

Incorporating Energy Star[®] Products into Low Income Weatherization Programs

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ABSTRACT

Wisconsin's low-income weatherization program serves over 8,000 households per year, achieving significant energy savings. This achievement shows the potential to move existing homes toward the Zero Energy ideal in a cost effective manner without the need to start new programs. Wisconsin's Weatherization Assistance Program (WAP) is continually searching for simple, robust standards to define appropriate energy conservation measures. The federal Energy Star[®] program has proven to be an effective tool for this purpose. Wisconsin's program has established a requirement for Energy Star[®] for many equipment types, including furnaces, refrigerators, freezers, compact fluorescent light bulbs (CFLs), air conditioners, and ventilation fans. The program also requires Energy Star[®] for equipment installed primarily for health and safety reasons rather than energy savings, such as dehumidifiers, and windows. Weatherization agencies use formal competitive bidding to drive down costs of this equipment. Discussion will cover experiences with procurement and other issues with obtaining Energy Star[®] products. This paper will present data from Wisconsin's weatherization program, illustrating how the program achieved cost-effective energy savings even while specifying premium efficiency products. The program has also helped to build a stronger market for Energy Star[®] products. Wisconsin's weatherization program is an example of how to incorporate Energy Star[®] into ongoing housing or energy programs, especially those that focus on existing housing stock.

Introduction

The Low Income Weatherization Assistance Program (WAP) is designed to reduce the energy cost burden on low income households. In Wisconsin, WAP has weatherized at least 5,000 households per year since the early 1980s, and in recent years that number has grown to over 8,000. The primary program goal is to reduce occupants' utility costs, by improving the energy efficiency of the shell of the residence and reducing fossil fuel usage by systems in the home. Typical measures include furnace replacement, air sealing, and insulation.

Over the past five years, a number of WAP programs in different states have moved beyond the federal program model to address baseload electric measures, loads that operate regularly 24 hours a day, such as refrigerators. To underwrite these measures, many states including Wisconsin use other funds to supplement their federal WAP funds. These supplemental funds may be restricted to specific geographical areas, measures, household types or income ranges. However, they provide additional resources that allow more measures to be installed, and also allow flexibility in selection criteria used to decide if a specific measure should be installed.

With its stronger ability to address both shell and baseload measures, the Weatherization Assistance Program is a powerful engine for promoting energy efficiency throughout the residential sector. The amount of money spent on WAP and other low income energy programs is substantial and in many states exceeds the funds spent on general residential energy efficiency

programs. WAP's programs are statewide, and broader than some general residential programs that are limited to specific utility service territories. Also, WAP has the ability to affect many trade allies, as it involves a wide range of the contractor community as installers of measures. Wisconsin's program experience has been that WAP has an influence on market players in their non-low income work as well. Furthermore, WAP has sped the introduction of new energy efficiency technologies into the general market. Thus, WAP has a market transformation influence that goes beyond the low income sector to affect the entire residential sector.

WAP Produces Energy Cost Savings for Households: Resource Acquisition

Wisconsin's WAP program is saving a significant amount of energy. It is useful to compare WAP's progress in installing Energy Star[®] products to the achievements of energy efficiency programs for the non-low income general residential sector (Table 1). Compared to Wisconsin's Focus on Energy, WAP's savings are 9% of the electric savings, and 63% of the natural gas savings.

Table 1. Energy Savings, WAP, and Focus Residential, FY 2005

Program	Electric Savings (kWh)	Natural Gas Savings (Therms)
WAP ¹	6,690,656	1,252,992
Focus Residential	77,800,000	2,000,000

Source: DOA 2005a and DOA 2005b

WAP's achievements in terms of Energy Star[®] product units installed is surprisingly high, compared to other residential programs. Table 2 shows that WAP installed one-tenth the number of CFLs and more refrigerators than the Focus residential program influenced. WAP installed one-third the same number of furnaces as the Focus residential program. WAP is installing many more measures per job than other programs for the general residential sector. The WAP is able to address each house more comprehensively than energy efficiency programs for non-low income customers.

