Northwest Manufactured Homes: A Key Market for ENERGY STAR®[1] Products

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ABSTRACT

ENERGY STAR is a nation-wide energy-efficiency program sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy to help consumers identify energy-efficient and resource-friendly products through product certification and labeling. In 1995, DOE chose the Northwest manufactured housing sector as the venue to launch a ENERGY STAR pilot program to increase the market introduction and market penetration of energy-efficient appliances including refrigerators, dishwashers, clothes washers, and lighting fixtures.

DOE chose the Northwest manufactured housing market[3] for the following reasons:

- Northwest manufactured home producers have a long history of participation in energy- efficiency programs sponsored by DOE and EPA.
- Manufactured homes comprise more than 30% of new home sales in the Northwest and nationwide.[4]
- A large number of home buyers can be reached by working with the handful of Northwest manufactured home builders.
- A successful regional program could easily be expanded nationwide because most manufactured home plants in the Northwest are owned by corporations with plants in other parts of the country.

The Pacific Northwest National Laboratory works with the Oregon Office of Energy, the Idaho Department of Water Resources, and Washington State University Energy Program to implement the program for DOE. Program staff work closely with appliance manufacturers, home producers, home retailers, and others to promote participation in the program. Participation has fluctuated with changes in program requirements but staff have learned several important lessons about market-led energy-efficiency programs that are helping the program to become successful in the region today.

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[1] The ENERGY STAR® name is a registered mark of the U.S. Environmental Protection Agency and has been licensed to the U.S. Department of Energy.

[2] The Pacific Northwest National Laboratory is a multiprogram national laboratory operated by Battelle for the U.S. Department of Energy under Contract DE-AC06-76RLO 1830.

[3] Manufactured homes are defined as transported structures that are built on a permanent chassis and are regulated by the U.S. Department of Housing and Urban Development (HUD). The HUD code is preemptive so HUD-code housing is not subject to local or state building codes (76 FR 13590).

[4] Personal communication with Don Miner, Oregon Manufactured Housing Association, March 16, 1998.

Introduction

New, highly energy-efficient appliances face a number of barriers in the marketplace: high first cost, lack of service infrastructure, quality and reliability concerns, low product availability, and lack of customer knowledge about the existence of and benefits associated with these appliances.

DOE established ENERGY STAR Partnerships to address these challenges. DOE's ENERGY STAR Partnerships Program supports numerous efforts to help speed the market introduction and increase the market penetration of highly efficient building equipment, appliances, and lighting using voluntary programs. DOE's efforts include the Appliance Program for Manufactured Homes, Emerging Technology Demonstrations, ENERGY STAR Appliances, and Volume Purchases.

The ENERGY STAR name and logo were created by the EPA to help consumers identify energy-efficient and resource-friendly products. In 1997, EPA licensed the use of the ENERGY STAR name and logo to DOE. See Figure 1 for an example of the ENERGY STAR logo. DOE and EPA conduct numerous ENERGY STAR programs to certify and label a wide range of products, including major appliances, heating and cooling equipment, windows, lighting fixtures and bulbs, TVs and VCRs, office equipment, and homes.

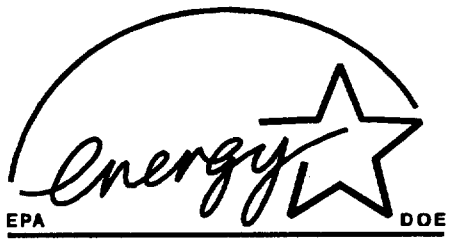

Figure 1. ENERGY STAR Logo

Homebuilders (of site-built and manufactured homes) typically offer appliances that barely meet the minimum level of efficiency required by law (Sandahl et al. 1996). DOE's ENERGY STAR Appliance Program for Manufactured Homes is working with the home building industry to make highly efficient refrigerators, dishwashers, clothes washers, and lighting more easily available to home buyers. ENERGY STAR manufactured housing program works closely with the ENERGY STAR Appliances program for retailers, which promotes these products in retail settings through partnerships with major national appliance retailers and independent retailers, appliance manufacturers, energy utilities, manufactured home producers, the Federal Trade Commission, and the EPA. That program is managed by D&R International for DOE and involves consumer education and labeling of high-efficiency appliances.

