Spinning Toward High-Efficiency Clothes Washers: Progress and Directions of a National Market Transformation Initiative

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The residential clothes washer market is ripe for a transformation that will yield substantial energy and water savings. Utilities have an opportunity to help drive this market transformation. Resource savings as well as notable consumer benefits (e.g., improved washing and rinsing performance, reduced wear on clothing, ability to handle large items, space savings, and better accessibility) make efficient washers attractive to electric, gas, water, and waste-water utilities as a customer value enhancement and conservation tool. Furthermore, utilities can bring value to clothes washer manufacturers by lending their credibility in promoting the new technologies.

The Consortium for Energy Efficiency's (CEE) High-Efficiency Clothes Washer Initiative, first launched in 1993, encourages utilities to promote clothes washers meeting a prescribed set of energy and water efficiency specifications. Widespread adoption of common efficiency specifications sets a clear target for new product design and demonstrates utility support for efficient products in the marketplace. Utility programs offering financial incentives and/or significant, focused promotional or educational efforts are encouraged by the initiative.

After briefly reviewing the background of CEE's initiative, this paper will describe its current scope, review lessons learned and assess the initiative's impact to date. Programs which are part of the CEE initiative are briefly described. The paper also reports on CEE's efforts to recruit utility participants by stressing opportunities to deliver customer value. Finally, the initiative's next steps are described. New products due out in 1996 and thereafter set the stage for increased utility participation in the initiative.

BACKGROUND

During the late eighties and early nineties, industry observers identified clothes washers as one of the more promising opportunities for residential appliance efficiency gains (Lebot, Turiel & Rosenquist 1990; Nadel & Geller 1992; Pope & Slavin 1992). At that time, one domestic manufacturer offered an efficient, horizontal-axis washer, but reached only a very small market niche. Horizontal-axis washers were, however, the standard throughout Europe and were alleged to yield substantial reductions in water and energy use. Furthermore, these European washers achieved high spin speeds resulting in greater moisture removal in the washer thus lowering dryer energy use. Limited testing conducted by Pacific Gas and Electric (PG&E) and Ontario Hydro (Edwards & Lithgow 1991) and analysis conducted by Lawrence Berkeley National Labs (Lebot, Turiel & Rosenquist 1990) found water savings of about one-third and energy savings of about one-half relative to vertical axis washers.

Furthermore, some manufacturers claimed that high-efficiency washer designs frequently surpass typical vertical-axis designs in several performance categories providing consumers with increased value. According to the manufacturers, these washers cleaned better, rinsed better and reduced fraying and pilling relative to vertical-axis washers. Because such washers provided significant consumer benefits that might ease market acceptance in addition to substantial resource savings, they seemed to be a good candidate for a market transformation.

The estimates of the technical savings potential for a high-efficiency washer market transformation are enormous. For example, if such washers were to comprise 25 percent of the in-use stock of residential washers, assuming per unit annual savings of 400 kWh and 4,800 gallons, total annual savings would equal roughly 9 million MWh equivalent energy and 108 billion gallons of water.

The current stock share of high-efficiency washers is estimated to be between one and three percent. Market research has identified higher costs as the most significant barrier to an increased market share. Low consumer awareness of and lack of familiarity with high-efficiency washer designs also present serious market barriers. Despite these barriers, industry experts believe that given adequate supply of products a five percent market share can be achieved without significant

educational and/or promotional efforts. Product availability has been a fundamental barrier, especially since the sole major U.S. manufactured product was withdrawn from production in 1994. Higher market shares are certainly within reach, but more concerted efforts likely will be needed to help large numbers of consumers understand the benefits of choosing a high-efficiency washer.

Complementary efforts

The Consortium for Energy Efficiency's (CEE) High Efficiency Clothes Washer Initiative is one of several activities and events which have affected the development and potential market for high-efficiency washers over the past few years. In 1990, the U.S. Department of Energy (DOE) established a new efficiency standard for clothes washers under the authority of the National Appliance Energy Conservation Act (NAECA). This standard, implemented in 1994, was within easy reach of current, vertical-axis technology. Given the potential for cost-effective savings and the dominance of high-efficiency washer designs in other markets, DOE indicated that it planned to develop a more rigorous standard in 1996 (Shephard 1992). This standard, to take effect in 1999, would require appliance manufacturers to shift to horizontal-axis technology or other high-efficiency designs. (Note: The standard has since been delayed.) In addition to regulatory pressures, by the early 1990s utilities were making their interest in high-efficiency washers known to U.S. appliance manufacturers.