Table 2. Volume of Units Influenced by the Program, by Selected Measure Types, WAP, and Other Programs, FY 2005

Measure	# Measures Installed under WAP	Deemed Savings for WAP for one measure	# Measures Incentivized by Focus on Energy Residential	Deemed Savings for Focus for one measure
CFLs	121,139	51 kWh	1,104,719	51 kWh
Refrigerators	3,414	728 kWh	2,662	66 kWh
Freezers	743	728 kWh	2	66 kWh
Furnaces	2,878	156 therms	6,947	20 therms*
Boilers	217	98 therms*	278	98 therms

* Only 1/3 of boilers installed were Energy Star[®], others had lower deemed savings than this. All Focus furnaces installed included ECMs and had electric savings that are not stated here.

¹ WAP energy savings calculated on 8,032 households weatherized, using per-household savings of 833 kWh and 156 therms (based on April 2001-November 2003 work) (DOA 2004).

History of How (and Why) Wisconsin's WAP Adopted Energy Star[®]

Several factors influenced the decision to adopt Energy Star[®] requirements for WAP measures in Wisconsin. One of the main drivers in Wisconsin was a need for more consistency in specifying and procuring products and services by WAP agencies.

In the past in Wisconsin, WAP operated in parallel with similar utility-sponsored low income programs. As a new Public Benefits statute began to be implemented, utilities surrendered their low income energy programs and redirected their earmarked funding for this to the statewide Public Benefits fund. Funding for low income programs was centralized into the existing WAP run by the state. WAP grantee agencies began receiving increased funding for their service areas. With greater funding levels came larger procurements that triggered more formalized procurement requirements. For example, state rules required contracts over \$25,000 to go through a formal sealed bid process. Some WAP agencies were having difficulty structuring their bid requests and evaluating vendor bids in order to get reasonable deals. The Division of Energy helped the WAP agencies to improve and standardize their procurement policies. Wisconsin's Division of Energy, with the support of state purchasing agents, launched a process to help all the agencies do this.

The Division of Energy developed a request-for-bid template, rolled it out in November 2002, and did training for all the WAP agencies. Agencies signed one year contracts with vendors, with the option of one year renewals. Agencies are now entering the third bidding cycle, and the process has worked well. Using a statewide standardized procurement process and standard technical specifications was a dramatic change for the small, independent agencies that had been implementing WAP for decades. This change took place when agencies were also ramping up capacity. The process was less flexible than before, and required a well-written request for bid (RFB) with all requirements explicitly specified. Requirements had to be technically or administratively justifiable for the running of the program. Some criteria agencies had been using, such as requirements for years of experience by a vendor, were not justifiable. In the past, some agencies had awarded bids after factoring in their experience with certain vendors, judgment on quality of the work of these vendors, etc. Furthermore, in the past agencies had often made an effort to spread the work around to various vendors. Established relationships between agencies and vendors were upset by this new formal system that did not allow these factors to enter into the decision process. Now awards were made strictly on the basis of low bid, of those vendors who could meet all stated requirements.

One effect of the new system was that the new formalized process tended to make awards to just a few vendors. This meant that one vendor got all the business, and other vendors have no stake in the program. In the earlier era of parallel utility and WAP programs, a much wider array of contractors was involved in low income programs. Some vendors shut out of WAP were unhappy with the new system. This was a particular problem in the urbanized part of the state with most of the activity.

Federal procurement rules required the agencies to do outreach for affirmative action to small, minority and women-owned firms. Agencies were supposed to make every effort to give these firms the opportunity to compete for business. There was concern that these small and minority vendors would be shut out of the process because they could not handle the volume of business of the local WAP agency. A solution to this problem was found. The RFB was written to explicitly ask every bidder to respond with the capacity of work it would be able to handle. Following federal and state minority business rules, the agency was able to accept bids 5%

higher from minority vendors. By making awards to several vendors for the different volumes of work, several vendors won pieces of the award. This also allowed these agencies to spread the work around.

A modified form of this solution was used in rural areas, that had a different problem. In those areas, WAP work was low volume and less lucrative than private sector work. Sometimes a vendor would win the contract but not follow through on the work. Agencies had challenges in the area of contract enforcement. Agencies needed to have several vendors on the contract to ensure someone would do the work. Using a process similar to the one described above, these agencies followed bidding procedures but made several awards on the contract. This gave the agency several available vendors to do the work, even if one did not follow through and dropped out of the program.

