

LO(W-E) AND BEHOLD:

Low-E Storm Windows Provide a New Way to Solve the Window Conundrum

BY

Efficiency Vermont:

Lara Bonn
Jasmine Rivest



D+R International, Ltd.:

Emily Phan-Gruber
Jenna Winer
Stephen Bickel



Larson Manufacturing:

Todd Stratmoen
David Bailey



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Contents

Background	5
Introduction	5
Purpose	8
Major Findings	9
Program Design	9
Incentive Structure and Retailer Stocking Strategies	9
Marketing	10
Training	11
Media	13
Survey	14
Data Collection	16
Pilot Impact	17
Storm Windows Sales Lift	17
Increase in Low-E Market Share	17
Stock and Custom Sales Distribution	18
Impacts at Retailer Level	18
Pilot Impact on Sales by Stock and Custom	19
Sales Volume by Week	20
Temperature Impact	21
Incentive Spending	22
Survey Results	23
Insights and Next Steps	24
Assessment of Pilot Impact	24
Increase in Sales	24
Conversion from Clear Glass to Low-E	24
What Worked?	24
Relationships	24
Marketing	25
Training	25

Media Outreach	25
Areas for Consideration	26
Marketing Materials.....	26
Survey.....	27
Training	27
Media	27
Conclusion.....	27
Recommendations	28
Appendix A: Marketing Materials	30
Window Sticker	30
Stack-Out.....	31
Sell Sheet.....	32
Pocket Card	33
Tear Pad	34
Appendix B: Survey Materials	35
Phase 1: Paper Survey.....	35
Phase 2: Phone Interview Survey.....	36
Appendix C: Blog Post	40

Background

The efficacy of low-emissivity (Low-E) storm windows is generally understood to be significant, primarily because these windows are substantially less expensive than full replacement of inefficient windows. But should these windows be part of an energy efficiency program, with incentives to purchase for customers? And if so, how should an efficiency administrator design an appropriate program to optimize incentive levels, purchase opportunities, and achievement of meaningful energy savings? What program design elements would prove effective for this product? What do the supply channel players need to participate and what are the customer drivers?

Efficiency Vermont, a statewide energy efficiency utility, funded a research and development (R&D) pilot in 2015, exploring this topic to inform future planning for the utility's residential and small business offerings.

The R&D Pilot on Low-E Storm Windows was funded by electric utility ratepayers under Efficiency Vermont's "non-resource acquisition" activity. That is, Efficiency Vermont did not claim energy savings for this pilot, although the Evaluation, Measurement, and Verification (EM&V) team is now, as a result of this pilot, screening Low-E storm windows for cost-effectiveness, to inform these windows' place in future energy efficiency program design. Efficiency Vermont collaborated with Larson Manufacturing, a storm window and door manufacturer, and D+R International, Ltd., an energy efficiency consulting firm, to design and implement the pilot.

Introduction

One of the first questions residential and business customers ask, when they call Efficiency Vermont about ways to cut energy costs, is whether they should replace their windows. Infrared images of buildings show that windows are often one of the largest heating and cooling sinks, or "holes" in the thermal envelope (see **Figure 1**). Single-pane windows are the most egregious offenders, particularly in colder climates such as the Vermont climate. In the Northeast and Midwest, single-pane windows represent just 30 percent of all installed windows.¹ However, they account for more than 50 percent of all heat loss from windows² and are responsible for cumulative heat flows of 0.53 quadrillion Btu.³

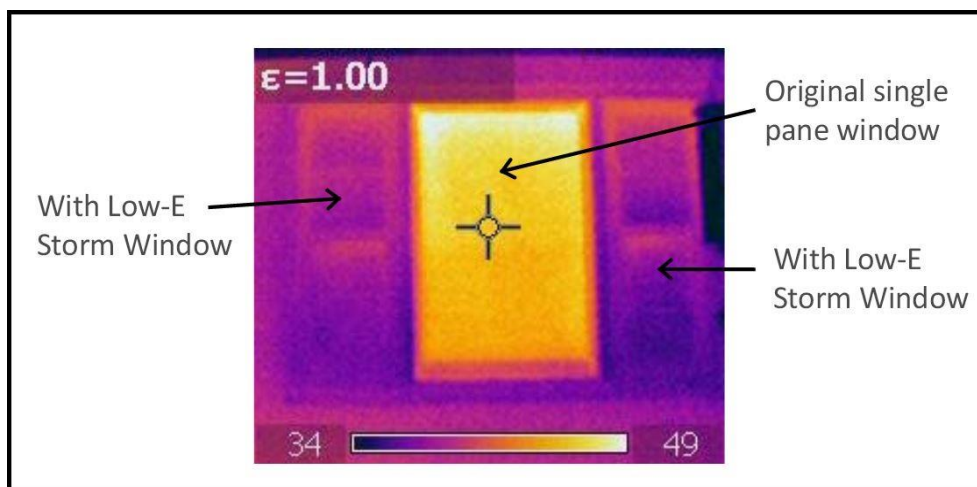
¹ Katherine A. Cort, *Low-E Storm Windows: Market Assessment and Pathways to Market Transformation* (PNNL Report No. PNNL-22565) (Richland, WA: Pacific Northwest National Laboratory, 2013).

http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-22565.pdf

² Ibid.

³ Advanced Research Projects Agency – Energy-U.S. Department of Energy, *Financial Assistance Funding Opportunity Announcement: Single-Pane Highly Insulating Efficient Lucid Designs (SHIELD)*, (FOA No.: DE-FOA-0001425 Issue Date: October 6, 2015). <https://arpa-e-foa.energy.gov/FileContent.aspx?FileID=d1c388ea-9d60-48f8-9f0f-0ee6757704e6>

Until recently, the primary solution available to homeowners and building owners / managers has been full window replacement. However, in the residential market, only 2 percent of homes replace their windows each year, largely because of cost (\$6,000 to \$12,000). Very few energy efficiency programs offer incentives for window replacement, given the high product cost and program preference for professional installation. Full window replacement generally does not meet cost-effectiveness tests as a stand-alone product measure. A very high proportion of windows sold are now energy efficient (80 to 90 percent), but utility incentives would be insufficient to encourage homeowners to replace single-pane windows at a scale that would solve the substantial energy loss problem at a regional or national level.



**Lighter colors show heat loss*

Figure 1. Infrared image of the heat loss from a single-pane window.⁴

Fortunately, recent research funded by the U.S. Department of Energy (DOE) suggests that an entire class of alternate measures could meet cost-effectiveness tests: window attachments, such as interior and exterior blinds, shades, and *Low-E storm windows*. To accelerate the adoption of these energy-efficient window attachments, the DOE has funded the formation of a third-party Attachments Energy Rating Council (AERC). AERC will develop energy performance ratings for window attachments. This is the first step for ENERGY STAR® or for energy efficiency programs to create specifications that rely on independently certified product performance.

Low-E storm windows are among the first phase of product categories that will have AERC energy performance ratings. Clear glass storm windows have classically been bulky, required seasonal installation, needed periodic maintenance, and were not aesthetically pleasing. Not surprisingly, they have had only a small market share, despite the fact that their purpose is to save energy. Modern storm

⁴ Katherine, Cort, Thomas Culp, Sarah Widder, "Affordable Window Retrofit Solutions: Using Energy-Efficiency Window Attachments to Improve Comfort and Reduce Energy Costs," (Panel presentation, Affordable Comfort Institute National Conference, Cherry Hill, New Jersey, May 5, 2015). http://labhomes.pnnl.gov/documents/ACI_Affordable_Window_Retrofits_PNNL-SA-108049.pdf

windows, on the other hand, are attractive, and their frames contain maintenance-free powder coat finishes and high-performance gaskets. Further, they are designed to be left in place year-round.

Today's storm windows, which can be installed over the exterior of the existing window or can be designed for interior placement (often referred to as an *interior panel*), create an insulating airspace that reduces both conductive and convective heat loss. The addition of a durable, transparent, low-emissivity (Low-E) coating to the glass reduces radiative heat loss, while permitting solar radiation to pass through the glass. This combination of attributes creates passive solar gain, which is beneficial in colder climates such as Vermont's. Storm windows also reduce air infiltration and leakage through and around the existing windows.



Figure 2. Modern Low-E storm window in place on a building.

The Low-E storm windows currently on the market have undergone the most field testing of all window attachment types. Field test results indicate that adding Low-E storm windows can generate significant energy savings for single-family and multifamily homes. In colder climates, Low-E storm windows have been shown to reduce heating energy consumption by 20 percent or more when installed in older homes with single-pane windows.⁵ Energy modeling suggests that a Low-E storm window upgrade also offers a relatively short payback period when installed over clear-glass, double-pane, metal frame windows in International Energy Conservation Code (IECC) climate zones four through eight.⁶

⁵ Katherine A. Cort, *Low-E Storm Windows: Market Assessment and Pathways to Market Transformation* (PNNL Report No. PNNL-22565) (Richland, WA: Pacific Northwest National Laboratory, 2013).

⁶ Thomas D. Culp and Katherine A. Cort, *Database of Low-E Storm Window Energy Performance across U.S. Climate Zones*. (PNNL Report No. PNNL-22864) (Richland, WA: Pacific Northwest National Laboratory, 2013).

Energy savings are only one of the many benefits of Low-E storm windows. For more detail, see **Low-E Storm Windows at a Glance**.

LOW-E STORM WINDOWS AT A GLANCE

1. Cost-effective solution for making inefficient windows perform better
2. Available in operable or fixed models, exterior or interior
3. Applicable in residential (single-family or multifamily), commercial, weatherization, historic preservation and industrial programs
4. Lower cost (\$50-\$100 per window) than total window replacement
5. Cost of retrofitting an average house = \$1,000 - \$1,500 vs. \$6,000-\$12,000 for full window replacements
6. Quick and easy to install; ~80% residential units self-installed
7. Cut heating costs of homes with single-pane windows by +20%⁸
8. Reduce peak loads by an average 11.2%⁹
9. Reduce air leakage
10. Improve curb appeal or maintain historic appearance (interior panels)

PURPOSE

Efficiency Vermont partnered with Larson and D+R to develop and execute a pilot project to explore the respective and combined roles of greater consumer awareness of Low-E storm windows and the elimination of the incremental cost price barrier on purchase activity. Despite the introduction of Low-E storm windows into the market and their potential for saving energy, they are not yet popular with consumers. For the pilot, Efficiency Vermont hypothesized that consumers were either unaware of the energy-saving potential or they were deterred by the higher cost of the Low-E windows, compared to clear glass storm windows.

