



SUSTAINABILITY AND HISTORIC WINDOWS

HOW FEDERAL POLICIES AND GREEN MARKETING
CONSPIRE TO SELL WINDOW REPLACEMENT AND
WHAT CAN BE DONE ABOUT IT

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Abstract

Owners of historic houses who want to improve their home's energy efficiency face conflicting information regarding the best practices for single-pane windows. Federal agencies and window replacement manufacturers encourage window replacement, while preservationists favor repairing old windows and adding storm units. Despite federal policies that encourage sustainable practices, publications by agencies such as the Department of Energy favor window replacement over other, more sustainable, retrofits. Window manufacturers use this opportunity to their full advantage in their own sustainable marketing strategies. In order to counter the negative effects of federal agencies and window manufacturers on old windows, historic preservationists must analyze the problem and, using this research, develop a comprehensive marketing plan that identifies sustainable solutions that save money, energy and the environment. This project is a first step in that direction.

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TABLE OF CONTENTS

	Abstract	i
	Acknowledgements	ii
1	Sustainability and its Implications for Historic Preservation	1
2	The Window Replacement Issue	14
3	Where Do the “Facts” Come From?	26
4	Five Window Manufacturers and Their Marketing Strategies	37
5	Saving Old Windows Marketing Campaign	48
6	Findings and Recommendations	57
	Appendix I Window Replacement Decision Matrix	64
	Appendix II Window Manufacturer Research	67
	Bibliography	68

TABLES AND FIGURES

	Table 1: Comparison of costs and return on investment for replacement windows and storm windows using HOME STAR	35
	Don’t Throw Me Out advertisement	56
	Window Replacement Decision Matrix	66

Chapter 1

Sustainability and Its Implications for Historic Preservation

The history of the modern sustainability movement in the United States began in 1969 with the creation of the Environmental Protection Agency (EPA) and the National Environmental Protection Act (NEPA). Five decades later, sustainability and its mainstream catchphrase, “green,” have crept into almost every aspect of society, including the building industry and historic preservation. Manufacturers and suppliers have adapted their marketing strategies with the goal of capturing the ever-expanding demand for green products. While some companies have altered their business practices and production methods to comply with the core principles of sustainability, others have indulged in what is known as “greenwashing,” false claims regarding a product’s sustainability. This chapter will examine how sustainability is marketed and the effect of these practices on consumers. This information is essential for historic preservationists, as it underlies many of the fundamental reasons why the truly sustainable practices that preservationists care about – such as saving historic windows – have not become universal.

The most commonly cited definition for sustainability stems from the 1987 United Nations report “Our Common Future,” also known as the Brundtland Report.¹ The Brundtland Report identified the need to reconcile human activity and the exploitation of Earth’s limited resources by setting a global goal of sustainable social and economic development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” In the nearly thirty years since the Brundtland Report, there have been a succession of studies that have

¹ Our Common Future. Available at www.un-documents.net/wced-ocf.htm.

expanded upon the severity of the sustainability crisis, including Al Gore's 2005 film *An Inconvenient Truth*, which chronicled the effects of global warming, and the 2006 report by the British Exchequer, known as the *Stern Review*, which calculated that 1 percent of the entire world's GDP would have to be diverted annually to avert catastrophic climate change.² But despite a mountain of evidence that fundamental, global reforms are essential, governments, corporations and the world's citizenry have been slow to respond. Climate action has been fought every step of the way by corporations.³ However, there are some reasons for optimism, including a small but growing number of governments and corporations that have embraced sustainability, and a burgeoning block of "green consumers" who have an increasingly large but confusing choice of sustainable products.

The term "marketing" is often confused with "advertising," so it is important to define these terms. Marketing consists of a strategic mix of business activities that bring sellers and buyers together for an exchange or transfer of products. The American Marketing Association defines marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and the society at large."⁴ Marketing includes advertising, usually the largest component of a marketing budget, but it also includes market research, customer support, sales strategies, community involvement, media planning, product pricing and public relations. At its core, marketing is about selling more stuff to people.⁵ Advertising consists of a "paid . . . persuasive message by an

² Stern, Nicholas. The Stern Review on the Economics of Climate Change. See also "Stern Report: The Key Points." BBC Online, <http://www.guardian.co.uk/politics/2006/oct/30/economy.uk>. Accessed October 3, 2010.

³ See, for example, an excellent summary of what happened at the 2009 UN Climate Change Conference in Copenhagen by The Guardian. Available at <http://www.guardian.co.uk/environment/Copenhagen>.

⁴ American Marketing Association. Online, <http://www.marketingpower.com/aboutama/pages/definitionofmarketing.aspx>. Accessed October 3, 2010.

⁵ Belz, Frank-Marting and Ken Peattie. *Sustainability Marketing: A Global Perspective*. Chichester, UK: Wiley, (2009), 17.

identified sponsor, the non-personal presentation or promotion by a firm of its products to its existing and potential customers.”⁶

The science of marketing was fully developed by the 1970’s, which is about the time when sustainable marketing, also known as green marketing, had its origins.⁷ As consumers have developed an increasing awareness of environmental problems such as global warming, resource depletion and ecological degradation, so too has there been growth in sustainable marketing. Sustainable marketing differs from classical marketing in that it is concerned with selling values, not products. These values are generally ecologically oriented, viable, ethical and relationship-based.⁸ In the building industry for example, evidence of sustainable marketing can be seen in advertisements for sustainably harvested forestry products, energy efficient heating and cooling systems, and environmentally friendly floor coverings, lighting and paints. Home Depot, the world’s largest home improvement retailer with over 1,500 stores in the U.S., uses the slogan “Save Green, Live Green” on its website, so the value that is communicated to consumers is, “save money *and* save the environment.” The company’s corporate values communicate many of the themes of sustainable marketing: “taking care of our people,” “giving back to our communities,” “doing the right thing,” “building strong relationships,” “and respect for all people,” as well as more traditional goals such as increasing shareholder value.⁹ These corporate values are repeated and reinforced by the firm’s advertising campaign, which included over 63,000 individual radio spots in September, 2010, making it the largest radio advertiser in the nation for that month.¹⁰ In

⁶ Lake, Laura. “Marketing vs. Advertising: What’s the Difference?” Online, www.About.com. Accessed September 15, 2010.

⁷ For the purposes of this paper, I will use the terms green and sustainable interchangeably.

⁸ Belz, 18.

⁹ Home Depot. Corporate. Online, corporate.homedepot.com, accessed Oct. 2, 2010.

¹⁰ Marketing Charts. Online, www.marketingcharts.com. Accessed Oct. 2, 2010.

all, Home Depot spends \$708.2 million per year on advertising, placing it at 54th nationally in ad spending.¹¹

Over \$412 billion is spent on advertising in the U.S. annually, and it is estimated that the average American living in a large city is exposed to several thousand commercial messages a day.¹² The vast amount of advertising clutter and resulting difficulty in getting a consumer's attention has forced marketers to constantly develop new advertising strategies. Within the last ten years, ads have been introduced into many formerly unused, "blank" spaces such as cash register receipts, turnstiles, pizza and takeout boxes, and even eggs. Video screens in schools, airplanes, taxis and bus stations create a constant advertising presence. In 2006, these alternative forms of advertising represented a tiny sliver - \$387 million – of the outside-the-home U.S. advertising budget of \$6.8 billion, but this amount will continue to climb as marketers search for innovative ways to reach customers.¹³ One of the fastest growing segments of the advertising industry – and one that the window industry utilizes – is Search Engine Marketing (SEM), a fee-based service that highlights certain products when a search term is entered into Google, Yahoo, Bing, and other web-based search engines.¹⁴ The sheer volume and competing claims of advertisers has had profoundly negative consequences on the reception of ads. Gallup polls show that in 1959, 75 percent of people believed the claims made in ads. By the mid-1970's the number had declined to

¹¹ "Marketer Trees 2010: Database of 100 Leading National Advertisers." Advertising Age. Online, <http://adage.com/marketertrees2010/>. Accessed Oct. 2, 2010.

¹² MediaCharts.com and ConsumerReports.com.

¹³ Story, Louise. "Anywhere the Eye Can See, It's Likely to See an Ad." NY Times, 15 January 2007, p. A1.

¹⁴ Window & Door. "Local Internet Advertising Continues to Grow." 1 September 2008. Online, <http://www.windowanddoor.com/article/september-2008/talking-dealers>.

50 percent, and by 1999, 74 percent of people stated that advertisers “seriously stretch the truth about the products they advertise.”¹⁵

Consumer skepticism applies to green and conventional advertising alike. The reasons for this are many, but they include conflicting science, lack of uniform labeling, and price.

Conflicting scientific evidence – some of it generated by corporations with a vested interest in having their product stand out above their competitors – leaves consumers perplexed about the “right” choice to make. Sustainability is an inherently complicated subject that cannot be distilled into easy choices or slogans. Whether something is truly green is a source of ongoing debate, such as paper or plastic bags, gas or diesel fuel, organic or conventionally grown food, locally made or imported goods. These debates are exacerbated by the lack of a uniform, government sanctioned labeling program for sustainable products. There are currently 88 green seal and certification programs used in the U.S., and abuses have led the Federal Trade Commission to restrict their ability to make unsubstantiated claims.¹⁶ Sustainability also has financial implications for businesses and consumers. Being green is often more expensive than the conventional alternative, and the effort a company puts into transforming itself into a more sustainable entity can lead to higher prices, which may put them at a competitive disadvantage.¹⁷ Some would argue that the very concept of sustainable development is fundamentally flawed and impossible to implement. Despite decades of accumulated evidence that humanity’s current path is unsustainable, the world’s population has soared from 5 billion to over 6.5 billion, global warming has increased, fisheries and forests continue to be depleted, the gap between rich and poor is widening, and

¹⁵ Ware, Leslie. Selling It: The Incredible Shrinking Package and Other Marvels of Modern Marketing. New York: Norton (2002), xv.

¹⁶ Vega, Tanzina. “Agency Seeks to Tighten Rules for ‘Green’ Claims.” NY Times, 6 October 2010. Online, <http://www.nytimes.com/2010/10/07/business/energy-environment/07green.html> . Some of the better known labeling programs include Green Seal, ENERGY STAR, USDA Organic, SFI (Sustainable Forestry Initiative), Greenguard, and Fair Trade Certified.

¹⁷ Belz, 30.

economic expansion continues unabated.¹⁸ The reporting of these seemingly intractable issues and their repercussions have raised consumer awareness of environmental issues, but have also encouraged companies to fabricate or stretch the truth about their sustainability efforts, which then furthers consumer distrust of green marketing.

Sustainability and sustainable marketing have been largely shaped by environmental disasters. Rachel Carson's 1962 best-selling book, *Silent Spring*, is credited with starting the contemporary environmental movement. It detailed the effects of pesticides on the environment, especially birds, and exposed the lax governmental oversight of the chemical industry. Other disasters such as Bhopal, Three Mile Island, Love Canal, Exxon Valdez, the destruction of the Amazon rainforest, and the recent BP oil spill in the Gulf of Mexico have had a tremendous impact on public opinion, government regulations, and ultimately, consumer buying habits. The market forces unleashed by ecological disasters have dramatically altered the way that companies do business, and have been reinforced by media coverage that amplifies – and often exaggerates – the real and purported threats of their activities on the environment, and on human health and welfare.¹⁹ Environmental watchdog groups such as Greenpeace, Natural Resources Defense Council, Rainforest Alliance and the Sierra Club have played a large part in forcing companies to change their practices, and some corporations now partner with these same groups to further their own sustainability and green marketing goals.

Concerns over sustainability, ethics and long-term corporate survival have led to the emergence of Corporate Social Responsibility (CSR), an array of sustainable legal, economic,

¹⁸ Revkin, Andrew C. "20 Years Later, Again Assigned to Fight Climate Change: A Conversation With Gro Harlem Brundtland." NY Times, 8 May 2007. Online, <http://www.nytimes.com/2007/05/08/science/earth/08conv.html>.

¹⁹ See, for example, "Love Canal: Hazardous Waste and the Politics of Fear." In Layzer, Judith. The Environmental Case: Translating Values into Policy. Washington, DC: QC Press, 2006. Pp. 54-80.

social and environmental practices that respect the triple bottom line of “people, planet, profit.” In practice, this “win, win, win” scenario has not been widely implemented, and consumers are not convinced that CSR’s claims are legitimate. British Petroleum (BP) advertised itself as the greenest oil company among its peers for over a decade, and in 2009 was voted by Greenopia, a web-based rater of green products and companies, as the sustainability leader in the oil industry.²⁰ Shortly before the Gulf Oil spill, BP extolled its green initiatives in a yearly report, “Operating at the energy frontiers: How a revitalized BP is driving innovative, efficient and responsible operations.”²¹ The phrase “sustainable oil company,” like “clean coal,” may at its root be oxymoronic, but even for those companies engaged in less environmentally destructive activities, the fact is that sustainability costs money, and there are limits to the premium price that consumers are willing to pay for ethically produced products and services. A green economy, despite all the media hype, is still far from reality. Only a handful of Global 500 companies have identified sustainability as a core business principle.²² Home Depot is one notable exception. In response to pressure by environmental groups including the World Wildlife Federation (WWF), Home Depot adopted the Forest Stewardship Council (FSC) standards for sustainable wood products, a move that the company now markets to its economic advantage.²³ In 2007, the company introduced Eco

²⁰ McDermott, Matthew. “BP, Sunoco & Shell Ranked Greenest Oil Companies in Sustainability Survey.” Tree Hugger, 4 April 2009. Online, <http://www.treehugger.com/files/2009/04/bp-sunoco-shell-greenest-oil-companies-sustainability-survey.php>. Accessed Oct. 3, 2010.

²¹ Sustainability Review 2009. London: BP, 2010. Available online, http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/e_s_assets/e_s_assets_2009/downloads_pdfs/bp_sustainability_review_2009.pdf. Accessed Oct. 3, 2010.

²² Makower, 240.

²³ Home Depot. Online, www6.homedepot.com/ecoptions/index.html?cm_mmc=Thd_marketing--Eco_Options_Site_07--Vanity--Home. Accessed October 3, 2010.

Options labeling on over 3,000 of their products that promote energy conservation, sustainable forestry and clean water, representing about 12 percent of their total product line.²⁴

The buying public's corollary to CSR is "ethical consumerism," which embodies the idea that spending involves a moral choice and that there are "good" (green) versus "bad" (more or less ecologically harmful) choices in the marketplace. A recent study shows that 41 percent of Americans hold the value of ethical consumerism.²⁵ But to what degree does this professed value translate into actual buying behavior? The most comprehensive index of green consumer spending is the British publication, the *Ethical Consumerism Report*, now in its tenth year. The 2009 publication noted that, although certain sectors have seen an exponential growth in sustainable products and purchasing, the average U.K. household purchase of green products stands at only 1 percent, and much of that amount is largely underpinned by government energy efficiency subsidies.²⁶

The trend in the U.S. has been a similarly slow rate of growth in sustainable corporate practices and ethical consumerism. However, there is a broad awareness of the importance of sustainable products in the marketplace. A recent *Time* magazine poll shows that 60 percent of Americans had purchased organic products in the first six months of 2010, 82 percent had supported local or neighborhood businesses, and 40 percent purchased products that reflected their social and political values.²⁷ Ethical consumerism has a small but growing effect on global stock

²⁴ Barbaro, Michael. "Home Depot to Display an Environmental Label." NY Times, 17 April 2007. Online, <http://www.nytimes.com/2007/04/17/business/17depot.html>. Accessed October 3, 2010.

²⁵ Pike, Cara. The Ecological Roadmap: Earthjustice Findings on Environmental Values. In Makower, Joel. Strategies for the Green Economy: Opportunities and Challenges in the New World of Business. New York: McGraw, 2009, 241-274.

²⁶ Ten Years of Ethical Consumerism: 1998-2008. London: The Co-operative Bank, 2009. Online, http://www.co-operativebank.co.uk/corp/pdf/Ethical_Consumerism_Report.pdf. Accessed October 3, 2010.