Agencies were coping with two changes at once: the increased funding and the change to more formal standardized procurement. Agencies needed to turn to new suppliers for new product types. In addition to bidding for HVAC installations, agencies now are also bidding for refrigerators and CFLs, in addition to insulation, sealants, and other materials. One approach that worked well is the “market basket” RFB. If a range of products is typically carried by one supplier (such as CFLs and spray foam), the agency will specify a list of different products they need, with quantities for each product. Vendors will respond with a bid on this “market basket.” Using the formal bid system, the agencies will evaluate these market basket responses, and choose the lowest responsive bid, and get the best deal for the various products they need. Another issue to be dealt with through the bidding process is whether the agency handles its own inventory, or the vendor supplies the items periodically at various locations, or through shipping. The system is still evolving and improving each year. Lessons learned are applied to the next bid process.

Energy Star[®] is the Answer for Technical Specifications

During this process, it became clear that agencies had slight differences in their procurement practices. While Wisconsin’s Weatherization manual had a standard statewide technical specifications for products, the interpretation of these standards differed among agencies. There was a need for uniformity in interpreting technical specifications. For example, some agencies wanted to require expanded warranties on the furnaces they purchased. On the other hand, there was a need to be good stewards of public funds. The state sought to balance the pursuit of high quality and energy efficient products with the risk of incurring unjustifiably large costs. Energy Star[®] was a good solution. To implement Energy Star[®] as a technical specification, the RFB boilerplate was altered to include the qualifier for selected measures: “Must be Energy Star[®] qualified” (Home Energy Plus 2006).

Specifying Energy Star[®] promotes the goals of the weatherization program. The alternative to requiring Energy Star[®] generally is to use federal minimum standards as the requirement. Some states do this. This does not promote energy efficiency. The product that just meets the federal minimum efficiency standard is the worst energy performer that can legally be manufactured. This saddles the client with higher operating costs for the lifetime of the equipment, which runs counter to the WAP goal of trying to reduce energy burdens for the client households.

Over time Wisconsin’s WAP has established new requirements for Energy Star[®] for various equipment types. Wisconsin’s Division of Energy has worked with the state’s 22

weatherization operators to assist them in implementing these new requirements. The change was an adjustment. For example, agencies had to change all their documents from referring to the AFUE of a furnace to mentioning Energy Star®. Communication with vendors had to change as well. Availability of Energy Star® products has been a significant concern for some operators. With more formal procurement policies coming into place, agencies wanted up-front assurance that local contractors would find sufficient models available to meet their specifications, and that these models were cost-competitive with standard models.

Higher price is another concern of some. Limited choices is a third concern. Energy Star® has worked well in light of these concerns. One objection by agencies has been the additional hassle of requiring Energy Star® for products like CFLs where most models are assumed to meet Energy Star®. The Division assisted these operators in understanding the Energy Star® program, identifying qualifying models (listed by brand and model number on the web site), and finding distributors that carry these models. Other questions arose, such as identifying Energy Star® furnaces that also qualify for certain mobile home certifications, or identifying Energy Star® products that meet certain size, weight, or other guidelines.

In Wisconsin, the result of the formalized bidding and standardization around the Energy Star® requirement has been lower prices for Energy Star® products. Also, Energy Star® facilitates a more transparent and fair process for choosing vendors. It creates a higher energy efficiency level of competition for the Weatherization agencies' vendors and it motivates them to meet higher energy performance requirements in order to obtain this valuable block of business each year.

WAP Measures Review Process

Another way that Wisconsin's WAP has established Energy Star® as a policy in its program is through its measures review process. The measures review process is a technology monitoring effort to determine what measures will be installed through the program. It is also the screening test to make sure that new energy measures in the weatherization program meet cost effectiveness standards. Measures installed for primarily health and safety reasons (such as dehumidifiers) do not need to pass a cost effectiveness test. Out of measures review, the resulting decisions are incorporated into the formal program policy, updated every year or so. The formal policies are described in the Wisconsin Weatherization Field Guide (DOA 2005b). Through this process, over time Wisconsin's WAP has established Energy Star® as a minimum requirement for many different product types.

Through the measures review process, Wisconsin's WAP staff identify technologies of interest and contract with a WAP grantee agency to implement a pilot program and collect data on the results of this pilot. Based on the performance of the technology, installation issues, availability, cost effectiveness, energy savings persistence, etc., the measures review committee decides whether to create a new policy with regard to this measure. In the process, of course, program staff can take a long-term view of cost-effectiveness, rather than focusing on unrealistically short payback standards. The measures review process has generated recent studies of cost effectiveness of the following measures: alternative water heaters, major mobile home measures, and ventilation.