The pilot ran from August to early October 2015. Efficiency Vermont marked down⁷ the cost of Low-E storm windows to the price of clear glass storm windows at five participating big-box retail locations in Vermont. Efficiency Vermont and its partners created marketing and training materials, including stack-out displays, window clings, handouts, and pocket cards to raise customer and retail staff awareness of the product and the promotion. Using its website, Efficiency Vermont introduced Low-E storm windows to its customers and advertised the promotion in a blog post. The energy efficiency utility also used its monthly e-newsletter, and Facebook and Twitter accounts to spread the word about the promotion, and introduced it

⁷Marking down a price is the process of applying money to a product - at the supplier level - so that the price on the shelf is already discounted. The customer therefore sees the discounted price on the shelf, and does not have to fill out a rebate form or apply for some other sort of incentive. For efficiency programs, marking down an efficient product's cost to be comparable to the cost of an inefficient product removes the higher-cost barrier from the customer's purchasing decision. Markdowns are a major driver of efficient product uptake in the marketplace.

⁸ Katherine A. Cort, *Low-E Storm Windows: Market Assessment and Pathways to Market Transformation* (PNNL Report No. 22565) (Richland, WA: Pacific Northwest National Laboratory, 2013).

⁹ Katherine, Cort, Thomas Culp, Sarah Widder, "Affordable Window Retrofit Solutions: Using Energy-Efficiency Window Attachments to Improve Comfort and Reduce Energy Costs," (Panel presentation, Affordable Comfort Institute National Conference, Cherry Hill, New Jersey, May 5, 2015).

on a local morning radio show. Customers who purchased Low-E storm windows during the promotional period were encouraged to complete a mail-in survey about their purchasing decision, residence, and experience with the product.

MAJOR FINDINGS

During the pilot, overall storm window sales increased by more than 37 percent, and sales of Low-E storm windows increased by 337 percent, shifting the Low-E market share at participating retailers from 22 percent (2014) to 70 percent (2015). Retail locations that sell both stock and custom windows sold, on average, 10 times more windows than locations that sell only custom windows.

Overall, the pilot met its goals, and Efficiency Vermont learned important, new lessons about messaging, marketing materials, and use of social media. Customers reported that promotion materials and messaging, along with information from store personnel, helped influence their decision to purchase Low-E storm windows. Training store personnel early and regularly checking in with them helped strengthen the promotion.

All survey participants reported installing the new storm windows themselves. This information is important to understand in program design and can be used in approaching future promotions. The survey also revealed that additional information sharing is needed among trade allies, since they were generally unaware of the energy efficiency attributes of Low-E storm windows. Further, early rollouts of social media efforts are key to ensuring the most customers possible hear about the opportunity.

Program Design

Efficiency Vermont partnered with Larson, and D+R to offer the markdown program for Low-E storm windows at all Vermont locations of two big-box retailers, Home Depot and Lowe's.

INCENTIVE STRUCTURE AND RETAILER STOCKING STRATEGIES

The pilot marked down the price of efficient Low-E storm windows at or near the price of clear glass storm windows. Based on previous sales volume provided by Larson, Efficiency Vermont allocated \$7,500 for incentives. **Table 1** outlines incentive and pricing information for stock and custom windows. Stock windows are those that come in standard sizes / materials and can be purchased directly off the shelf, whereas custom windows are ordered in the store and shipped to the store for customer pick-up.

Table 1. Incentive and pricing structure for Low-E storm window promotion

Low-E Storm Window Product Type	Pricing Type	Value
Stock windows	Markdown rate	20% - 35%
	Regular price range, per window	\$56 - \$79

Low-E Storm Window Product Type	Pricing Type	Value
	Promotional price range, per window	\$39 - \$63
	Incentive markdown range	\$11 - \$26
Custom windows	Markdown rate	20%
	Regular price range, per window	\$80 - \$231
	Promotional price range, per window	\$64 - \$185
	Incentive markdown range	\$16-\$46

Although messaging and merchandising were nearly identical for both retailers, each used a different stocking strategy. Retailer A carried both stock clear-glass and Low-E storm windows, whereas Retailer B carried only stock Low-E storm windows. Retailer B had previously stocked only clear-glass storm windows until immediately before the start of the pilot. Custom orders could be placed in store at both retailers, but customers had the choice of ordering Low-E storm windows with the promotional discount or ordering regularly priced (non-marked-down) clear-glass storm windows.

The pilot limited each customer to 15 windows, and custom orders required verification that the customer was a resident of Vermont (via the address listed on the order). The retail partners provided Larson with a weekly report of storm window sales. In turn, Larson provided a sales report of every item sold, by stock-keeping unit (SKU), including custom orders, to Efficiency Vermont and D+R. D+R tracked sales trends and incentive spending levels and reported them to Efficiency Vermont and Larson.

MARKETING

Early in the planning process, Efficiency Vermont decided to offer a consumer information component, through both marketing and social media efforts, to help customers understand the differences and benefits of Low-E storm windows. Efficiency Vermont and its partners created a variety of marketing pieces, including a stack-out display, sell sheets, a tear-pad for custom measurements, and window clings. These marketing materials used Efficiency Vermont's Smart Choice branding, which was consistent with what customers were already seeing throughout Home Depot and Lowe's stores to help them identify energy-efficient products.

Efficiency Vermont's Smart Choice campaign addresses the *how* and *why* of the program. Why do some products qualify and not others? Why does Efficiency Vermont have rebates? The tagline "We've done the research so you can make the smart choice" is often followed by the benefits of the various product categories such as (1) ENERGY STAR certified; (2) tested in a third party laboratory to meet the highest standards of quality and performance; or (3) in the case of Low-E storm windows: add an insulating layer to your existing windows, stop drafts, and reduce energy loss. The Smart Choice campaign not only helps influence the customer's purchase decision, it also offers Efficiency Vermont's story, and ensures a

consistent experience for the consumer. **Appendix A** presents the pilot's marketing and media materials.

Efficiency Vermont and its partners chose two central messages for the stack-out display: stopping drafts and obtaining energy savings at a lower cost than total window replacement. The stack-out also mentioned other benefits of storm windows, including adding an insulating layer to existing windows and blocking harmful UV rays to reduce interior fading (see **Figure 3**). Stack-outs were placed at three stores that offered both stock and custom Low-E storm windows. The other two stores offered only custom storm windows, so stack-outs were not placed at those locations.



Figure 3. Stack-out wraparound graphics for the Low-E storm window promotion.

A sticker cling was placed in the upper corner of each Low-E storm window which labeled it as an Efficiency Vermont Smart Choice, and indicated that up to 20 percent of the purchase price would be taken off at the register. The marketing materials also included the Low-E symbol seen in **Figure 4** used by Larson to help consumers easily identify and understand that Low-E glass was the energy-efficient, “green” option.




Figure 4. Low-E symbol, which helps differentiate the efficient windows from clear-glass storm windows.

TRAINING

Efficiency Vermont and its partners created a sell sheet and pocket card for store staff to use in conjunction with the marketing materials, as a reference. The sell sheet contained information about Low-E storm windows, describing Low-E glass, how it works, and how it can help customers save energy.

It also outlined the Efficiency Vermont pilot promotion, its timeframe, and the purchase limit of 15 windows. Store employees used the sell sheet to explain to customers the benefits of Low-E storm windows and eligibility provisions, including the fact that the purchaser must be a Vermont resident and could purchase no more than 15 windows. Customers could take the sell sheets home. The pocket card was a quick reference for store employees, with information about the discount, relevant SKUs, and information about Efficiency Vermont (see **Figure 5**).

Larson created a custom storm window measurement tear pad, so customers could tear off a sheet and measure at home. The tear pad sheet included information about Low-E glass and easy-to-understand instructions about measuring and determining the size of the window they needed.



Low-E Storm Windows


An Efficiency Vermont SMART CHOICE

What is Low-E?

Low emissivity (Low-E) glass is formed by adding an ultra-thin layer of metal to clear glass. LARSON® storm windows feature pyrolytic Low-E glass. The metallic-oxide (pyrolytic) coating is applied when the glass is in its molten state, and the coating becomes a permanent and extremely durable part of the glass. This coating is also known as "hard-coat" Low-E.

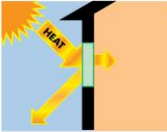
How does it work?

Low-E glass is designed to redirect heat back towards the source.




Warmer in Winter

- Improves window performance by reflecting heat back into the home and reducing energy transfer through the window opening
- Helps reduce heating energy costs



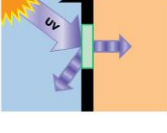
Cooler in Summer

- Less solar energy is transmitted with Low-E glass
- Helps keep interiors cooler
- Helps reduce cooling energy costs




Visible Light Transmittance and Appearance

- Minimal reduction in visible light passing through the window
- Provides interior and exterior appearance similar to clear glass



Reduces Ultraviolet Energy

- Reduces fabric-fading UV energy more effectively
- Helps protect interior furnishings, fabrics, and carpets from fading



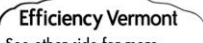
Key upgrade selling features

LARSON® Performance Series Low-E Storm Windows offer the following upgrade selling features over standard clear glass storm windows:


- Low-E "hard coat" interior glass
- Expander for uneven sills
- Extended Warranty

For a limited time, begins 8/17/15.			
SKU	Size	Was	Now
	24x39		
	28x39		
	28x47		
	28x55		
	32x39		
	32x47		
	32x55		
	36x39		
	36x47		
	36x55		

Special order Low-E storm windows will be priced at 20% off regular retails for a limited time, begins 8/17/15.



See other side for more information on the Efficiency Vermont SMART CHOICE program



ABOUT LOW-E STORM WINDOW INSTANT DISCOUNTS

Limited time only (offer could last until early October 2015, but will only be available while supplies last)

Customers should purchase windows or place special orders as soon as possible to ensure that they receive the instant discount

Efficiency Vermont reserves the right to cancel this promotion at any time

Limits: 15 windows per Vermont electric utility account
Efficiency Vermont is testing this promotion, and may decide to create a longer-term promotion at a later date

ABOUT EFFICIENCY VERMONT

Efficiency Vermont was created by the Vermont Legislature and the Vermont Public Service Board to help Vermonters reduce their energy use

Services include technical assistance, education, financing, and financial incentives for the purchase and installation of energy-efficient products

Efficiency Vermont is funded through the Energy Efficiency Charge on electric bills.

www.efficiencyvermont.com | 888.921.5990

**Pocket card approximately 25% of the size of the sell sheet*

Figure 5. Front of sell sheet for customers and store staff, and back of the pocket card for store staff.

Prior to the promotion, a representative from Larson visited each participating store to let staff know the promotion was coming. Representatives from Efficiency Vermont and Larson visited all participating

stores within the first two days of the promotion, to ensure proper placement of all marketing and training materials, and to talk to store managers and staff about the promotion and the benefits of the product. Efficiency Vermont specifically trained sales staff on promotion limits and reinforced the information that promotional incentives were only to be applied to custom orders placed by Vermonters.

When the store manager was not available during the representatives' visit, the Larson representative followed up with a phone call and subsequent store visit. Throughout the promotion, representatives from Efficiency Vermont and Larson visited the stores and spoke to staff and store managers about the promotion and answered questions. Efficiency Vermont and Larson representatives were unable to reach one store manager, so he remained unaware of the promotion until the final few weeks. His store was a non-stock store, and had only one sale during the promotional period. The lessons learned from that experience will be addressed later in this report.