²⁷ Stengel, Richard and Jeremy Caplan. "The Responsibility Revolution." *Time*, 174.11 (2009): 38-42. Online, EBSCO Publishing. Accessed October 3, 2010.

market investing. Booz & Company has predicted that by 2015, 15 to 20 percent of the world's stock portfolios will consist of investments in companies that have embraced the virtue of sustainability.²⁸ However, sustainable investing has been far slower to catch on in the U.S. than other parts of the world. The Booz study predicts that sustainable investing in Europe will grow by 28 percent and an astounding 150 percent in Asia, while the U.S. market will grow by only a comparatively tepid 17 percent.²⁹ The slow adoption of sustainable investing in the U.S. exposes an issue that has become only more problematic since the recent economic recession: despite their claims of environmental concern, American consumers are much more reluctant than their European or Asian counterparts to “walk the talk.” The reasons for this are many: the high price of sustainable goods and services; a lack of comprehensive government policies that support sustainability; and confusion regarding the relative sustainability of different products, which is compounded by the absence of a uniform, national sustainability rating and labeling system. But these reasons, though important, mask a deeper problem that underlies both federal policies and consumer behavior.

Americans are reluctant to adopt sustainable behaviors because of their dominant social paradigm (DSP) – the lens of values, beliefs, institutions and habits that form their worldview.³⁰ The Western environmental DSP is summed up by Kilbourne (2001) as a self-reinforcing outlook of technological optimism (i.e. science will ultimately solve all environmental challenges), unlimited economic growth and ever-increasing material well-being, and unlimited accumulation

²⁸ The Sustainability Yearbook 2010. New York: PriceWaterhouseCooper, 2010. Online, Accessed October 3, 2010.

²⁹ Ibid.

³⁰ Kilbourne defines the dominant social paradigm as a society's attitudes toward technology, politics and economics. Kilbourne, William E., Suzanne C. Beckmann, Alan Lewis and Ynte van Dam. “A Multinational Examination of the Role of the Dominant Social Paradigm in Environmental Attitudes of University Students.” Environment and Behavior, Vol. 33 No. 2, March 2001. Abstract.

of private property with minimal governmental interference.³¹ Kilbourne's research reveals that "as confidence in the DSP increases, one's perception of environmental problems decreases," and he concludes that any policy solutions to this problem must include a reevaluation of the DSP, a task that he suggests will take many generations.³² In other words, despite overwhelming evidence of environmental degradation and global warming, Americans are generally confident that technical solutions will be found at the 11th hour, and in the meantime, they can continue with the lifestyle to which they have grown accustomed. Examples of how the dominant social paradigm has had devastating consequences for the environment can be seen in examples that include the destruction of the cod fishery in the Atlantic, the failure of state and local officials to restore the health of the Chesapeake Bay, and the inability of Americans to wean themselves from ever-increasing dependence on fossil fuels.

So how is the issue of sustainability connected to historic preservation? Anthony Veerkamp, a Program Director for NTHP, recently testified before Congress that climate change and historic preservation are inextricably linked: "We believe that 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."³³ This message is echoed by the National Trust's website, where the sustainability section leads with the statement that "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 re-use of historic and older buildings,

³¹Ibid. 209-228.

³² Ibid, 225.

³³ Statement of Anthony Veerkamp. U.S. House of Representatives Committee on Natural Resources, Subcommittee on National Parks, Forests and Public Lands: The Impacts of Climate Change on the Chesapeake Bay. 2 July 2009. Online, <http://www.preservationnation.org/issues/sustainability/additional-resources/NTHP-Chesapeake-Bay-Climate-Change.pdf>

greening the existing building stock, and reinvestment in older and historic communities, is crucial to combating climate change.”³⁴ U.S. housing statistics emphasize the importance of the issues raised by NTHP. The amount of material used in the construction of a home has increased dramatically in the past 50-plus years. Between 1950 and 2004, the average size of the American house has grown from 983 square feet to over 2,349 square feet.³⁵ The construction of larger homes has led to a dramatic increase in the amount of construction debris going into landfills. The EPA’s estimates of the annual amount of waste – including construction debris – that is deposited in landfills has grown from 88.1 million tons in 1960 to 249.6 million tons by 2008, and this does not even account for the cost to the environment of harvesting raw materials.³⁶ Estimates vary, but waste that results from resource extraction and the manufacture of goods, including building materials, could be as much as 65 times the amount that goes into landfills.³⁷ The Department of Energy estimates that 95 percent of building-related construction waste is recyclable, but very few mandatory recycling laws have been enacted.³⁸ Some notable exceptions can be found in California, Massachusetts and Florida.³⁹

Energy usage statistics underscore the need to make buildings more energy efficient, and therefore more sustainable. The buildings sector consumed 39 percent of U.S. primary energy in 2006, of which 74 percent consisted of electricity.⁴⁰ Between 1980 and 2006, electricity consumption (which in the East is generated primarily by plants that use coal) has increased from

³⁴ National Trust for Historic Preservation. Online, <http://www.preservationnation.org/issues/sustainability/>.

³⁵ National Association of Home Builders. Quoted in Adler, Margo. “Behind the Ever-Expanding American Dream House.” National Public Radio, 4 July 2006. Online, <http://www.npr.org/templates/story/story.php?storyId=5525283>.

³⁶ Environmental Protection Agency. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2008. EPA, www.epa.gov/epawaste/nonhaz/municipal/pubs/msw2008rpt.pdf.

³⁷ Makower, xiii.

³⁸ Department of Energy, Buildings Energy Data Book, Table 2.4.8. Characteristics of U.S. Construction Waste. Online, buildingsdatabook.eren.doe.gov. Accessed September 18, 2010.

³⁹ For example, see Californians Against Waste, online at <http://www.cawrecycles.org/>.

⁴⁰ Department of Energy. Ibid. Chapter 1-1, Primary Energy in the Buildings Sector.

26.32 Quads to over 38.77 Quads, an increase of nearly 50 percent.⁴¹ The residential buildings sector consumes 20 percent of all of the energy generated in the U.S., and produces 21 percent of greenhouse gas emissions.⁴² The amount of money spent on home renovations is similarly revealing. Building improvements and repairs grew from \$99.9 billion in 1980 to \$228.2 billion in 2006.⁴³ Clearly, it is in the national interest to increase the energy efficiency of all existing homes, which includes historic residences, but it is also vital that the retrofits make sense from a sustainability perspective.

Residential homes – how they are constructed, maintained and discarded – have a substantial effect on the environment. From a CSR perspective, the building products and services industries should be leaders in driving truly sustainable energy efficiency initiatives, but they have been slow to adopt green practices unless forced to do so. It is not enough to talk about sustainability: there must be systemic changes in the American way of doing business, driven by government policies and programs that lead the way. NTHP is an important player in the sustainability movement, as it embodies the ethic – and value – of conserving the built environment.

In the following chapters, the author will examine one of the flashpoint issues in historic preservation: the energy efficiency of historic windows, and whether replacing single-pane windows with double-pane replacement windows is a truly energy efficient-strategy. Chapter 2 will examine the scope of the window replacement issue in the U.S., the stakeholders that influence the issue, and federal policies and programs that impact the preservation of historic

⁴¹ Ibid. A Quad equals one quadrillion (1,000,000,000,000,000 or 10¹⁵) Btu's.

⁴² Ibid., Chapter 2-1, Residential Sector Energy Consumption.

⁴³ Ibid. Table 2.6.1. "Value of Residential Building Improvements and Repairs, by Sector." Accessed September 18, 2010.

windows. Chapter 3 will look at the relative energy efficiency of historic windows versus replacement windows, and describe some strategies for improving the energy efficiency of historic windows. Chapter 4 will consist of an examination and critique of the sustainability and green marketing claims of five prominent replacement window manufacturers. Chapter 5 will contain an advertising campaign that can be used by NTHP for its historic window preservation initiative. Chapter 6 is a summary of findings with recommendations. Two appendices are included. The first features a window replacement decision matrix that can be implemented by historic district commissions nationally. The second is a spreadsheet containing the information gathered on the five largest window manufacturers in the nation, and whose marketing techniques are described and analyzed in Chapter 4.

Chapter 2

The Window Replacement Issue

For historic preservationists, the window replacement issue and its impact on historic windows is one of the most important problems facing historic buildings. Windows are an especially vulnerable building component because their chief attribute – the ability to see through them – is also what makes them less energy efficient than, for instance, the wall in which the window is located. In a historic house, poorly maintained single-pane windows may be responsible for as much as 30 percent of the energy loss.⁴⁴ For the purposes of this paper the author will focus on single-family residential homes, which constitutes the majority of the U.S. housing stock. However, much of what will be discussed in the following chapters can also be applied to other types of buildings. The term “historic windows” will apply to primarily wood sash windows 70 years old or more, located in residences that are both within and outside of historic districts. Windows manufactured prior to the late 1940’s were constructed with straight-grained, old-growth wood that all but disappeared during the post-WWII building boom, so windows made after this period tend to have a much shorter lifespan. This chapter will examine the extent of the window replacement issue, federal agencies that impact the historic window problem, and the federal policies that play a role. The proposed HOME STAR program will be used to highlight the effects of federal policies on window replacement, and will serve to identify some of the major stakeholders involved in this issue.

⁴⁴ Department of Energy. Insulation and Air Sealing. Online, <http://www.energy.gov/insulationairsealing.htm>.

The scale of the window replacement issue is considerable. Census figures for 2007-2008 show that there are approximately 41.4 million homes in the nation built prior to 1960, the date that meets National Register's criteria of 50 years old for historic properties.⁴⁵ The Department of Energy (DOE) estimates that 50.7 million residential homes in the U.S. have single-pane windows, of which 80 percent meet the National Register criteria of 50 years or older.⁴⁶ Some of these homes lie within established historic districts, but it is only about 3 percent of the 41.4 million pre-1960 homes. There are currently approximately 1.3 million contributing homes in 14,332 National Register historic districts across the country.⁴⁷ Historic district regulations typically prevent homeowners from replacing windows, even if they wanted to do so for energy efficiency reasons.⁴⁸ Although historic district guidelines also regulate storm windows, they are encouraged because, unlike window replacements, they protect the original window and do not disturb the architectural integrity of the house.⁴⁹

These statistics do not tell the whole story, however, because not everyone who owns a historic house can afford to buy double-pane replacement windows. Of the 41.4 million homes built before 1960, 23 million – 55 percent – are owner-occupied.⁵⁰ The recent recession has had a serious effect on employment, home ownership and consumer spending, but even if only 20 percent of the people who own an older home can afford to replace some or all of their windows, this still represents a very large number of potential candidates for window replacement. Other issues that influence window replacement in older homes include window viability, whether

⁴⁵ U.S. Census Bureau. American Housing Survey for the United States, 2007. On-Line, www.census.gov/prod/2008pubs/h150-07.pdf.

⁴⁶ Department of Energy. Buildings Energy Data Book, Table 5.2.6, "2005 Residential Prime Window Stock." Online, http://buildingsdatabook.eren.doe.gov/docs%5CDataBooks%5C2005_BEDB.pdf.

⁴⁷ Byrne, John, National Register Database Manager. Email with author. 20 July 2010.

⁴⁸ The total number of contributing homes does not differentiate between owner occupied homes and rental properties, nor does it take into account income levels.

⁴⁹ See the storm window section in National Park Service Preservation Brief #3, Conserving Energy in Historic Buildings. Online, <http://www.nps.gov/hps/tps/briefs/brief03.htm>.

⁵⁰ U.S. Census Bureau. Ibid.

repairs are worth the effort in energy efficiency savings, and the lack of workers with specialized window repair skills. These issues are addressed in a number of publications on NTHP's website.⁵¹

Three federal agencies exert the greatest influence on the window replacement issue: the Department of Energy (DOE), the Environmental Protection Agency (EPA) and the Department of Housing and Urban Development (HUD). DOE is the most influential, because energy efficiency is most closely associated with its core mission. Residential windows are impacted by two of DOE's three main directives: "to advance the national, economic, and energy security of the United States," and "to promote scientific and technological innovation in support of that mission."⁵² Within DOE, the Office of Energy Efficiency and Renewable Energy (EERE) is tasked with developing energy efficient technologies for buildings, including residential homes.⁵³ Like the other federal agencies described in this chapter, DOE conducts research into building technologies in partnership with industry, state and local governments, and universities. DOE's Windows and Daylighting facility at the Lawrence Berkeley National Laboratory (LBNL) researches new technologies for residential and commercial applications, develops window modeling software, and publishes window energy efficiency statistics. DOE has a major impact on window replacement through its ENERGY STAR program, which rates the energy efficiency of – and provides rebates for – a wide array of building products, including windows and doors. DOE also has a Weatherization Assistance Program (WAP), which provides low-income energy efficiency improvements – including window replacement – for over 100,000 homes annually.⁵⁴

⁵¹ NTHP. Windows. Online, <http://www.preservationnation.org/issues/weatherization/windows/>.

⁵² U.S. Department of Energy. About DOE. Online, <http://www.energy.gov/about/index.htm>. DOE's other mission is to "regulate the environmental cleanup of the national nuclear weapons complex." Ibid.

⁵³ Ibid. Energy Efficiency. Online, <http://www.energy.gov/energyefficiency/index.htm>.

⁵⁴ EERE Weatherization Fact Sheet. Energy Efficiency and Renewable Energy. Online, http://www1.eere.energy.gov/wip/pdfs/wip_factsheet.pdf.

The second federal agency that affects the replacement window issue is the Environmental Protection Agency (EPA). EPA protects human health and the environment, and its mission includes the greening of buildings and building components.⁵⁵ EPA's National Center for Environmental Research has a Green Buildings division that gives grants to universities to develop green retrofits for existing buildings.⁵⁶ The Office of Research and Development (ORD) has a National Risk Management Laboratory that performs Life Cycle Assessment (LCA) analysis on a range of products, including building materials. ORD conducts research in partnership with DOE for their ENERGY STAR program. ORD's Sustainability Program conducts research into four topic areas, one of which touches on the replacement window issue: "Urban Sustainability and the Built Environment."⁵⁷ It also developed the "People, Prosperity and the Planet" (P3) program, which encourages college students to design climate change solutions that are then featured at an annual National Sustainable Design Expo. The EPA also exerts a major influence over federal agency purchasing through its Environmentally Preferred Purchasing program, which mandates the procurement of green products and supplies.⁵⁸

The third federal agency that affects the window replacement issue is Department of Housing and Urban Development (HUD), which helps facilitate home ownership through a variety of programs. The agency exerts most of its influence on window replacement through its policies and best practice recommendations for new and existing buildings. The Office of Policy Development and Research (OPDR) operates under a set of strategic goals that guides HUD research in a variety of topics, including affordable housing and energy efficiency. OPDR

⁵⁵ Environmental Protection Agency. What We Do. Online, <http://www.epa.gov/aboutepa/whatwedo.html>.

⁵⁶ For example, see the award given to Princeton University that included the development of a home energy modeling software called "Greentprofit." USEPA, National Center for Environmental Research. "Final Report: Green Retrofitting Residential Buildings." Online, http://cfpub.epa.gov/ncer_abstracts/INDEX.cfm/fuseaction/display.abstractDetail/abstract/8613/report/F. A later phase of the project will include the development of a window replacement module.

⁵⁷ Environmental Protection Administration. Sustainability Program. Online, <http://www.epa.gov/sustainability/>.

⁵⁸ EPA. Environmentally Preferable Purchasing. Online, <http://www.epa.gov/epp/index.htm>.

publishes research papers that identify and recommend innovative building components and strategies to improve energy efficiency.⁵⁹ OPDR's Partnership for Advancing Technology in Housing (PATH) conducts research through the National Association of Home Builders (NAHB) Research Center, a subsidiary of NAHB charged with making housing more durable and affordable.⁶⁰ PATH publishes a nine-volume set of Rehab Guides that includes a volume dedicated to windows and doors.⁶¹ PATH was created at the request of the White House in 1989, is funded and overseen by HUD, and is partnered with federal agencies, state and local governments, and private sector industries that are involved in every facet of affordable housing, including lending, insurance, construction, research and technology development.⁶²

In addition to these three federal agencies, the window replacement issue is also impacted by policy initiatives issued by the White House. Two recent presidential Executive Orders (EO's) have had a large part in moving the federal government toward adopting sustainable and implementing energy efficient programs and practices. A 1993 EO created the Office of the Federal Environmental Executive (EE), within which is housed in the Council on Environmental Quality (CEQ). The CEQ was created under Title II of NEPA, is administered by the EPA, and provides guidance to federal agencies for a number of sustainability goals, including improving the energy efficiency of federal buildings and measuring the economic benefits of these improvements.⁶³ A recent EO that affects the window issue more directly is EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, signed by President Obama in

⁵⁹ HUD Publications. Housing Production and Technology. Online, <http://www.huduser.org/portal/taxonomy/term/33>.

