Baseline Assessment Executive Summary

ENERGY STAR® Residential Lighting Fixtures Program

Market Progress Evaluation Report #1

prepared by

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EXECUTIVE SUMMARY

Evaluation Objectives

This report is the first of what will be three Market Progress Evaluation Reports (MPER) documenting the effects of the ENERGY STAR® Residential Lighting Fixture Program. The primary objectives for the overall evaluation are:

- Measure program progress toward overcoming identified market barriers
- Measure program progress toward the program exit strategy
- Provide timely feedback to refine the program

This initial report, MPER #1, contributes toward achieving these objectives through the following four steps:

- Characterize the residential fixtures market, showing key actors, information and distribution channels, product attributes, market alternatives, and market barriers or failures
- Establish links between program elements and specific market barriers
- Estimate baseline conditions, benchmarking the key market effects that are expected to indicate changes in market barriers due to program interventions
- Provide preliminary feedback on the efficacy of the program design and support recommendations for improving program delivery

Program Overview

The ENERGY STAR Residential Lighting Fixture Program (the program) was implemented to accelerate product availability and consumer acceptance in the market for energy-efficient fluorescent residential light fixtures. The long-term goal is to increase the market share by 25% for targeted energy-efficient fixture applications. Toward this end, the program established the following near-term objectives:

- Promote consumer awareness and understanding of energy-efficient products.

- Promote product availability and recognition throughout the region served by the Alliance.
- Coordinate efforts of manufacturers, retailers, and local utilities to maximize effective outreach to consumers through media and other channels.
- Increase market awareness of ENERGY STAR fixtures.
- Partner with all interested industries, including manufactured housing.

Consistent with the primary program goal, the program design specified an exit strategy of obtaining a sustainable market share for program fixtures that compete on price, quality, and desirability with conventional and nonprogram, energy-efficient fixtures. The intent is that installation of these fixtures will become a standard practice in new construction and retrofit applications. To accomplish this, the Alliance established a goal of selling 100,500 fixtures by October 30, 1998.

To accomplish these goals, the program design emphasizes a dual "push/pull" approach; that is, the program works to increase both the supply (the "push") and the demand (the "pull") for energy-efficient light fixtures. Specific market intervention strategies include: (1) manufacturer incentives to increase product availability and reduce incremental cost; (2) retailer education and marketing to increase retailer stocking of qualifying products; (3) promotion to increase retail and consumer awareness of products; and (4) mass advertising and branding to increase consumer demand and awareness/knowledge of the product.

Methodology

As part of the evaluation design process, we conducted a detailed review of stated program goals and objectives, program design documents, manufacturer responses to the program RFP, and published literature sources. Results of this review were used in the following manner:

- To focus evaluation resources on the key market actors.
- To identify the most likely market barriers.
- To design data collection strategies capable of detecting program impacts on those barriers.
- To develop a set of measures to track progress toward the program exit conditions.

Primary data collection focused on three general sets of market actors: manufacturers, wholesalers and retailers, and consumers. Each set of market actors corresponds to a key market function: supply, distribution, and demand. Development of the data collection and analysis methods followed an analogous process for all three groups. For each group, we developed a listing of information needed to characterize that segment of the market and we identified measurable indicators of market effects. These lists were then used to develop survey instruments and to guide the analysis. These instruments were used to conduct the following data collection activities:

- **Manufacturer Interviews:** We interviewed seventeen lighting fixture manufacturers, including all five currently participating manufacturers. Interviewees were drawn from a combined list 158 manufacturers from the following sources: the program list of manufacturers that received the program RFP, the program mailing list of manufacturers that received a pre-qualification letter, and the EPA's list of qualified ENERGY STAR manufacturers.
- **Distributor Interviews:** We interviewed sales staff and corporate representatives from 6 wholesale businesses, 23 retail businesses, and 3 volume builders. The first two categories represented more than 320 distinct retail and wholesale outlets in the region. Sampled wholesalers and retailers were selected from a list of 607 businesses that had been prescreened for eligibility.
- **Consumer Mail Surveys:** We received 301 responses to a 12-page survey mailed to 2,500 households in the region. Response was encouraged by first mailing out an advance postcard, followed by the survey itself. Three weeks after the survey was mailed, we mailed a second survey to 500 randomly selected households who had not yet responded to the first mailing.

