

Residential Windows

ENERGY STAR® Residential Windows Program Northwest Energy Efficiency Alliance

Editors Note: Residential space heating clearly comprises the major share of residential natural gas use. Homeowners can achieve significant energy savings by installing energy-efficient windows, which greatly reduce heat loss through the building envelope.

In our search for programs that exemplify best practices, we found no current examples of programs that promote adoption of energy-efficient windows to achieve natural gas savings that fit our criteria for “best practices.” The ENERGY STAR® Residential Windows Program offered by the Northwest Energy Efficiency Alliance (the “Alliance”) for the period 1998–2001 was the best example of a windows program that we found. The fact that the program no longer exists signals the success it achieved in transforming the residential windows market in the Northwest. The program was designed with a clear intent to end after it achieved its objectives. The success of this program provides valuable information on effective approaches for transforming residential windows markets.

The program as offered by the Alliance targeted energy savings in predominantly electrically heated homes, a situation somewhat unique to the Northwest with its predominance of low-cost hydropower. Natural gas also is used as a home heating fuel in the Northwest, and its use is growing rapidly. Because there were no screening or eligibility requirements for home heating fuel type, the program clearly resulted in natural gas savings. However, because of the Alliance’s funding structure and program focus, there was no explicit targeting or tracking of natural gas savings attributable to the program.

After this program ended in 2001, promotion of ENERGY STAR® windows has continued under the broader envelope of the Alliance’s ENERGY STAR® Home Products Program. The Alliance has found that because of the success of the initial ENERGY STAR® Windows Program, a high market share of such products has been maintained without a specific program and marketing for windows. Such products clearly have become a standard for windows markets in the Northwest.

The primary contractor for the program, the Westwall Group, has worked on smaller scale and pilot programs in other states, including Massachusetts and California, but none as extensive as this one for the Alliance. Markets in other areas of the country, such as the Midwest and Northeast where natural gas heating is much more prevalent, are prime candidates for similar regional programs that target window manufacturers. For more information about these types of programs, contact Gary Curtis of the Westwall Group, (503)587-8528, gary@westwallgroup.com. The profile below gives contact information for John Jennings, the Alliance’s Project Coordinator for this program.

PROGRAM OVERVIEW

The Northwest Energy Efficiency Alliance's ENERGY STAR® Residential Windows Program targeted new and replacement manufactured residential windows in Oregon, Washington, Idaho, and Montana.

This market transformation project began in 1998 and ran through June 2001. The strategy was to build product image and brand association to increase the sales of high-efficiency residential windows (U-value less than 0.35 Btu/hour-SF-F). The goal was to make ENERGY STAR® windows the market norm by achieving a 54% market share by the end of 2001, up from an initial market share of 12%. The project worked with manufacturers to improve construction techniques and increase supply as well as increase consumer demand for windows that exceed state energy codes in Oregon, Washington, Idaho, and Montana. Activities included promotional initiatives, marketing incentives for manufacturers, sales training and materials for retailers, and technical assistance for volume homebuilders.

The Alliance initially contracted with the Oregon Office of Energy (OOE), which subcontracted with D&R International. Due to key OOE personnel moving to D&R, the contract moved wholly over to D&R International. The Alliance operated as overall contract manager while D&R staff worked with manufacturers, retailers, and marketing support entities. Little utility involvement occurred. No direct utility incentives were provided. The key D&R staff have now moved on to West Wall Group and are operating a Commercial Windows Initiative for the Alliance.

PROGRAM PERFORMANCE

Specific progress milestones that were achieved included:

- Cooperation from a majority of window manufacturers in the Northwest region in terms of significant cost-sharing of marketing. Nearly \$1 million in cost-share was achieved.
- Increased awareness of ENERGY STAR® fenestration products and their benefits.
- Increased market share of ENERGY STAR® fenestration products in all four states—achieved 66% by the end of 2000, 70% by the end of 2001, and 75% by mid-2002. Many manufacturers now produce 100% ENERGY STAR windows in their Northwest plants.

The following quotes are from an independent evaluation conducted by Quantec Consulting: “The Northwest ENERGY STAR Windows Project has been a great success. The Project met and exceeded (its) goals. Project highlights included:

- *ENERGY STAR windows have achieved high market penetration.*
- *The Northwest had high ENERGY STAR penetration relative to rest of nation.* As of 2001, the national average of ENERGY STAR windows was 25%. By region, the Midwest has 30% penetration, the Northeast with 35%, California with 30%, and Florida and Texas far behind with less than 2% penetration.
- *Market penetration is increasing and will likely continue to increase.* Many sources agree that market penetration will increase in the future. This is likely to continue due to changes in manufacturing processes that are producing more energy-efficient windows.

