Market Baseline Evaluation Report Executive Summary

ENERGY STAR® Residential Lighting Fixtures

prepared by
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*report #*E98-014

August 1998

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Executive Summary

The barriers to the successful promotion of CFL bulbs and fixtures have been known for several years. These include the following:

- High first costs,
- Unavailability,
- Lack of awareness of technology, benefits, and cost effectiveness,
- Incompatibility with existing fixtures, dimmers, and timers or photocells,
- Performance problems,
- Unattractiveness, and
- Fear of fluorescent technology.

Over the past few years, improvements in CFL technology, manufacturing, and distribution have reduced or minimized several of these barriers. Smaller, more attractive CFLs have appeared on the market. In fact, some of the newest CFLs with lower wattage are virtually identical in shape and size to incandescent bulbs. Some manufacturers are even producing "dimmable" CFLs and CFLs that have dusk-to-dawn lighting capabilities. In addition, most of the performance problems have been overcome. CFLs are available today that:

- Start immediately,
- Have an attractive, warm light color,
- Produce no audible hum,
- Produce no perceptible flicker,
- Do not interfere with remote controls, and
- Start and operate brightly at cold temperatures.

Despite these significant improvements, CFL sales are still low. The purpose of this study is to perform market and consumer research in the Pacific Northwest residential energy efficient lighting market to aid the Alliance in determining future program opportunities. The goal is to identify currently perceived barriers and determine if there are any features of CFL bulb or fixture products that are most appealing to customers. Based on these features, particular consumer "hooks" may be able to be identified that can be utilized to increase CFL bulb and fixture sales. These "hooks" could be utilized by the Alliance in their CFL promotional efforts.

ES.1 Approach

The approach taken to address these goals utilized several market and consumer research techniques. These included an assessment of the CFL market utilizing secondary and primary market research, interviews with several groups of consumers utilizing focus groups, and analysis of consumer purchase decisions utilizing consumer conjoint analysis.

The secondary and primary market research reviewed much of the previous research on this topic and expanded on this review of previous research with telephone interviews of market actors. These market actors included manufacturers, wholesalers, retailers, contractors, and utility program representatives. Retailers were sub-categorized into large home improvement stores, large mass merchandisers, small retailers, and grocery and drug store chains. Further, to investigate markets for both new construction and existing homes undergoing remodel work, telephone interviews were conducted with lighting and electrical contractors.

To provide additional insight and to explore a variety of consumer-related issues and perspectives on energy efficient lighting, four focus groups were held with homeowners in the Northwest. A key to obtaining meaningful information from these focus groups was to have real products with real pricing information on hand that the participants could examine and test. Each focus group session began with a discussion on how lighting is used in the home with probes for links to comfort, safety, convenience, and energy bills. Past experiences with energy-efficient lighting products (good and bad) were explored to ascertain whether such experiences were likely to help or hinder subsequent purchases. Recent lighting purchases were discussed generally, first, and then specifically to probe for specific examples of energy and non-energy related drivers in the decision-making process.

The final market and consumer research technique utilized was a consumer conjoint analysis. Conjoint analysis was used to determine which lighting attributes in the CFL purchase decision process consumers value most and value least. This type of analysis also provides a means to estimate how modifying features in these attributes changes what consumers choose to buy. The conjoint survey was performed through a website with survey participants solicited through email and postcard solicitation and through links from energy and utility related websites in the Northwest.

ES.2 Key Findings

Each of the market and consumer research efforts came up with similar findings in terms of the most significant positive features and significant barriers still facing the CFL market. One of the most important, if not the most important, positive feature of CFL bulbs and fixtures is the long life of the bulb. In the conjoint survey, there was a large difference in utility value between long and short bulb life in both the bulb and fixture surveys. In the

market research, nearly all of the interviewees indicated that long bulb life was one of the most popular and important characteristics of CFLs. It was viewed positively more from the perspective of less maintenance in changing bulbs than from the money one would save with avoided cost from not buying as many incandescent bulbs. Long life was viewed as particularly positive when placing the CFL in a hard to reach spot. Within the focus groups, the short life of incandescent bulbs, especially in hard to reach fixtures, was viewed as a major inconvenience. However, focus group participants were often skeptical about the long-life claims of CFLs. Warranties helped alleviate some of the skepticism, and some kind of trusted independent testing to back-up the long-life claim, such as by Underwriter's Lab, would also reduce the skepticism.

The level of energy savings from CFLs was viewed as a positive but not necessarily significant feature. In the conjoint survey, the operating cost attribute had a relatively small difference in utility value between the low and high operating cost features. In the market research, the level of energy savings was not overwhelmingly mentioned as a key component in the purchase decision. However, in the market research, one of the most effective marketing displays was an electric meter display that spun at different rates for the CFL and incandescent bulbs. This visual representation of energy savings had a very positive impact on those who saw it. In the focus groups, participants were generally unaware of the magnitude of the energy savings from CFLs and, once they learned of it, they were impressed. The fact that the focus group participants had low awareness of the energy savings potential and the fact that the electric meter marketing display was received so positively may indicate more of a lack of knowledge on the significance of the energy savings rather than a disregard for the savings.

The safety issue of low heat from CFLs, especially in a torchiere application, was a highly regarded attribute. In the conjoint survey, the CFL torchiere was the dominant preference over both halogen and incandescent torchieres. Both the market research and the focus groups reiterated the importance of this feature. Although the most popular use of the low heat feature of CFLs is for safer torchieres, other applications were identified such as putting brighter light output CFL bulbs in fixtures that have heat limitations or delicate designer shades.

