

Fact Sheet

Repairing, Retrofitting and Replacing Windows

In most historic buildings, the windows and the architectural detail surrounding them were carefully designed as integral components of the style, scale and character of the building. Windows have always played an important role in the performance of the building in terms of providing and managing light and air, and that role has expanded to include or improve occupant comfort, accessible operation, energy-efficiency, noise control, safety and security. With that in mind, the Commission's Rules and resources are intended to accommodate a range of approaches to repairing, retrofitting and replacing windows, one of the most common work types reviewed by the Commission.

This guide is intended to identify facts and key considerations for repairing, retrofitting and replacing windows at all facades and building types, including individual landmarks and buildings within historic districts.

Facts and Key Considerations for Windows

- Building owners have a variety of options to improve the appearance, energy-efficiency and functionality of windows, often reviewed and approved at staff level.
- Some options do not require a permit. Most other options that do require a permit can be approved at staff level, and those that cannot require review and approval by the Commissioners at a Public Hearing.
- Existing historic windows that are in fair or good condition can be repaired and retrofitted, and doing so conserves material resources and preserves authenticity. No LPC permit is required to perform most repairs and undertake many energy-efficiency upgrades.
- Existing windows that are deteriorated and in poor condition, or are functionally deficient, can be replaced. A LPC permit is required, and for staff level review and approval the new windows must match the historic windows to varying degrees depending on the primary or secondary nature of the façade(s).
- LPC staff can assist owners in exploring options for window repair, retrofit or replacement.
 - o Simple window repairs and retrofits (weatherstripping, air sealing, insulating, etc.) can be accomplished at the same time, saving time and labor costs while improving energy-efficiency and comfort of the home. "Special windows" in particular (such as those with stained glass) may be difficult to replicate, so repair and retrofit may be the best option.
 - o Window replacement options vary, ranging from sash-only replacements, to insert windows in the original frames, to full removal and new window installation. Consider hiring

architects, suppliers, and/or contractors with experience working on historic buildings to come up with the best approach when replacing windows.

LPC Regulation

- LPC regulates the replacement of windows on buildings located within a historic district or on an Individual Landmarks. No LPC permit is required for most repairs, retrofits and routine maintenance of existing windows, which includes but is not limited to glass replacement, scraping, priming and repainting the window sash and frame to match the same color, caulking, and the installation of weatherstripping. See Title 63 of the Rules of the City of New York and refer to appended guidelines in Appendix A.
- The majority of window replacement proposals reviewed by LPC meets the applicable criteria and can be approved at staff level. However, window proposals that do not meet these criteria as stated herein will require review by the Commissioners at a public hearing. See Title 63 of the Rules of the City of New York.
- The public hearing is an opportunity to explain why a proposed installation is appropriate to the building or historic district. LPC Staff will provide guidance on how to prepare a presentation to the Commissioners. Applicants should be prepared to make a case for appropriateness when presenting at a Public Hearing.

LPC Review

Applications for window replacements or modifications should include typical LPC submission materials, including:

- Permit application form signed by the building owner.
- High quality color photograph prints (and digital in case requested) of the building facade, exterior windows, with close-ups of typical and unique details including brickmolds and jamb details, streetscape photos documenting similar buildings and historic photographs, such as tax photos found at the Municipal Archives, and other sources such as New York Public Library, Museum of the City of New York, and Library of Congress many of which can be accessed on line.
- Fully-dimensioned and labeled drawings, including floor plans identifying the location of the windows on the building, elevations, through-wall horizontal and vertical sections, and specified paint color.

Accurate dimensions: For window replacement at all building types, it is important to provide fully-dimensioned drawings of the existing windows in elevation and section details if they are historic windows. Important dimensions to include are total sightline from opening in wall to glazing, plus individual components such as the brickmolds, blind stop, window framing, and the **setback** of the window sash from the plane of the façade. Glazing diminution calculations may be requested by staff based on a review of the submitted material.

Repairing and Retrofitting Windows

The Commission supports efforts to maintain, repair, and retrofit historic windows. Maintenance and repairs to historic windows do not require a permit as long as certain criteria are met. Windows that have not been well maintained and have minor deterioration can often be repaired and retrofitted rather than replaced, and when properly done, this improves functionality and efficiency. The following best practices for maintaining and repairing historic windows do not require a permit, except as noted.

Best Practices for Repairing Historic Windows

- **Operation:** More often than not poor operation is due to over painting and sealing the window sash to the window jambs and sills, making them difficult to open. Cutting the paint seal at all contact points usually resolves this issue. In addition, replacing window hardware including pulley chains or ropes, hinges and sash locks, in addition to scraping, sanding, and repainting the window jambs, will improve the functionality of the windows.
- **Deterioration:** If a window shows sign of deterioration, it is often the result of moisture penetration. This is preventable by thorough painting, regular maintenance, and prompt repairs. If rot has already occurred, it is best to remove the deteriorated sections to a solid material and install a dutchman that matches the original window details. For wood windows, consider using a compatible rot-resistant hardwood.
- **General Maintenance:** To prevent deterioration, it is important to caulk around frames and sill, scrape peeling paint, sand to a smooth finish, prime with an oil-based primer, and repaint the window sash and/or frames with two coats of exterior grade paint. To increase the longevity of the windows, routinely inspect the windows every five to seven years and make necessary minor repairs. A permit is only required when painting a window and frame a different color.
- **Glass:** Broken glass and glazing putty failure is another contributor to the deterioration of windows. It is important to replace broken glass and failing glazing putty with new glass and glazing putty as soon as practical. Subsequently, the affected area should be primed and painted to maintain a waterproof seal.
- **Retrofitting:** While making repairs, it is a good opportunity to retrofit or upgrade the historic windows to improve the performance and energy efficiency. All types of historic windows can be retrofit with appropriate insulation, air sealing, and weatherstripping, while minimizing the impact on the functionality and aesthetics of the window.
- **Storm Windows:** Installing interior or exterior storm windows, in conjunction with repairing and retrofitting existing historic windows, can be just as effective as modern replacement windows in terms of improving energy-efficiency and occupant comfort.
 - Interior storms windows with clear glazing that require no mullions, muntins, or wide frames visible from the exterior of the building do not need a LPC permit.
 - Exterior storm windows with clear glazing do require a LPC permit, and should have tightly fit framing within the window openings without the need for a sub frame or panning around the perimeter, with meeting rails used only in conjunction with double-hung windows, with a finish that matches the windows.