MEDIA

Efficiency Vermont reached out through several channels to inform consumers about Low-E storm windows and raise awareness about the promotion. The focal point of the media effort was a September 14 blog post (**Appendix C**), discussing the challenges of drafty windows, the benefits of Low-E storm windows, and the pilot program. This blog post was referenced in Efficiency Vermont Facebook and Twitter posts on September 16 (see **Figure 6**). Efficiency Vermont's weekly segment on the "Green Mountain Mornings" radio program featured Low-E storm windows on September 24, and they were also featured in the September 29 issue of *Watts New*, Efficiency Vermont's electronic customer newsletter. Efficiency Vermont promotes various energy efficiency initiatives in their weekly spot on Green Mountain Mornings.





Figure 6. Social media promotion of the Low-E pilot.

SURVEY

Efficiency Vermont also gathered information about customers' homes and motivations for buying, obtaining a sample of Vermont-specific data that could inform an energy savings analysis in the future. Efficiency Vermont developed a two-phase survey which involved a pre-paid postage trifold pamphlet (Phase 1, see **Figure 7** and **Figure 8**) inserted into the storm window packaging, and which offered a \$10 Amazon gift card upon satisfactory completion of the survey (pending verification that the customer had an active Vermont utility account). The Larson representative placed the survey pamphlet in existing stock windows at participating retailers, and Larson added it to the Low-E storm windows during either manufacturing or distribution for custom or replenishment stock windows shipped after the promotion had begun. The Phase 1 survey asked respondents if they would be willing to participate in a follow-up phone interview (Phase 2), and were offered a \$20 Amazon gift card upon completion.

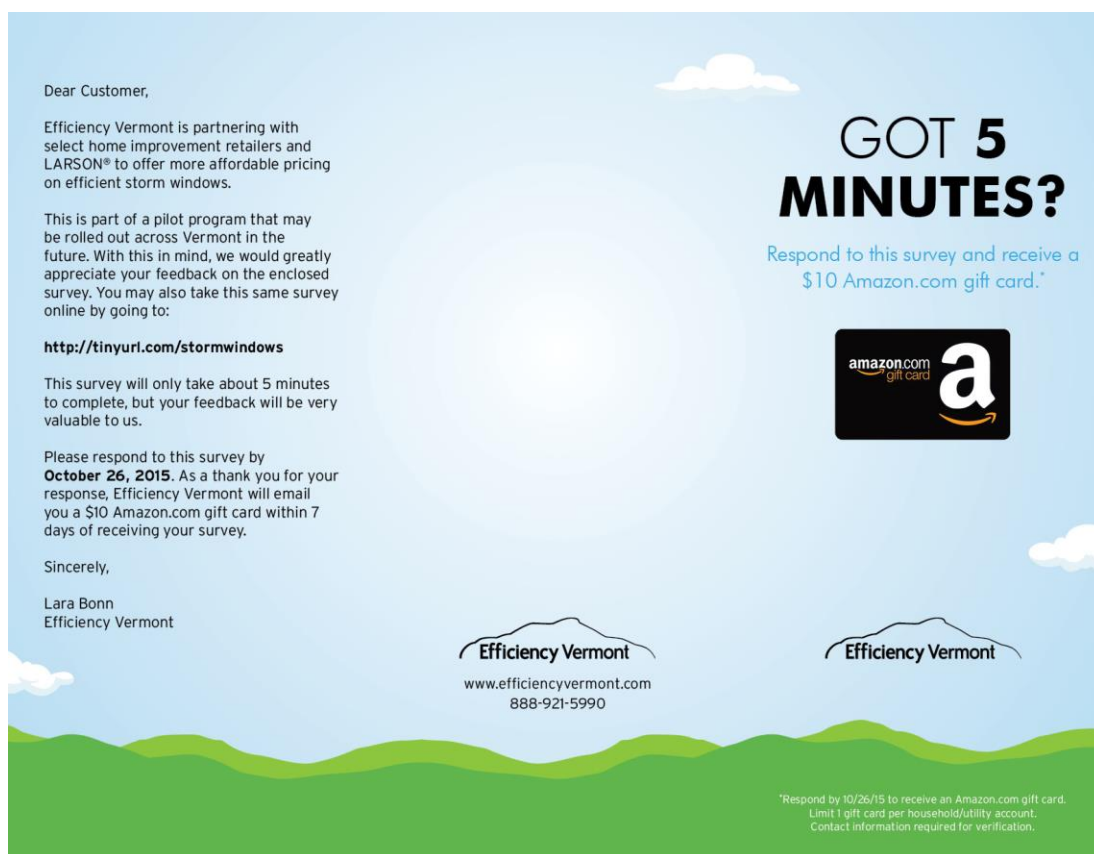


Figure 7. Outside page of the paper survey for Phase 1 information gathering.

CUSTOMER INFORMATION

of Household members: _____

Name*: _____

Email address*: _____

Address where storm windows will be installed*: _____

Phone number*: _____

May we contact you for further product feedback?
You would be paid for your time/opinions. Yes / No

*Required for online gift card

Respond to this survey and receive a \$10 Amazon.com gift card.**

FILL OUT THE SURVEY BELOW

1. Year home built: _____
2. Size of home (square feet): _____
3. Primary space heating fuel type (check one):
☐ Wood/pellets ☐ Electric
☐ Propane ☐ Fuel Oil
☐ Natural Gas ☐ Other
4. Total number of windows in the home: _____
5. Please indicate the number of storm windows you recently purchased:
 Off-the-shelf storm windows: _____
 Special order storm windows: _____
6. Where did you purchase the storm windows?
☐ Home Depot
☐ Lowe's
7. Are you replacing existing storm windows? Y / N
8. If yes, what are the frame type(s) of the existing storm windows?
☐ Metal
☐ Wood
9. What type of existing windows will these storm windows cover? (Please check all that apply.)

Frame type:	# of Glass Panels:
<input type="checkbox"/> Vinyl	<input type="checkbox"/> Single pane
<input type="checkbox"/> Aluminum	<input type="checkbox"/> Double pane
<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Triple pane
<input type="checkbox"/> Wood	<input type="checkbox"/> Don't Know
<input type="checkbox"/> Other	
10. Storm windows to be installed by:
☐ Self ☐ Contractor
☐ Other _____
11. Why did you buy storm windows?
☐ Energy bills too high
☐ Existing windows were old and/or cracked
☐ Existing windows let in drafts
☐ Low-cost alternative to window replacements
☐ Other _____
12. Did you know about the Efficiency Vermont discount before you purchased your storm windows? Y / N
13. If yes, did the discount influence your purchase decision? Y / N

Thank you for your feedback. We will email your \$10 Amazon.com gift card within 7 days of receipt of this survey.

** Respond by 10/26/15 to receive an Amazon.com gift card. Limit 1 gift card per household/utility account. Contact information required for verification.

EV-3171-0815-YRAX

Figure 8. The Phase 1 survey, inside page.

The follow-up phone survey administered by Efficiency Vermont's Consumer Insights team probed into the questions posed in the mail-in survey and provided an opportunity to gather additional information.

The insights garnered during the follow-up interview, including resonance of marketing messaging, purchasing decision timeline and process, and information channels used for research, were important for determining future program development, and will help Efficiency Vermont determine additional training needed or channels with which to work. The follow-up phone survey covered the following topics (see also **Appendix B**):

- Basic home information
- Condition of existing windows
- Existing window replacement
- Reasons for purchasing

- Research before buying
- In-store assistance
- Storm window satisfaction and changes
- Other energy efficiency improvements

DATA COLLECTION

Larson provided weekly sales data to Efficiency Vermont and D+R on each stock and custom Low-E window sold at participating retail locations throughout the promotion, in addition to providing comparison sales data from the previous year. D+R aggregated the weekly data and calculated key tracking statistics: incentive spend rate, sales volume, market share of Low-E and clear glass storm windows, and sales of custom and stock windows for each retailer and location. This analysis tracked the progress of each retailer to ensure available funds could last through the end of the promotional period and to compare promotional sales to historical sales data of clear glass and Low-E storm windows to determine the impact of the pilot program.

Pilot Impact

STORM WINDOWS SALES LIFT

Storm window sales of both glass types increased overall, compared to sales volumes during the same time period in 2014, as shown in **Figure 9**.

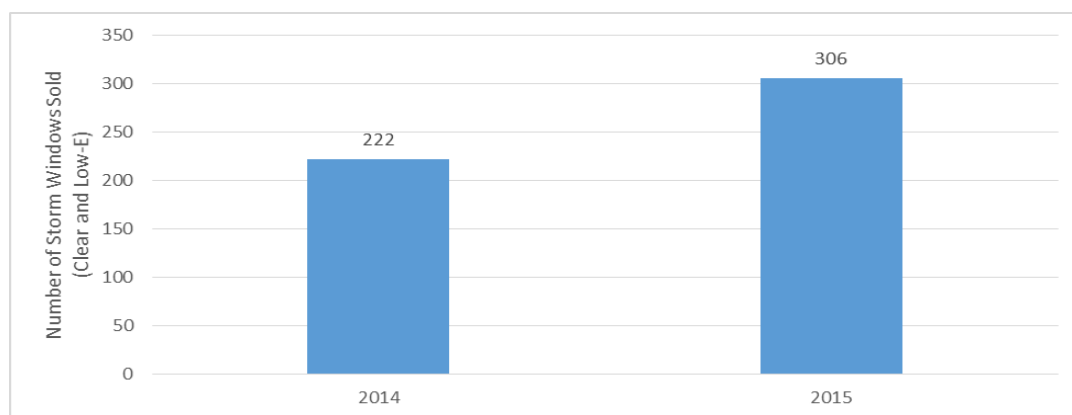


Figure 9. Comparison of storm window sales, 2014 and during the promotional period, 2015.

INCREASE IN LOW-E MARKET SHARE

Low-E storm window sales increased 337 percent during the promotional period compared to 2014, whereas clear-glass storm window sales declined nearly 50 percent at both retail partners' stores. The participating stores sold more Low-E storm windows during the promotional period than total sales of clear-glass storm windows during the same period in 2014, as shown in **Figure 10**.