Many considerations come into play during the measures review process. First, the standard must result in cost-effective energy savings for the resident. However, a wide variety of implementation issues are considered as well. A standard must be straightforward, since it must

be clear to staff in the field in multiple agencies. For field audit staff, evaluation of a home's existing appliances should be quick and simple, both to speed the audit process and to reduce disruption of a client household. This means substantial electrical metering is to be avoided. Supporting information needs to be readily available, and equally user-friendly. Intended replacement products must be widely available, at competitive cost. They must be simple to install properly, or amenable to objective and uncomplicated performance testing. (Monitoring staff have a goal of reviewing 10 percent of all WAP work.) Since WAP operators are in a client's private residence, operators must also have some flexibility.

As WAP began to consider more electrical conservation measures, staff participating in the measures review process sought to apply the lessons learned from past residential programs to WAP. Specifically, they were able to leverage the success of Energy Star[®] appliances by incorporating Energy Star[®] as a requirement into WAP. WAP operators were able to work with Energy Star[®] because it was a strong, established program with proven success in the residential market that had created wide availability of models at reasonable prices. Through WAP's measure review process, continuous improvement of specifications and adoption of new technologies such as Energy Star[®] proved feasible.

Audits

After several decades of program experience, Wisconsin's WAP audits only about 10% of the households with the NEAT audit. In the other 90% of cases, WAP uses a list of tested energy conservation measures. At present, there are 132 measures on this standardized list. In evaluating a residence for weatherization improvements, the auditor checks off the measures that apply. When a household goes through the Weatherization program, generally all of the auditor's checked measures are installed, with very few exceptions.

Furnace Example of How WAP has Changed the Market

The example of high efficiency condensing gas furnaces shows the role WAP can play in transforming the entire market, not just low income housing, toward energy efficiency. In the late 1980's, the Wisconsin WAP began to promote installation of what was then a new technology, the condensing 90% efficient gas furnace, but experienced significant push-back from installers. Contractors employed by the program knew they were unfamiliar with the new furnaces, had concerns about product durability, and had limited product availability. Program administrators finally required the use of only condensing furnaces. This requirement allowed many furnace installers, who were leery of installing the new technology and concerned about call backs from dissatisfied customers, to develop a comfort level in dealing with these furnaces. Because they were required to install them, contractors sought out appropriate training, established supply channels with manufacturers and distributors, and gained experience in their proper installation. An important factor was the assurance that, if problems developed, WAP would pay to replace defective equipment.

Competition for this substantial piece of the furnace installation business drove the price of installations down not only for WAP but for the general residential householders. As with electronic ballasts for commercial fluorescent lighting, there were some early failures (furnace heat exchangers in this case). The quality control required by WAP drove the manufacturers to improve the quality of their product.

It is believed by many that the WAP requirement was one of the most important forces in Wisconsin in rolling out high efficiency condensing furnaces. It established a “market door” that allowed utility programs to offer incentives for these high efficiency furnaces. Today, more than 80% of new furnaces sold in Wisconsin are Energy Star[®] high efficiency condensing furnaces (Prahl & Pigg 1998), compared with 50% in neighboring Minnesota.

Refrigerators and Freezers

Wisconsin’s WAP program has adopted a policy to replace all refrigerators manufactured before 1990. All replacements must be Energy Star[®] refrigerators. The reason for this is that pre-1990 levels are high energy consumers and near the end of their useful life.

Selection criteria for refrigerator and freezer replacement. Federal minimum efficiency standards for refrigerators went into effect in 1990. In 2006, this includes units manufactured nearly 16 years ago. The life time for first ownership is commonly considered to be approximately 20 years. Thus, units manufactured before 1990 are nearing or passed their average life expectancy.

To help identify these refrigerator replacement candidates, Wisconsin developed a database listing nearly 100,000 refrigerators and freezers. The database is available on the Internet and also as an Excel or comma-delimited file that can be loaded into a palm computer or a PC Windows based program (Refrigerator Database 2006). Program staff mandated that the database include a search tool. To use the database, the user simply enters the old refrigerator brand and model number from the nameplate. The program will display the model year along with the type of unit (automatic or manual defrost), energy rating at time of manufacture, and estimated current usage.