This paper provides an overview of the ENERGY STAR Appliance Program for Manufactured Homes and how it has successfully engaged market forces to promote the development and market penetration of energy- and resource-efficient appliances in the Northwest manufactured home market. This paper

- Shows why the Northwest manufactured housing market has been an ideal venue for launching the ENERGY STAR Appliance program.
- Describes program elements, requirements, and benefits for partners.
- Discusses how the program design evolved as the team worked with and learned from industry partners.

- Provides a detailed list of lessons learned that could be applied to other energy-efficiency programs.
- Brings readers up to date on program accomplishments.

Northwest Manufactured Housing Industry

Manufactured homes represent a significant share of the U.S. housing market[1] In 1997, 30% of all single-family homes sold in the United States were manufactured homes (MHI 1998). Last year, the Northwest reflected the national average with manufactured homes comprising more than 30% of all new home sales. Manufactured homes are built by less than 20 companies in the Northwest, compared to the hundreds of Northwest builders constructing site-built homes. By working with the relatively small number of manufactured home producers, DOE can influence thousands of homebuyers each year. For example, in 1996 more than 15,000 new manufactured homes were sold in the Northwest.

Since 1983, the Bonneville Power Administration and Northwest investor-owned utilities have spent about $120 million on manufactured housing efficiency programs including incentives to home manufacturers, promotional campaigns, and research on energy-efficient construction. These efforts involved the participation of a wide variety of stakeholders including manufacturers, state energy offices, and the U.S. DOE (Gilbertson et al. 1993). At its peak in 1992, the region's Manufactured Housing Acquisition Program (MAP) had the participation of all 18 Northwest manufactured home builders, and every new manufactured home produced in the region was built to the MAP strict envelope conservation standards (Lee et al. 1995). These standards were among the highest in the country for any housing type. They were 57% more efficient than the federal manufactured home standards in effect at the time and saved about 4,700 kWh annually for each new home (IEE 1996). Although the HUD standard was upgraded in 1994, homes built to the MAP requirements are still at least 32% more efficient.

MAP, with its $1,500-per-home utility incentives, ended in 1994; however, much of the industry continues to comply with the voluntary construction guidelines. Approximately 50 to 60% of all new manufactured homes produced in the Northwest still meet the standards of the voluntary Super Good Cents building envelope program, a follow-up program with similar requirements to MAP.

The Northwest manufactured housing market is unique in the United States for several reasons. The typical manufactured home in the Northwest tends to be a more upper-end product than is sited in other parts of the country. In 1996, the average price for a new manufactured home sited in Oregon, Washington, or Idaho was $50,100. The average price for a new manufactured home in the nation as a whole was $38,400 (see Table 1). Northwest manufactured home buyers purchase far more double- and triple-section homes than single-section homes. Multi-section homes make up 95% of manufactured home sales in Oregon, 93% of manufactured home sales in Washington, and 79% of manufactured home sales in Idaho, while they comprise only 52% of manufactured home sales nationwide (MHI 1998) (see Table 2).

[1] Manufactured homes are defined as transported structures that are built on a permanent chassis and are regulated by the U.S. Department of Housing and Urban Development (HUD). The HUD code is preemptive so HUD-code housing is not subject to local or state building codes (76 FR 13590).

Table 1. Average Sale Price of New Manufactured Homes in the Northwest in 1996 Compared to the U.S. Average Sale Price (MHI 1998)

Area	Average Sale Price of Home
WA	$51,400
OR	$50,700
ID	$48,200
U.S. Total	$38,400

Table 2. Comparison of Single-Section and Multi-Section Manufactured Home Shipments in the Northwest to U.S. Average for Single- and Multi-Section Home Shipments in 1996 (MHI 1998)

Area	Single-Section Homes	Multi-Section Homes	Total Home Shipments	Single-Section Homes as Percent of Total Shipments
WA	448	5,809	6,257	7%
OR	315	6,169	6,484	5%
ID	574	2,061	2,635	21%
U.S.	173,674	189,737	363,411	47.8%