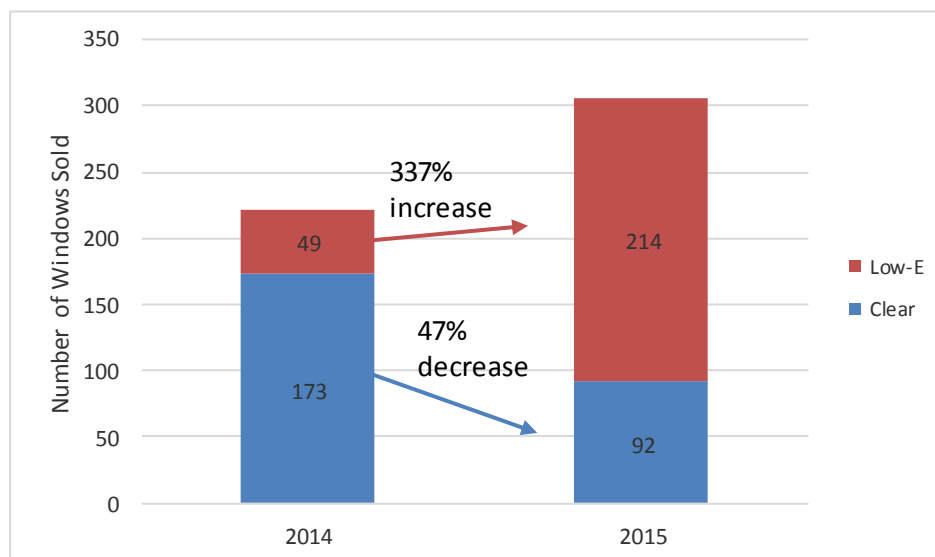


Figure 10. Sales of Low-E storm windows in 2014, compared to 2015.

STOCK AND CUSTOM SALES DISTRIBUTION

As Larson predicted, sales were nearly evenly split between stock and custom orders in 2014 and 2015, as shown in **Figure 11**.

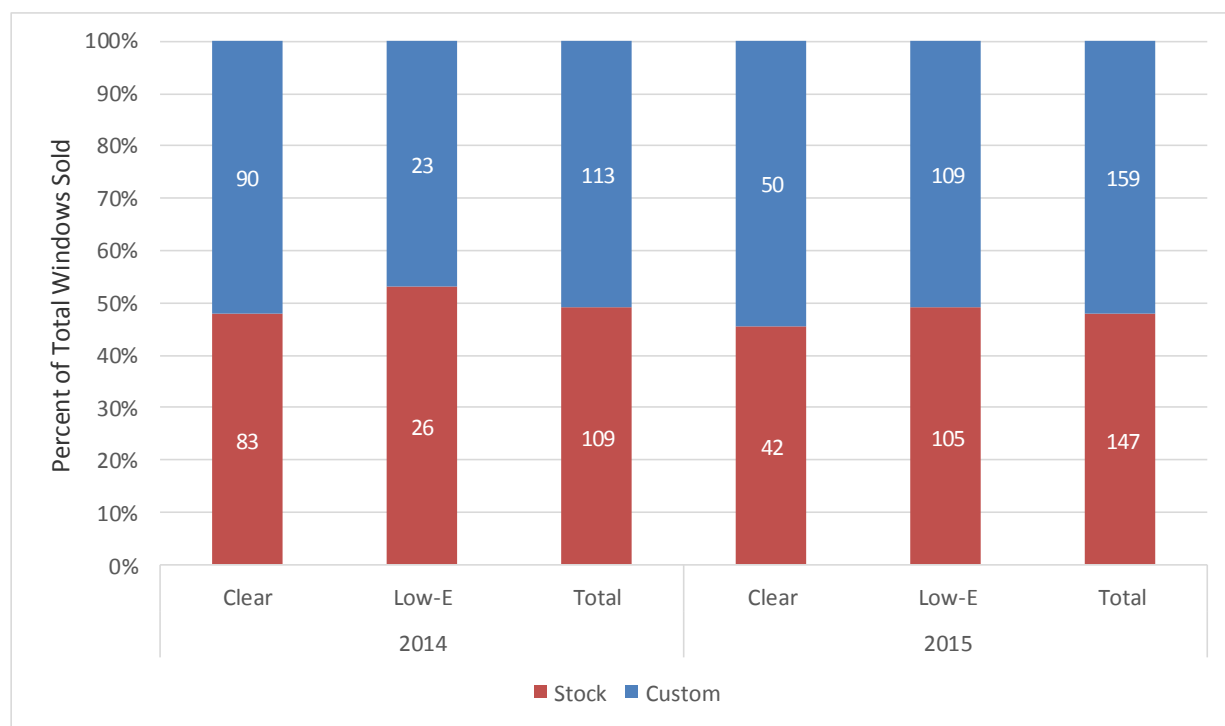


Figure 11. Distribution of sales of Home Depot's and Lowe's storm windows.

IMPACTS AT RETAILER LEVEL

Retailer B saw a dramatic sales lift, with 147 percent more storm windows sold in 2015 than in 2014, although this was the first time that Retailer B stocked Low-E storm windows and simultaneously removed stock clear-glass storm windows from store shelves. That strategy certainly helped to drive sales of stock Low-E storm windows. Retailer B experienced a complete reversal in Low-E market sales from 7 windows to 120 windows.

Retailer A, on the other hand, saw effectively flat sales volumes (a change of -3 percent from 2014 to 2015), and an impressive, but somewhat less dramatic shift in relative market share of Low-E storm windows (42 in 2014, to 94 in 2015). This is reflected in **Figure 12**.

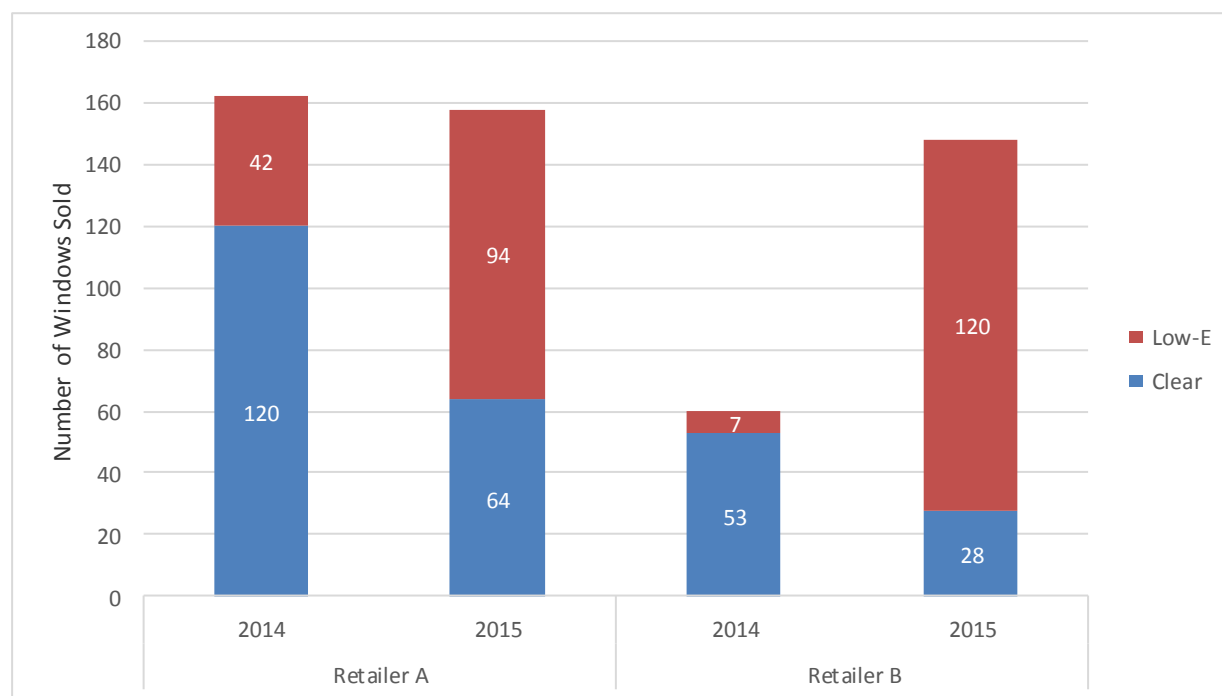


Figure 12. Sales of Low-E and clear-glass storm windows, by retailer and year.

PILOT IMPACT ON SALES BY STOCK AND CUSTOM

The distribution of stock windows versus custom windows showed even greater variability at the retailer level. The two stores with zero stock sales did not stock any storm windows, nor did they have stack-out displays to draw attention to the product and promotional offer. Products were available only by custom order at these stores. Retailer A sold substantially more stock Low-E storm windows in 2015, whereas Retailer B sold substantially more custom windows, as shown in **Table 2** and **Table 3**.

Table 2. Low-E stock and custom sales, by retailer

Store Type	Retail Store	Stock Windows Sold	Custom Windows Sold	Total Windows
Stock stores	Retailer A, Stores 1 and 2	61	32	93
	Retailer B Store 1	66	66	110
	Stock store total	91	84	175
Non-stock stores	Retailer A, Store 3	0	1	1
	Retailer B, Store 2	0	10	10
	Non-stock store total	0	11	11
Grand total		105	109	214

Table 3. Clear and Low-E stock and custom sales, by retailer, 2014 and 2015

Retailer	Type of Window	2014			2015		
		Clear	Low-E	Total	Clear	Low-E	Total
Retailer A	Stock	77	26	103	42	61	103
	Custom	43	16	59	22	33	55
	Total	120	42	162	64	94	158
Retailer B	Stock	6	0	6	0	44	44
	Custom	47	7	54	28	76	104
	Total	53	7	60	28	120	148
Combined	Stock	83	26	109	42	105	147
	Custom	90	23	113	50	109	159
	Total	173	49	222	92	214	306

SALES VOLUME BY WEEK

Sales volumes in the first weeks of the promotion were moderate, but rose significantly in the second half of September, beginning with the week of September 14 and peaking during the week of September 21. Sales returned to the September 14 levels in the week of September 28. The sales increase coincided with the Efficiency Vermont media promotions: the blog post on September 14, Facebook and Twitter posts on September 16, the local radio show segment on September 24, and an e-newsletter sent out on September 29 (see **Figure 13** and **Table 4**).