⁶⁰ PATH. Product Technology Development (NAHB Research Center). Online, <http://www.pathnet.org/sp.asp?id=1377>. See also NAHB Research Center. Online, <http://www.nahbrc.com/index.aspx>.

⁶¹ HUD. The Rehab Guide, Vols. 1-9. Online, <http://www.huduser.org/portal/publications/destech/rehabgds.html>.

⁶² PATH. About PATH. Online, http://www.pathnet.org/sp.asp?mc=about_path.

⁶³ Office of the Federal Environmental Executive. Online, <http://www.ofee.gov/>. The director of the EE was formerly a Senior Vice President at the U.S. Green Building Council. Ibid.

October 2009. EO 13514 requires all federal agencies to set greenhouse gas emission targets, increase energy efficiency, and buy environmentally friendly products and technologies.⁶⁴ The effect of this EO can be put into perspective when one considers that the Federal government owns over 500,000 buildings and spends more than \$500 billion per year on goods and services.⁶⁵

Federal regulations have likewise put pressures on historic windows: the Energy Policy Act of 1992 (EPAAct 1992), the Energy Policy Act of 2005 (EPAAct 2005), and the American Recovery and Reinvestment Act of 2009 (ARRA). The EPAAct 1992 set energy efficiency goals for federal buildings, spurred the development of new energy efficiency technologies and was the first step in requiring federal agency purchasing of energy-efficient products.⁶⁶ It also initiated the voluntary labeling system for windows that is administered to this day by the National Fenestration Rating Council (NFRC), which was created by the window industry for this purpose.⁶⁷ The EPAAct of 2005 furthered these goals by requiring the metering of energy efficiency improvements in federal buildings, establishing improved guidelines for building performance standards (including sustainable design principles for new buildings), and requiring that all federal agencies purchase only ENERGY STAR-rated products, including windows.⁶⁸ ARRA, in addition to its many other economic stimulus provisions, offers a Residential Energy Property Credit that provides a rebate of up to 30 percent of the cost of energy efficiency improvements (including replacement windows

⁶⁴ White House. "President Obama signs an Executive Order Focused on Federal Leadership in Environmental, Energy, and Economic Performance." Online, <http://www.whitehouse.gov/the-press-office/president-obama-signs-executive-order-focused-federal-leadership-environmental-ener>.

⁶⁵ Ibid.

⁶⁶ Energy Policy Act of 1992. EERE: Federal Energy Management Program. Online, <http://www1.eere.energy.gov/femp/regulations/epact1992.html>.

⁶⁷ Behind the Glass – A History of the NFRC As Told By the People Who Lived It. Silver Spring MD: NFRC (2004), 17.

⁶⁸ Energy Policy Act of 2005. EERE: Federal Energy Management Program. Online, <http://www1.eere.energy.gov/femp/regulations/epact2005.html>.

and storm windows), for a maximum \$1,500 credit.⁶⁹ If used for window replacement, the tax credit can be applied to the cost of the windows only – installation costs are not included – but the credit can be used for new and existing homes. The program expires on December 31, 2010. A more ambitious version of the ENERGY STAR program, called HOME STAR, was intended to be implemented in 2010 but due to the current political impasse, has been stalled in the Senate.⁷⁰ An examination of the history, support for, and structure of HOME STAR will highlight the potential effects of this kind of program on historic windows.

HOME STAR was introduced in Congress in April 2010 with the aim of decreasing residential energy consumption, reversing job losses in the construction and services sectors, and stimulating demand for U.S.-made products that improve energy efficiency.⁷¹ HOME STAR, officially titled the HOME STAR Energy Retrofit Act of 2010, had wide, bipartisan support and was expected to be passed in 2010. The bill, which is currently pending in the Senate, has the support of the National Trust for Historic Preservation (NTHP) and other preservation groups. In expressing its support for HOME STAR, the National Council of State Historic Preservation Officers stated that the bill as amended “recognizes the inherent value of historic buildings and materials, such as windows, and does not incentivize needless and damaging alteration.”⁷² HOME STAR includes window replacement as one of its energy efficiency strategies, a provision that was potentially troubling for preservationists, but NTHP successfully lobbied for the inclusion of a storm window amendment in the House version of the bill, which will give homeowners a choice

⁶⁹ Energy Incentives for Individuals in the American Recovery and Reinvestment Act. Internal Revenue Service. Online, <http://www.irs.gov/newsroom/article/0,,id=206875,00.html>.

⁷⁰ For the bill’s current status, see U.S. Senate, Bill Summary & Status. Online, <http://thomas.loc.gov/cgi-bin/bdquery/z?d111:HR05019:@@D&summ2=m&>.

⁷¹ House Report 111-469. Committee Reports, 111th Congress (2009-2010). On-Line, accessed 7/15/10.

⁷² Historic Preservation: Support for Retrofits of Older and Historic Buildings. National Council of State Historic Preservation Officers. On-line, <http://www.ncshpo.org/current/legislation/2010%201-pagers/20100318Energy.pdf>.

between window replacement and the preferred preservation option: the installation of storm windows.

If it is implemented, HOME STAR will be a \$6 billion rebate program that will last for two years.⁷³ The program would create incentives for energy-efficient appliances, building mechanical systems, insulation, and whole-home energy efficiency retrofits, including window replacement. The program has two tracks: SILVER STAR and GOLD STAR. SILVER STAR is a one-year program that will provide consumers a rebate for energy-saving home retrofits and appliances: air sealing; attic, wall, and crawl space insulation; duct sealing or replacement; and replacement of existing windows and doors, furnaces, air conditioners, heat pumps, water heaters and appliances with high-efficiency, ENERGY STAR-rated models.⁷⁴ Homeowners would receive between \$1,000 and \$1,500 for each energy efficiency measure and \$250 for each ENERGY STAR appliance, for a rebate of up to \$3,000 or 50 percent of the total project cost, whichever is less. The GOLD STAR track is a more comprehensive program that would require an energy audit and thorough inspection of the home, with targeted, prioritized retrofits that will yield more dramatic energy savings than SILVER STAR. Homeowners who achieve a modeled 20 percent reduction in energy usage will receive a \$3,000 rebate, plus another \$1,000 for each additional five percent improvement in energy performance, for a total possible rebate of up to \$8,000 or 50 percent of the total project cost, whichever is less. Rebates will be given to consumers at the point of sale by the manufacturer, supplier, retailer or contractor who provides the product or service, and they in turn

⁷³ A home is defined in the bill as “a private residential dwelling unit in a building with no more than four dwelling units.” U.S. Senate. Ibid.

⁷⁴ ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that encourages energy efficient products and practices, and includes a rating program for appliances, HVAC systems and windows, among other products. See <http://www.energystar.gov/>.

will be reimbursed within 30 days by federally approved rebate aggregators.⁷⁵ Quality assurance for GOLD STAR will include a job completion checklist, work scope and testing data, all of which must be submitted before a reimbursement can be issued. SILVER STAR only requires a job completion checklist for the reimbursement, and additional quality assurance is provided in both tracks by random inspections of completed jobs.⁷⁶

The largest national advocacy group that has influenced the stalled bill is the HOME STAR Coalition, which has over 2,000 members including trade unions, financial companies, builders, window and door manufacturers, and a broad range of green energy and green building advocacy groups, all of which will exert their influence if the bill is taken up again by the Senate.⁷⁷ The HOME STAR Coalition commissioned a study that concludes that HOME STAR's \$6 billion program will yield \$20 billion in construction activity.⁷⁸ One of the powerful lobby groups represented in the HOME STAR Coalition is the Window and Door Manufacturers Association (WDMA). In a recent press release, WDMA stated that "The Window and Door Manufacturers Association supports President Obama's announced HOME STAR program which is designed to spur job creation across many industries, including the nation's window, door and skylight industry, which has lost 33 percent of its workforce over the past five years.⁷⁹ Pella Windows, one of the nation's largest manufacturers of windows, is a supporter of HOME STAR, but its position on window replacement is typical of the industry as a whole. "Pella supports HOME STAR because we think it creates jobs now, and it addresses the largest energy savings potential in U.S.

⁷⁵ Rebate aggregators include existing Home Performance with ENERGY STAR partners, state-approved residential energy efficiency retrofit programs, and utilities that administer energy efficiency programs.

⁷⁶ HOME STAR Coalition. The HOME STAR Initiative to Retrofit America's Housing for Good Jobs and Energy Efficiency. On-line, http://homestarcoalition.org/HOME_STAR_Overview.pdf.

⁷⁷ See <http://www.homestarcoalition.org/>.

⁷⁸ Approximate Impacts on Public Sector Revenues due to the HOME STAR Program. Fairfax VA: ICF, 10 May 2010. On-Line, http://www.homestarcoalition.org/documents/HSC_public_sector_impacts.pdf.

⁷⁹ WDMA, available at <https://www.wdma.com/Default.aspx>. The home construction and services industry had 27 percent unemployment as of March 2010. HOME STAR Energy Retrofit Act of 2010. U.S. Congress: Committee Reports, 2010.

homes: the replacement of single-pane windows," stated Martin Wesemann, Pella's director of advanced technology.⁸⁰ This misrepresentation about the energy efficiency of single-pane windows is repeated by most window manufacturers as one of the main rationales for replacement, and underscores the uphill public relations battle that preservationists face.

The storm window amendment in HOME STAR was introduced by Rep. Melissa Bean (D-IL), in response to lobbying by NTHP, the Alliance to Save Energy (ASE), the National Resources Defense Council (NRDC) and the U.S. Green Building Council (USGBC).⁸¹ While the interest of preservationists in retaining historic windows may be characterized as primarily aesthetic, environmentalists and green building advocates recognize that tossing serviceable windows into a landfill is neither sustainable nor a viable, long-term energy efficiency strategy. These views are supported by Life Cycle Assessment (LCA) and Embodied Energy studies. LCA measures the total costs of windows from resource extraction to end of service, or "cradle to grave," and can be expressed in a variety of ways including the total amount of CO₂ generated. Embodied Energy measures the energy used to create a building component, from harvesting the raw materials to manufacture, and is usually expressed in Btu's.⁸² LCA and embodied energy calculations have been cited by preservationists in support of keeping historic windows in place. Donovan Rypkema argues that the reuse of historic buildings, including old windows, is the ultimate form of recycling.⁸³

The storm window and door amendment in HOME STAR may not save every historic window, but at least it gives consumers a preservation-friendly option. How can owners of historic

⁸⁰ Miller, Stephani L. "HOME STAR Bill Moves on to Senate." *Custom Home Magazine*, 10 June 2010.

⁸¹ Lally, Pat. "On the Hill: Victory for Preservationists as HOME STAR Passes the House." *PreservationNation* blog, 6 May 2010. On Line, <http://blogs.nationaltrust.org/preservationnation/?p=9956>. See also "Understanding HOME STAR." NTHP, Online, <http://www.preservationnation.org/take-action/advocacy-center/on-the-hill/homestar.html>.

⁸² A simple Life Cycle Assessment calculator can be found at <http://www.lcacalculator.com/>. A prototype for an embodied energy calculator can be found at <http://www.thegreenestbuilding.org/>.

⁸³ Rypkema, Donovan. "Sustainability and Historic Preservation." Cited in Preservation Action Council of San Jose. "Economic Benefits of Historic Preservation." Online, <http://www.preservation.org/rypkema.htm>.

homes learn about the advantages of storm windows over replacement windows? Consumer education that focuses on the benefits of retaining historic wood windows is not included in HOME STAR, so this important task will have to be taken up by national, state and local preservation groups and their allies. Educational outreach efforts must stress the mutually achievable goals of energy efficiency and preserving existing windows. Much work is already being done. NTHP has been ramping up its energy efficiency education efforts with its web-based guide, *Weatherization Guide for Older and Historic Buildings*, as has the National Park Service (NPS) with its new on-line publication, *Weatherizing and Improving the Energy Efficiency of Historic Buildings*.⁸⁴ NTHP's Weatherization Guide includes a valuable database of window restoration experts.⁸⁵ Both publications stress that retaining historic wood windows makes sense from both an energy efficiency and preservation standpoint. A project team has also been formed within the Technical Preservation Services (TPS) department of NPS to make much needed updates to Preservation Brief #3, *Conserving Energy in Historic Buildings*, so that it includes current information about the energy efficiency benefits of weather stripping and storm windows.⁸⁶

Building on these and other efforts, NTHP has unveiled a national campaign to save historic windows.⁸⁷ In May 2010, shortly before ending his tenure as President of the National Trust for Historic Preservation, Richard Moe sent out a fundraising letter that outlined the issue of window replacement and how the Trust intended to address the threat to historic windows.⁸⁸ The letter identifies three target audiences: homeowners, government officials, and energy firms and

⁸⁴ Online, <http://www.preservationnation.org/issues/weatherization/> and <http://www.nps.gov/history/hps/tps/weather/index.html>.

⁸⁵ NTHP. Window Know-How: A Guide to Old-Building-Friendly Contractors. Online, <http://www.preservationnation.org/resources/homeowners/map.html>.

⁸⁶ Conversation with Jenny Parker, HPS Technical Preservation Services, 19 July 2010. See also Hensley, Jo Ellen and Antonio Aguilar. "An Update on Revisions to Preservation Brief #3, Improving the Energy Efficiency of Historic Buildings." 6 December 2009. On-Line, http://www1.eere.energy.gov/femp/pdfs/ee_historicbldgs_aguilar.pdf.

⁸⁷ Conversation with Rebecca Williams, NTHP Program Officer, 8 October 2010.

⁸⁸ The text of the letter was posted on a blog, <http://offaydesignstudioblog.typepad.com/historic-interior-design/2010/05/national-trust-for-historic-preservation-national-windows-campaign.html>.

auditors. Each of these groups presents its own marketing challenges. Whereas both government officials and energy firms and auditors would likely respond well to a combination of science-based evidence and targeted lobbying, homeowners present a special challenge. How NTHP intends to address these marketing challenges is unclear at this time. This issue will be explored further in the proposed marketing campaign in Chapter 5.

Chapter 3

Where Do the “Facts” Come From?

As described in the previous chapter, the Department of Energy (DOE) influences the window replacement issue above all other federal agencies. DOE’s energy-efficiency statistics are used by national and state weatherization programs, and by the ENERGY STAR program to set minimum standards for replacement windows. DOE’s numbers are used by EPA for its green building initiatives, and by HUD in its low-income retrofit programs. All of these programs have a major impact on historic windows. From a historic preservation perspective, the key problem is that the energy efficiency guides and decision tools published by DOE, EPA and HUD do not include adequate information about the retrofits that can make historic windows perform just as well as most replacement windows. The absence of information regarding these money-saving and genuinely sustainable practices is highly advantageous for replacement window manufacturers, suppliers and contractors, and they use this omission to their advantage. The reason for this seeming oversight can be attributed in part to the dominant social paradigm (DSP) that pervades consumer attitudes, but more importantly, to the relationships that have evolved between the window industry, federal agencies, research laboratories and green labeling organizations. One of the most important examples of this relationship can be seen at DOE’s research facility, the Lawrence Berkeley National Laboratory (LBNL).