Audit staff find many extremely old refrigerators, too old to be included in the database. Also in some cases, the nameplate is difficult to find. Thus, several additional selection criteria have been developed to identify units manufactured before 1990 including the use of color, name plate location and material, door handle design and general appearance of the unit. In addition, to simplify measurement as a selection method, when all else fails, selection criteria for replacement have been developed for simple electrical monitoring: very short term (less than 20 seconds) measurements (power factor less than 0.75), short term (5 to 10 minutes) measurement (wattage greater than 240 watts or current more than 2.4 amps), and moderate term (approx 2 hours) measurement (kWh per hour greater than 0.15).

For the last two years, Wisconsin’s WAP has also been replacing freezers based on selection criteria that any freezer unit with a power factor of less than 0.75 can be replaced with a chest freezer unit of 15 cubic feet. This selection criteria has proven to be easy to implement and very reliable. In addition, freezers typically have a plug that is more accessible than for refrigerators where the refrigerator unit is often pushed up against the wall plug and the unit has much stuff on top making movement difficult. There are often concerns about scratching the floor.

Anticipated benefits include driving down the cost of refrigerator replacement to \$500. Replacing an existing refrigerator with an Energy Star[®] refrigerator or freezer includes purchase, installation, removal and recycling of the existing unit. The average usage of Energy Star[®] replacement units is about 500 kWh annually. With an average first purchaser use of 20 years and usage of the unit to be replaced of about 1,200 kWh annually, the savings of 700 kWh over a

20-year period is 14,000 kWh. At a cost of 10 cents per kWh this would be a savings of \$1,400 for a cost of \$500, nearly a 3 to 1 simple benefit to cost ratio.

Furnaces and Boilers

After a review of available models, the Energy Star[®] criteria was incorporated into Wisconsin's WAP requirements for natural gas and LP furnaces. Energy Star[®] was not required for oil furnaces, since there are not enough Energy Star[®]-qualified oil furnaces widely distributed across Wisconsin. (Less than 6% of furnaces in Wisconsin today are oil fired.) The program installs about 80-100 oil furnaces per year. The program requirement for oil furnaces was set at equal to or greater than 83% AFUE. WAP agencies are allowed to convert oil furnaces to LP.

After a review of the availability of energy efficient boilers, it was determined that there were not enough Energy Star[®] models available throughout Wisconsin for a competitive market. The program requirement for boilers was set at 85% AFUE. Difficulty in obtaining these units at reasonable prices resulted in the energy efficiency criteria being dropped further down to 83%. Thus, in Wisconsin's WAP, only natural gas and LP furnaces must be Energy Star[®] qualified. Other heating equipment must have an AFUE of 83% or greater. Grantees are required to model both standard and high efficiency condensing boilers with the NEAT audit. The grantees must install the boiler with the highest Savings to Investment Ratio (SIR), based on the audit modeling. If a condensing boiler is installed, it must be Energy Star[®] rated. With the greater availability of condensing boilers now, it may be time to revisit the use of Energy Star[®] as a selection criteria for boilers.

ECM Furnaces

On-going tracking by the Energy Center of Wisconsin indicates that about 20% of the gas furnaces sold in Wisconsin are ECM (Electronically Commutated Motor) units. The expanding market for ECM furnaces means that WAP can play a role similar to the one it played when high efficiency condensing furnaces first appeared on the market. WAP can help identify models prone to failure, improve installation practices, and drive the price down. WAP can generate greater competition for market share and reduce concerns related to reliability and call backs, by its involvement with ECM furnaces. In cases where the fan is used year-round, this measure may qualify as part of our baseload reduction effort. Wisconsin is considering using the Consortium for Energy Efficiency (CEE) selection criteria for low electric usage furnaces. Low electric use fans & motors could provide year-round savings since they are used for air handling during heating and air conditioning seasons, as well as ventilation during the shoulder periods.

Lighting

Lighting accounts for about 20% of the electrical usage in a typical Wisconsin household. Lighting could also be viewed as a health and safety issue in a residence with dimly lit halls or stairways and with difficult-to-reach fixtures. Currently, the Wisconsin WAP agencies may replace all the incandescent bulbs in a client's residence with Energy Star[®]-qualified CFLs if the client is agreeable. The program also allows installation of the following Energy Star[®] CFL products as replacements for incandescents or halogen torchieres: 3-way CFLs, CFL-based

torchieres, and exterior lighting. For multi-family buildings, the program also replaces exit signs. In 2005, 98% of households accepted CFLs, and over 15 CFLs were installed per household.