According to a study of appliances installed in manufactured homes sited in Washington and Oregon from 1988 to 1994, efficiency levels of appliances were close to the minimum level allowed by law (Sandahl et al. 1996). This study found that the efficiency levels of appliances installed in manufactured homes increased only when the national appliance standards for that appliance increased. Figure 2 presents the market share of appliances as a percentage of production by manufacturers in Oregon and Washington.

e-Rated Appliance Program

In 1995, the DOE-funded Pacific Northwest National Laboratory (PNNL) and the Oregon Office of Energy teamed to develop and launch an energy-efficient appliance program in Oregon. This program was called the *e*-Rated Appliance Program and was a partnership between DOE, the Oregon Office of Energy, and interested manufactured home producers and home retailers in Oregon. Appliances featured in the program included high-performance dishwashers, clothes washers, and refrigerators. In 1996, the Washington State University Energy Program and the Idaho Department of Water Resources were added as partners to implement the program in Washington and Idaho.

Because the *e*-Rated program specifications for energy-efficiency were very high, only a handful of expensive foreign appliance brands qualified. Typically, home manufacturers wanting to participate in the program had to find a new appliance source because their current suppliers did not carry any models that met the program efficiency requirements.

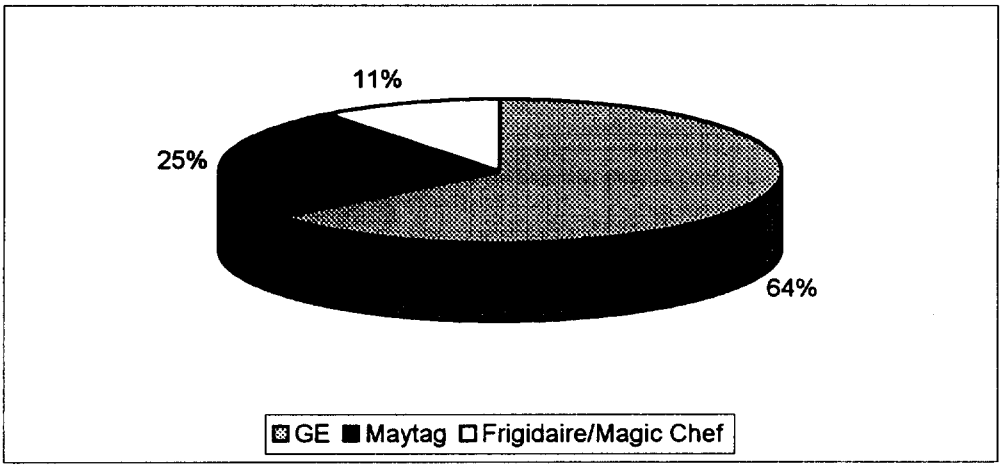

Figure 2: Appliance Brands Installed by Manufacturers (as a percentage of production by manufacturers who responded to our survey)

Participating home manufacturers were each asked to identify three home retailers to pilot the appliance program. These retailers were generally those with strong Super Good Cents sales. Sales staff at each participating retailer were provided sales training and were encouraged to display the appliances in a showroom setting. At least one sales event was held at each retailer. Program staff attended home shows and promoted program and industry partners. Northwest utilities provided a small amount of promotional support; however, the program was designed so that success was not dependent upon the use of rebates or financial incentives. Non-energy benefits of ENERGY STAR appliances, such as superior performance, improved comfort, and convenient financing were promoted along with energy and resource efficiency benefits.

Originally five Oregon manufactured home producers agreed to participate in the *e*-Rated Appliance Program; however, all but one, Silvercrest Homes, soon withdrew their participation. A number of obstacles led to the decline in program participation:

- The appliance producers participating in the program were not accustomed to supplying the manufactured home industry and, from the home industry perspective, did not provide an adequate level of service.
- Due to utility industry restructuring, most Northwest utilities withdrew promotional support, so the promotional budget was not sufficient to build awareness among consumers.
- Consolidation in the manufactured home industry caused a number of manufacturers to avoid adding new suppliers, and some locally managed manufacturers suddenly were bound by large corporate contracts.
- Qualifying appliances were very expensive.
- Qualifying appliances were built by unfamiliar foreign manufacturers and were not available through the home manufacturer's regular appliance suppliers. Many manufacturers and retailers did not view these suppliers as a good fit for their homes.
- A 1996 slowdown in manufactured home sales caused a number of home manufacturers to focus on low-cost homes that typically would not include relatively expensive upgrade options.