LBNL is part of a chain of seventeen national laboratory system operated by DOE through its Office of Science.⁸⁹ The laboratory is located on the campus of the University of California at Berkeley and employs 4,200 scientists, engineers, support staff and students. LBNL's budget for 2010 is \$824 million, and its economic impact on the national economy is calculated to be many times that, primarily through the new technologies that are developed there.⁹⁰ Energy efficiency is one of LBNL's key research topics. Berkeley Lab has developed many of the energy-saving features now found in most of the windows sold in the U.S., including low-e coatings. LBNL also developed the window ratings system used by the National Fenestration Rating Council (NFRC) and the ENERGY STAR program.⁹¹ The Windows and Daylighting Group at LBNL conducts research on a variety of topics connected to the replacement window issue, including the development of highly efficient glazing materials, energy efficiency modeling software, and new window technologies that will transform windows as they are understood today. One of the most innovative of these is Zero Energy Windows, which are designed to harness solar energy that will help power the building in which they are installed. Zero Energy Windows can be manually darkened in order to assist in the regulation of the internal temperature of a building.⁹²

LBNL exerts most of its influence on the replacement window issue through its publication of window energy efficiency statistics, which are published by DOE and disseminated by federal and state agencies. Two window modeling software tools developed by LBNL – WINDOW and THERM – are used by researchers and the window industry to develop more energy efficient windows, and by the NFRC to estimate anticipated energy efficiency values for new windows.

⁸⁹ DOE. Research Facilities. Online, <http://www.energy.gov/researchfacilities.htm>.

⁹⁰ Berkeley Lab. About Berkeley Lab. Online, <http://www.lbl.gov/LBL-PID/LBL-Overview.html>.

⁹¹ Ibid. Berkeley Breakthroughs. Online, <http://www.lbl.gov/Publications/energy-breakthroughs.html>.

⁹² DOE Factsheet, Zero Energy Window Prototype: High Performance Window of the Future. Online, http://windows.lbl.gov/adv_Sys/hi_R_insert/ZeroEnergyWindowDOE-FactSheet.pdf.

WINDOW is used to model U-values, solar heat gain coefficients (SHGC), shading coefficients and visible transmittances through various glazing types.⁹³ THERM measures heat transfer through a variety of building components, including window frames and jambs.⁹⁴ Window manufacturers use WINDOW and THERM to model the insulating characteristics of the glazing and frame, respectively, of new windows.⁹⁵ Using this software combination, the average U-value of wood single-pane windows has been estimated to be between .71 and .99, compared to a U-value of approximately .49 for an average non-metal double-pane window.⁹⁶ In other words, a double-pane wood window has approximately twice the insulating value as a single-pane wood window. The variability in the U-values for single-pane windows is attributable to their condition. A properly maintained and sealed window has a lower U-value than one that has, for example, poorly fitting sashes and worn weather stripping. But LBNL has also performed research that shows that it is possible to improve the insulating values for single-pane windows through the use of insulating shades, blinds, drapes and shutters.⁹⁷ In general, these cost-effective strategies are downplayed in favor of expensive, high-tech replacements, a clear example of the DSP at work.

Some of the reasons why replacement windows are emphasized can be found on LBNL's *Choosing a Residential Window* internet site, where this statement appears: "LBNL's Windows and Daylighting Group provides technical support to government and industry efforts to help

⁹³ LBNL. WINDOW. Online, <http://windows.lbl.gov/software/window/window.html>.

⁹⁴ Ibid. THERM. Online, <http://windows.lbl.gov/software/therm/therm.html>. Both THERM and WINDOW are available free, and will in future be integrated with another LBNL software product, RESFEN, which measures the energy efficiency of entire buildings. Ibid.

⁹⁵ Mitchell, Robin. LBNL Staff, Environmental Energy Technologies Division. Email to author, 27 October 2010.

⁹⁶ Selkowitz, Stephen E. Thermal Performance of Insulating Window Systems. Berkeley CA: LBNL (December 1978), 2. Multiple Benefits Fact Sheet. Efficient Windows Collaborative, January 2010. Online, <http://www.efficientwindows.org/factsheets/MultiBenefitsFactsheet.pdf>. Non-metal frames can include wood, vinyl and fiberglass. Ibid.

⁹⁷ Selkowitz, 3. Selkowitz, Stephen E. Influence of Windows on Building Energy Use. Berkeley CA: LBNL (1984), 5-7.

consumers and builders choose energy-efficient and cost-effective residential windows.”⁹⁸ A link transfers the visitor to the Efficient Windows Collaborative (EWC), a window sales tool supported by LBNL, window and window component manufacturers, federal, state and local government agencies and other energy efficiency stakeholders.⁹⁹ With such a diverse set of stakeholders, why is EWC focused on replacement windows, not retrofits? The answer can be found in the structure of the organization. Membership in EWC is administered by the Alliance to Save Energy (ASE), a non-profit advocacy, research and educational organization.¹⁰⁰ ASE’s membership consists of over 170 “prominent businesses, environmental and consumer groups, government entities, academic centers and associations,” and lists Andersen Windows as one of its “Founder Associates,” a designation for large supporters who donate \$25 thousand or more.¹⁰¹ Jeld-Wen is also listed as an Associate.¹⁰² The influence of window manufacturers is evident in the stated positions of EWC and ASE, which both cite that replacement of single-pane windows is one of the key ways that consumers can achieve greater energy efficiency in their homes. The aims of the two organizations are summed up on LBNL’s website: “LBNL supports the DOE-sponsored Efficient Windows Collaborative, an industry-based group organized by the Alliance to Save Energy with a goal of doubling the market share of efficient residential windows by 2005.”¹⁰³

EWC reinforces the window replacement option over other, more sustainable, retrofits including window replacement with its *Window Selection Tool*, a very simple on-line program that allows the user to compare a range of energy efficient windows in a new or existing home, and in a

⁹⁸ LBNL Choosing a Residential Window. Online, http://windows.lbl.gov/choose_res/default.htm.

⁹⁹ Efficient Windows Collaborative. What is the Efficient Windows Collaborative? Online, <http://www.efficientwindows.org/images/ewc.pdf>.

¹⁰⁰ Alliance to Save Energy. About Us. Online, <http://ase.org/about-us>.

¹⁰¹ Ibid. Associates. Online, <http://ase.org/associates>.

¹⁰² Ibid.

¹⁰³ LBNL, Efficient Windows Collaborative. Online, <http://eetd.lbl.gov/pubs/e-windows-hp-2006.pdf>.

selection of cities across the country.¹⁰⁴ By selecting *Existing Windows* and *Washington, DC* from the drop-down menus for the window type and house location, respectively, a series of graphs showing 29 possible glazing and frame combinations are displayed, along with two-tone bar graphs that shows the heating and cooling costs that can be anticipated for an average house in Washington, DC. The software basis its calculations on an average 2,150 square foot house in which 15 percent of the exterior walls are taken up by windows, evenly distributed on all four façades. The anticipated heating and cooling costs do not include other utility bills, and the energy prices are based on estimates by the Energy Information Administration (EIA). For single-pane, clear glass, non-metal (which includes wood) frame windows, the heating cost is approximately \$1,250, and the cooling cost approximately \$1,550.¹⁰⁵ For the same house with double-pane, clear glass, non-metal frame windows, the heating cost is \$1,075 – a savings of \$175 – and the cooling cost is \$1,325 – a savings of \$225. In other words, someone using the tool should be able to figure out that substituting single-pane windows with double-pane windows can yield \$400 in annual savings.

The EWC tool has many shortcomings. First, the energy usage for heating and cooling are shown in \$600 increments, and there is no total dollar amount shown. Second, the relative savings for each type of window cannot be compared. The viewer must estimate the savings based on poorly calibrated horizontal graphs. Most importantly from both a preservation and cost benefit perspective, the tool does not provide an option for calculating the anticipated energy usage for single-pane windows combined with, for example, exterior low-e storm windows. This omission is also evident in DOE's residential energy efficiency tool, *Home Energy Saver*, which allows a homeowner to model energy savings for an entire house. Unless the user already has ENERGY

¹⁰⁴ EWC. Window Selection Tool. Online, <http://www.efficientwindows.org/selection.cfm>.

¹⁰⁵ The bar graphs are scaled in increments of \$600, so it is not possible to get an exact reading.

STAR windows, the recommendations at the end of the session stresses replacement windows, without including any mention of storm windows: “Energy-efficient windows can make your home more comfortable year-round, reduce condensation, block outside noise, improve fire safety, and cut back on ultraviolet radiation that can fade your carpets and furniture.”¹⁰⁶

The emphasis on replacement is also evident in federal publications such as EERE’s *Energy Savers Tips Booklet: Tips on Saving Energy and Money at Home*, available on DOE’s website in English and Spanish.¹⁰⁷ The *Windows* section of the publication states that windows “account for 10% to 25% of your heating bill,” and recommends the homeowner to “install ENERGY STAR windows and use curtains and shade to give your air conditioner and energy bill a break.”¹⁰⁸ In the next paragraph, this recommendation is made more explicit: “If your home has single-pane windows, as many U.S. homes do, consider replacing them with new double-pane windows with high-performance glass (e.g. low-e or spectrally selective).”¹⁰⁹ The section goes on to describe alternative weatherization strategies if the window replacement option is not chosen, such as plastic film, window shades, and storm windows, which “can reduce heat loss through the windows by 25% to 50%.”¹¹⁰ However, the replacement window option is emphasized as the recommended long-term solution: “While it may take many years for your new windows to pay off in energy savings, the benefits of added comfort and improved aesthetics and functionality may make the investment worth it to you.”¹¹¹

There is no doubt that high quality replacement windows can provide improved energy efficiency, but is it a cost-effective strategy for homeowners who have viable single-pane

¹⁰⁶ DOE. Home Energy Saver. Upgrade Recommendations Summary. Online, <http://hes.lbl.gov/>.

¹⁰⁷ EERE Energy Savers: Tips. Online, <http://www.energysavers.gov/tips/>.

¹⁰⁸ Ibid. Windows, Online, <http://www.energysavers.gov/tips/windows.cfm>.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid.

windows? Tax credits have been shown to be a very effective way of getting consumers to spend money on energy efficiency measures. The following example uses HOME STAR in the form in which it was passed by the House earlier this year. HOME STAR requires the replacement of at least eight exterior windows or up to 75 percent of the total number of windows in a house, whichever is less. An average window replacement project costs approximately \$500 - \$1000 per window, including installation.¹¹² Using as an example a historic house with 12 single-pane wood sash windows, nine of the windows will qualify for the tax credit. Using \$750 as an average cost, replacing the nine eligible windows will cost the homeowner \$6,750, of which 50 percent or \$3,375 would be refunded. The storm window amendment in HOME STAR requires the installation of at least five storm windows, but there are no limits on the maximum number. The average installed cost for a storm window is \$75 - \$150.¹¹³ Using the same example of a historic house with 12 single-pane windows and an average installed cost of \$100 per window, the total cost for 12 storm windows is \$1,200, of which \$600 would be rebated. As one can see from this example, the window replacement option is nearly six times more expensive, and the window replacement rebate is only available for up to 75 percent of the total number of windows in a home. A homeowner who chooses the storm windows option will pay approximately one-sixth of the cost of full replacement, and all of the windows in his house qualify for the rebate.

More importantly, adding storm windows can make existing single-pane wood windows just as energy efficient as a double-pane (insulated) window. To understand why, it is necessary to look at the relative insulating characteristics of windows. A window's insulation property is expressed as U-value, a measurement of how well the unit resists heat flow, from exterior to

¹¹² I base these numbers in part on my 20 years experience as a home improvement contractor. A number of internet sites also provide average replacement window costs. For example, see <http://www.costhelper.com/cost/home-garden/window-replacement.html>.

¹¹³ A storm window can usually be installed within one half hour. For more information on storm windows, see <http://stormwindowssavemoney.com/>.

interior in summer and vice-versa in colder temperatures. The lower the U-value, the better the window is able to resist heat and cold flow.¹¹⁴ As described earlier, LBNL's analysis shows that an average single-pane non-metal (wood or vinyl) window has a U-value of between .71 and .90, while a double-pane non-metal window has a U-value of .49.¹¹⁵ In other words, the double-pane window is almost twice as energy efficient as a poorly maintained, leaky single-pane window.¹¹⁶ However, a single-pane window combined with a storm window also has a U-value of .49, making it just as energy efficient as an average double-pane wood or vinyl replacement window.¹¹⁷ Using a low-e storm window, it is possible to achieve a U-value as low as .36.¹¹⁸ This last fact is critically important for homeowners who live in historic houses with single-pane wood windows, who may not know that the combination of proper maintenance of the original window plus correctly installed, low-e storm windows can yield the same energy savings as window replacement, for about one-sixth of the cost, a very significant savings. These findings are supported by several scientific studies. The British non-profit preservation organization *English Heritage* has produced one of the most definitive analyses on the energy efficiency of historic wood windows, which concludes that the combination of window rehabilitation, storm windows, and other weatherization strategies such as shutters or insulated curtains provides the most cost-

¹¹⁴ The insulating value for all other parts of a building are measured with an R-factor. Dividing 1 by the U-value will yield a window's R-value. For examples, see <http://www.efficientwindows.org/ufactor.cfm>.

¹¹⁵ Building Performance Institute. Technical Standards for the Building Analyst Professional. On-Line, http://www.bpi.org/Webpercent20Download/BPIpercent20Standards/Buildingpercent20Analystpercent20Professional_2-28-05nNC-newCO.pdf, p. 9.

¹¹⁶ The higher energy efficiency of a double glazed window is due primarily to the insulating characteristics of the air layer between the two panes of glass. Lower U-values can be achieved with triple-pane glazing, special glass coatings and the use of different gases between the glass panels. ENERGY STAR windows must have a U-value less than .30 in order to qualify for a federal rebate.

¹¹⁷ Building Performance Institute. *Ibid.* See also Klems, J. H. Measured Winter Performance of Storm Windows. Berkeley CA: LBNL, 2002. Online, <http://www.parks.ca.gov/pages/1054/files/berkeley%20storm%20window%20research.pdf>.

¹¹⁸ Conversation with John Siegel, QuantaPanel Insulating Glass Systems. Nov. 15, 2010.

effective approach for reducing energy usage in a historic home.¹¹⁹ A study conducted at the University of Vermont shows that energy considerations alone are not sufficient to encourage window replacement, and that properly installed triple-track storm windows can dramatically increase the energy efficiency of single-pane windows.¹²⁰

The payback period on investment is another factor that must be taken into account by homeowners considering window replacement. The average energy savings of a double-pane over a single-pane window is approximately \$6-\$25 per year.¹²¹ Using \$15 as the average savings, the window replacement scenario described above will save the homeowner \$15 per year on nine windows, for a total energy saving of \$135 per year.¹²² Dividing the total project cost of \$3,375 by \$135, it turns out that the investment in replacement windows will take about 25 years to recoup. In the non low-e storm window example, the investment in 12 windows will yield \$180 in energy savings per year. Dividing the total project cost of \$600 by \$180, the payback period (Return on Investment or ROI) is just over three years, which is nearly eight times faster than the window replacement option.¹²³ Given that replacement windows will last about twenty to thirty years at

¹¹⁹ See English Heritage, "Thermal Performance of Traditional Windows." On Line, <http://www.english-heritage.org.uk/professional/research/buildings/energy-efficiency/thermal-performance-of-traditional-windows/>. NTHP "Windows." <http://www.preservationnation.org/issues/weatherization/windows/>

¹²⁰ James, Brad C. Testing the Energy Performance of Historic Windows in a Cold Climate. University of Vermont: 1997, 124.

¹²¹ The high end of the scale is quoted, as might be expected, by the replacement industry. An engineer on the Collingswood, NJ historic district commission has estimated the energy savings at \$9.65 per year. Halberern, Keith. "Old"Wood Window/Replacement Window Energy Efficiency Analysis: What Those Home Improvement Advertisements Won't Tell You! On-Line, <http://restoreomaha.org/resources/WindowEnergyAnalysis.pdf>. EnergyStar.gov estimates that the savings are closer to \$15 per window. An energy auditor with more than thirty years experience estimates that the cost is probably closer to \$6 per window. Conversation with Ed Minch, Energy Services Group. Oct. 22, 2010.

¹²² This estimate is quoted by ENERGY STAR, and is close to the average result in a replacement window scenario for Washington, DC with a U-value of .49 using the window replacement tool on the Efficient Window Collaborative. EWC's window tool uses regression analysis provided by LBNL, which are based on an existing 2150 square foot house in which windows constitute 15 percent of the exterior wall space, spread out evenly on all four facades. Online, http://www.efficientwindows.org/city_all.cfm?new=E&prodtype=WN&id=9.