Table 4. Weekly sales, by retailer and type of window

Date Range	Retailer A		Retailer B		Combined Total
	Stock	Custom	Stock	Custom	
August 17 - 23	2	14	0	6	22
August 24 - 30	6	0	9	0	15
August 31 – September 6	2	0	10	8	20
September 7 - 13	2	0	8	1	11
September 14 - 20	21	4	3	3	31
September 21 - 27	14	14	9	32	69
September 28 – October 4	9	0	1	25	35
October 5 - 11	5	1	4	1	11

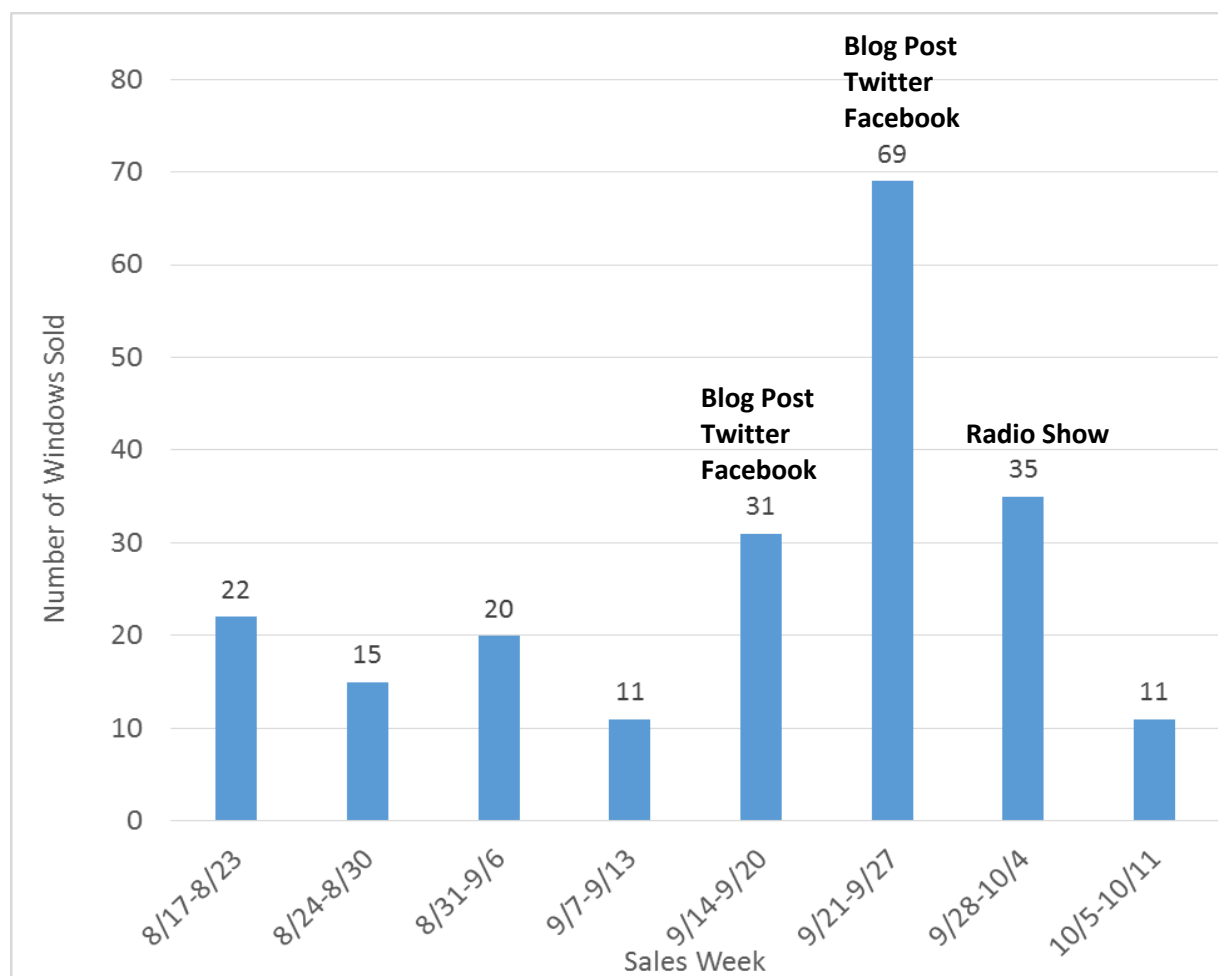
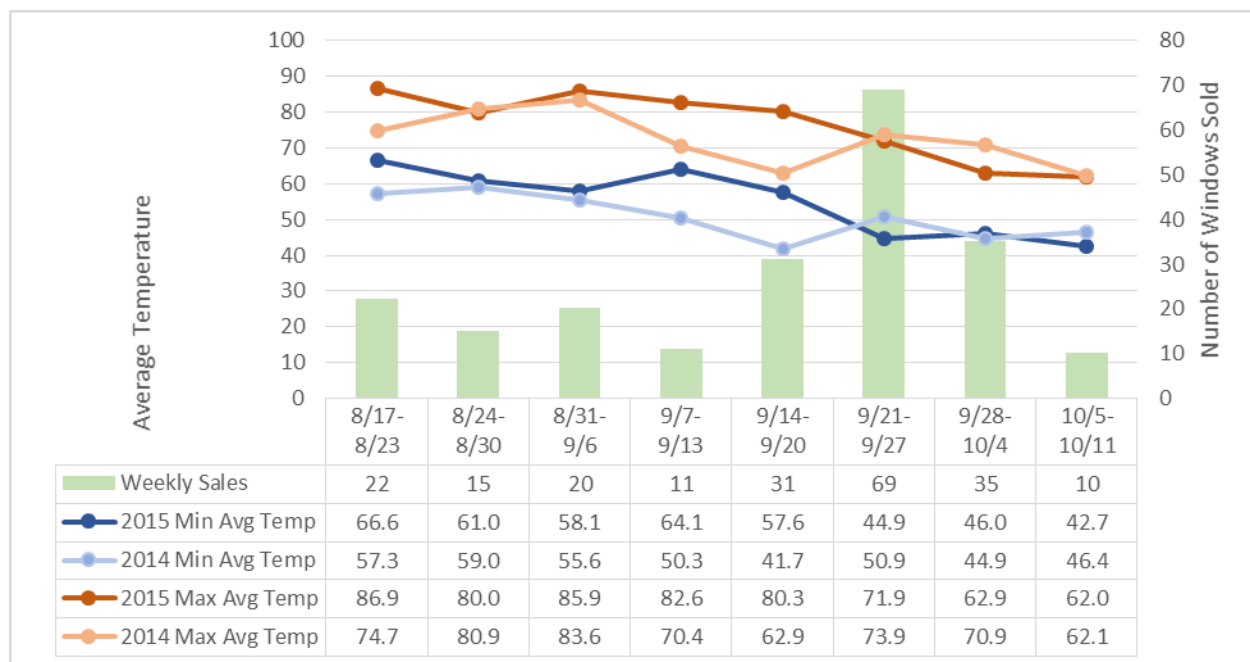


Figure 13. Weekly Low-E sales during the promotional period.

TEMPERATURE IMPACT

Unusually high outdoor air temperatures during the pilot could have affected sales, since cooling temperatures tend to remind customers that they should prepare for the colder weather ahead. Temperatures remained in the 70s and 80s through August and through the first three weeks of September (see **Figure 14**). The drop in temperature, which began September 21, coincided with the release of most of the media outreach, making it difficult to determine the effect of weather on sales. This could be a useful data point to track in future storm windows programs. The warmer-than-normal temperatures could have also slowed early participation.



Source: National Weather Service Forecast Office, n.d.

Figure 14. Average weekly temperature comparison, August through October.

INCENTIVE SPENDING

Although the retailers sold approximately equal numbers of stock and custom windows, 58 percent of incentive dollars went to custom sales, because custom windows have a higher non-promotional retail price than stock products. Retailer B used more of its incentive pool than Retailer A (92 percent vs. 61 percent), because it sold more Low-E windows and more custom windows, and had a greater price differential between clear and Low-E storm windows (see **Table 5**). The budgeting for this pilot could not be based on previous program experience; future budgeting, however, will consider the pilot's sales results and can help Efficiency Vermont better forecast spending rates for subsequent window initiatives.

Table 5. Stock and custom incentive dollars spent by each retailer

Retail Store	Stock Incentive Dollars Spent	Average Stock Incentive	Custom Incentive Dollars Spent	Average Custom Incentive	Total Incentive Dollars Spent
Retailer A	\$ 869.00	\$14.04	\$ 975.66	\$29.52	\$ 1,844.66
Retailer B	\$ 1,094.00	\$24.61	\$1,664.18	\$21.59	\$ 2,758.18
Total	\$ 1,963.00	\$18.47	\$2,639.84	\$23.93	\$ 4,602.84

The week with the greatest spending (25 percent of funds), the week beginning September 21, fell in the middle of the multiple marketing promotions. Incentive spending declined during the promotion's final two weeks.

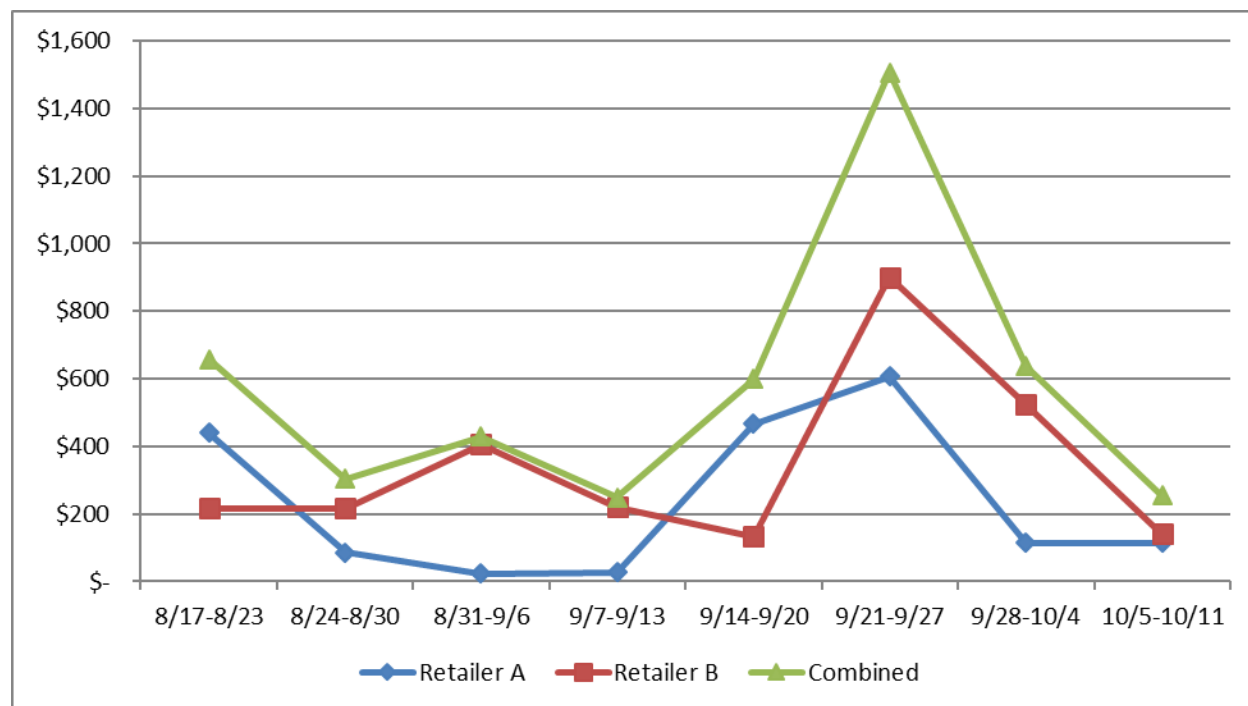


Figure 15. Incentive funds spent, by week and by retailer.

SURVEY RESULTS

Efficiency Vermont received seven responses (3.3 percent response rate) to the mail-in paper survey. Staff also conducted five follow-up phone interviews for more detailed discussions. Although somewhat lower than the typical 5 percent response rate for Efficiency Vermont surveys of this format, the survey responses generated very useful insights. Highlights of these results are below, with others presented in the **Insights and Next Steps** section.