Despite the challenges, about 100 *e*-Rated appliances were sold. These sales were made in Oregon through Silvercrest Homes, which offered factory installation of *e*-Rated clothes washers and dishwashers built by ASKO.

The Oregon Office of Energy supported Silvercrest Homes and its retailers by holding promotional events at retail locations. They also set up an *e*-Rated Appliance booth at Oregon Manufactured Home Shows and promotional events at retail home locations. Northwest Natural Gas also provided promotional support to the *e*-Rated Program. As of March 1998, Silvercrest still offered the *e*-Rated appliances through a few retailers.

The implementation of the *e*-Rated Appliance Program evolved over time as project staff became more familiar with the manufactured home industry's appliance needs and appliance-related home construction and home setup practices.

ENERGY STAR Appliance Program

In 1997, DOE decided to revamp the program using the ENERGY STAR name and logo. The program still focuses on refrigerators, dishwashers, and clothes washers. A new category, energy-efficient lighting, was added in 1998. The Idaho Department of Water Resources and Washington State University Energy Program continue to implement the program with Pacific Northwest National Laboratory using the ENERGY STAR name and logo in their respective states.

To participate in the ENERGY STAR Program for Manufactured Homes, home manufacturers must offer ENERGY STAR appliances and include them in their standard product literature. One manufacturer, Fleetwood of Washington, offers a package of ENERGY STAR appliances, that includes a refrigerator, dishwasher, and clothes washer. The ENERGY STAR program staff work closely with appliance manufacturers, home producers, home retailers, and others to promote participation in the program.

Appliance Specifications

ENERGY STAR efficiency levels, which are slightly less stringent than the *e*-Rated specifications, were adopted along with the ENERGY STAR program name and logo. To qualify as an ENERGY STAR appliance, a clothes washer must be at least 50% more energy efficient than required to meet the minimum federal standards for efficiency, a refrigerator must be at least 20% more efficient, and a dishwasher must be at least 13% more efficient. Table 3 lists the energy specifications for the appliances.

The 1998 ENERGY STAR lighting package requires that a builder use ENERGY STAR qualifying fixtures and lamps in three high-use places in the home: the kitchen (including the informal kitchen/dining combination areas), the exterior entryway, and in one other location of the builder's choice (such as the hallway, bathroom, bedroom, living room, or family room) (see Table 4). ENERGY STAR qualifying fixtures require fluorescent lamps that last up to 10 times as long as ordinary incandescent lamps and use one-third to one-fifth less energy.

Table 3. Energy Specifications for the ENERGY STAR Appliance Program

Appliance	ENERGY STAR Specification	Current DOE Standard
Dishwasher	- energy factor of at least 0.52 cycle/kWh These dishwashers are at least 13% more energy efficient than the U.S. DOE minimum standard and require about half as much water to operate as a typical new dishwasher. They are also extremely quiet.	1994 – energy factor = 0.46 cycles/kWh
Clothes Washers	- energy factor of at least 2.5 ft^3/kWh/cycle - water factor of no more than 11.0 gallons/ft^3/cycle These washers require only about half the energy to operate and use 17 to 25 gallons of water per load compared to the 38 to 50 gallons of water consumed by a typical new washing machine. They also require less detergent and bleach.	1994 - 1.18ft^3/kWh/cycle
Refrigerators	- at least 20% more efficient than the U.S. DOE standard One model exceeds the standard by over 40%.	1993 – varies by size and model, see 10 CFR 30.32

Table 4. ENERGY STAR Lighting Package Specification

The ENERGY STAR Lighting Package Specification includes
• Kitchen fixtures, including informal kitchen/dining combination areas • Outdoor entry-way fixture • Builder's choice: one additional fixture selected by the builder (to be placed in a high-use area such as the hallway, bathroom, bedroom, living room, or family room)

Program Partner Roles

Partners in DOE's ENERGY STAR Appliance Program for manufactured housing have the following roles.

PNNL. PNNL's role in the program, on behalf of DOE, is to act as a facilitator between interested parties and to provide support, including promotional and consumer educational materials designed to create consumer awareness. PNNL manages contracts with the Washington State University Energy Program and the Idaho Department of Water Resources, assists in recruiting new industry partners, and acts as a liaison with other DOE efforts.