Using Energy Star® CFLs provides financial and quality of life benefits. In general, programs can now purchase common spiral CFLs in bulk for about \$2.50 per bulb or about 10 cents per watt. Since WAP replaces so many light bulbs in the home, annual energy savings per CFL will be lower than in programs where only high use incandescents are replaced. Assuming one 8,000-hour CFL saving 50 watts will save 400 kWh over the life of the bulb or \$40 at today's electric rates (about 10 cents per kWh), the CFL is a low-cost investment that yields great cost savings (16 to 1 simple benefit to cost ratio). The Energy Star® CFLs can also improve the quality of light in the household. Replacement of a typical incandescent bulb with a CFL at a 3 to 1 wattage reduction rather than the usual 4 to 1 watts reduction can increase the lumen output. Since the lifetime is extended from 750 hours to 8,000 hours, it also provides a more reliable light source. The use of Energy Star® as the minimum requirement for CFLs assures installation of higher quality products.

Health and Safety Measures

Windows. Windows are a high cost item and are not replaced extensively in WAP. When replacement is warranted, WAP requires Energy Star® units. The incremental cost increase for Energy Star® is low to non-existent. The installation rate has declined in recent years.

Water heaters. There is no Energy Star® criterion for water heaters. Water heaters are usually replaced only as a health and safety issue, and the program requires that replacement water heaters have an Energy Factor (EF) of 0.61 or greater for both gas and oil. Current protocol allows fuel switching for water heaters to natural gas or LP under certain conditions. Efficiency measures such as low-flow showerheads and faucet aerators are also routinely installed to improve efficiency related to water heating. In the WAP program, replacement gas water heaters must be power vented.

Central air conditioning. Wisconsin's WAP installs air conditioners only in certain circumstances, and all air conditioners installed must meet Energy Star® requirements. Central air conditioners (CAC) can be installed under WAP to replace older, inefficient units or to replace three old room air conditioners (RAC).

Dehumidifiers. Some Energy Star®-qualified dehumidifiers have been installed as a health and safety measure. This measure is not commonly implemented. The program does benefit from the growing list of Energy Star®-qualified dehumidifier manufacturers, including at least three located in Wisconsin.

Ventilation fans. Implementation of ASHRAE 62.2 has dramatically increased the incidence of added mechanical ventilation. Now the WAP program utilizes a ventilation standard as opposed to a building tightness standard building. The current installation rate is just under 40%, although pilots projected that installation rates may run as high as 80%. The cost averages about \$450 for the Energy Star® fan and a controller. The program requires that new and replacement fans be Energy Star®. In recent years, more manufacturers have offered more models of Energy Star® ventilation fans, increasing the availability and offering more choices at lower prices.

Wisconsin's state energy office and WAP may have played a role in enlisting more manufacturers by guaranteeing a certain market. The Focus on Energy program worked with one Wisconsin manufacturer to help increase the number of their Energy Star[®] models.

Why Energy Star[®]

There are many advantages to using Energy Star[®] as a base requirement for measures. First, Energy Star[®] ensures that programs are installing better-performing technology from an energy perspective. Energy Star[®] sets a goal of the top 20% of the most efficient models, but adjusts to market conditions. For example, when DOE upgraded the minimum federal minimum efficiency standards for refrigerators and freezers in 2001, Energy Star[®] established its level at 10% more efficient than the federal minimum standard. As market share grew and more consumers purchased Energy Star[®] qualifying units and as manufacturers introduced more models that met the Energy Star[®] guideline, the Energy Star[®] refrigerator standard was moved up to be 15% more efficient than the federal standard². When a program incorporates Energy Star[®] as a requirement, the burden of following energy efficient trends and market developments is reduced, as illustrated above for refrigerators. Once a program chooses Energy Star[®] as the criteria for what qualifies as an energy efficient product, this provides an assurance that the product will continue to be in the upper 20% of the most efficient models available. The national Energy Star[®] program ensures that the Energy Star[®] level is regularly moved up to adjust to technology and market developments.

Second, using Energy Star[®] simplifies product selection and increases transparency of program requirements. The Energy Star[®] program is user-friendly for suppliers. The qualifying criteria and list of qualifying products are available on publicly accessible web sites maintained by EPA and DOE. By referring to the Energy Star[®] program, local programs have no need to keep their own qualifying product lists or engage in their own testing. Instead, they can rely on the national Energy Star[®] program for this. Even product models that have been discontinued are still listed on the Energy Star[®] web site for nearly 6 months. The availability of this public data allows operators to ensure that the models being bid are true Energy Star[®]-qualified models and that the energy usage listed has been determined using a federally approved or sanctioned uniform test procedure. The national Energy Star[®] program also considers product availability when conferring the Energy Star[®] label on various products. The Energy Star[®] program strives to ensure multiple manufacturers and a range of models are available to meet Energy Star[®] requirements.