- Of the 7 respondents, 3 reported that they were replacing existing storm windows.
- Low-E storm window purchases ranged from 1 to 13 windows per customer.
- All participants reported installing their storm windows themselves, and none reported any installation issues.
- Five of the 7 participants reported purchasing storm windows because their existing windows were old and cracked, or they were seen as a lower-cost alternative to a full window replacement.

- Phone interview participants reported learning about Low-E storm windows through a several channels, and most had been considering storm window purchases for an extended period of time.

Insights and Next Steps

ASSESSMENT OF PILOT IMPACT

Although the pilot period was short, its results suggest significant potential for offering benefits to consumers and energy savings for program administrators, in Vermont and other cold climates.

Increase in Sales

Overall storm window sales increased by more than 37 percent over the previous year, with 306 storm windows purchased and Low-E storm windows making up 70 percent of those sales.

Conversion from Clear Glass to Low-E

The number of Low-E storm windows sold during the pilot period was 337 percent more, over the same period in 2014, whereas sales of clear-glass storm windows decreased by 47 percent.

WHAT WORKED?

The pilot revealed areas that worked well and should be continued or expanded in future programs.

Relationships

Established relationships with the local store managers.

The Efficiency Vermont and Larson representatives had existing relationships with the store managers at Lowe's and Home Depot before the pilot began. The Larson representative's relationships were crucial to getting the stack-outs placed in the stores. Working solely through the corporate office of each retailer would have required more time than was available for the pilot. Before the promotion started, the Larson representative was in Lowe's and Home Depot stores to discuss the upcoming pilot with store managers and store staff, which prepared them well for the start of the pilot.

Having representatives on the ground.

Having representatives from Efficiency Vermont and Larson on the ground ensured materials were distributed and displayed properly at the start of the promotion. It also allowed them to cycle back through the stores throughout the promotion to talk to managers and employees about how the promotion was going. For example, store employees reported that customers had asked about the discount, even before they saw the stack-out display. Having these regular conversations helped Efficiency Vermont and its partners feel confident that the promotion was trending in a positive direction.

Marketing

The marketing efforts were highly successful because of three basic marketing elements: a familiar brand, bright and noticeable promotional materials, and messaging that consumers could understand.

Integrating into a familiar brand.

Using Efficiency Vermont's Smart Choice campaign on the promotional materials for Low-E storm windows helped reinforce for consumers that this was an energy-efficient choice they could trust because they see the Smart Choice campaign at Lowe's and Home Depot on other energy-efficient products throughout the stores.

Noticeable promotional materials.

Having the stack-out displays in three retail locations was a large and visible reminder of the promotion. The "special pricing" signs that Efficiency Vermont added to store shelves also helped raise awareness of the discount. The benefits of the promotional materials were confirmed in follow-up interviews with customers. They reported that although they had been considering storm windows, the promotional material and discounted price convinced them to purchase Low-E storm windows.

Messaging that resonates with consumers.

Interviews with customers revealed that many had purchased storm windows because their existing windows were old and cracked, or they viewed Low-E storm windows as a low-cost alternative to full window replacement. These comments suggest that the messaging resonated with consumers in their purchasing decisions—and should be continued.

Training

Make it easy for store employees.

The pocket card was an easy way for store personnel to refer to the details of the promotion, including the discounted pricing. Customers reported that sales personnel were able to inform them about the promotion, which led to their purchases.

Media Outreach

Inform customers through more than one channel.

Media outreach was important for raising awareness of the promotion and was very successful. More than one-third of recipients (35 percent) opened the *Watts New* e-newsletter (31 percent is Efficiency Vermont's average), and 91 percent of those who clicked through, clicked on the blog post link (950 of 1,041 total clicks). This is the highest percentage of clicks any one story has ever received.

Overall, customers reported hearing about the promotion through more than one channel, including sales personnel and marketing materials. Having multiple channels for engaging customers should be continued in any future program.

AREAS FOR CONSIDERATION

As successful as the pilot was, Efficiency Vermont learned several lessons and identified elements that could be improved in a full-scale program.

Marketing Materials

The marketing materials worked well, but Efficiency Vermont and its partners determined that a few changes would improve them:

- Make sticker clings bigger and have the design on both sides, so they are visible from both sides of the Low-E storm window displays.
- Show previous and reduced (was / now) pricing on the store shelf, so that consumers can see the discount amount.
- Have more options for places to put the tear pad, so that it does not cover prices.
- Have a larger point-of-purchase (POP) piece, such as an aisle violator or end-cap, to further increase visuals and awareness about the promotion.
- Develop materials early, if they need corporate retailer approval.

Add POP options for non-stocking stores.

Stores that did not sell stock windows had significantly smaller sales of Low-E storm windows. These stores did not have stack-outs or the on-the-shelf pricing as the stock stores did, which likely affected customer awareness of the promotion. For future efforts, developing and placing highly visible marketing materials in non-stock stores might help close the gap between sales in stock and non-stock stores, and generate more sales overall.

Consider targeted messaging.

Some survey participants reported recently purchasing a new home and purchasing storm windows to improve the energy efficiency of those homes. Targeting marketing messaging toward “New Movers” might help convince new homeowners to cost-effectively improve the energy efficiency of their home. In addition, all respondents reported that they had installed the storm windows themselves without issues, which could be another message to further highlight in future efforts.

Survey

Consider different survey design and delivery options.

In addition to the low response rate for the mail-in survey, another challenge was that inserting the survey into the storm window packaging was labor intensive, particularly at the stores and at Larson distribution centers. If data collection is needed for future efforts, other options should be explored, including changing the length of the survey, re-examining the incentive amount, and altering the format design (a postcard, rather than a tri-fold). For example, a sticker could be affixed to the exterior of the packaging announcing the survey inside, or sales staff could staple the customer's receipt to a survey.

Training

Ensure all relevant staff are trained.

The Efficiency Vermont or manufacturing representatives could attend the daily (or weekly) meetings with store employees to make sure that staff on all shifts receive the relevant information about the promotion. Such training would likely have helped the store manager who was unaware of the promotion for a few weeks. The representatives should also make sure that people in other departments—especially those who occasionally staff the millwork department—are familiar with the promotion.

Engage relevant trade allies about the technology and promotion.

Four of the five customers who were interviewed in the phone survey mentioned that they had discussed energy efficiency improvements with a contractor, but that the contractor had not mentioned Low-E storm windows. If this program is expanded in the future, information for trade allies should be considered as a program component.

Media

Start media outreach as early as possible.

Media outreach helped raise the promotion profile. The most common customer complaint in response to the blog post was related to the timing of blog post and e-newsletter—both of which came close to the end of the promotional period. It would be helpful to have blog posts or other narrative pieces ready to be published at the start of future promotions, to give customers more time to make purchases and allow multiple posts on Facebook and Twitter.

Conclusion

This pilot was a first of its kind in the United States. The markdown of the price of Low-E storm windows to or near to the price of clear-glass storm windows was highly successful in converting sales of clear-glass storm windows to Low-E storm windows. It was also effective in increasing the overall volume of storm windows sold. The pilot's marketing messaging centered on Low-E storm windows as a lower-cost

alternative to full window replacement and stopping drafts from old windows. These messages resonated with customers. Additionally, surveys revealed that customers had installed the Low-E storm windows themselves without problems, so future marketing efforts can emphasize that storm window installation can be a do-it-yourself project.

The outreach and training conducted with store personnel helped prepare them to communicate with consumers about the promotion. Although overall survey response was low, the paper and follow-up phone interviews provided important information about the pilot efforts, including training and messaging, and could offer future follow-up opportunities with these respondents to assess energy savings from their installed Low-E storm windows. Most important, the proportion of sales of Low-E storm windows shifted from just 22 percent in 2014 to 70 percent in 2015.

An additional benefit of this pilot is that it tested a program with thermal savings that could reach low- to moderate-income customers in new, more cost-effective ways than Efficiency Vermont has been able to accomplish, to date. If Efficiency Vermont moves forward with an expansion to a full program for Low-E storm windows, it will need to ensure broad coverage via retailer networks, including independent retailers, and full geographic coverage to reach all Vermonters.

RECOMMENDATIONS

- Continue to engage with local stores early and often.
- Engagement at the local store level was a key factor in the success of this pilot, ensuring that store personnel were equipped to talk to customers about the promotion and helped ensure that promotional materials were displayed properly.
- Continue to incorporate messaging emphasizing Low-E storm windows as a low-cost alternative to window replacement and as a way to stop drafts and improve home energy efficiency.
- Continue to engage customers across multiple channels, especially merchandising and marketing, social media, and store personnel.
- Ensure sufficient time for any collaboration with corporate retail offices, so that program implementation occurs as scheduled.
- Engage trade allies, such as contractors or energy efficiency auditors, to inform them about Low-E storm windows and any relevant promotions.
- Test targeted messaging with different customer groups.
 - Target homeowners who have recently purchased a new home, to interest them in a cost-effective way to improve their home's efficiency, and share information as part of a "New Movers" kit.
 - Target people with older, historical homes.

- Target low-income or moderate-income individuals.
- Start social media and outreach messaging earlier in the promotional period, so that there is a greater chance for customers to hear about the promotion.
- Test different incentive structures to determine which is most cost effective for an Efficiency Vermont program. This might involve testing whether a full markdown is necessary. Will conversions still occur if the markdown does not bring the price of Low-E storm windows equal to the price of clear glass storm windows?
- Find ways to engage or interview customers who purchase clear-glass storm windows.
 - Identify the barriers that kept them from purchasing Low-E storm windows. Price? Lack of awareness about the promotion or the technology? Desire to match clear storm windows previously purchased?
 - Are they homeowners? Contractors? Does messaging need to be different for certain audiences? If a retailer tends to be more contractor oriented, does it need different messaging?
- Explore and develop plans to expand the program to other channels, such as independent retailers.

This program is being screened by Efficiency Vermont's EM&V team, to see if it qualifies for full program adoption. If a new program results from the pilot, building on the lessons learned and expanding into new geographic areas could greatly benefit customers across Vermont.

Appendix A: Marketing Materials

Window Sticker



Stack-Out

Efficiency Vermont

SMART CHOICE

**WE'VE DONE THE RESEARCH
SO YOU CAN MAKE THE SMART CHOICE.**

Stop drafts by installing Low-E storm windows over your existing windows and get energy savings at a fraction of the cost of a total window replacement. Low-E storm windows:

- Add an insulating layer to your existing windows
- Help block harmful UV rays, and reduce interior fading
- Are eligible for an Efficiency Vermont instant discount of up to 20% per window.

SAVE MONEY BY INSTALLING LOW-E STORM WINDOWS

UP TO 20% OFF LARSON LOW-E STORM WINDOWS

(Up to 15 windows per Vermont vehicle, all by customer.)