¹²³ These numbers correlate closely with the cost-saving figures cited by the storm window industry. For example, see <http://www.stormwindowssavemoney.com/save-green/>.

most, it is clear that the investment in replacement windows may never be recouped in energy savings alone.¹²⁴

Table 1 – Comparison of costs and return on investment for replacement windows and storm windows using HOME STAR.

Replacement Windows	Storm Windows
Minimum 8 windows must be replaced, up to 75% of the windows in the house are eligible	Minimum 5 storm windows must be installed, all of the windows in a house are eligible
Average installed cost = \$750	Average installed cost = \$100 ¹
Total cost for 9 windows = \$6,750	Total cost for 12 storm windows = \$1,200
50% Tax credit for 9 windows = \$3,375 Total out of pocket expense = \$3,375	50% Tax credit 12 storm windows = \$600 Total out of pocket expense = \$600
U-value of avg. replacement window = .49 ² (ENERGY STAR replacement window = <.30)	U-value with avg. storm windows = .49 U-value with low-e storm windows = .38 ³
Energy savings at .49 U-value = \$15/window ⁴ (ENERGY STAR savings = \$25/window) ⁴	Energy savings avg. storm windows = \$15/window ⁴ Energy savings low-e storm = \$17/window ⁴
Replacement window yearly savings = \$135 (ENERGY STAR yearly savings = \$225) ⁵	Avg. storm window yearly savings = \$180 Low-e storm window yearly savings = \$204
ROI for average replacement windows = 25 yrs. (ROI for ENERGY STAR windows = >30 yrs.) ⁶	ROI for non low-e storm windows = 3.33 yrs. ROI for low-e storm windows = 3.6 yrs. ⁷

1. The installed cost for low-e storm windows is closer to \$125 per window.
2. U-value calculation based on BPI and LBNL research cited in footnote 118.
3. Average measured U-values based on PA study quoted below by Thomas Culp. See footnote 126.
4. Modeled savings using EWC Window Selection Tool for Washington, DC.
5. ENERGY STAR window savings estimated using EWC Window Selection Tool for Washington, DC.
6. Estimate based on higher anticipated cost of ENERGY STAR windows.
7. Based on estimated installed cost of \$125 for low-e storm windows.

These findings are supported by several research projects. A study carried out in four cities in Pennsylvania showed that low-e storm windows are a much better investment than replacement windows, especially for weatherization programs that want to maximize their effect.¹²⁵ As a result, best practices for low-income energy efficiency projects now include low-e storm windows as the recommended strategy for retrofitting single-pane wood or metal windows, and to replace

¹²⁴ For average life expectancy of replacement windows, I rely on my experience as a contractor, but these estimates are consistent with three sources used by the Old House Journal, available at <http://www.oldhouseweb.com/how-to-advice/life-expectancy.shtml>.

¹²⁵ Email from Thomas Culp, Birch Point Consulting. Nov. 4, 2010.

damaged or non-functioning older storm windows.¹²⁶ A similar study commissioned by DOE and HUD concluded that low-e storm windows installed in six homes in Chicago yielded an average energy savings of 21 percent, with an average payback period of three to five years.¹²⁷ These energy savings compare very favorably with the 20-30 percent energy savings goal cited by the Partnership for Home Energy Efficiency, a DOE/ EPA/ HUD initiative, for homes “fully equipped with ENERGY STAR products.”¹²⁸ The summary included in the Chicago research project makes the national implications of the study clear: “With an estimated 43% of all residential windows being single-pane glass, there is a tremendous opportunity to provide energy savings through the use of affordable storm and low-e windows.”¹²⁹ A Boston-based research project was completed in October 2010, which compared the energy savings of historic single-pane wood windows with triple-track storm windows to low-e double-pane vinyl replacements.¹³⁰ The results, which have not yet been published, also indicate that the performance of the two window scenarios is nearly identical. The conclusions of these studies, which are applicable primarily to cold-weather climates – climate zones 1 through 3 in the U.S. – make it abundantly clear that the replacement of viable single-pane historic windows is unnecessary and unwarranted from a cost-benefit, energy efficiency and sustainability perspective.¹³¹

¹²⁶ Ibid.

¹²⁷ Drumheller, S. Craig, Christian Köhler and Stefanie Minen. Field Evaluation of Low-E Storm Windows. Atlanta: ASHRAE, 2007.

¹²⁸ Partnership for Home Energy Efficiency: An Overview. Washington DC: DOE/EPA/ HUD, 2010. Online, http://www.energystar.gov/ia/home_improvement/PHEE_Overview_final.pdf.

¹²⁹ Ibid, 6.

¹³⁰ Galvin, Jarod. Frank Shirley Architects. Conversation with author, Oct. 21, 2010. The study will be published in early 2011.

¹³¹ For southern climate zones, awnings or other strategies may be more beneficial for reducing energy usage. See Carmody, John and Kerry Haglund. “Awnings in Residential Buildings: The Impact on Energy Use and Peak Demand in Twelve U.S. Cities.” Berkeley CA: LBNL, Sept. 2007. Online, Awnings in Residential Buildings: The Impact on Energy Use and Peak Demand in Twelve U.S. Cities. For a map of U.S. climate zones, see EIA’s U.S. Climate Zones. Online, http://www.eia.doe.gov/emeu/cbecs/climate_zones.html.

Chapter 4

Five Window Manufacturers and Their Marketing Strategies

The previous chapter makes clear that DOE and other federal agencies emphasize window replacement above other, more cost effective and sustainable alternatives. How do manufacturers use this to their advantage and, in combination with their own green marketing, sell replacement windows to consumers? An examination of how the five largest window manufacturers market their windows will reveal the green marketing – and greenwashing – tactics that they use to sell their products. The five manufacturers selected for this study are, in alphabetical order, Andersen Windows and Doors, Atrium Companies, Jeld-Wen Windows and Doors, Marvin Windows and Doors, and Pella.¹³² These five window companies have used their relationships with federal agencies and researchers, memberships in organizations with a stake in sustainability, and other tactics to convey a consistent message to consumers: replacing single-pane windows is the recommended strategy for improving the energy efficiency of existing homes. This analysis will serve as opposition research for the marketing campaign outlined in Chapter 6. Each company below is described in terms of its size, partnership in federal and non-profit sustainability initiatives, window replacement rationale, and green claims. For this study, only the companies' websites and sources available online were consulted. A thorough, comprehensive survey of television, radio and print advertising is beyond the scope of this paper. However, it is assumed that corporate websites and digital media provide a relatively accurate snapshot of a company's

¹³² Replacement-Windows.com. The Top 100 Window Manufacturers. Online, <http://www.replacement-windows.com/top-100-manufacturers.php>.

marketing strategy, and that a more detailed study would yield many of the same general findings outlined below.

Andersen Corporation is the largest manufacturer of wood windows in the world, the second-largest window manufacturer in the U.S., and ranks 188th on the Forbes list of largest private companies.¹³³ The company had sales of \$2.5 billion in 2009, and has a workforce of over 10,000 employees.¹³⁴ The company makes over 5 million windows per year.¹³⁵ Andersen is one of the oldest window manufacturers in the U.S., and this long experience has allowed the company to develop one of the most recognizable brands in the industry. The company is involved in an impressive array of sustainability initiatives that have helped it to position itself as a green leader in the window industry. These include partnership in DOE's ENERGY STAR program, EPA's Project XL (Excellence in Leadership), HUD's Partnership for Advancing Technology in Housing (PATH), Alliance to Save Energy (ASE), Forest Stewardship Council (FSC), Green Seal, U.S. Green Building Council (USGBC), and Scientific Certification Systems (SCS).¹³⁶ Andersen was named a 2010 ENERGY STAR Partner of the Year for its exemplary marketing of energy-efficient products.¹³⁷ Andersen's involvement in EPA's Project XL may allow it to fast-track the implementation of lower-emission waterborne wood treatment technology at its manufacturing facility, which if successful, will create more streamlined emission regulations for other

¹³³ Forbes. America's Largest Private Companies. Online, http://www.forbes.com/lists/2009/21/private-companies-09_Andersen_OAE3.html.

¹³⁴ Ibid.

¹³⁵ Replacement-Windows.com. Ibid.

¹³⁶ Andersen Online. Sustainability: Our Commitment. Online, <http://www.andersenwindows.com/servlet/Satellite/AW/Page/awGeneral-3/1200437179427>.

¹³⁷ Andersen Windows. Media Release Archive. "Andersen Windows Named 2010 ENERGY STAR Partner of the Year." Online, <http://www.andersenwindows.com/servlet/Satellite/AW/Page/awMediaContainer/1115823198035?mrid=1267444824197>.

industries.¹³⁸ Participation in PATH allowed Andersen windows to be featured in two model energy-efficient housing projects funded by HUD.¹³⁹ Andersen is listed as an ASE Founder-level Associate, meaning that it contributes \$25 thousand annually or more to that organization.¹⁴⁰ It is also one of only two window manufacturers in this study with an independent lobbying presence on Capitol Hill, where it has spent \$90,000 in the first two quarters of 2010, more than double what it spent in 2009.¹⁴¹ Andersen, like four of the top five window manufacturers (Atrium is the exception), is a founding member of the Efficient Windows Collaborative (EWC).¹⁴²

Andersen's window replacement rationales – the reasons that the manufacturer provides for choosing replacement windows over retrofit – are stated in the *Window Problem FAQ* on the company's website. The list is typical of many window manufacturers. Windows that have air infiltration leaks, “look ugly,” don't open or close easily, are difficult to clean, are worn out, or need painting, should be replaced.¹⁴³ Andersen recommends the replacement of “old single-pane windows with modern windows that feature dual-pane low-e glass for a substantial energy savings.”¹⁴⁴ The list of Andersen's green initiatives includes reducing pollution, conserving natural resources, promoting energy conservation, developing sustainable materials, and improving environmental performance.¹⁴⁵ These initiatives are marketed in print, on Andersen's website, on

¹³⁸ EPA. Project XL. Andersen Corporation. Online, <http://www.epa.gov/projctxl/andersen/index.htm>.

¹³⁹ HUD. PATH. Andersen Corporation. Online, <http://www.pathnet.org/sp.asp?id=14019>.

¹⁴⁰ ASE. Full List of Alliance Associates. Online, <http://ase.org/full-list-alliance-associates>.

¹⁴¹ Open Secrets. Online, <http://www.opensecrets.org/lobby/indusclient.php?lname=C05&year=2010>.

¹⁴² EWC. Members: Charter. Online, http://www.efficientwindows.org/members_charter.cfm.

¹⁴³ Andersen. Window Problem FAQ. Online, <http://www.andersenwindows.com/servlet/Satellite/AW/Page/awGeneral-3/1104867941420/>.

¹⁴⁴ Ibid.

¹⁴⁵ Ibid. Our Commitment. Online, <http://www.andersenwindows.com/servlet/Satellite/AW/Page/awGeneral-3/1200437179427>.

a dedicated YouTube channel (81 subscribers), via Facebook (626 likes), and a Twitter feed (983 followers) that focuses on sustainability called “In Our Nature.”¹⁴⁶

Atrium Companies, Inc. recently emerged from Chapter 11 bankruptcy, but retains its position as one of the largest manufacturer of vinyl and aluminum windows in the U.S., with sales of over \$800 million per year.¹⁴⁷ The company, which is an amalgam of six window manufacturers, including Atrium Windows, is currently owned by two equity firms.¹⁴⁸ The company has 80 manufacturing and distribution centers in North America, and produces more than 7 million windows and patio doors per year.¹⁴⁹ The company is an ENERGY STAR partner and offers several lines of energy efficient windows. Atrium has won several *Window and Door Magazine* Crystal Achievement Awards for its innovative marketing programs, which include “Training Tuesdays,” an on-line webinar series dedicated to sales, advertising, lead generation, management, legal advice, and other tips and tools for remodelers who use Atrium products.¹⁵⁰ The webinars are hosted by experts in sales psychology, training, home improvement and database marketing systems, and include green-themed lectures such as, “Green products and green building: A guide to picking products – with or without green labels – that can green up any home or building.”¹⁵¹

¹⁴⁶ YouTube. Andersen Windows. Online, <http://www.youtube.com/user/AndersenWindow>. Facebook. Andersen Windows + Doors. Online, <http://www.facebook.com/pages/Andersen-Windows-Doors/356282821488>. Twitter. Inournature. Online, http://twitter.com/aw_inournature. Accessed Nov. 7, 2010.

¹⁴⁷ Replacement-Windows.com. Ibid.

¹⁴⁸ “Atrium Companies Successfully Completes Balance Sheet Restructuring and Emerges From Chapter 11.” Atrium Companies, Inc. Online, <http://www.atrium.com/PR/pdf/Press-Release-04302010.pdf>. The Atrium brand includes HR Windows, Danvid, Superior Engineered Products Corporation, MD Casting, RG Darby, Dow-Tech Plastics and Thermal Industries.

¹⁴⁹ Replacement-Windows.com.

¹⁵⁰ Atrium Companies. “Atrium Continues “Training Tuesdays” Webinars for Remodelers.” Online, http://www.atrium.com/PR/pdf/ATR%20Training%20Tuesdays%20release%2010.14.08_FINAL.pdf.

¹⁵¹ Ibid.

Atrium’s window replacement rationale is not available on its website, but is evident in a television advertisement found on the web, where the claims are made that replacement will yield savings of up to 30 percent of home heating and cooling costs, will increase home equity, and that “you could actually earn your investment back, and then some.”¹⁵² The company’s sustainability claims are advertised in a two-page publication, *A Greener Choice*, which states that its vinyl windows are “green from start to finish.”¹⁵³ The brochure explains that all of the vinyl is compounded and extruded in-house, that scrap vinyl left over during production is recycled, and that the company uses lead-free PVC that generates no harmful gases.¹⁵⁴ Atrium claims to use up to 28 percent reclaimed glass in its windows, and that the “extended life cycles for many of our windows help save energy in America’s homes.”¹⁵⁵ None of these claims are substantiated or independently verified. Atrium relies on its dealer network for most of its marketing, and it does not have a presence on YouTube, Facebook or Twitter.

Jeld-Wen is the largest window company in the world, with over \$2.9 billion in sales. The company ranks 153^d on the Forbes list of largest private companies, and it has over 20,000 employees.¹⁵⁶ Jeld-Wen is an ENERGY STAR partner and in 2010 was named an ENERGY STAR Partner of the Year.¹⁵⁷ The company uses this affiliation to claim that “replacing your windows with ENERGY STAR qualified windows can reduce greenhouse gas emissions equivalent to leaving your car at home for 70 days or planting 29 trees.”¹⁵⁸ Jeld-Wen’s green marketing includes membership in the Green Building Initiative (GBI), a non-profit organization

¹⁵² REFERENCE

¹⁵³ Atrium. “A Greener Choice.” Online, <http://www.atrium.com/repository/7ef8dae3-9863-4901-a03c-9d0b14616a93/Repository.aspx>.

¹⁵⁴ Ibid.

¹⁵⁵ Ibid.

¹⁵⁶ Forbes. America’s Largest Private Companies. Online, http://www.forbes.com/lists/2009/21/private-companies-09_JELD-WEN_1BZM.html.

¹⁵⁷ Jeld-Wen. “What is ENERGY STAR?” Online, <http://www.jeld-wen.com/learn/save-money/131-energy-star>.