Third, using Energy Star[®] specifications facilitates fair and competitive product procurement. Energy Star[®] requirements provide a simple, uniform criteria that manufacturers, distributors, installers and service organizations all know. The use of Energy Star[®] also provides consistency by many implementers within a program. In Wisconsin 22 agencies are the local contractors implementing WAP (most are Community Action Programs). Maintaining uniformity and quality control across this many agencies can be difficult. Each individual weatherization agency bids out installation work to local contractors. Ensuring they use the same product specifications (i.e., Energy Star[®]) improves statewide program consistency. This relieves local programs from some of the burden of ensuring that their product specifications allow for competition. WAP programs using Energy Star[®] in their bid specification can drive down prices

² However, the Energy Star[®] freezer standard stayed at 10% above the federal minimum standard.

for these product as their market share increases. This consistent specification enables disparities between agencies to be identified. With Energy Star[®] bid specifications, the market can readily respond to meeting the standards.

Fourth, Energy Star[®] program standards often ensure a level of quality assurance. For example, when there were complaints that some Energy Star[®] qualified CFLs were not reliable, DOE initiated a process of testing. This testing identified CFLs that did not meet an established longevity standard. These were removed from Energy Star[®] CFL listing.

In short, federal and state initiatives have succeeded, in the public's eye, of establishing Energy Star[®] as a "brand" that helps consumers identify preferred products. Like "Campbell's Soup" or "GE", it is a brand that is transferable across products. Choosing Energy Star[®] simplifies specification and product selection. It is a single message for many different product types, including freezers, clothes washers, dishwashers, lamps, fixtures, furnaces, boilers, dehumidifiers, and air conditioners. There is just one simple message: use only Energy Star[®].

Future Directions

To enhance the cost effectiveness of these measures, Wisconsin's WAP program is studying alternative procurement options, which may include centralized state-wide bidding for products and materials, such as CFLs, and refrigerators and freezers. A study on this issue is in progress and will be final in Summer 2006.

Further data analysis could clarify where to focus future efforts. Analysis of seasonal energy use patterns of WAP households (both before and after weatherization) could further attribute savings to particular measures, particularly if households are separated by baseload measures installed. It would also be useful to compare these results to results for households that do not participate in WAP, but receive LIHEAP (federal low income household energy bill paying assistance).³ This could help clarify the free rider situation with WAP.

Memorandum of Understanding

In September 2002, EPA, DOE and HUD announced an historic agreement to promote Energy Star[®] through HUD programs. Each year, HUD programs affect approximately 5% of all housing. The new agreement identified areas where EPA, DOE and HUD would coordinate resources and approaches to expand the use of Energy Star[®]-labeled products in HUD programs. This agreement was re-affirmed in July 2005 when these agencies announced the Partnership for Home Energy Efficiency. Again, a key part of this agreement was to expand efforts to promote Energy Star[®] products through HUD programs, including low income and subsidized housing.

By embracing Energy Star[®], HUD can have a profound influence on housing in the US and make its own operations more efficient. For example, HUD pays for utility bills for public housing authorities. If HUD could incorporate Energy Star[®] into the appliance and equipment purchasing standards of public housing authorities, these large volume purchases of energy efficient products would drive down energy expenditures for housing authorities and thus reduce the long term liability of HUD.

³ The number of households that applied but were not income qualified for WAP is very small, since most households are prescreened via the WHEAP (low income bill paying assistance) program. Households that receive WHEAP are automatically included in the electronic referral lists coming to the WAP grantee.

Conclusion/Recommendations

This paper addresses an opportunity to promote energy efficiency in Weatherization Assistance Programs. Toward this end, DOE could require states to make data on their low income weatherization programs available, or DOE could assemble this data itself. DOE should encourage and consider making mandatory the replacement of older inefficient appliances such as refrigerators with Energy Star[®]-qualifying units. A simplified selection criteria would encourage additional state WAPs to participate. DOE could require Energy Star[®] for product installations that accompany low income weatherization jobs in all states. Other residential energy efficiency programs could learn from WAP's success in promoting Energy Star[®] products.

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