By 1992, a few utilities had already fielded horizontal-axis clothes washer rebate programs. In 1992, the Electric Power Research Institute (EPRI) began a partnership with Maytag to develop a new high-efficiency washer for the residential market. During this same period, many utilities were finding that the market transformation approach could have greater long-term impacts and could be less expensive than traditional rebate type programs. The successful initiation of the Super-Efficient Refrigerator Project (SERP) project, in which some twenty electric utilities pooled over $30 million to create a contest for the development of a new, highly-efficient, full-featured refrigerator (Nadel and Geller 1994), showed that consolidation of utility market leverage could increase manufacturers' interest in developing better, more efficient appliances. Thus, in 1992 the Western Utility Consortium (WUC), with support from the Northwest Appliance Efficiency Group, began developing a framework that would encourage the use of consistent efficiency specifications for washer programs across the region.

In 1993, the WUC asked the newly-formed Consortium for Energy Efficiency (CEE) to take on the clothes washer effort it had been developing. CEE was in a position to encourage WUC's framework approach on a national scale. Many interested utilities, however, were prevented from moving forward with washer programs due to the lack of performance and market data. In response to this dearth of information, a collaborative, consisting primarily of West Coast energy and water utilities and DOE and led by the City of Seattle, launched The High Efficiency Laundry Metering and Market Analysis (THELMA), an EPRI research project. This project, due for completion in 1996, was designed to explore the market transformation potential of efficient washers (Hill, Pope & Winch 1996). THELMA research results will enable several utilities to move forward with program development.

With the predominance of horizontal-axis washers in international markets, globalization of the appliance industry has increased the relevance of high-efficiency washers to U.S. manufacturers. In the last few years, U.S. manufacturers have had greater exposure to overseas markets and European manufacturers and importers have introduced several high-efficiency washers into the U.S. market. These European models have enjoyed tremendous sales growth.

Finally, domestic manufacturers have made substantial investments in efficient washer product research and development. In addition to Maytag, Frigidaire and Whirlpool began developing new, high-efficiency washers. Thus, manufacturer advances into the high-efficiency washer market have been well timed with regulatory pressure and market pull activities planned by utilities.

Why a national initiative?

In the past, programs for a specific application tended to vary widely from utility to utility. Specific products qualifying for a rebate or other promotion under one utility program often did not qualify under another. As a result, the overall impact of utilities' programs on the market for a given technology was diluted. The CEE initiative seeks to address this shortcoming. Its fundamental purpose is to leverage utility programs so that they collectively have a lasting impact on the clothes washer market greater than the sum of their individual intervention efforts. The initiative strengthens the incentive for manufacturers to develop and market efficient washers and accelerates the rate at which these washers gain market share. It seeks to meet these goals by providing a measure of consistency among current washer programs, by encouraging additional programs, and by providing clear communications between program implementers and product manufacturers.

If utilities serving a substantial percentage of the population use the common specifications suggested by CEE, they provide much more of an encouragement to manufacturers, distributors, and retailers to market high-efficiency washers than could one utility alone. For example, even the largest utility serves only a small fraction of the appliance manufac-

turers' national market. That same utility together with others participating in a national initiative may represent 20 to 30 percent of the national market.

A national initiative also makes promoting efficient washers easier for utilities. The initiative provides product and market information available to utilities that would be costly and time consuming for each utility to acquire individually. The initiative also creates an ongoing communication link which streamlines and strengthens communications between utilities and manufacturers. CEE provides utilities a central location which tracks product development and availability. At the same time, CEE tells manufacturers which utilities are planning programs to promote high-efficiency products.