¹⁵⁸ Ibid.

that awards Green Globes for improved energy performance in new and existing buildings.¹⁵⁹ GBI is a flagrant example of a greenwashing tool used by proponents in the vinyl industry. The GBI Board of Directors includes the Senior Vice-President of Jeld-Wen, as well as representatives from The Vinyl Institute (the trade association for the vinyl industry), Dow Chemical (a major manufacturer of vinyl chloride, the chief component of PVC), and the Resilient Floor Covering Institute (the trade association for manufacturers of vinyl flooring).¹⁶⁰ The company is also a member of the Sustainable Forestry Initiative (SFI). Under its discussion of responsible forest management, the company echoes the definition of sustainability in the Brundtland Report: “We believe sustainability means meeting the needs of the present without compromising the ability of future generations to meet their needs,” but that claim is undercut by the next paragraph, which states that SFI certification for Chain of Custody is only applicable to “certain facilities.”¹⁶¹ Jeld-Wen has the largest presence of any window manufacturer on Capitol Hill, where it spent \$160,000 on lobbying in the first two quarters of 2010.¹⁶²

Jeld-Wen’s window replacement rationales are the typical mix used by many manufacturers: increased home value, greater energy efficiency, improved safety and security, reduced noise, aesthetic appeal, and the availability of the stimulus tax credit of up to \$1,500.¹⁶³ As the consumer views the above list on Jeld-Wen’s website, a female voiceover intones, “Imagine being able to welcome each new season without worrying about your utility bills,” and ends with

¹⁵⁹ Jeld-Wen. “Partnerships.” Online, <http://www.jeld-wen.com/learn/environmental-stewardship/partnerships>.

¹⁶⁰ GBI. Board of Directors. Online, <http://www.thegbi.org/about-gbi/who-we-are/board.asp>. For a thorough analysis and reports on the vinyl issue, see USGBC’s PVC Task Force Background and History. Online, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=153>. See also Forest Ethics, Green Building Standard Factsheet: Green Globes’ Lack of Environmental Credibility. Online, http://credibleforestcertification.org/fileadmin/materials/old_growth/dont_buy_sfi/sfi_facts/Green_Globes_ForestEthics_factsheet.pdf.

¹⁶¹ Ibid.

¹⁶² Open Secrets. Jeld-Wen Inc. Online, <http://www.opensecrets.org/lobby/clientsum.php?lname=Jeld-Wen+Inc&year=2010>. Accessed Oct. 27, 2010.

¹⁶³ Jeld-Wen. “The Benefits of Replacement.” Online, <http://replacement.jeld-wen.com/replacement/?icid=rw002>.

“replacing your windows with Jeld-Wen products is hugely beneficial.”¹⁶⁴ A downloadable questionnaire, *Why Replace?*, features a list of ten questions with recommendations. “If your existing windows are more than 20 years old, it may be time to replace them. Older windows often reflect a lack of maintenance . . . Time-worn windows don’t just detract from the overall aesthetic appeal of the house. They can lead to other problems including water entering the walls, a noticeable rise in heating/cooling costs, and poor operation.”¹⁶⁵ There is no mincing of words regarding the recommendation regarding single-pane windows. “Let’s start with single-pane windows and keep it simple. If your windows have one pane of glass separating you and your family from the outdoors, it’s time to replace your windows. Single-pane windows are likely to fail most items in this inspection checklist. You’ll experience drafts, condensation, and alarmingly high heat and/or air conditioning costs.”¹⁶⁶ Jeld-Wen’s green marketing efforts are amplified by a robust internet presence, including a dedicated YouTube channel, JELDWENVIDEOS, which features 47 professionally produced clips.¹⁶⁷ Several of these videos tout the company’s sustainability efforts, which include the claim that vinyl is recyclable and long-lasting.¹⁶⁸ The company has several well established Facebook pages, and with 3,459 followers, the most active Twitter account.¹⁶⁹

Marvin Windows and Doors sells over \$500 million worth of wood and clad products per year, primarily through its network of over 4,500 U.S. distributors.¹⁷⁰ The company has more than 5,000 employees in plants and warehouses across the country.¹⁷¹ The company is a member of

¹⁶⁴ Ibid.

¹⁶⁵ Jeld-Wen. “Why Replace?” Online, http://replacement.jeld-wen.com/replacement/pdfs/why_replace.pdf.

¹⁶⁶ Ibid.

¹⁶⁷ YouTube. JELDWENVIDEOS. Online, <http://www.youtube.com/user/JELDWENVIDEOS>.

¹⁶⁸ Ibid. “Sustainable choices for the home.” 2 October 2008.

¹⁶⁹ Twitter. JELDWEN. Online, <http://twitter.com/JELDWEN>. Accessed Nov. 7, 2010.

¹⁷⁰ Replacement-Windows.com. Ibid.

¹⁷¹ Ibid.

USGBC, SFI, ENERGY STAR, and is a partner in LBNL's efforts to develop the Zero Energy Window.¹⁷² J.D. Power gave Marvin its highest rating for customer satisfaction in 2007, a reflection of the high esteem that Marvin enjoys among builders, architects and homeowners.¹⁷³ Like some of the other major manufacturers, Marvin is represented on the boards of organizations that bear on the company's bottom line. The senior vice president and general counsel for the company recently stepped down as the chairman of the Window and Door Manufacturers Association (WDMA), and earlier this year became the president of the Tropical Forest Foundation (TFF). Marvin is one of the major sponsors listed on TFF's Chairman's Advisory Council, which is exclusively made up of corporate logging stakeholders such as Stihl (manufacturers of chainsaws) and Caterpillar, Inc. (manufacturers of logging equipment).¹⁷⁴

Marvin's rationales for window replacement are available in brochure and video form. The publication *Your Guide to Window and Door Replacement* states that replacement windows increase home equity, are easier to operate, decrease noise from outside, provide warranty protection, make a home brighter, and make life more comfortable and enjoyable.¹⁷⁵ A list of window problems that indicate the need to replace includes sticking, rusty hardware, fading furniture, drafts, peeling paint, and windows that are "tired looking and out of style."¹⁷⁶ The benefits of replacement are underscored with the usual claim that "new windows can save you 15-25% on your monthly heating and cooling bills – that's \$350-450 a year or more for a typical household," followed by the misleading statement that "windows and doors are the biggest energy

¹⁷² DOE. EERE. "Zero Energy Window Prototype: High Performance Window of the Future." Online, http://windows.lbl.gov/adv_Sys/hi_R_insert/ZeroEnergyWindowDOE-FactSheet.pdf.

¹⁷³ J.D. Power and Associates. Online, <http://businesscenter.jdpower.com/news/pressrelease.aspx?ID=2007134>.

¹⁷⁴ TFF. Corporate Sponsorship. Online, <http://tropicalforestfoundation.org/about/corporate-sponsorship>.

¹⁷⁵ Marvin Windows and Doors. "Your Guide to Window and Door Replacement." Online, <http://www.marvin.com/?page=Replacement>. 3.

¹⁷⁶ Ibid. 4.

losers in a typical home.”¹⁷⁷ Marvin’s sustainability efforts are explained in a downloadable document featuring textured pages that turn just like a real book, *Focus on Sustainability*.¹⁷⁸ Waste reduction efforts implemented by the company include heating one of their plants with packaging and logging waste, selling left over wood shaving for animal bedding, reclaiming used solvents, and installing water saving devices.¹⁷⁹ Three of the company’s plants augment their energy needs with wind power.¹⁸⁰ Marvin has been presented with a number of awards, including the Minnesota Governor’s Environmental Award for Excellence in Waste and Pollution Prevention.¹⁸¹ Marvin’s products and green marketing are advertised on a dedicated YouTube channel.¹⁸² Like Jeld-Wen’s, Marvin’s videos are professionally produced. Some feature Lou Manfredini, a TV personality and salesman with a background in remodeling. In one of the videos, Manfredini lists a number of recognizable green strategies, such as locating a house to take advantage of solar gain and using a programmable thermostat.¹⁸³ However, he also implies that a window older than ten years should be replaced in order to take advantage of the latest energy saving technology.¹⁸⁴ Marvin has one of the best developed web and digital media presences of any of the major window manufacturers, including a Facebook page (1,373 friends), Twitter (1,136 followers), Flickr (313 photos), and an iPhone window shopping application.¹⁸⁵

¹⁷⁷ Ibid. 5.

¹⁷⁸ Marvin. *Focus on Sustainability*. Online, http://www.marvin.com/default.aspx?page=Sustainability_Brochure.

¹⁷⁹ Ibid. 8.

¹⁸⁰ Ibid. 10.

¹⁸¹ Ibid. 12.

¹⁸² YouTube. MARVINDOTCOM. Online, <http://www.youtube.com/user/marvindotcom>.

¹⁸³ MARVINDOTCOM, <http://www.youtube.com/user/marvindotcom#p/u/16/zHJWrJFsUMQ>.

¹⁸⁴ Ibid.

¹⁸⁵ Facebook. MarvinWindows. Online, <http://www.facebook.com/MarvinWindows>. Twitter. MarvinWindows. Online, <http://www.youtube.com/user/marvindotcom#p/u/16/zHJWrJFsUMQ>. Flickr. Marvin Windows and Doors. Online, <http://www.flickr.com/photos/marvinwindows/sets/72157623728449370/>. Marvin. Online, http://www.marvin.com/?page=Mobile_iPhone_Retailers_App. Accessed Nov. 2, 2010.

Pella is the third-largest window manufacturer in the U.S., with sales of over \$1.5 billion and more than 9,300 workers.¹⁸⁶ Forbes ranks the company the 327th largest private company in the U.S.¹⁸⁷ Pella is a partner in LBNL’s efforts to develop the next generation of “superwindows.”¹⁸⁸ The company is affiliated with ENERGY STAR, FSC, USGBC, and EPA’s SmartWay, an accreditation program that encourages companies to improve the environmental performance of their freight operations.¹⁸⁹ Pella has been an ENERGY STAR Partner of the Year for four years in a row, and also received the ENERGY STAR Sustained Excellence award in 2010.¹⁹⁰ The company was awarded J.D. Power’s highest customer satisfaction among window and door manufacturers in 2009.¹⁹¹ The Chairman of NFRC’s board of directors is a senior product engineer with Pella (Jeld-Wen and Marvin are also represented on NFRC’s board).¹⁹²

Pella’s rationales for window replacement are stated on its website in the introduction to *Replacing Windows and Doors*: “Conquer those drafty, leaky or just-plain-ugly old windows and doors – Pella makes it easy with affordable choices and expert installation.”¹⁹³ The list of reasons contains variations on those cited by other manufacturers: air leaks, fogging, high energy bills, fade damage, decreased safety, hassle to clean and operate, and “they’re just plain ugly.”¹⁹⁴ Pella’s green claims appear in the *Environmental Commitment* section of its website, which emphasizes

¹⁸⁶ Murphy, Andrea D. “Home Improvement: Opening Doors and Opening Minds at Pella.” *Forbes Magazine*. 28 May 2009. Online, <http://www.forbes.com/2009/05/27/pella-windows-manufacturing-business-home.html>.

¹⁸⁷ Forbes.com. Online, http://www.forbes.com/business/lists/2008/21/privates08_Pella_5E2C.html.

¹⁸⁸ LBNL. From the Lab to the Marketplace: Seeing Windows Through. Online, <http://eetd.lbl.gov/ea/mills/lab2mkt/Windows.html>.

¹⁸⁹ CSR Wire. “Pella earns EPA SmartWay (SM) Transport Partner status.” 4 June 2008. Online, http://www.csrwire.com/press_releases/14401-Pella-earns-EPA-SmartWay-SM-Transport-Partner-status.

¹⁹⁰ Pella. Awards and honors earned by Pella. Online, http://pressroom.pella.com/fast_facts/150/.

¹⁹¹ Ibid.

¹⁹² NFRC. Current (2010) NFRC Board of Directors. Online, <http://www.nfrc.org/board.aspx>.

¹⁹³ Ibid. Planning Your Project. Online, <http://www.pella.com/planning-your-project/default.aspx>.

¹⁹⁴ Ibid. Signs that your old windows or doors need to be replaced. Online, <http://www.pella.com/planning-your-project/replacing-existing-windows/reasons-to-replace.aspx>.

the company's recycling efforts, sustainable use of natural resources, and pollution reduction.¹⁹⁵ Its green marketing is summed up by the slogan on its *Environmental Business Practices* page: "Building windows. And a better world."¹⁹⁶ Pella does not have a YouTube presence, but some window suppliers feature Pella products in their own on-line advertising. The company has an active Facebook page (488 friends) and Twitter feed (1,702 followers).¹⁹⁷

The information gathered for the five largest window manufacturers provides a good cross section of the marketing tactics employed by the window replacement industry. The huge size of these companies makes it clear that they can and do exert a great deal of power in the marketplace, and with the federal government through their agency partnerships and lobbying efforts. They use this influence to help shape the energy efficiency information that consumers rely on. Although there are indications that these companies have made some genuine strides toward sustainability, there are also some notable instances of greenwashing, particularly by the vinyl window industry. Obviously, it is in the interest of economic survival that window manufacturers must sell windows, especially in light of the major job losses suffered by the building and manufacturing sectors of the economy. Precipitous declines in new home construction mean that window companies will fight even harder to retain or increase their replacement window market share, and they will continue to downplay or ignore any alternatives to window replacement, no matter how sustainable. And the close relationship between federal agencies and window manufacturers, combined with the federal government's focus on job creation through tax credit programs like HOME STAR, ensures that replacement windows will continue to be favored above retrofits.

¹⁹⁵ Ibid. "Environmental Commitment." Online, <http://www.pella.com/about-us/environmental-commitment/default.aspx>.

¹⁹⁶ Ibid. "Environmental Building Practices." Online, <http://www.pella.com/about-us/environmental-commitment/practices.aspx>.

¹⁹⁷ Facebook. Pella Windows. Online, <http://www.facebook.com/pages/Pella-Windows/30465225949>. Twitter. Pella_News. Online, http://twitter.com/Pella_News.

Chapter 5

Saving Old Windows Marketing Campaign

A campaign to influence and change public opinion regarding the sustainability of historic windows is a daunting task. As indicated in the previous chapter, the window industry spends billions of dollars annually to ensure that the average homeowner will only consider window replacement as the preferred energy efficiency strategy. A successful campaign to save historic windows must follow some of the basic rules of marketing, including market research, analysis and design. The previous chapter provides one important aspect, but more is needed. Most importantly, the target audience must be clearly identified. Consumers are very diverse in their attitudes toward historic windows. The rationales listed by window manufacturers as the reasons to replace are not simply made up, but the result of very careful studies of consumer attitudes. Pella's "just plain ugly" comment about old windows was probably made by a respondent to a survey or focus group aimed at identifying the reasons why consumers prefer new windows over old. A campaign to save historic windows must likewise include a thorough study of consumer attitudes to learn where the points of resistance toward alternatives are, and what to do about them so that the campaign can be targeted accordingly.

As mentioned earlier in this paper, Cara Pike has conducted an excellent study of consumer attitudes toward the environment, and has classified these into ten distinct types of environmental worldviews. Pike's findings could provide the basis for a more sophisticated, targeted advertising approach, but for the purposes of this paper it can be assumed that most consumers respond to the

classic “four P’s” of any marketing campaign: *product, price, place, and promotion*. Window manufacturers must differentiate their product from those made by others, and a historic window campaign must likewise describe the tangible and intangible benefits of saving old windows versus purchasing new windows. Price is an important consideration for most, if not all, consumers. The vinyl window industry has done a particularly effective job of selling their cheaper, “easier to maintain,” “longer lasting” products and a historic window campaign will counteract these distortions by emphasizing the *real* cost-savings potential of saving original windows, which includes direct cost savings *and* costs to the environment. The “place” in the four P’s refers to the convenience of, and ready availability of, a product. This is one of the toughest areas to address for a historic window campaign, because retrofitting old windows requires workers with specialized skills who can be very difficult to locate. Fortunately, storm windows are readily available in most parts of the country. The last element is promotion, which window manufacturers do very effectively with discount offers in all types of media, conventional and electronic. A historic window campaign will have to be very creative with a message that will rise to people’s attention, and be repeated enough to be remembered. Conventional advertising is one part of the campaign, but must be augmented with other strategies such as press releases, blogging, YouTube videos, and exhibitions at conferences and trade events. An important step in the marketing campaign is measuring its effectiveness after the fact, through follow-up surveys or other means.