States. Two state organizations are currently working with PNNL to implement the program: the Washington State University Energy Program and the Idaho Department of Water Resources. These organizations act as the lead liaisons with the manufactured housing industry in their own states to promote and coordinate the program among manufactured home producers and retailers, and utilities. These organizations implement the Super Good Cents voluntary building envelope standards program with the manufactured home producers in their respective states. Because of this activity, they are excellent resource for interfacing with the manufacturers concerning ENERGY STAR appliances. The Oregon Office of Energy continues to support high-efficiency appliance activities, but is not doing so as part of DOE's ENERGY STAR program.

Home Manufacturers. Manufactured home producers who want to participate in the program must agree to offer ENERGY STAR appliances, either as an optional upgrade or as standard appliances in the homes they sell. The manufacturers commit to incorporating ENERGY STAR appliance information into their standard product literature. No requirement is made for home retailers to stock ENERGY STAR appliances. Manufacturers can sign a Memorandum of Understanding (MOU) with DOE that allows them to use the ENERGY STAR logo to promote qualifying appliances and to familiarize their partners.

Appliance Manufacturers. As part of the ENERGY STAR program, PNNL has been working with appliance manufacturers to make ENERGY STAR appliances available to the manufactured home industry. Because the energy-efficiency requirements were relaxed and because U.S. manufacturers have since introduced additional models that meet the ENERGY STAR specifications, home manufacturers are now often able to obtain ENERGY STAR qualifying appliances from their *current* appliance suppliers. Because manufactured home producers generally do not add or switch appliance suppliers often, a commitment from appliance manufacturers to offer ENERGY STAR appliances to their manufactured home producers is very important. Some appliance manufacturers, particularly Maytag, have been especially supportive in making ENERGY STAR appliances available direct from the factory and encouraging their sales to manufactured home producers.

Lessons to Remember

From experience with the manufactured housing appliance program, in its *e*-Rated format and its current ENERGY STAR format, we have gleaned a number of important market-related *lessons to remember*. Many of these lessons are relevant to other energy-efficient appliance programs.

Clearly define what you are offering to your partners. At the start of a program, it is often hard to articulate what you will offer in terms of program support. For example, when we first started approaching manufactured home producers about the ENERGY STAR Appliance Program for manufactured homes, we had produced very little program literature. We found that we had a difficult time getting the manufacturers' attention and getting them to view what we were describing as a "real" program. When we had brochures and press releases to show them, they showed more interest. Examples of promotional support that can be offered include hosting dealer events, participating in home shows, preparing press releases, brochures, and consumer information, and providing technical support to manufacturers.

Clearly define the role of the industry partners. In addition to defining what the program offers, you must clearly define the industry partner's role. In our program, manufactured home producers must have ENERGY STAR appliances available from the factory, must provide retailers with pricing information, and must include ENERGY STAR products in standard product literature. It is a good idea to agree to these terms in writing. For example, with ENERGY STAR, an MOU was developed that program partners are encouraged, though not required, to sign to formalize the partnership between the partner and PNNL/DOE.

Identify how your program enhances your partner's business. Your partners are interested in increasing their sales and improving their bottom line. Participation in the ENERGY STAR Appliance program can help manufactured home producers and retailers differentiate their homes from the competition since not all producers offer high-performance appliances. Promotional events create visibility for retailers and bring people into the showroom, and the association with earth-friendly, energy-efficient home components can help improve a company's overall image as a good corporate citizen.

Understand the market position and corporate strategy of potential partners as it relates to energy efficiency. Some companies position themselves as efficiency leaders while others focus on minimum requirements and low initial cost. Understanding a company's market position can help you determine whether or not it is a likely program partner. Because some companies are better candidates than others, your understanding will help target resources on those companies that have the most likelihood of participating. Corporate strategies that stress environmental friendliness are also consistent with an energy-efficiency message.

Use an industry champion in as many ways as possible. Successful implementation of voluntary energy-efficiency programs often can be attributed to the involvement of an industry person who was willing to champion the project at their company. It takes time and effort to put a project in place and if you cannot get the attention of at least one person at an organization, success is unlikely.