Efficiency specifications

The CEE initiative was developed in 1993 with extensive input from utilities and comments received from manufacturers. Specifications were designated that accounted for energy used to heat water for washing and for operating the washer itself (energy factor), total water use (water factor), and savings from reduced drying time (remaining moisture content) (see Table 1). The specifications were structured to give manufacturers maximum flexibility, but also to encourage the most efficient designs. A specification category (category 1) was set for the best currently available equipment at the time and a higher specification category (category 2) was set at a level thought to be achievable within the next few years. Within each category, three levels (A, B, and C) were established holding washer energy use and water use constant but varying remaining moisture content. These levels within each category enable manufacturers to gain credit for further reducing energy consumption by utilizing high spin speeds to yield lower remaining moisture content. Low remaining moisture content, however, is not required.

Horizontal-axis technology is the basis for the initiative's specifications because the most efficient washers available and public analyses of potential savings in clothes washers largely rely on that technology. Nevertheless, washers using some other basic design could qualify for the initiative by meeting or exceeding its energy and water efficiency specifications.

Figure 1 shows baseline energy use and the annual energy use associated with each specification level for a household using electric water heating and drying. The baseline was determined using the 1994 DOE minimum energy factor standard (1.18 cu.ft./kWh) and industry accepted data for average water factor (13.3) and average remaining moisture content (62%) (DOE 1995).

Initial Participation

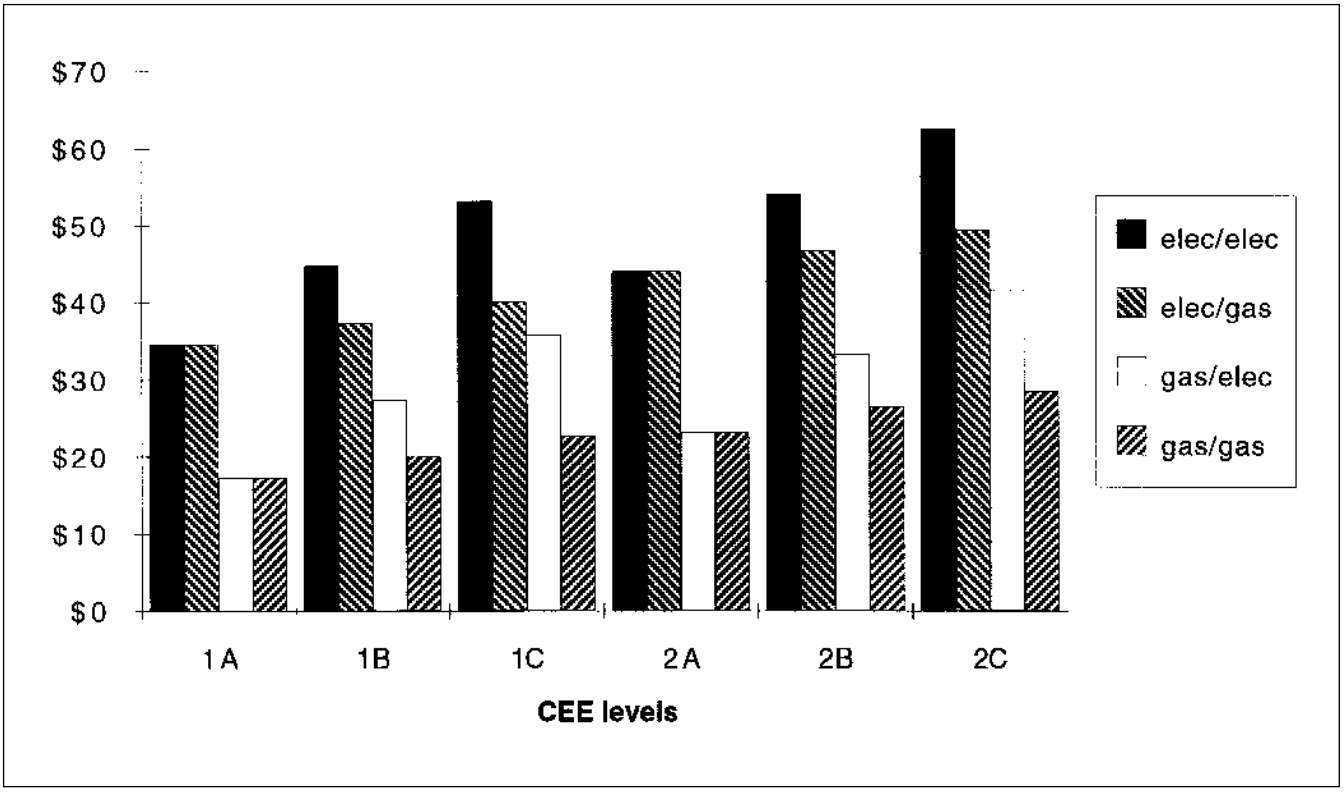
Late in 1993, CEE requested that utilities interested in participating in the initiative indicate their interest in offering incentives for efficient washers. Utilities that responded included those servicing most of California as well as utilities from New Jersey, Wisconsin, and Iowa. In addition, the City of Portland, Oregon, which was working to organize a collaborative effort that would include energy, water, and waste-water utilities as well as city government, indicated