A historic window campaign will not have a traditional advertising focus. The objective is not to sell a product, but to further a cause. The campaign must therefore rely on a specific type of marketing: *cause marketing*, also referred to as *social marketing*. Cause marketing follows most of the same rules as conventional marketing, but is specifically intended to change personal

behavior and may also be used to influence public policy. All of the five window companies in the previous chapter use cause-related marketing to further their sustainability claims by, for instance, aligning themselves with green organizations such as the U.S. Green Building Council (USGBC) and the Forest Stewardship Council (FSC). The historic window campaign must likewise underline its green claims by affiliating with one or more organizations with, preferably, highly recognizable sustainability credentials, such as the National Resources Defense Council (NRDC).

One of the first steps in the marketing process is to answer a series of questions that help to define the audience, message, and desired results of the campaign. The following questions are taken from *Advertising Creative: Strategy, Copy and Design*.¹⁹⁸ The questions are in bold type, and are followed by the author's answers.

1. Target audience.

Owners of historic homes built before 1960. Target audience has a high school education or better, is 30 years of age or older, has an income sufficient to pay for home improvements, has purchased “green” and/or organic products within the past year, and is interested in improving the energy efficiency of his/her home. (As mentioned above, the target audience and other answers below must be refined with additional research.)

2. What do they think?

Replacing my historic windows is the preferred strategy for improving the energy efficiency of my house. New is better. Old windows are leaky, difficult to weatherize, unsafe, and hard or impossible to repair. It is easier to replace old windows than to take the time to repair them.

¹⁹⁸ Altstiel, Tom and Jean Grow. *Advertising Creative: Strategy, Copy and Design*. Los Angeles: Sage Publications, 2010. 53.

3. What do I want them to think?

Historic windows can be repaired and retrofitted with low-e storm windows to make them as energy efficient as double-pane windows. Retrofitting saves money, is sustainable, and is good for the environment. It is wasteful and unnecessary to throw out old windows when they can be repaired. Saving historic windows preserves the historical integrity of my house. Historic windows are beautiful, character-defining elements that must be saved.

4. Why should they think this?

Preserving historic windows saves scarce resources, creates less waste, and is a sustainable practice that saves money. Window replacement sucks up resources, results in more solid waste going into landfills, and is economically and environmentally unsustainable.

Removing historic windows has a negative effect on the architectural integrity of the house and can result in lower property value. The investment in replacement windows can never be recouped in energy savings, while the payback for installing low-e storm windows is 3-5 years.

5. What is our message?:

You can save money, energy, and the environment by fixing old windows.

Throwing away historic windows wastes money.

Saving old windows is smart.

Saving old windows saves money.

Saving old windows saves energy.

Saving old windows saves the environment.

The next step in the campaign is to perform opposition research, which was done in the previous chapter but outlined below (see also Appendix II). Secondary research was performed on

the five largest window manufacturers in North America, as measured by sales information published by the Window and Door Manufacturer's Association (WDMA). Listed in alphabetical order, they are: Andersen Windows and Doors, Atrium Companies, Jeld-Wen Windows and Doors, Marvin Windows and Doors, and Pella. These companies have the largest and best-developed marketing campaigns in the industry, and research into their techniques therefore provides important insights that can be used in marketing the preservation of historic windows.

The following information was collected:

- 1. Company name, location and website address.**
- 2. Slogan.** How the company distills its mission to consumers provides information that could be helpful in the creation of a counter-message.
- 3. Ranking.** Forbes ranking for 2009 or other information that provides an indication of the company's performance.
- 4. Annual Sales.** Estimated annual sales figures for 2009 provided by Forbes, ReplacementWindows.com and other sources. Sales figures provide one indication of the market influence of each company.
- 5. Employees.** Estimated number of employees provides an indication of the size of the industry and its lobbying clout.
- 6. Memberships.** Every major manufacturer is a member of organizations – environmental, green product certification, and others with a stake in sustainability – that can help further their goals of (a) selling windows, (b) influencing federal, state and local policies that affect their ability to sell windows, and (c) further their marketing efforts in order to sell more windows.

- 7. Awards.** Awards provided by green non-profits are a way to promote a company's green practices and environmental stewardship. These award programs and how they are administered provide information that can be used to shape, for instance, a competing award system.
- 8. Window replacement rationale.** Every window manufacturer conducts market research to arrive at the reasons why consumers choose window replacement. These reasons – whether they have a rational basis or not – are used as the basis for marketing replacement windows. Countering these reasons must be a key component of a marketing campaign to preserve historic windows.
- 9. Green claims.** It is in the interest of window replacement companies to appear sustainable, and most have made genuine strides in minimizing pollution during production, reducing negative environmental effects through recycling, and using sustainably harvested wood products. However, most indulge in greenwashing to one degree or another. Examining how companies have co-opted the language of sustainability will provide important insights into the motivations of individual manufacturers, and opportunities for holding them responsible for their claims.
- 10. YouTube.** Many window replacement companies have a YouTube Channel that they use to promote their brand, products and accomplishments. How the companies use electronic media such as YouTube will be an important consideration when designing a historic windows campaign.
- 11. Facebook.** Social networking sites provide another way for companies to market themselves, and must also be examined as part of the marketing efforts for preserving historic windows.

12. Twitter. Another networking site that provides immediacy through its micro-blogging approach. Possibly a valuable addition to the historic windows campaign.

Not included in the study but very important to include in a more comprehensive survey:

- **Search Engine Marketing (SEM).** The author was not able to track down statistics for this rapidly growing field of marketing.
- **Television advertising.** Current statistics on television advertising and other statistics are published by organizations that charge thousands of dollars for this information. MarketResearch.com, for instance, charges \$3,295 for a report detailing the current state of the vinyl window industry.¹⁹⁹ Ad Age published statistics covering ad spending for television, radio and print for all major companies for a subscription fee plus a fee for each publication.²⁰⁰
- **Radio advertising.** Radio advertising still constitutes a large segment of the advertising budgets of many corporations, but like television advertising statistics, very expensive.
- **Print advertising.** In the case of replacement windows, print advertising probably ranks as high – or higher – than television advertising, primarily in the form of newspaper ads and inserts for replacement windows.

A historic single-pane or divided light window will serve as a grid to give the ad visual appeal. Alternate versions of the ad can be created using different historic windows, each one showing varying signs of wear and tear and in a range of visually appealing colors. The ad will be in color, but is also suitable for publication in black and white format, so that it can be used in a variety of media. The windows will be chosen on the basis of their ability to transmit the

¹⁹⁹ MarketResearch.com, online <http://www.marketresearch.com>.

²⁰⁰ Ad Age. Data Center. Online, <http://adage.com/datacenter/>.

importance of windows as character-defining elements. Behind the glass will be individuals – men, women and children, of varying ethnicity and social status – who look wistfully away, or directly toward the viewer, thus creating an arresting image that is designed to draw the viewer’s attention and curiosity. The people behind the window will transmit recognizable family and partner combinations: “mother and child,” “father and son,” “grandfather and granddaughter,” and other arrangements that highlight the importance of sustainability to future generations.

The central message of the ad, which is superimposed over the window, will be consistent across all types of media. The message, “Don’t throw me out,” is intended to be ambiguous. On first glance, the message will appear to refer to the people behind the window, and it is only upon reading further that the meaning of the message will become clear: the “me” in the ad refers to old windows. The central message of the ad, “save money, energy and the environment by repairing your old windows” captures the central message. Logos for the sponsoring organizations appear above the web address set up specifically for this campaign: savingoldwindows.com.

The digital version of the ad can be set up so that the visitor can click through to the Saving Old Windows website, where one can find information about the people featured in the ad (in the example below, the couple write and illustrate for a business called Idiot’s Books), and the featured window (the window in this ad is in the Charles Sumner Hall, the last extant African American Civil War veterans’ hall left standing in the nation). The site will provide access to a pre-approved registry of window retrofitters by region, give simple how-to information on improving the energy efficiency of old windows, provide links to storm window manufacturers (perhaps pre-approved or recommended by NTHP or another preservation group), and a link to a simple to use tool for calculating the estimated energy savings that can be achieved if window repairs and retrofits are implemented. The ad can also be published as a poster.

**DON'T
THROW
ME OUT**



**SAVE MONEY,
ENERGY AND THE
ENVIRONMENT
BY REPAIRING YOUR
OLD WINDOWS**

**NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION**



WWW.SAVINGOLDWINDOWS.COM

©Photo and design by Kees de Mooy

Chapter 6

Findings and Recommendations

- **DOE window energy efficiency statistics are the result of research conducted in partnership with – and influenced by – window manufacturers.**

LBNL's Windows and Daylighting lab is funded by the Federal government, but its energy efficiency publications are influenced through its partnership with the window industry.

This relationship results in marketing to consumers that favor replacement over restoration and repair.

Recommendation: Energy efficiency statistics must be verified by independent, non-governmental agencies that can weigh the relative merits of window strategies without influence by the window industry. NTHP, in partnership with an academic research facility such as UMD or other institution must initiate its own research into the relative energy efficiency of historic windows, under a variety of conditions that will yield broadly applicable results.

- **Window energy efficiency statistics are presented to consumers by DOE, EERE, EPA, HUD and LBNL in such a way that window replacement is recommended above all other strategies.**

Window statistics available through publications, websites and web-based tools produced by these agencies are used by consumers who seek independent, reputable, and scientifically backed information. Unfortunately, these sources downplay or entirely omit

alternatives to replacing single-pane windows, such as the installation of storm windows. Window retrofits must be included as a first consideration – and the most sustainable alternative – for improving the energy efficiency of historic, single-pane windows. If energy efficiency recommendations are intended to be truly sustainable, they must be weighted toward strategies that preserve existing windows instead of encouraging the construction of new windows. This can only be done if there is a significant paradigm shift, whereby the dominance of the science-based, bigger and newer are better worldview is supplanted by a philosophy that incorporates truly sustainable practices. This shift will be very difficult to achieve but is essential to the long-term survival of humanity.

Recommendation: Education efforts must include a windows marketing effort that stresses the value of preservation (see Chapter 5). This windows marketing effort can be carried out by a consortium of historic preservation, environmental and sustainability advocates with a vested interest in the preservation of historic windows, and specifically targeted to agencies, stakeholder groups and individuals with the most influence. These include the White House, DOE, EPA, HUD, state energy efficiency and housing agencies, architects, engineers, builders, and building component manufacturers, suppliers, distributors and homeowners.

- **The Federal government has a strong interest in promoting energy efficiency policies that stimulate jobs.**

The construction industry is one of the hardest hit sectors of the economy during the recent recession. Industry lobbying groups including the Window and Door Manufacturing Association (WDMA) and National Association of Home Builders (NAHB) have a very

strong presence on Capitol Hill, where they advocate for legislation that supports their constituencies, including the window replacement provisions in HOME STAR.

Recommendation: Federal legislators must be educated about the job creation potential in window repair, which can be piggybacked onto the weatherization training provisions in HOME STAR. Community colleges can serve as the location for training new or existing tradesmen and women in the repair and retrofit of historic windows.

- **The goal of replacement window trade groups, manufacturers, suppliers and installers is to sell replacement windows.**

This point may be self-evident, but it is important to recognize that the window industry must sell replacement windows in order to survive. The industry employs tens of thousands of people whose livelihood is at stake. Historically, technological shifts have been accompanied by tremendous upheaval. A paradigm shift toward sustainability will not be accepted without strong resistance by the window industry, and the change will have to be met with federal policies and programs that help the industry to adapt.

Recommendation: Federal retraining programs must be implemented to educate window industry workers, whose existing skills make them highly suited for window retrofitting and other weatherization jobs.

- **Replacement window company green claims mask the fact that sustainability cannot be achieved through the invention and implementation of new technologies that use scarce resources.**

Although sustainability is a goal that will take many generations to achieve, the effort must be tirelessly pursued. This includes what on its face may seem like the relatively innocuous issue of window replacement. Life Cycle Assessment, embodied energy, and other analytical tools can be used to reveal the unsustainable practices of the home building and remodeling industry. This analysis can be supported with government statistics on the volume of solid waste generated by the building industry, recycling rates, and other indicators of unsustainable practices.

Recommendation: Consumer and environmental watchdog groups, media outlets, and preservation groups must be unrelenting in their exposure of unsustainable practices such as the unnecessary replacement of old windows.

- **The National Trust for Historic Preservation and allied groups must play a lead role in sustainability efforts, including the preservation of historic windows.**

NTHP is the lead voice for the historic preservation movement in the U.S. The organization has already initiated a national campaign to preserve historic windows, and the campaign can be picked up at the state and local level by preservation and green groups. The key to the campaign's success is the degree to which the general population, but especially owners of historic homes who can afford to replace windows, can be convinced that preserving historic windows is a cost-effective, energy efficient and sustainable strategy. A successful campaign must have funding sufficient to counter the replacement windows industry's dominant marketing presence. NTHP cannot possibly raise enough money to counter the vast sums that the window industry spends on marketing, but it can expose the hidden costs of window replacement and introduce a

counter-narrative that highlights the value of sustainability. One measure of the campaign's success will be that its message is picked up by media outlets and groups with a stake in sustainability, in effect leveraging the message without spending vast sums of money.

Recommendation: NTHP must partner with environmental groups with a similar interest in preserving the built environment, such as the Natural Resources Defense Council (NRDC), the Alliance to Save Energy (ASE) and the U.S. Green Building Council (USGBC). The shared resources and fundraising capacities of multiple organizations are vital to creating a unified marketing message that stresses the importance of conservation, whether that message is targeted at natural resources in general, or more specifically targeted at historic windows. The message can be “branded” by establishing an umbrella group of members (organizations and individuals) with the shared vision of sustainability through conservation.

- **NTHP marketing, training and programs must be reinforced at the State and local level by preservation agencies and advocacy groups.**

NTHP's educational efforts will be implemented at the State and local level, so it is vital that these efforts are coordinated and “on message.” The Saving Old Windows campaign must be targeted at various stakeholders who can help to leverage the window preservation message.

Recommendation: NTHP outreach efforts must target, in addition to consumers, state and local government agencies and groups that have a stake in energy efficiency.

- **Local historic district commissions and boards are a vital conduit for educating consumers about the mutually achievable goals of saving money, increasing energy efficiency, and preserving historic windows.**

Historic district commissions are the point of contact for many owners of historic homes, and already play a significant role in educating residents in historic districts about the importance of preservation. This constituency is generally supportive of preservation goals, but energy efficiency presents significant challenges to preservation that must be recognized, discussed and – if possible – resolved. Energy efficient alternatives to window replacement such as shutters, awnings, and storm windows must be evaluated.

Recommendation: NTHP, state preservation agencies and local preservation groups must ramp up their education efforts through a unified, well-supported educational campaign that includes professionally designed tip sheets for consumers.

- **Owners of historic homes in historic districts need educational tools that help them decide whether their aging windows can be repaired, and at what point window replacement is the best option.**

One of the most complicated and contentious issues in the window replacement issue is deciding under which circumstances and conditions it is appropriate to opt for replacement over repair. NTHP's Historic Wood Windows tip sheet is a good starting point.²⁰¹

Although no two situations that come before historic district commissions are exactly alike, it is possible to generalize about some of the overarching factors that must be taken into account when considering replacement.

²⁰¹ NTHP. Historic Wood Windows. Washington DC: NTHP, July 2008. Online, <http://www.preservationnation.org/issues/sustainability/additional-resources/July2008WindowsTipSheet.pdf>.

Recommendation: A window decision matrix tool should be adopted by all historic district commissions (see Appendix I).

- **Online energy efficiency and window replacement tools do not include a storm window option.**

DOE's Home Energy Saver tool and EWC's Window Selection Tool offer information about energy savings potential for various types of replacement windows, but do not allow the user to compare the benefit of installing storm windows over single-pane windows.

This is due in part to the embedded presence of window manufacturers in the creation of these tools.

Recommendation: Create an online tool that estimates the cost, energy savings and return on investment (ROI) for installing storm windows. The site could be hosted by the National Trust for Historic Preservation and the National Park Service, and could be funded by donations from storm window manufacturers. The tool can be simple enough that a worksheet could serve the same purpose. The Missouri Department of Natural Resources Energy Center has produced a very good worksheet for their Energy Loan Program that can serve as a model.²⁰² NPS Preservation Brief 9, *The Repair of Historic Wood Windows*, is another excellent guide.²⁰³

²⁰² In Sedovic, Walter and Jill H. Gotthelf. What Replacement Windows Can't Replace: The Real Cost of Removing Historic Windows. APT Bulletin 36:4, Fig. 2.