Understand the power of different industry channel members. In addition to identifying a champion in industry and the corporate strategy of the various market participants, it is important to recognize the power structure of the industry as some participants have leverage over others. In the manufactured housing industry, large retailers are often very influential about convincing manufactured home builders to offer certain products. As retailers are the closest link to consumers, they are key in convincing manufacturers to offer ENERGY STAR appliances in homes.

Introducing changes to building practices can be problematic. Homebuilders are very sensitive to costs; therefore, anything that increases costs is a tough sell. Costs are not limited to the incremental cost of upgrading to a more efficient product. Costs can include additional time required for installation or increased inventory costs. On the other hand, anything that will reduce these costs can be used in getting the homebuilder to make a change to a more efficient product. Also, in the manufactured housing industry, introducing a product that must be installed on site during home setup is a drawback as this can lead to quality control problems.

Do not focus solely on energy savings. Remember this is not a good primary argument to use when recruiting industry members; research has shown that low energy consumption is not on the top of the list of attributes consumers are looking for in appliances. Instead, stress how a quiet, energy-efficient dishwasher will reduce noise and improve comfort in an open floor plan. Stress how they will increase usable space in utility rooms with an energy-efficient, stackable clothes washer. Show how publicity from program participation can boost the company's image.

Understand purchasing cycles for the products in question. Manufactured home corporate contracts for appliances are generally negotiated on a yearly basis. This schedule has a number of program implications. For example, manufacturers may be legally obligated to purchase from an exclusive supplier over the duration of the contract. Also, prices on ENERGY STAR products from the appliance manufacturer are generally lower if they are negotiated as part of the homebuilder's national contract. Therefore, timing is important. Don't miss out on the opportunity to help influence which products are included in a homebuilder's yearly appliance contract. Also coordinate with other programs to take advantage of other large volume purchases of energy-efficient products.

You need proven, available products for a large market impact. It is important that a variety of appliances be available from a number of suppliers so that home builders have a choice when selecting energy-efficient products to offer as part of the ENERGY STAR appliance program. Ideally, ENERGY STAR appliances will be available from a manufactured home builder's current supplier because switching or adding suppliers is generally undesirable. Also, it is important that products are proven in the marketplace. When the ENERGY STAR Appliance program began, very few domestic appliance manufacturers offered qualified products; most were expensive, unfamiliar foreign brands. The one manufactured home builder that offered ENERGY STAR appliances direct from the factory experienced delivery problems. Another builder who was interested in participating found the appliance supplier to be unreliable and eventually decided against continued participation in the program.

Program Update

In March 1998, Fleetwood of Washington, a manufactured home plant located in Woodland, Washington, began offering an ENERGY STAR appliance package including a qualifying dishwasher, refrigerator, and clothes washer built by Maytag. Fleetwood of Washington's participation was the result of months of dialogue between plant management and WSU Energy Program staff who support the ENERGY STAR program. PNNL ENERGY STAR staff held meetings with Maytag to update the appliance manufacturer on qualifying appliances and the benefits of offering these appliances to Fleetwood and other manufactured home producers. Maytag currently supplies appliances to all Fleetwood plants. Fleetwood of Washington's participation in the program was highlighted at the 1998 Salem Manufactured Home Show in Salem, Oregon, on March 3-8. An ENERGY STAR Appliance booth was set up at the home show to demonstrate the ENERGY STAR appliances offered by Fleetwood.

Home retail centers offering Fleetwood of Washington homes are located in Idaho, Washington, and Oregon. Staff are in the process of providing promotional materials and training on the benefits of ENERGY STAR appliances to home buyers.

Fleetwood of Washington is owned by Fleetwood Corporation, the largest home producer in the country. In 1995, Fleetwood built about 65,000 new homes across the United States. Fleetwood plants are also located in Idaho and Washington. Fleetwood of Washington sells the most expensive homes of

the three Northwest Fleetwood plants. At the Salem Manufactured Home Show ENERGY STAR program staff received inquiries from other Fleetwood plants who would like to find out more about the appliance package and their ability to offer the package through their retail home centers.

Marelette Homes and Redman Homes are now joining the program. Marlette Homes is a Division of Schult Homes, the oldest manufactured home builder in America, founded in 1934. Redman is a subsidiary of Champion Enterprises, which is headquartered in Auburn Hills, Michigan, and has 55 manufacturing facilities in 18 states.