Table 1. *CEE Washer Initiative Eligibility Categories and Their Respective Specifications*

Eligibility Category	Energy Factor	Water Factor	Remaining Moisture Content
1A	2.50 cu.ft./kWh	11.0 gal/cu.ft.	no requirement
1B	2.50	11.0	50.0%
1C	2.50	11.0	40.0%
2A	3.25	9.5	no requirement
2B	3.25	9.5	50.0%
2C	3.25	9.5	40.0%

Note: A product may qualify for a category or level by exactly meeting the identified specifications, as well as by exceeding those specifications

Figure 1. *Energy and Water Savings: all electric scenario*



that it would like to have its effort considered a part of the national initiative.

CURRENT SCOPE

Utilities participate in the CEE initiative either by offering incentives for washers meeting the initiative's specifications or by implementing a ''significant and focused'' educational or promotional effort. Initially, participants were required to offer rebates. However, in 1995, with input from utilities and manufacturers, CEE widened participation to include non-incentive based programs.

Participation

CEE initially anticipated that utilities using the levels as specifications for their own rebate programs would offer progressively higher amounts for more efficient washers, creating incentives for manufacturers to design for the higher levels. One large utility has done so and others may follow. However, a utility which offers one incentive amount is still considered a participant, as long as a threshold is at least as high as level 1A. CEE broadened the initiative to include non-incentive based programs in order to include those utilities interested in the effort, but not offering incentive-based programs. Utilities implementing strictly educational or promotional programs are free to choose any threshold for determining which washers it promotes, and CEE considers it a participant as long as a threshold is equivalent to level 1A or higher. The CEE specifications are entirely voluntary and utilities which adopt the CEE levels are free to adopt others as well.

Currently available high-efficiency washers cost from $250 to more than $1,000 more than standard, vertical-axis washers. These washers are primarily European and tend to be very high-end products. Analysis completed in 1995 based on industry data provided through the appliance industry trade group, the Association of Home Appliance Manufacturers (AHAM), indicates that North American made horizontal-axis washers meeting the highest efficiency categories of the initiative might cost approximately $200 more than comparable vertical-axis washers (DOE 1995). The cost differential between European and North American horizontal axis washers is largely accounted for by differences in manufacturing costs, shipping costs, and duties as well as added features on many European models. Given the incremental cost of high-efficiency washers over standard efficiency models, a utility financed rebate can play an important role in easing consumer acceptance of these washers.

In addition to financial incentive programs, stand-alone educational or promotional programs may be extremely useful for helping these products gain wider acceptance more rap-

idly than they otherwise would. In an era of constrained utility budgets for efficiency programs, utilities may be able to capitalize on their reputations with customers as a reliable source of energy efficiency information. Traditional approaches such as mass advertising or dedicated bill stuffers could help to build customer awareness of efficient washers. Manufacturers have confirmed that customers tend to trust their utility regarding claims for resource savings more than a product's maker. Most people buy a new washer when their old one breaks or they buy a new house. Therefore, efforts that focus on encouraging people to consider high-efficiency units once they are in the store could prove to be particularly effective. Utilities could help improve retailer and salesperson knowledge of and comfort with the technology so that customers get accurate information that improves acceptance of new washer technologies. Demonstration projects could also be helpful for educating retailers and the public at large since consumers are generally unfamiliar with efficient washers and their benefits.

