro, Steve Flanders, and Dr. David Hemenway. “Testing the Energy Performance of Wood Windows in Cold Climates.” A Report to the State of Vermont Division for Historic Preservation. 30 August, 1996. <https://www.ncptt.nps.gov/blog/testing-the-energy-performance-of-wood-windows-in-cold-climates-a-report-to-the-state-of-vermont-division-for-historic-preservation-agency-of-commerce-and-community-development-1996-08/>

Klems, Joseph H. "Measured winter performance of storm windows." University of California: Lawrence Berkeley National Laboratory, August 23, 2002. <http://repositories.cdlib.org/lbnl/LBNL-51453>

Poore, Patricia “The Case for Repairing Wood Windows.” Old House Journal (August 2020).
<https://www.oldhouseonline.com/gardens-and-exterior/preserving-wood-windows/>

Rypkema, Donovan D. “Economics, Sustainability, and Historic Preservation.” Forum
Journal 20, No. 2 (2006):27-38.

Sedovic, Walter and Jill H. Gotthelf. “What Replacement Windows Can’t Replace: The Real
Cost of Removing Historic Windows.” APT Bulletin, Journal of Preservation Technology 36,
no. 4 (2005):25-29.

<https://www.lenfant.org/eblasts/October2011/WhatReplacementWindowsCan'tReplace.pdf>



This Tip Sheet update was made possible by the National Trust for Historic
Preservation’s HOPE Crew (Hands-On Preservation Experience).
To learn more visit: savingplaces.org/hope-crew

The National Trust for Historic Preservation is a privately funded nonprofit organization that works to save America's historic places. From our headquarters in Washington, D.C. and our field offices, we take direct, on-the-ground action when historic sites are threatened. Our work helps build vibrant, sustainable communities. We facilitate public participation in the preservation of sites, buildings, and objects of national significance or interest. We advocate with governments to save America's heritage, and we strive to create a cultural legacy that is as diverse as the nation itself so all of us can take pride in our part of the American story.



National Trust *for*
Historic Preservation®

The Watergate Office Building
2600 Virginia Avenue NW Suite 1100
Washington, DC 20037

SavingPlaces.org