²⁰³ The Repair of Historic Wood Windows. National Park Service. Online, <http://www.nps.gov/history/hps/tps/briefs/brief09.htm>.

Appendix I

Replacement Window Decision Matrix

The following decision matrix was designed specifically for the Chestertown Historic District Commission, but can also serve as the basis for a window replacement decision tool for other historic district commission. Before using the decision matrix, the condition of the window(s) must first be determined with the help of a condition checklist. The decision matrix consists of the following steps. Words and phrases that will be included in a glossary of terms are shown in bold.

1. **Is the house a contributing resource in the historic district?** The first step in deciding whether to replace windows is to determine whether the house in which they are located is a **contributing** or **non-contributing** resource. This is determined by (1) whether or not the house was constructed within the **period of significance** that was established when the historic district was created, and if so, then (2) whether the house retains its architectural integrity or has been altered to such an extent that its significance is lost. As the note at the bottom of the decision matrix stresses, federal and state historic preservation tax credits are only available for contributing resources, which is why this question is listed first.
2. **Are the windows original to the house?** Windows in historic houses may not be original, but if over 50 years old, even these replacements may have acquired a significance of their own. Windows may have been replaced for a variety of reasons, including a change in architectural style or fashion. In most cases it is fairly easy to tell whether a window is original to the house, but it may be necessary to consult with an expert, such as an

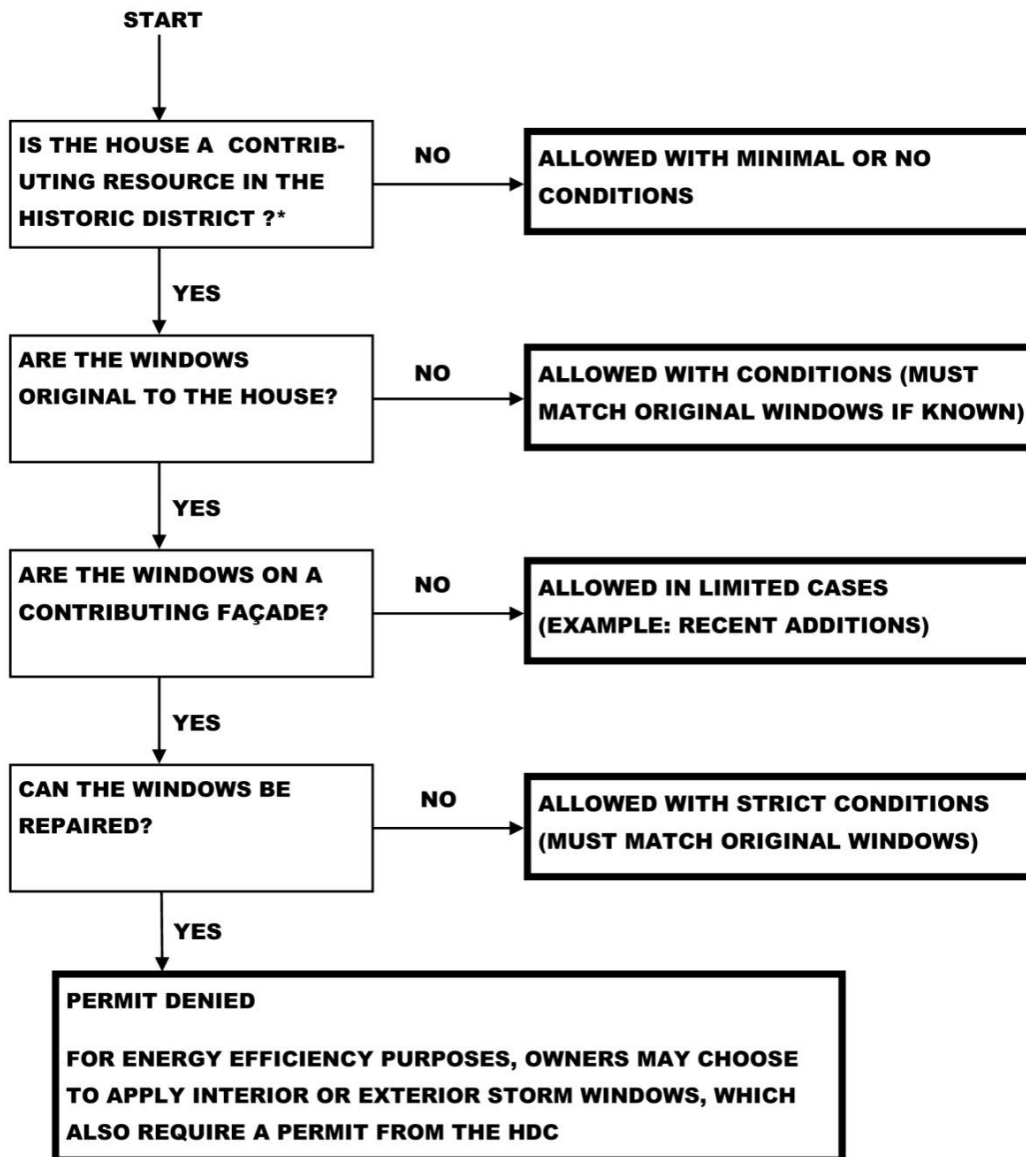
architectural historian. Windows that were replaced later than the period of significance may be held to a lower standard and are eligible for replacement with a window that more closely matches the originals (if known) or a style that is appropriate for the period in which the house was constructed.

3. **Are the windows on a contributing façade?** It is possible that a contributing resource may have one or more non-contributing façades, for example a recent addition that was constructed outside of the period of significance. In the case of an addition less than fifty years old, the windows in the addition are held to a lower standard and can be replaced with few conditions.
4. **Can the windows be repaired?** Windows built more than 70 years ago were constructed with straight-grained hardwood that all but disappeared during the post-WWII building boom. Newer windows were built of softer woods that deteriorate more quickly, and were mass produced, making them more difficult to repair. Older windows are often not only sturdier, but were built in such a way that they can be taken apart and worn parts replaced. A patient craftsman with some experience in old window repair can recondition a historic window to prime condition. A determination of whether a window is repairable should be made by an architectural historian, restoration contractor or other expert in the field. If the window is not repairable, it must be replaced with a window that closely matches the original in material and design. In the case of a landmark structure, the replacement window must match the originals in material and design.

If the answer to all of the questions in the matrix is yes, then the Commission must deny the window replacement application. However, they should inform the applicant of the energy efficiency benefits of storm windows.

CHESTERTOWN HISTORIC DISTRICT

WINDOW REPLACEMENT GUIDE



* A **CONTRIBUTING RESOURCE** IS (1) A BUILDING OR FEATURE THAT WAS BUILT WITHIN THE PERIOD OF SIGNIFICANCE FOR THE CHESTERTOWN HISTORIC DISTRICT (PRIOR TO 1940) AND (2) NOT ALTERED TO SUCH A DEGREE THAT ITS SIGNIFICANCE IS LOST (E.G. ALL NEW SIDING, WINDOWS REPLACED, TRIM REMOVED, ROOF ALTERED, OR ANY COMBINATION THAT OBSCURES OR OBLITERATES THE ORIGINAL ARCHITECTURE)

NOTE: FEDERAL AND STATE HISTORIC PRESERVATION TAX CREDITS ARE ONLY AVAILABLE FOR CONTRIBUTING RESOURCES IN THE HISTORIC DISTRICT

Appendix II Window Manufacturer Research

Manufacturer	Slogan	Ranking (2009)	Annual Sales (2009)	Employees	Memberships	Awards	Window Replacement Rationale	Green Claims	Youtube	Facebook	Twitter
Andersen Windows & Doors Bayport, MN www.andersenwindows.com/	"Come Home to Andersen" "See Us In A Different Light"	188 (Forbes) World's largest window manufacturer.	\$2.5 billion (Spent \$90K lobbying Congress first two quarters 2010)	10,000	ENERGY STAR, EPA Project XL (Environmental Excellence and Leadership), FSC, NFRC, Green Seal, USGBC, SCS, Alliance to Save Energy. Charter Member, Efficient Windows Collaborative	2010 ENERGY STAR Partner of the Year, Alliance to Save Energy Star of Efficiency Award, SCS Indoor Advantage Gold for indoor air quality	Window Problem FAQ: air infiltration, windows look ugly, won't open, won't stay open, don't open or close easily, difficult to clean, falling apart, inconsistent with the style of your house, condensation, tired of painting. "we recommend replacing old single-pane windows with modern windows that feature dual-pane Low-E glass for a substantial energy savings"	Our Commitment: minimize pollution at the source, conserve natural resources, promote energy conservation, develop long-lasting products with minimal adverse effect on the environment, continuously improve environmental performance. LEED and ICC 700 Credits for energy efficiency, FIBREX made from wood fibers plus "synthetic material," Project XL (first company in MN). In Our Nature blog: Andersen on Sustainability	Andersen Window's [sic] Channel: 6 videos Sustainability (VP of Corporate Sustainability and Quality): certified products, ENERGY STAR awards, wood as a renewable product, first FSC awardee, focus on employees, 98.5% of materials used, sawdust blended with polymer to create Fibrex sills 46% recycled content, reduced plant emissions through heating with sawdust generated by plant.	Andersen Windows and Doors: 579 likes	andersenwind: 69 followers, 583 tweets: crime reports, birdhouses, window reviews,
Atrium Companies, Inc. Dallas, TX http://www.atrium.com/ Includes Atrue, HR Windows, Danvid Windows and Doors, Thermal Industries, Superior Windows and Doors, Champion Window, Darby Doors, North Star Vinyl Windows and Doors	"Improving Your View of the World"	Largest manufacturer of vinyl and aluminum windows in North America	\$500 million	4,500	ENERGY STAR	Window & Door Magazine 2009 Crystal Achievement Awards: Large Manufacturer Most Innovative Marketing Program, "Training Tuesdays." Webinars: Sales, advertising, lead generation, management, Web site tips, business software, legal information, green products, green building tips. Experts in sales psychology and training (Rick Grosso), home improvement (R2R Associates), database marketing systems (MarketSharp).	Video ad: save up to 30% on your home heating and cooling costs, add to your home's equity, improve energy efficiency, "you could actually earn your investment back, and then some."	"A Greener Choice": (PDF brochure) "At Atrium, our company philosophy is simple: to provide our customers with energy-efficient, maintenance-free products that help lower their energy bills." "Green from start to finish." Vinyl compounded and extruded in-house, scrap is recycled, lead-free PVC vinyl that requires no burning and generates no harmful gases, 24-28% recycled glass content, "extended life cycles for many of our windows help save energy in America's homes."	No YouTube channel. Individual TV spots created for suppliers and builders, including how-to	None. Some Atrium suppliers and installers listed.	None. Some discount window suppliers listed.
Jeld-Wen Windows & Doors Klamath Falls, OR http://www.jeld-wen.com/	"Windows and Doors for Real Life." "Get Inspired. Learn. Connect."	153 (Forbes)	\$2.9 billion (Spent \$160K lobbying Congress first two quarters 2010)	20,000	Green Building Initiative, USGBC. Charter Member Efficient Windows Collaborative.	2010 ENERGY STAR Partner of the Year, 2009 ENERGY STAR Participant of the Year, 2006 ENERGY STAR Promotional Campaign of the Year.	Increased home value, greater energy efficiency, safety and security, reduced noise, aesthetic appeal, \$1,500 tax credit	"Environmental Stewardship: Making the world a greener place, starting with your home." Recycling and Reuse ("up to 15% recycled content"), Carbon Footprint (manufacture within 300-mile radius), Low VOC (Auralast wood windows), Green Building (durable, longlasting products, case studies)	JELDWENVIDEOS Channel: 46 videos Inspire Hope - Jeld-Wen applauds a "real life hero" with cerebral palsy, D. J. Gregory. Danny Lipford talks about energy efficiency - U-value and SHG plus tax benefit. HGTV ad - "historic style meets modern technology" for HGTV Dream Home	Windows and Doors, Notes, Tradition (PGA golf tournament), RSS JELD-WEN Windows and Doors's Notes	JELDWEN: 3,373 followers, 3,143 tweets: Energy efficiency, awards, tips, trends, new products
Marvin Windows & Doors Warroad, MN http://www.marvin.com/	"Built Around You"	Over 4,500 distributors nationwide	\$500 million	5,000	USGBC, Sustainable Forest Initiative, Efficient Windows Collaborative, ENERGY STAR, UM Forest Products Management and Development Institute, MN Wastewater Treatment Facility GreenStar, JD Power Customer Satisfaction highest rating. Steve Tourek of Marvin is current President of WDMA. Charter Member Efficient Windows Collaborative.	2006 MN Governor's Environmental Award for excellence in waste and pollution prevention. 1999 Honorable Mention, 1996 winner. MN Wastewater Treatment Facility Operational Award. Greener North Dakota Award. MN Waste Wise Program. Partner in LBNL Zero Energy Windows.	Improved property value, trouble-free operation, \$1,500 tax credit, noise reduction, warranty protection, brighter home, enjoyable living "Quality windows and doors make your whole house better and stronger"	"Thinking Green": energy efficiency, recycling and waste reduction (not designed to be taken apart easily, but the major components can be recycled, recycling: 350 tons of cardboard, 90 tons of paper recycled, 120 tons of plastic yearly), forestry management (FSC and SFI certified wood products),	MARVINDOTCOM Channel: 47 videos "Window Shopping" Iphone App, Incorporating green building principles (Lou Manfredini, Home contributor for The Today Show), Architect and author Sarah Susanka sees her new myMarvin window, Lou Manfredini explores energy efficiency at IBS ("windows and doors are your areas of greatest loss, as far as energy efficiency"), Energy Efficiency Tips with Lou Manfredini ("windows and doors are your areas of greatest loss", replace windows if drafty)	Marvin Windows and Doors: 1,314 friends. Is it time to replace? Your Guide to Remodeling & Replacement (PDF). Find a Retailer Near You, Learn From Lou (Lou Manfredini), 16 photo albums, 24 videos posted	MarvinWindows: 1,078 followers, 618 tweets. Tips, awards, green building news, recycled furniture, HOME STAR, composting
Pella Pella, IA http://www.pella.com/	"The Pella Difference" "Creating a Better View"	327 (Forbes)	\$1.5 billion	8,600	ENERGY STAR, NFRC, FSC, USGBC, AIA, EPA SmartWay. Charter Member Efficient Windows Collaborative.	2007, '08, '09, '10 ENERGY STAR Partner of the Year, ENERGY STAR Sustained Excellence award, 2010 Consumer Digest "Best Buys," 2007 Iowa Governor's Environmental Excellence Award (recycling scrap wood), 2006 EPA Pollution Prevention Award (responsible manufacturing processes), EPA Hammer Award (leadership in hazardous chemical release reductions), National Arbor Day Foundation Award, NFRC, FSC, USGBC, AIA Health/Safety/Welfare education program, EPA SmartWay Transport Partnership Program (improved fleet performance)	"Replacing Windows and Doors: Conquer those drafty, leaky or just-plain-ugly old windows and doors - Pella makes it easy with affordable choices and expert installation." Signs that your old windows need to be replaced: poor performance, high energy bills, fade damage, no emergency escape route, they're just-plain-ugly, they're a hassle to clean and operate.	Using Precious Resources Responsibly: recycling, left over materials "sold for use in other products." "A History of Sustainability: Times are different but our values have always stayed the same." Environmental Business Practices, Energy-Saving Products, Awards and Certifications. "By choosing ENERGY STAR qualified products, the typical household can save up to \$501 per year - while improving home comfort and helping the environment.** (ref: ENERGY STAR website)	No YouTube channel or Pella-produced videos. Individual videos by various window suppliers. Several Pella Windows commercials. Interviews with Pella sales people at builder's shows. Disgruntled purchasers of Pella products very prominent. Installation tips.	Pella Windows: 459 likes. Home Show Sale. Minimal activity.	Pella_News: 1,653 followers, 2,815 tweets. Updates from Kathy Pella on latest news. Very chatty.

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