



July 13, 2009

Glendale City Council
Council Chamber
613 E. Broadway, 2nd Floor
Glendale, California 91206

Re: July 14 Regular Meeting Agenda Item 8d, Planning Department Review Procedure for Proposed Residential Window Replacements

Dear Mayor Quintero and Council Members Drayman, Friedman, Najarian, and Weaver:

On behalf of the Board of Directors and members of The Glendale Historical Society, I strongly urge you to adopt option 3 in the Planning Department report and direct Staff to modify the current design review process for windows by finalizing the Window Replacement Guidelines. As described in the report, these Guidelines will clarify the existing design review process for applicants and provide more predictability in the decision-making process. The Guidelines also should strongly discourage vinyl (polyvinyl chloride or PVC) window installations on front façades in Glendale's older neighborhoods, where incompatible with existing architectural style and in other conditions as determined by Staff; and prohibit the use of internal muntin grids and Z-bar frames when visible from the street.

We ask that Council firmly commits to a policy of discouraging unnecessary window replacement citywide, particularly the use of vinyl and aluminum replacement windows, while encouraging and providing incentives for the restoration and retrofitting of existing wood and steel windows, especially in our older residential neighborhoods. Council must also adopt and strictly enforce a zero-tolerance policy on unpermitted window replacements, including imposing higher punitive fees. Short of an outright ban on unnecessary window replacements, this policy would be the most logical and responsible, aesthetically, economically and environmentally. To that end, the Window Replacement Guidelines should provide applicants with information and resources for window restoration and include some basic facts about windows and window replacement:

Original windows are an intrinsic part of the character, and therefore the value, of older homes. The window types, proportions and design are unique and specific to each architectural style, and their fine detailing reflects a level of craftsmanship nearly impossible to replicate today. Buyers interested in older or historic properties will pay a premium, even in a down market, for an older home that has all of its period details intact. Maintaining those windows is critical to maintaining the value of the property and of the surrounding neighborhood.

Antique wood windows very rarely, if ever, need replacing. They are made of old growth timber, much denser and stronger and more weather-resistant than modern tree-farmed lumber. They are also naturally pest-resistant; the longer a tree grows, the more tannin develops in its sap, making it far less palatable to termites. The windows are constructed with true mortise-and-tenon joints, incredibly strong and long-lasting. With proper maintenance, wood windows will last indefinitely; there are countless examples in Europe and the United States of wood windows that have lasted in good working condition for hundreds of years. Even windows that have been neglected for years can usually be repaired at a fraction of the cost of replacement.

Vinyl and aluminum windows are inferior in quality to the original windows they replace. A 2002 Fact Sheet from the U.S. Department of Energy noted that vinyl windows are particularly sensitive to heat and light and susceptible to fading, warping, twisting, bowing and cracking. This not only breaks down the vinyl; it also pops the seals between the frame and the glass, frequently within just a few years. "Vinyl windows have a tendency to distort when exposed to extremes of heat and cold, making them harder to operate and allowing air leakage" (*Lowe's Home Improvement and Repair Guide*, 2006). Studies have shown that the maximum life expectancy of aluminum windows, under ideal conditions, is about 40 years, while vinyl window frames last at most 25 years ("Life Cycle Analysis of Window Materials – A

Comparative Analysis”, Napier University School of Engineering, Edinburgh, 2002). In reality, their life spans are usually far shorter, as little as 18 years on average for vinyl windows ("A Review of Life-Cycle Assessment of Windows", James Salazar and Taraneh Sowlati, *Forest Products Journal*, October 2008).

Vinyl and aluminum windows cannot be maintained. Too many homeowners install these windows because they "don't need to be painted", failing to understand that vinyl and aluminum windows *cannot* be painted or otherwise protected from the elements. Unlike wood windows, which can be maintained by painting every several years, the inevitable and relatively rapid deterioration of vinyl and aluminum windows cannot be prevented or reversed. A 2006 report by the U.K. Environmental Ministry noted that "the average PVC window tends to be disposed of in 18 years. The material turns yellow and brittle in sunlight and even forms hairline cracks. Once degraded, vinyl windows are impossible to repair."

Replacing windows does not significantly increase a home's energy efficiency. Studies have shown that only about 20% of a building's heating loss is through windows while 80% is through roofs, floors, walls and chimneys (New Jersey Department of Environmental Protection, January 2007). Because windows make up so little of a home's exterior envelope, it would take decades for the meager energy savings to justify the cost of window replacement. According to the *Field Study of Energy Impacts of Window Rehab Choices* conducted by the Vermont Energy Investment Corporation, the University of Vermont School of Civil and Environmental Engineering and the U.S. Army Cold Regions Research and Engineering Laboratory, the estimated first year energy savings between a restored wood window and a replacement window was \$0.60. The study concluded that "The decision to renovate or replace a window should not be based solely on energy considerations, as the difference in estimated first year savings between the upgrade options are small."