The successful entrance of several relatively high-priced European models into the U.S. market shows that some consumers are willing to pay more for the additional benefits offered by efficient washers. Manufacturers and detergent makers have attested to improved washing and rinse performance (Shepherd 1995, Linard 1995). In addition, manufacturers point out that because washing action is achieved by tumbling clothes through water as opposed to an agitator, pilling and fraying are reduced. Utilities can increase customer willingness to pay a premium for a washer with better performance characteristics by providing independent corroboration of the utility bill reductions a family is likely to see. A well-constructed and carefully targeted educational or promotional campaign could influence many buyers.

Consumer savings

Figure 2 shows the expected annual savings for a customer who purchases a washer meeting each of the CEE levels for each potential fuel scenario for water heating (electric or gas) and for drying (electric or gas). Figure 2 accounts for electricity, gas, and water and sewer savings. National average prices are assumed ($0.0838/kWh, $0.603/therm, and $2.84/thousand gallons). Water and sewer savings account for about $9.50 of the category 1 savings and $14 of the category 2 savings. As can be seen from the chart, savings are clearly greatest for customers relying on electricity for water heating and drying. Moreover, for customers with electric dryers, savings increase substantially with washers that spin more moisture out of the clothes. The effect of high spin speeds is such that a category 1C washer outperforms a category 2A washer that uses less energy for water heating and operating the washer itself, but lacks a high spin speed feature.

Currently available European washers fall within category 1C, yielding about $50 per year in savings in the all electric scenario. Given the incremental costs of these washers, simple paybacks are five years and up. However, based on the DOE analysis cited above, U.S. manufacturers may not be far from introducing washers that could meet category 2C at an incremental cost of roughly $200. Based on annual savings of $62, the simple payback on such a washer would be 3.2 years for an all electric scenario. Obviously, there are many regions of the country where electricity prices far exceed the national average and regions where water prices far exceed the national average. In these regions, paybacks will be under three years. Where they overlap (e.g. New York City, California, Boston) paybacks may be shorter than two years.

Another area of cost savings for users may be in reduced detergent use. Because efficient washers use less water, less of current detergent formulations must be used to avoid too much suds. One money-saving option is to reduce detergent use by as much as two-thirds. However, a key variable in determining cleaning performance, the ratio of detergent to soil, is compromised. Detergent manufacturers maintain that many, if not most, people will elect to switch to detergents specifically designed for use in washers that use less water. Such detergents have yet to be sold widely, so changes in annual detergent costs cannot be estimated yet.

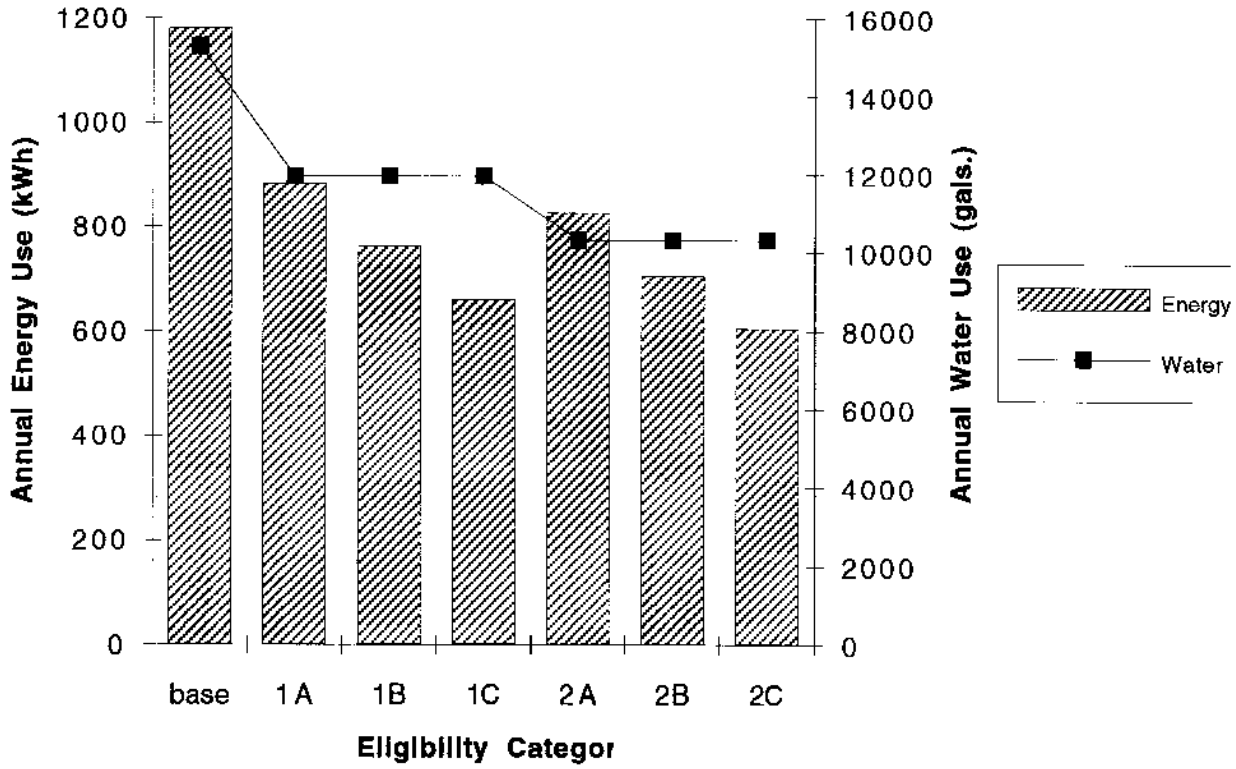
Paybacks in the neighborhood of three years and less begin to set the stage for a self-sustaining transformation of the marketplace. Quite possibly, as manufacturers increase production of these models, economies of scale and competition will lead to reduced incremental cost, improving the cost-effectiveness of high-efficiency washers. The role of utility and other programs in helping to generate the initial volumes of washers that allow manufacturers to reach economies of scale, and encourage a wide range of models will play an important role in determining the rate at which a transformation of the washer market takes place.