Interesting bulb shapes and smaller sizes are positive attributes. Current CFLs on the market with either small, interesting shapes or with the size and shape of a standard incandescent bulb are viewed positively by consumers. In the conjoint bulb survey, the small CFL shape had a very high utility whereas the bulkier, older style circular shape had a very low utility value. The market research results indicated that consumers are attracted to interesting shapes such as spiral or twister shapes. The focus groups indicated a preference for the "A" bulb shape; however, participants also were intrigued with a variety of other shapes.

The quality of light from CFLs was a key positive attribute that came from the focus groups. Moreover, focus group participants noted that light quality was often an emotional issue, contributing to the mood or ambiance of the room. This attribute could not be modeled within the web-based conjoint survey (although it could be with a one-on-one conjoint survey with actual bulbs and fixtures to use as examples). Light quality was also mentioned in the market research literature and interviews. For example, several respondents noted that consumers like bright lights.

On the barrier side, two of the long-term barriers still significantly hinder CFL acceptance. The most important is lack of awareness of the current technology, benefits, and cost effectiveness. The second is the high first cost of CFL bulbs. This second barrier appears to be eroding with the continued falling of CFL prices. Bulbs with a high first cost had a very low utility in the bulb conjoint survey while the low cost alternatives in the conjoint bulb survey were well received. In the conjoint fixture survey, purchase price was not a highly significant attribute. The market research supports this with the finding that, with fixtures, the extra cost of an energy efficient model over a standard model is not as great as with CFL bulbs. Furthermore, focus group participants were very impressed with the low cost of several of the newly available CFL bulbs. For example, participants indicated that a CFL price of $5.95 or lower was an attractive option.

The most significant barrier is consumer awareness. This barrier was not modeled through the conjoint survey. However, the interviews with market actors identified low consumer awareness as likely the greatest reason for slow CFL sales. The focus group results demonstrated this and showed that, once consumers gain awareness, there is significant CFL acceptance. For example, most of the focus group participants expressed limited knowledge about CFLs at the beginning of the sessions, then surprise and interest as they learned more about CFLs. Finally, by the end of the session, most had favorable opinions of CFLs.

Overall, product availability for bulbs has improved significantly over the past few years but appears to be still limited for fixtures. Grocery stores continue to be the one primary lighting product source where CFLs are only minimally available.

ES.3 Recommendations

CFLs and ENERGY STAR fixtures appear to be close to becoming significant alternatives to incandescent and halogen bulbs and fixtures in the residential sector. Many of the earlier barriers such as performance problems, incompatibility, unavailability, unattractiveness, and even high first cost are being minimized. Many CFL features such as long life, lighting quality (color), low heat production, energy savings, and even bulb appearance are now being viewed as positive qualities that consumers desire. Assuming that price continues to decline

to a level of about $5 to $7 for new CFL bulbs, the primary remaining barrier is consumer awareness. Once consumers are fully aware of the benefits of CFLs, their market share should grow substantially. An additional important remaining barrier is the general unavailability of CFLs in grocery stores, which is the number one place where consumers buy replacement bulbs.

The recommendations that follow are primarily designed to improve consumer awareness and trust in CFL lighting. These recommendations have been reviewed and reflect the comments and input of the Alliance Board subcommittee on lighting and the Lighting Advisory Committee:

1) *Conduct a regional consumer-based campaign that incorporates media (i.e., broadcast and print advertising), public relations, special promotions/events and cooperative advertising with "in-store" efforts to promote and make visible the benefits of energy efficient lighting.* Major elements of this campaign may include:
   a) Advertising. An example of a "hook" message could be to emphasize how CFLs are "new and improved." The popular appearance of the twister CFL can be featured as the symbol of energy efficient lighting (with a call to action to look for the ENERGY STAR label to find these products).
   b) In-store/retail displays of CFLs and fixtures would bring the products to life and enable the consumer to see, operate, and learn about the benefits of energy efficient lighting.
   c) To enhance the consumer awareness of products in retail further, the program would encourage manufacturers to make their products more easily visible to the consumer (via packaging) and provide more graphical information on packaging.
   d) A low-risk opportunity can be provided for the consumer to "try out" a CFL, offering a limited time subsidy and unconditional guarantee. A particular product line (i.e., subcompact CFLs) could be the focus of this offer. This could be funded and administered directly through the program or in combination with the manufacturers and retailers.
   e) Other recommended elements include educational outreach (also see recommendation #3 for utility promotional support), efforts to strengthen and support ENERGY STAR lighting specifications to include meaningful product testing and manufacturers' warranties and access to customer service support.
2) *Consider a separate market strategy for ENERGY STAR fixtures.* Recognizing the differences in market acceptance of energy efficient fixtures and CFLs (primarily related to lack of product availability), the program should consider approaches other than mass retail to increase the availability of ENERGY STAR fixture products. The Consortium for Energy Efficiency (CEE) is conducting market research on approaches that will increase the availability of residential energy efficient fixture products. Based on this research (completion planned for early June) and the recommended approaches, CEE intends to launch a new national initiative.

Market strategies to promote ENERGY STAR fixtures should consider the outcome of this research and subsequent development of program approaches should be consistent with the CEE initiative.

3) *Provide opportunities for utilities to promote energy efficient lighting to residential customers in conjunction with recommendation #1*. Utilities can play a major role in promoting consumer awareness of the consumer-friendly qualities of CFL lighting: long life, lighting quality (color), low heat production, energy savings, and bulb appearance. Program activities that could be offered by utilities include a strong, well-defined outreach program to schools (the portability and lowering-cost features of the CFL make the show-and-tell demonstration easy and affordable), special discounts or rebates on "preferred" products or applications that yield greater energy savings, and expanded consumer education through normal outreach and communications channels, including bill stuffers, newsletters, websites, community events.