For more information about Larson low-e storm windows visit www.larsondoors.com

Find out about other Smart Choice products at www.efficiencyvermont.com/smartchoice

LARSON

Low E

Efficiency Vermont

SMART CHOICE

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(Up to 15 windows per Vermont vehicle, all by customer.)


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LARSON

Low E



Sell Sheet



Low-E Storm Windows

An Efficiency Vermont SMART CHOICE

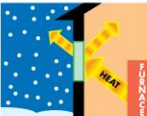
What is Low-E?

Low emissivity (Low-E) glass is formed by adding an ultra-thin layer of metal to clear glass. LARSON® storm windows feature pyrolytic Low-E glass. The metallic-oxide (pyrolytic) coating is applied when the glass is in its molten state, and the coating becomes a permanent and extremely durable part of the glass. This coating is also known as "hard-coat" Low-E.

How does it work?


Low-E glass is designed to redirect heat back towards the source.

Warmer in Winter




- Improves window performance by reflecting heat back into the home and reducing energy transfer through the window opening
- Helps reduce heating energy costs

Cooler in Summer



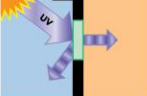
- Less solar energy is transmitted with Low-E glass
- Helps keep interiors cooler
- Helps reduce cooling energy costs

Visible Light Transmittance and Appearance



- Minimal reduction in visible light passing through the window
- Provides interior and exterior appearance similar to clear glass

Reduces Ultraviolet Energy



- Reduces fabric-fading UV energy more effectively
- Helps protect interior furnishings, fabrics, and carpets from fading

Key upgrade selling features

LARSON® Performance Series Low-E Storm Windows offer the following upgrade selling features over standard clear glass storm windows:

- Low-E "hard coat" interior glass
- Expander for uneven sills
- Extended Warranty

For a limited time, begins 8/17/15.			
SKU	Size	Was	Now
	24x39		
	28x39		
	28x47		
	28x55		
	32x39		
	32x47		
	32x55		
	36x39		
	36x47		
	36x55		

Special order Low-E storm windows will be priced at 20% off regular retails for a limited time, begins 8/17/15.

Efficiency Vermont
See other side for more information on the Efficiency Vermont SMART CHOICE program



SMART CHOICE

**WE'VE DONE THE RESEARCH
SO YOU CAN MAKE THE SMART CHOICE.**

Stop drafts and reduce energy loss by installing Low-E storm windows over your existing windows and get energy savings at a fraction of the cost of a total window replacement. Low-E storm windows:

- Add an insulating layer to your existing windows
- Help block harmful UV rays, and reduce interior fading
- Are eligible for an Efficiency Vermont instant discount



SAVE MONEY BY INSTALLING LOW-E STORM WINDOWS

Efficiency Vermont is offering an instant discount for a limited time on low-e storm windows.
LIMIT: 15 WINDOWS PER VERMONT ELECTRIC UTILITY ACCOUNT.

Instant discount is available to all electric utility customers in Vermont and must be installed in Vermont. Instant discount may be subject to change without prior notice. Limitation of Liability: Efficiency Vermont does not guarantee the performance of installed equipment expressly or implicitly. For more information, call 888-921-5990.

Pocket Card



Low-E Storm Windows

An Efficiency Vermont SMART CHOICE

LARSON® Performance Series Low-E Storm Windows offer key upgrades:

- Low-E glass adds energy efficiency
- Expander for uneven sills
- Extended Warranty



For a limited time, begins 8/17/15.

SKU	Size	Was	Now
	24x39		
	28x39		
	28x47		
	28x55		
	32x39		
	32x47		
	32x55		
	36x39		
	36x47		
	36x55		

Special order Low-E storm windows will be priced at 20% off regular retails for a limited time, begins 8/17/15.



ABOUT LOW-E STORM WINDOW INSTANT DISCOUNTS

Limited time only (offer could last until early October 2015, but will only be available while supplies last)

Customers should purchase windows or place special orders as soon as possible to ensure that they receive the instant discount

Efficiency Vermont reserves the right to cancel this promotion at any time

Limits: 15 windows per Vermont electric utility account
Efficiency Vermont is testing this promotion, and may decide to create a longer-term promotion at a later date

ABOUT EFFICIENCY VERMONT

Efficiency Vermont was created by the Vermont Legislature and the Vermont Public Service Board to help Vermonters reduce their energy use

Services include technical assistance, education, financing, and financial incentives for the purchase and installation of energy-efficient products

Efficiency Vermont is funded through the Energy Efficiency Charge on electric bills.

www.efficiencyvermont.com | 888.921.5990

A photograph of a white-framed window with dark green horizontal shutters on either side. A green circular sticker with the text 'LOW E GLASS' is affixed to the upper pane of the window. The window is set into a light-colored wall, and some green foliage is visible at the top and sides.



Available custom-sized to fit **your** home

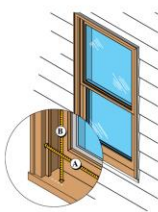
Low emissivity (Low-E) glass is formed by adding an ultra-thin layer of metal to clear glass. LARSON® storm windows feature pyrolytic (metallic-oxide coating) Low-E glass, applied when the glass is in its molten state. The coating, also known as "hard-coat" Low-E, becomes a permanent and extremely durable part of the glass.

When used in LARSON storm windows, Low-E glass provides added energy saving benefits that help the existing primary window to reduce drafts, keep your home warmer in the winter and cooler in the summer.

1 Opening Measurements

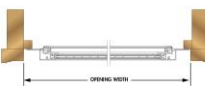
Give us your opening measurements and tell us how you plan to install them. We will do the math to produce a product that fits your opening.

Measure opening width and height in three places to the nearest $1/8"$. For width (A) measure from inside edges of side brickmold. For height (B) measure from inside edge of top brickmold to inside sill. Use the narrowest width and height measurements.



Inside Mount

Inside Mount
Inside mount installation involves mounting your storm window inside of your brick mold frame. We will deduct approximately 1/8" in width and height for clearance from the opening measurements you provide.



Outside Mount

Outside mount installation involves mounting your storm window on the outside of your brick mold frame. We will add 1/2" on each side and 3/4" in height to the opening measurements you provide for the flange to overlap the brick mold.



Fill in information below and give to a store associate to begin the order process. Please include Color and Window Type for each storm window ordered.

Customer/Job Name
Street Address
City
State/Zip
Phone
Name

For Store Use Only

P.O.#

Store #

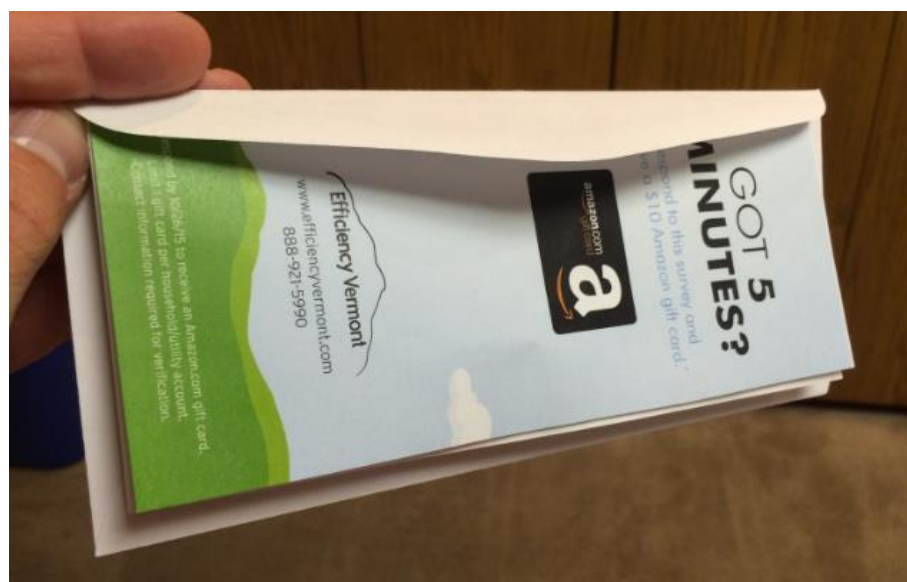
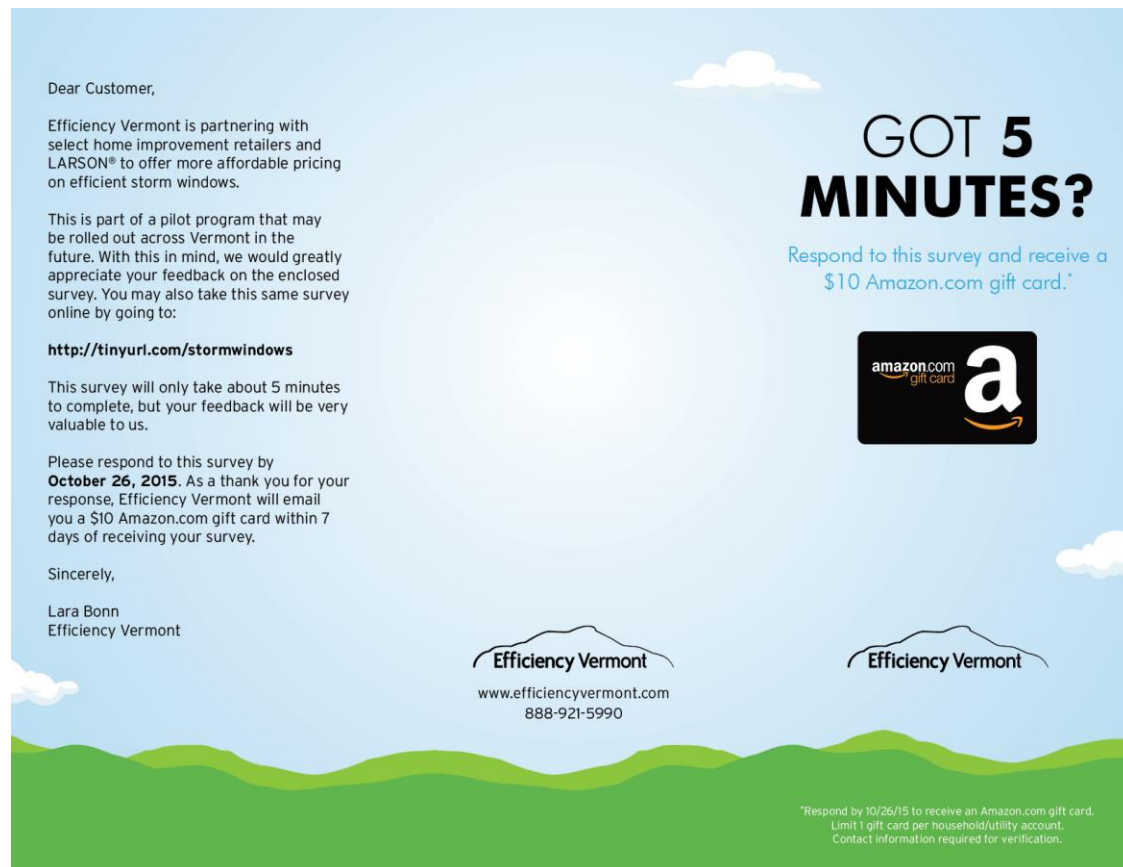
2 or
2 Tip-to-Tip

Tell us the exact tip-to-tip size of the window you want us to produce and we will build to that dimension. Let us know if you want a sill expander to accommodate out-of-square openings (Expander not available on slider or slider/picture units).