Current programs

As of May 1996, utilities servicing roughly 8% of U.S. customers already were implementing or planned efficient washer programs. In a program scheduled to run into the fall of 1996, PG&E offered a rebate of $150 to $225 depending on the efficiency level of the washer. In addition, three water utilities, East Bay Municipal Utility District, City of Davis, and Santa Clara County, offered an additional $75 to their customers. Other water utilities may join the PG&E-anchored program. It is anticipated that this program will continue and possibly expand over the next few years.

Manufacturers have clearly responded to the PG&E and water utility joint rebate program. One planned to make its

Figure 2. *Total annual customer savings (energy and water) at national average prices*



Note: ''elec/elec'' indicates electric water heater/electric dryer; ''elec/gas'' electric water heater/gas dryer; ''gas/elec'' gas water heater/gas dryer, and; ''gas/gas'' gas water heater/gas dryer.

new high-efficiency washer available in PG&E's service territory in advance of national distribution. In addition, manufacturers new to the market moved quickly to certify their machines with CEE in order to be eligible for the rebate.

San Diego Gas and Electric (SDG&E) offered a $100 rebate on all horizontal axis washers in a pilot program which began in 1995. This program moved beyond the pilot phase in 1996 and was scheduled to continue throughout the year. For customers of the San Diego County Water Authority, $50 of the rebate was funded by the authority and their supplier, Metropolitan Water District of Southern California. SDG&E anticipates continuing the program in 1997 and potentially switching to a tiered rebate structure.

Other rebate programs implemented in 1995 included those of the Eugene Water and Electric Board and Salem Electric, both in Oregon. Each of these programs were continued in 1996. In addition, the Sacramento Municipal Utility District and Interstate Power planned to begin rebate programs beginning mid-year.

In addition to utility programs, an Oregon program begun in 1995 targeted at appliances in new manufactured housing also uses the CEE specifications. The U.S. DOE is providing funding to the Oregon Department of Energy to encourage new manufactured home buyers to purchase high-efficiency appliances. The incremental cost is rolled into a buyer's mortgage. In addition to being able to choose a high-efficiency clothes washer, customers can buy an efficient dishwasher and refrigerator. Interestingly, one home manufacturer has redesigned its laundry room to take advantage of the space savings gained by stacking the dryer on top of front-loading, efficient washers. Programs such as this one that rely on financing as opposed to rebates may provide important opportunities to expand support for high-efficiency equipment.