General Findings and Conclusions

Respondents to the consumer survey demonstrated fairly positive and well-informed attitudes about compact fluorescent technologies. However, results of the three data collection efforts—manufacturer, wholesaler/retailer, and consumer—all point to the importance of style and performance as the driving factors in the consumer decision-making process. While this result is not groundbreaking, it is worth reiterating. For ENERGY STAR fixtures to gain a significant share of the market, they will almost certainly have to satisfy consumers' basic style and performance demands. At that point, as long as purchase prices are not too far out of line with those of competing fixtures, operational cost savings and other product benefits can be used effectively as a tie-breaker to make ENERGY STAR fixtures the preferred choice.

Perhaps the greatest untapped opportunity for communicating with consumers is through their utility. Both retailers and wholesalers thought that local electric utilities could have a great deal of impact on promotion of compact fluorescent fixtures. This finding was reinforced by results from the consumer survey. Utility information is well-regarded among consumers but, at present, is a minor source of information about light fixtures. However, utility initiatives could bring trusted information to consumers with little or no special effort on the part of consumers to obtain it.

At the time of this first report, distribution of Energy Star fixtures was just beginning. Therefore, it was not possible to accurately comment on the relative differences in product availability between the markets of Idaho, Montana, Oregon, and Washington. In future reports we expect to address the differences between these markets. Site-visit data indicate that ENERGY STAR light fixtures were virtually absent from these markets in 1997. Phone survey responses from 1998 corroborate this finding, at least qualitatively.

Table ES.1. Percentage of Shelf Space Stocked with ENERGY STAR-Qualifying Fixtures (1997)

	Idaho	Montana	Oregon	Washington
Indoor Fixtures	3.1%	0.0%	1.4%	0.9%
Torchieres	0.0%	0.0%	0.0%	0.0%
Outdoor Fixtures	0.0%	0.0%	3.7%	1.9%
All Fixtures	1.0%	1.0%	1.7%	1.1%

Finally, one of the biggest program impediments, at least at the supply end, appears to be the EPA requirement that ENERGY STAR fixtures include high-power factor ballasts. According to our manufacturer informants, this requirement significantly increases production costs, causes delays in production due to ballast supply shortages, and apparently offers no tangible benefit that a consumer would be able to identify. Manufacturers consistently argued that dropping this requirement would allow them to produce cheaper fixtures without compromising energy efficiency and without compromising any of the performance features (e.g., light color, instant start) that consumers actually care about.

For each group of market actors, the results of this study suggest that program efforts targeted to specific segments within each market sector offer the greatest prospects of success. This is not to say that other segments should be ignored or excluded. However, these other segments present significant challenges to overcome for members of those segments to participate in the program productively. Those segments that appear to offer the best prospects of success are described below.

Manufacturers

Among manufacturers, the best prospects for success appear to be among the largest producers (those with annual sales exceeding $10 million). While the overall market share controlled by these manufacturers is not known, these manufacturers are best equipped to produce the large volumes of program product needed to make an impact on the market without exposing themselves to undue financial risk. These manufacturers also tend to have the most direct relationships with large retailers, which translates into greater potential influence on the presentation of the product to the ultimate consumers.

Initial responses indicate that the program is already enjoying a measure of success among this group. In particular, the program has succeeded in gaining the participation of Catalina, one of the world's largest fixture manufacturers and a manufacturer that, unlike most of the other program participants, was not already making a fixture that nearly qualified. Thus, Catalina's joining the program meant that a major manufacturer developed significant new capabilities for producing energy-efficient fixtures.

Wholesalers and Retailers

Among wholesalers and retailers, the best short-term opportunities for program success appear to be among home improvement centers. Home improvement centers are among the most popular places to shop for light fixtures, and they tend to carry a broad selection of fixture types, including hardwired indoor and outdoor fixtures and torchieres. These stores are also the most visited by do-it-yourselfers involved in a significant remodeling project. Finally, compared to mass merchandisers, the next most important source of retail fixtures, home improvement centers are more likely to have trained staff on the floor who specialize in lighting issues.

Consumers

The greatest opportunities for getting ENERGY STAR fixtures into the market appear to be among those people in the process of remodeling or redecorating. Remodeling and redecorating represented the single most important reason for shopping for a fixture. Furthermore, based on the number of stores visited by people remodeling compared to number of visits by people shopping for other reasons, people engaged in remodeling appear to shop for fixtures more systematically. Thus these people may be easier to reach with messages explaining the superior product benefits of ENERGY STAR fixtures. Finally, people engaged in remodeling and redecorating are relatively more likely to shop at home improvement centers.