Replacing Windows

The Commission regularly approves replacing windows due to deteriorated conditions and other factors related to functionality. Replacement may also be necessary to meet various standards or satisfy code requirements. A permit is required to replace existing windows, but the vast majority of such proposals are handled at staff level. Definitions and rule criteria that must be met in order to qualify for staff level review and approval are described below.

Window Attributes- Rule Criteria Used for Window Replacement

- **Material-** the substances used to fabricate windows; e.g., wood, aluminum, steel, fiberglass, and vinyl.
- **Operation-** the manner in which a window unit opens closes, locks, or functions; e.g., casement, double-hung, etc. If non-operable, a window unit (such as a side light) is identified as “fixed.”

- Configuration- the number, shape, organization and relationship of panes (lights) of glass, sash, frame, muntins or tracery.
- Details- the dimensions and contours of both the stationary and movable portions of a window, and moldings.
- Finish- the visual characteristics including color, texture and reflectivity of all exterior materials.

“Special Windows”

- “Special Windows”- windows with certain distinctive attributes (such as curved sashes, leaded or stained glass, and curved muntins, among others).
 - For all building types and façades, visible and non-visible, the material, operation, configuration, details, and finish must match the historic “Special Windows” being replaced.
 - A condition assessment may be required for staff review to replace “Special Windows.”

Window Replacement- Rules Based on Façade Types, Building Types and Visibility

- Primary Façade: a façade facing a street or a public thoroughfare, and sometimes facing a mews or court. A façade that does not face a public thoroughfare, but possesses significant architectural features, may be considered a primary façade.
 - For all building types, the operation, configuration, details, and finish must match the historic windows. Material must always match the historic window material for Individual Landmarks, and for Small buildings, with one exception: Windows at Small buildings (six stories or less in height and with a street frontage of forty (40) feet or less) that are straight-headed one-over-one double-hung wood windows historically may be replaced with a different material as long as the historic wood brickmolds are retained or replicated in wood.
 - Windows at Large buildings (seven or more stories in height or with a street frontage of forty-one (41) feet or greater) may be replaced with a different material.
 - Variations in details will be permitted if such variations do not significantly affect the visual characteristics of the window, including the shadow effect of muntins and sash on the glazing. In evaluating "significant" effect, factors considered include the age of the building and its architectural quality, as well as the extent of diminution in the total glazed area of sash. For wood windows less than 15 inches wide, the diminution shall be limited to 10%; for wood windows 15 inches or wider, the diminution shall be limited to 6%; for metal windows (of any size) the diminution shall be limited to 10%.
- Secondary Façade: a façade that does not face a public thoroughfare, mews or court.
 - Visible Windows
 - Windows must match the historic windows in terms of configuration and finish. (e.g., a 4-lite tilt-and-turn window could appear to match a two-over-two double-hung window.)
 - Windows can be installed in the existing window opening, or window openings that are to be modified that still retain the general shape and pattern of the existing windows on the same façade, or that form a regular and consistent new pattern.
 - Non-Visible Windows
 - Windows do not need to match the historic windows, and can be installed in the existing window opening, or window openings that are to be modified.
 - Windows on the top floor of the rear façade of a rowhouse are not to be enlarged or reduced, with the exception of lowering the sill of one opening to provide access to a rear yard addition or deck.

Window Replacement Matrix (within existing openings)

Type	Location of Façade	Material	Operation	Configuration	Details	Finish
Large Buildings	Primary	○	●	●	●	●
	Visible Secondary	○	○	●	○	●
	Non-visible Secondary	○	○	○	○	○
Small Buildings	Primary	●	●	●	●	●
	Visible Secondary	○	○	●	○	●
	Non-visible Secondary	○	○	○	○	○
Individual Landmarks	Primary	●	●	●	●	●
	Visible Secondary	○	○	●	○	●
	Non-visible Secondary	○	○	○	○	○
Special Windows	All Façades	●	●	●	●	●

Key	Match Required	●
	Match NOT Required	○
	Match with Exceptions	◉

Appendix A: Repairing Windows

Examples of window repairs that do not require an LPC permit.



Operation: Cutting the paint seal, while replacing the sash cords/chains will increase the functionality of your windows. Before and after example below.





Glazing Putty: When you see signs of glazing putty failure, it is important to remove deteriorated sections and install new glazing putty and paint accordingly.



Dutchman's: Where signs of rot occur, it is important to remove the deteriorated section and install a dutchman. This can be done with wood or alternative materials such as epoxy.

Appendix B: Replacing Windows

Examples of replacement windows approved at staff level:



Criteria: Replacement windows on primary facades that match historic configuration, operation, details, material, and finish can be approved at staff level.

Appendix C: Storm Windows

Examples of storm windows approved at staff level.



Criteria: Exterior storm windows should have tightly fit framing within the window openings without the need for a sub frame or panning around the perimeter, with meeting rails used only in conjunction with double-hung windows.