In the Northwest, a major collaborative has been formed that includes electric, gas, and water utilities. Participants include Bonneville Power Administration, Puget Power, City of Seattle (electricity and water), Snohomish Public Utility District, Tacoma Public Utilities (electricity and

water), Northwest Natural Gas, and Portland Water. The Northwest program includes two components that will be selectively implemented by participants: a stand alone marketing/information campaign and, in some locations, a combined water and electric utility in-store discount and rebate.

CEE will be actively working to encourage additional utilities to run programs that would begin in 1997. CEE has set a target of having utilities serving between 20 and 30 percent of the nation's customers running programs by 1997. Utilities which have held back from implementing programs due to the lack of U.S. product availability and/or high incremental costs will soon be able to take advantage of U.S. made products.

LESSONS LEARNED

Several key lessons have been learned during the implementation of this initiative. First, an initiative intended to contribute to a long term market transformation must remain flexible, especially given the changing utility industry. This initiative was originally conceived of as a strategy for utilities to get more out of their incentive-based demand-side management (DSM) programs. For many utilities, maximizing program impact and taking a whole-market point of view remain an important motivation for participating in a national effort. Most of the current initiative participants became involved because of the market transformation opportunity.

The changing utility environment, however, has caused CEE to re-evaluate how it works to meet the objective of widespread utility promotion of efficient washers. The fundamental scope of the initiative was expanded to cover non-incentive based programs. Furthermore, CEE found that benefits other than energy conservation may prove to be the key motivators for utility participation. In an increasingly competitive industry, utilities are looking for opportunities to deliver customer services that enhance their image and foster loyalty. The performance benefits and immediate reductions in energy and water bills yielded by high-efficiency washers make them an ideal candidate for a customer value driven utility program. Moreover, an energy utility program may be a tool for providing value to key customers, such as water utilities. Increasingly, CEE has emphasized these benefits as it seeks additional utility participants for the initiative.

Below, a number of the reasons that utilities have expressed for being interested in this national effort are summarized.

- *Cut costs*—The information and program specifications provided save participating utilities resources and staff time that they otherwise would have to spend on program development. In addition to specifications for determining qualifying products, CEE provides savings estimates based on government data, coordinates communications with manufacturers, keeps utilities informed of qualifying models and other product developments, and provides basic background on the washer market. If these tasks were done by each utility separately, each would need to invest substantial staff time.

- *Serve key customers*—One potential participant noted that the local water utility is its second largest customer and at risk of switching energy providers. This utility and others see a joint washer program as a way to provide value to the water utility, an important customer. In addition, many water utilities are a branch of local or county government, another important customer.

- *Form strategic partnerships*—A local program for washers offers an opportunity to form alliances among electric, gas, water and wastewater utilities as well as local government.

- *Provide a valued service to residential customers*—Utilities may find that informing customers of a new product that meets their needs better than standard products is precisely the sort of service that they want to provide in a competitive marketplace.

- *Enhance environmental reputation*—Because washers yield water savings in addition to energy savings and will possibly use less detergent by volume, a utility can take credit for being part of an effort to promote environmentally sound products. This benefit may be particularly valuable in water-starved areas.

Among these reasons for participation, the one most frequently cited has been the partnership opportunity with water utilities. One utility which initially became involved for the market transformation value of the initiative has found that the partnerships developed with water utilities has become a key benefit of the program. Many utilities considering programs are looking for ways to involve their water utility from the start.

A second lesson of the initiative has been the need to build on market momentum and the activities of other organizations (see ''Complementary efforts'' above). Alone, the CEE initiative is unlikely to lead to a market transformation. In combination with other efforts, however, it can lead to long term market changes. As several authors have noted, a successful market transformation effort must address a range of potential barriers and a variety of approaches may be necessary such as support for research and development, demonstration projects, labeling of efficient products, and large-scale procurement (see Hastie et al. 1996, Nadel and Geller 1992, Goldstein 1992).

Finally, an initiative of this nature takes time to have a measurable impact. Typically, manufacturers need at least two years to develop and bring a new product to market. For washer manufacturers, changes in design plans, problems securing components, and other problems may have caused products to be slower in arriving to the market than had been originally expected. Similarly, it takes time for utilities to make decisions regarding new product areas and to develop new types of programs. Because of the time needed to effect a market transformation, CEE's position as an independent organization somewhat less subject to industry shifts than individual utilities has proven to be an asset. Its independence has enables CEE to maintain this initiative over several years with a changing cast of utility participants.