There are more economical and more effective methods for improving a home's energy efficiency than window replacement. Because 80% of a home's heating loss is through floors, walls, roofs and chimneys, a smarter alternative is to restore and weatherproof old windows, fit fireplaces with glass doors and insulate the rest of the house. Old windows can easily be retrofitted to improve their energy efficiency, at a fraction of the cost of replacement. And the addition of just 3 1/2 inches of insulation to an attic can save more energy than new windows ("Window Know-How: A Guide to Going Green", *Preservation Magazine*, March/April 2009). A recent British study demonstrated that it takes 60 to 100 years for the average vinyl window installation to pay for itself, but the same amount spent on weatherproofing existing windows, insulating attics, walls and floors and upgrading to energy-efficient appliances would see a return on investment after only about five years (Northern Ireland Environment and Heritage Service, 2007).

Replacement windows consume many times more energy than they could ever possibly save. According to the American Institute of Architects' Environmental Resource Guide, the production of wood products requires 3,770 British thermal units per pound (BTU/lb), compared to 20,700 BTU/lb for recycled aluminum, 36,500 BTU/lb for vinyl and a staggering 103,500 BTU/lb for aluminum smelted from bauxite (and only 27.5% of aluminum production comes from recycled aluminum). Shipping and installing these products consumes even more energy. Old windows, on the other hand, possess a great deal of embodied energy that is wasted if the windows are discarded. Repairs and restoration done by local craftspeople use a minimum of materials and resources and a maximum of labor. Restoring windows is the best use of existing materials, the best way to conserve energy and the best way to support the local economy.

Aluminum and vinyl are two of the most environmentally damaging products on the market today. According to Ohio State University Research News, the aluminum smelting process releases almost 1.5 pounds of carbon dioxide – the principal "greenhouse gas" contributing to global warming – for every pound of aluminum produced. And both the mining of bauxite (the ore from which aluminum is smelted) and the recycling of aluminum contaminate soil and groundwater with toxic chemicals (www.worldwatch.org).

The manufacture, use and disposal of vinyl (polyvinyl chloride or PVC) emit several hazardous air pollutants, including vinyl chloride, chlorine, hydrogen chloride, methanol and dioxin. Vinyl chloride (VC) is categorized as a Group 1 carcinogen by the International Agency for Research on Cancer, a branch of the World Health Organization. It is known to cause tumors of the liver, brain and lung as well as melanoma and malignancies of the lymphatic and hematopoietic system. Dioxin is also a known carcinogen and is thought to be the most toxic human-made chemical. Dioxin is assimilated into the fat stores of plants and animals; because it cannot be broken down, it accumulates in higher and higher levels as it moves up the food chain. There is no "threshold" dose for dioxin; the lowest dose that causes hormonal action has not yet been found. These toxins are given off not only in the manufacture of PVC, but also when it is heated and as it deteriorates, both of which occur when PVC is exposed to sunlight. Deteriorating PVC also produces hydrogen chloride, a corrosive and acidic gas. ("PVC: A Health Hazard From Production Through Disposal", Paul Goettlich, *mindfully.org*, October 25, 2001).

Unnecessary window replacement diminishes the character and lowers the value of older homes and neighborhoods by indiscriminately discarding long lasting, high quality materials in favor of cheap, inferior products. Vinyl and aluminum windows consume rapidly dwindling resources and contribute to the global warming crisis and the further degradation of the environment. We must stop this unhealthy obsession with "newness" and break the destructive cycle of consumption and waste. As Richard Moe, the President of the National Trust for Historic Preservation, has said, "We can't build our way out of the global warming crisis. We have to conserve our way out. That means we have to make better, wiser use of what we have already built." Discouraging unnecessary window replacement and encouraging the restoration and retrofit of original windows, especially in our older residential neighborhoods, is one step we can take toward making better use of what we have already built. The Glendale Historical Society urges the City Council, in the strongest terms possible, to show true vision and leadership and take a decisive stand on this issue.

Thank you for your time and consideration.

Respectfully yours,

John LoCascio, Architect
President, The Glendale Historical Society

Cc: Ardashes Kassakhian, City Clerk; Hassan Haghani, Director of Planning; Jay Platt, Historic Preservation Planner; James E. Starbird, City Manager; Scott H. Howard, City Attorney; Timothy Foy, Assistant Director of Planning; Alan Loomis, Principal Urban Designer; Stephanie Reich, Senior Urban Designer; Stephanie Landregan, Chair, Historic Preservation Commission