Further, even without additional funding from Alliance, about 40% of dealers say they will continue to promote ENERGY STAR window products.

- *Cost is becoming less of an issue.* The estimated price premium of energy-efficient windows above standard windows is between 5–10%. Delphi study experts predict that most efficiency features costs will fall. Additionally, the sheer production focus by manufacturers converting to 100% production of ENERGY STAR windows will serve to create economies of scale and drive down incremental prices. Yet, for states such as Oregon where code and ENERGY STAR criteria are very close, there may be almost no extra cost for the windows.
- *ENERGY STAR windows are ‘worth the extra cost.’* The majority of window retailers and wholesalers/distributors say energy-efficient windows are a good value to their customers. Three-quarters of builders say that energy-efficient windows save their customers money through lowering energy costs. The overwhelming majority of salespeople in mystery-shopped stores mentioned that they believe energy-efficient windows to be worth the extra cost.
- *ENERGY STAR windows are very available.*
- *High customer demand.* Over half of builders and retailers reported that consumers have high interest in efficient fenestration products.”

From 1998 to the end of 2001, the project resulted in installed windows that will save 78 million kWh/year, and by 2010 it is estimated that 400 million kWh will be saved each year for a window life of 20 years (48 average MW). The program has an excellent regional cost-effectiveness with a benefit-to-cost ratio of 2.8, including all regional costs (Alliance, consumer, local utility, and others) and all electricity and gas savings.

LESSONS LEARNED

Two program features helped assure program success. First, early in the program’s development, the Alliance showed a willingness to be flexible on the performance criteria of the windows. Prior to involvement with ENERGY STAR®, an initial project design aimed for a U-value of 0.30. However, in order to capture a larger market share, the objective of depth of savings per window was exchanged for the objective of achieving a larger market share for windows with slightly lower thermal performance. The program achieved a larger market share by bringing in a national program name, ENERGY STAR®. This also made it easier for manufacturers to comply and join the program.

Another key program design element was its focus on helping manufacturers produce qualifying products. Some manufacturers did not have the knowledge to make changes to their designs to meet the requirement or they assumed that the changes were too expensive. The contractor worked with the manufacturers to find inexpensive and easy ways to comply, either through changes in product design or production processes, or both.

Additionally, the program evaluation attributed the success of the ENERGY STAR® Windows Program to the following primary factors:

1. The implementation flexibility of Alliance, D&R International, and implementation staff.

2. D&R International's strategy of targeting and signing "market share hungry" manufacturers to create competition for share within the market.
3. The application of creative, tailored marketing strategies for individual manufacturer partners, which increased the value of the ENERGY STAR® label to the manufacturers.
4. Relatively small incremental change in U-value in some states (from 0.40 to 0.35 or better) that did not require major plant retooling as well as manufacturer desire to keep up with code changes.
5. Focus of one very large retailer on promoting ENERGY STAR® products in general.

The specific project focusing on residential windows has ended. However, ENERGY STAR® residential windows are now integrated into the Alliance's ENERGY STAR® Home Products Program. Given the ENERGY STAR® criteria, all U.S. regions should be able to implement a similar program. The project succeeded in the most extreme climate tier of ENERGY STAR® criteria (Northern Tier). Central and Southern zones should be easier in terms of U-value changes. The Alliance is now developing a similar project in the commercial window sector.

PROGRAM AT A GLANCE

Program name: Northwest ENERGY STAR® Residential Windows

Program start date: June 1998 (end date: December 2001, now part of ENERGY STAR® Home Products program)

Program participants to date: 12 major window manufacturers with plants in the Northwest; over 300 trade allies (dealers, distributors, and builders)

Eligible population or customer segment: New residential homes and replacement windows in existing residential units

Participation rate: 75% market share as of June 2002

Annual energy savings achieved: From 1998 to the end of 2001, the program installed windows that will save 91 million kWh/year, and by 2010 it is estimated that 400 million kWh will be saved each year. The program was open for homes heated by natural gas, but savings data for natural gas were not tracked.

Other measures of program results to date

- All major manufacturers in the Northwest participated and provided a cumulative match of more than \$995,000 in marketing efforts over the project period.
- Five manufactured home producers joined the program, representing about 40% of the region's manufactured home production.
- Over 300 retailers (almost all big box and 30% of the independents) and builders operated as ENERGY STAR® partners.

Budget: Total budget (1998–2001): \$1,802,405; there were no direct utility incentives or charges to consumers other than normal product price.

Funding source: Funds originate from public and investor-owned utilities in the Northwest.

Best person to contact for information about the program

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- Web page: Program has ended; NEEA's site is <http://www.nwalliance.org>.