IMPACTS AND NEXT STEPS

As stated above, the purpose of the CEE initiative is to encourage manufacturers to develop and market high-efficiency washers and to accelerate their penetration of the market. Substantial progress has been made in reaching the first goal. In 1990, one North American manufacturer marketed a washer that met the CEE category 1 specifications. None met category 2. In 1996 or soon thereafter, three of the five major U.S. clothes washer manufacturers plan to introduce washers that meet the highest category of the CEE program. A new U.S. company has begun manufacturing horizontal-axis washers and several additional European manufacturers have begun exporting washers to North America. In April 1995, five manufacturers joined CEE in announcing the growing availability of efficient washers. In June, four manufacturers presented their new products at a meeting of CEE's members. Manufacturers reacted favorably to the CEE initiative, indicating that it was one of the key factors influencing their decisions regarding efficient washer products. In part due to CEE's effort, the critical hurdle of adequate product availability at an acceptable incremental cost appears to be on the verge of being addressed.

Importantly, washers meeting the CEE initiative specifications are not simply standard technology with better components. Rather, manufacturing infrastructure must change to accommodate fundamental platform shifts requiring very large capital investments on the part of manufacturers (Hastie et al. 1995, AESP 1996). This investment and consumers' appreciation of certain product performance characteristics indicate that high-efficiency washers' share of the market is likely to grow regardless of the level of utility support. The success of the European products provides an early indication of this change. The introduction of lower cost U.S. made products should create the opportunity for the high-efficiency washer market to take off. Utility programs should be able to accelerate this climb.

Washers meeting CEE specifications accounted for between one and three percent of the residential washer stock in 1995. All told, utility programs rebated about 1,000 washers in 1995, a year in which no American washers were manufactured which met CEE specifications. Between now and 2010, the majority of the residential washer stock will turn over. At least two paths for achieving stock penetration by then are possible. First, the U.S. DOE may require that all new washers sold after a certain date meet stringent efficiency requirements. Provided such a requirement went into effect by early in the next century, stock of efficient washers would easily exceed 25 percent. In the absence of standards, high-efficiency washers may still be able to carve out a substantial share of the stock by 2010. If, as many manufacturers claim, efficient washers are simply a better way to do wash, and incremental costs are reduced over time, it is feasible that such designs could capture an increasing share of the market over the next fifteen years. As noted, such designs already have a dominant market share in Europe. Modified to meet American preferences, it seems possible that such washers could achieve a market share approaching 40 to 50 percent and an accumulated stock of 20 to 25 percent by 2010, even in the absence of new standards.

In 1996, CEE is aggressively recruiting additional utility participants for the initiative. Over the coming months, through direct contacts with utilities as well as a broad-based publicity campaign, CEE aims to drum up additional utility support. Launched in April 1996, this recruitment effort is emphasizing the customer service benefits and cost savings aspects of participation.

In addition to working to widen the number of energy utilities promoting washers to their customers, CEE will look for other opportunities to leverage the market for efficient washers. In some parts of the country, water utilities may prove to be the audience most interested in this technology. Similarly, as the Oregon Department of Energy program has shown, non-utility program participants may prove crucial to the initiative's success.

Moreover, every effort will be made to coordinate this initiative with other efforts to encourage the market for high-efficiency washers. Notably, the DOE has launched an initiative with retailers that seeks to educate consumers at the point of sale regarding high-efficiency products. This effort has included the development of a label for identifying high-efficiency products which could ultimately have broader application and help leverage utility programs.

Finally, several other areas are deserving of further investigation. First, although a rough baseline exists for current market share of high-efficiency washers, a more thorough plan for an evaluation of the eventual national market impacts of this initiative needs to be developed. Second, CEE has

begun to explore complementary efforts that focus on small capacity commercial washers that are nearly equivalent in technology to residential washers. Finally, a mass buy of efficient washers might complement this initiative and other ongoing efforts. Such an effort would help to create a large initial market for high-efficiency washers and contribute to the momentum of the market transformation.

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