[illegible]

Appendix B: Survey Materials

PHASE 1: PAPER SURVEY



CUSTOMER INFORMATION

of Household members: _____

Name*: _____

Email address*: _____

Address where storm windows will be installed*: _____

Phone number*: _____

May we contact you for further product feedback?
You would be paid for your time/opinions. Yes / No

*Required for online gift card

FILL OUT THE SURVEY BELOW

- Year home built: _____
- Size of home (square feet): _____
- Primary space heating fuel type (check one):

☐ Wood/pellets ☐ Electric
☐ Propane ☐ Fuel Oil
☐ Natural Gas ☐ Other
- Total number of windows in the home: _____
- Please indicate the number of storm windows you recently purchased:

Off-the-shelf storm windows: _____

Special order storm windows: _____
- Where did you purchase the storm windows?

☐ Home Depot
☐ Lowe's
- Are you replacing existing storm windows? Y / N
- If yes, what are the frame type(s) of the existing storm windows?

☐ Metal
☐ Wood
- What type of existing windows will these storm windows cover? (Please check all that apply.)

Frame type:
☐ Vinyl
☐ Aluminum
☐ Fiberglass
☐ Wood
☐ Other

of Glass Panels:
☐ Single pane
☐ Double pane
☐ Triple pane
☐ Wood
☐ Don't Know
- Storm windows to be installed by:

☐ Self
☐ Other

☐ Contractor
- Why did you buy storm windows?

☐ Energy bills too high
☐ Existing windows were old and/or cracked
☐ Existing windows let in drafts
☐ Low-cost alternative to window replacements
☐ Other
- Did you know about the Efficiency Vermont discount before you purchased your storm windows? Y / N
- If yes, did the discount influence your purchase decision? Y / N

Respond to this survey and receive a \$10 Amazon.com gift card.**

** Respond by 10/26/15 to receive an Amazon.com gift card. Limit 1 gift card per household/utility account. Contact information required for verification.

EV-3171-0815-YRAX

PHASE 2: PHONE INTERVIEW SURVEY

PHASE 2: PHONE INTERVIEW

[Intro from researcher]

Thank you for agreeing to talk with us today. As mentioned when we made this appointment, our conversation will take about 20 minutes. To thank you for your time and feedback, we'll email you an Amazon gift card worth \$20 within the next week.

We encourage you to be as candid as possible in your feedback, as your comments will be kept confidential and will directly help shape Efficiency Vermont's future programs.

Do you have any questions? Great, let's begin.

Did you install storm windows at your primary residence, a vacation home, or a business?

Do you rent or own the building in which the storm windows were installed?

Now I'll read you a list of different types of home...please stop me when I describe the type of home where you installed the storm windows.

- A single-family home
- A condo/town house
- An apartment building with 2 – 4 units
- An apartment building with 5 or more units

For what rooms in your home/business did you buy storm windows? Why did you prioritize these areas?

Tell me about the condition of the existing windows that you covered with storm windows.

Probe: How old would you estimate the existing windows to be?

Probe: Could you feel drafts?

What type of windows did you affix the storm windows to? (double-hung, slider, picture casement (crank-out), etc.?)

Have you replaced any other storm windows in your home and/or business?

Probe: If "yes"...How many storm windows have you replaced? What was the primary reason for replacing your existing storm windows?

Have you completely replaced any windows in your home/business?

Probe: *If “yes”...How many windows have you replaced?*

In the product survey you filled out, you indicated that your main reason for buying storm windows was _____.

Probe: *What other reasons led you to buy storm windows?*

Probe: *What led you to buy storm windows rather than replacement windows?*

Probe: Do you plan to buy additional storm windows in the future? If yes...For which areas of the house or business?

How long had you been considering storm windows before buying them?

How did you decide on the model of storm windows that you ultimately purchased? Did you decide at the store shelf – or prior to visiting the store?

Probe: *What research, if any, did you do before buying storm windows?*

Probe: *Did you consider multiple window brands or models?*

What help, if any, did receive from a salesperson when shopping for windows?

Probe: *If “yes”....tell me more about what you learned from the salesperson.*

Were you aware that you purchased a more energy-efficient type of storm windows?

If customer answers “yes”...Why did you choose “Low-E” storm windows?

In the survey you filled out, you indicated that you were aware Efficiency Vermont had discounted the price of the Low-E storm windows. How did you find out about this discount?

Probe: *Did you see the Smart Choice sticker on the product or display itself?*

Probe: *Do you recall seeing any Smart Choice or Efficiency Vermont signage in-store?*

Probe: *Did a salesperson mention the discount?*

Have the storm windows already been installed?

If “yes”...In your survey, you mentioned that _____ would install the windows.

Probe: Why did you choose this route? When did you install them (month/day)?

Probe: How easy or difficult did you (or your installer) find the installation to be?

How satisfied are you with the storm windows you recently purchased? Please tell me more...

What changes, if any, have you noticed in your home as a result of the new windows?

Probe: Have you discovered any benefits or problems you didn't expect when you purchased your storm windows?

Have you made any other energy efficiency improvements in the last 2 years? **If “yes”**...What were they? Approximately when did you complete each?

Probe: Insulation, air-sealing, new doors, new heating system.

Do you have any plans to make any other energy efficient improvements in the next 2 years? **If “yes”**... What are they?

What else, if anything, would you like to add?

Thank you very much for your time today. Your feedback is very helpful. I'll be sending you a gift certificate via email to Amazon.com within the next week.

Appendix C: Blog Post

<https://www.efficiencyvermont.com/blog/blog/2015/09/16/could-new-storm-windows-save-you-money-this-fall>

Could New Storm Windows Save You Money This Fall?

Wednesday Sep 16, 2015

Old, drafty windows are a common frustration among Vermonters. They are cold in the winter and let heat into your home in the summer. Leaky windows make it very difficult to control the temperature in your home to keep it comfortable and they can also have a negative impact on your energy bills.

[According to the U.S. Department of Energy, leaky windows can account for 10% to 25% of your heating bill by letting heat out.](#)

Many homeowners assume that their only recourse for drafty, inefficient windows is to replace them with expensive, brand new windows. But a full window replacement can be very pricey, [and it usually isn't the most cost-effective option for reducing energy bills.](#) Some low-cost and relatively easy ways to reduce air leakage in your home include caulking and weather stripping around your windows. A more effective option that costs a fraction of the cost of a full window replacement is to add storm windows to your existing windows.

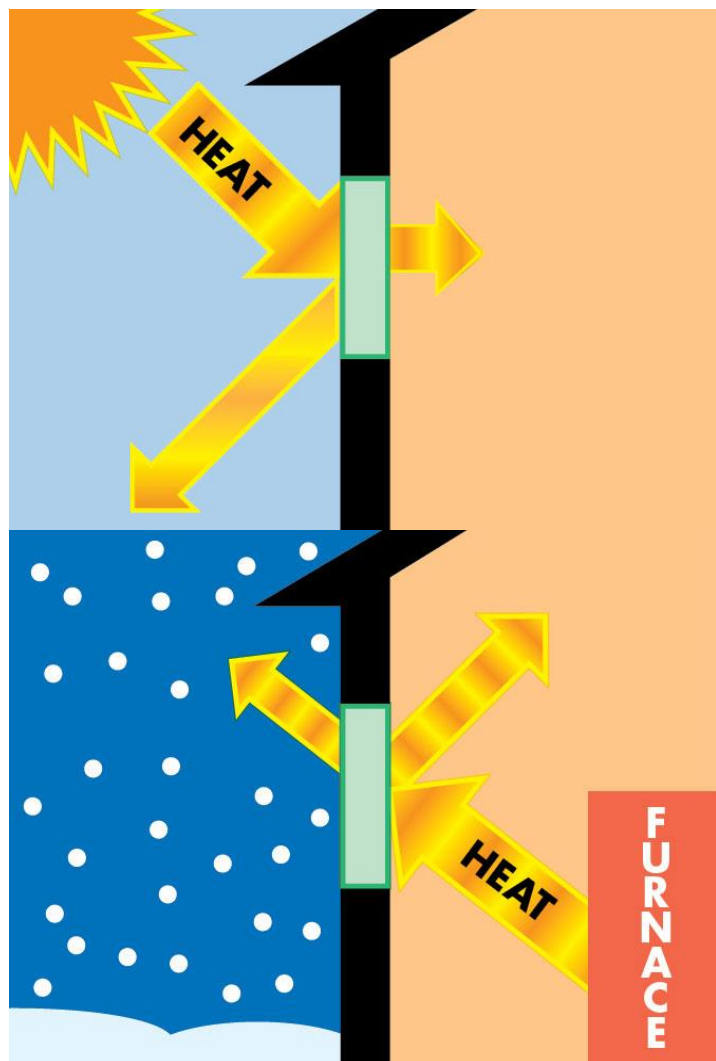


Storm windows are easy to install and do not require any special skills. In most cases installation can be a DIY project, taking less than 30 minutes per window to install. Photo courtesy of Larson Manufacturing Company

The Low-E Option

Low emissivity (Low-E) storm windows are a smart choice for upgrading your existing inefficient windows. They reduce the flow of outside air into your home, and the airspace between the storm

windows and your existing windows acts as an added insulation layer. Low-E storm windows are coated with an ultra-thin, virtually invisible layer of metal that reflects heat back to its source. So on a cold winter day the storm windows reflect the heat from your home's heating system back into the house, helping to keep it warmer and reduce your energy costs. The coating on Low-E storm windows has little impact on lighting levels and it helps to reduce ultraviolet ray damage that can cause your window treatments, floors, or furniture to fade.



Low-E storm windows are designed to redirect heat back towards the source, keeping your home cooler in the summer and warmer in the winter. Images courtesy of Larson Manufacturing Company

Low-E storm windows are easy to install and for a limited time cost as little as \$39 per window, whereas an ENERGY STAR® rated full window replacement starts at about \$120 per window, plus professional installation. Last month Efficiency Vermont launched a pilot promotion offering instant savings on qualifying Low-E storm windows purchased at Home Depot stores in Bennington, Rutland, and Williston and at Lowe's stores in Essex and South Burlington. With this instant discount many Low-E storm windows are reduced to the same price as comparable storm windows containing less efficient

standard, uncoated glass. This offer is valid while supplies last and there is a limit of 15 Low-E storm windows per Vermont electric utility account.

Once this pilot promotion has concluded we will evaluate how effective it was and we will consider offering a longer term discount on Low-E storm windows with additional retail partners, so stay tuned for updates. Do you have window woes? Have you considered Low-E storm windows? Let us know in the comments below!