Although the 1998 Salem Home Show was the first time an ENERGY STAR booth appeared at a major Northwest home show, program staff have discussed the program with industry at other home shows including the Portland Meadows Home Show in 1997, the Jerome Manufactured Homes 25th Anniversary Celebration in Jerome, Idaho, in 1997, and the Stateline Manufactured Home Show in Post Falls, Idaho, in 1998. Program staff did not want to participate in the shows with a booth until at least one manufactured home builder had agreed to join the program. ENERGY STAR appliance displays are planned for a number of locations in early 1998, including the Boise, Idaho, Home and Garden Show, and the Puyallup, Washington, Home Show.

Manufactured home builders can choose from an increasing variety of ENERGY STAR compliant products. Through the efforts of this and other DOE and EPA ENERGY STAR programs, appliances bearing the ENERGY STAR logo are showing up in Circuit City, Montgomery Wards, Home Depot, and numerous other independent retail stores. When the manufactured housing appliance program first began in 1995, no U.S. manufacturer was making a refrigerator, dishwasher, or clothes washer that met the program specifications. All of the leading U.S. appliance manufacturers now make appliance models that are efficient enough to carry the ENERGY STAR label.

The ENERGY STAR homepage (www.energystar.gov) lists over 100 models of lighting fixtures produced by more than 30 manufacturers. These lights come in a variety of shapes and types including ceiling-mounted lights; exterior lights; chandeliers; recessed lighting; wall sconces; track lighting; table, floor, and desk lamps; and architectural lighting like cove, soffit, and valance lights. There are currently no manufactured home builders offering the ENERGY STAR Lighting Package, although a few manufacturers are evaluating the use of individual fixtures, such as an outdoor fixture.

EPA and DOE are taking steps to increase public awareness of the ENERGY STAR label. Network and cable television stations in the Northwest ran several news stories about ENERGY STAR appliances in 1996 and 1997. Radio stations, magazines, and city buses in the Seattle and Portland metropolitan areas have carried public service announcements and advertisements about the benefits of energy-efficient ENERGY STAR appliances. ENERGY STAR labeled products are showing up in retail stores across the country and the logo is appearing on a variety of qualifying products – everything from computers to refrigerators to light fixtures. Consumer recognition of ENERGY STAR is growing. In a recent survey, 40% of consumers recognized the ENERGY STAR logo and associated it with energy efficiency.

Costs of ENERGY STAR appliances to builders are coming down thanks to programs like LightWise and WashWise sponsored by the Northwest Energy Efficiency Alliance (NEEA), a non-profit consortium of utilities, governments, and public-interest groups. The NEEA LightWise program offers a rebate to participating manufacturers for every ENERGY STAR qualifying compact fluorescent bulb sold. NEEA has a similar program for ENERGY STAR light fixtures. The WashWise program gives consumers a substantial rebate when they buy an ENERGY STAR clothes washer. This rebate was $75 as of March 1998.

References

Gilbertson, W., F. DiMassa, A.D. Lee, and S. Onisko. 1993. *A Road Map for Success: How Northwest Manufactured Housing Conservation Efforts Revolutionized an Industry* DOE/BP-2139. Portland, Ore. Bonneville Power Administration.

Lee, A.D., Z.T. Taylor, L.J. Sandahl, and S. Riewer. 1995. *Impact Evaluation of a Major Residential Efficiency Program: the Importance of Market Transformation.* PNL-SA-26527. Presented at the 1995 International Energy Program Evaluation Conference, Chicago, Ill., August. 23-25.

Manufactured Housing Institute (MHI). March 16, 1998. "Manufacturing Report: Current Industry Statistics" from National Conference of States on Building Codes and Standards (NCSBCS) and U.S. Department of Commerce [Online Report] Available URL:http://www.mfghome.org/members/stats/index.html.

Sandahl, L.J., J.M. Norling, T.L. Odell, and M.R. Ledbetter. 1996. *Baseline Analysis of the Energy-Efficiency Levels of Appliances Installed in Manufactured Homes in the Northwest.* Richland, Wash.: Pacific Northwest National Laboratory.