Demographically, people most likely to remodel or redecorate have relatively higher incomes (greater than $40,000 per year) and relatively more education (at least some post-high school education), compared to other respondents. This group also showed a relatively greater tendency to get its information from broadcast channels, as opposed to word of mouth, and expressed greater confidence in information from sales clerks and utilities. Among younger members of this group (those under 55 and particularly those under 44 years of age), recognition of the ENERGY STAR logo was notably high, due in part, to the prevalence of the logo on computers.

Findings supporting these various conclusions are summarized below.

Manufacturer Survey Findings

Findings Regarding Interactions with Other Market Actors

- The lighting fixture industry is dynamic. Matters of decorative style drive the residential fixture market and nearly constant changes in style and materials require ready adaptation from all players involved.

- Most fixture manufacturers distribute their products through a network of wholesale distributors and independent sales forces, and have little direct contact with retailers. Only the larger companies sell products directly to retail chains.

- Manufacturers that distribute their products through a wholesale distributor, or depend on an independent sales force, claim to exercise little control over how ENERGY STAR is marketed or even whether it is presented at all. Manufacturers see themselves as responding to the market demands rather than creating demand in the market place.

- Product promotion is primarily carried out at trade shows. Few manufacturers make an effort to market their products to end users. In-store product support is not an industry standard. Such support is likely only for very large manufacturers who distribute directly to mass retailers.

Findings Regarding Primary Information Channels

- While only a small number of manufacturers have formalized procedures to garner consumer feedback, it is usual for a manufacturer's representatives to solicit input from wholesale and retail customers regarding product popularity and function. This input is considered very important in ensuring that products meet the needs of the consumer.

- Most manufacturers rely on their own expertise and informal market intelligence to determine what fixtures markets to address. Trade shows were consistently cited as a means to keep abreast of what competing companies are offering. Only one company said that it had a structured process in place to gather market data on trends.

- Smaller firms tend to ensure they are making accurate production decisions by including the customer (either wholesaler or retailer) as an active participant in the design process. For larger manufacturers, focus groups or trial marketing may be used.

Findings Relating to Interactions with and Awareness of the Program.

- For the industry overall, awareness of the ENERGY STAR program is high. All respondents were aware of the program and all but one had some familiarity with the basic program requirements.

- For most participant manufacturers, joining the program was convenient since they already produced a similar fixture. However, participation required changing fixtures to use higher power factor ballasts. Sourcing a high-power-factor electronic ballast appeared to be a big barrier to participation.

- For small firms to commit to the production volumes viewed by manufacturers as necessary to effectively participate in the program presents too much risk for their normal mode of operation.

- Those manufacturers who primarily focus on style and who aim their products at the high-end designer market are less likely to participate. While the overall market share controlled by these manufacturers is not known, these manufacturers repeatedly said that style was the primary concern of consumers, not energy efficiency. It was also mentioned that the ENERGY STAR rebate effectively "buys down" the cost of production for only inexpensive fixtures. The rebate does not represent a high enough percentage of production cost to influence the price of high-end fixtures. However, manufacturers did not specify price points at which the rebate begins to represent a large enough percentage of production costs to be attractive.

- Those manufacturers who depend on distributing their products through large retailers and who aim their fixtures at the mid to lower levels of the markets are more likely to participate. This is probably due to the increased control manufacturers have in getting ENERGY STAR products to their retailers, and to their ability to produce the volume of ENERGY STAR fixtures necessary to bring the production costs in line with competing products.

- Manufacturers seem to be confident that the market for compact fluorescent fixtures will continue to grow. However, the market is looked at as a relatively small portion of the overall fixture market.

Distributor Survey Findings

Findings Regarding Interactions with Other Market Actors

- Retail respondents appear to rely more heavily than do wholesalers on manufacturers' representatives to provide whatever information is relevant for the lighting products they stock.

- Less than half of retail respondents said that the store staff are specifically trained to sell lighting equipment. Five of six wholesalers said that they train their sales staff. Hardware stores seem to vary the most in terms of training and personnel's lighting expertise; some stores/chains have designated electrical department sales personnel and others have "floating" personnel. The staff most likely to be untrained appear to be among the mass merchandisers, especially non-department stores, where employee turnover is high, training is minimal, and employees are likely to float between departments.

- Two of the four stores that currently stock ENERGY STAR fixtures said they promote ENERGY STAR products differently than the rest of their lighting products. One uses a focus area to display program fixtures and the other uses in-store signage and promotional materials from Lights of America. Both wholesalers that stock ENERGY STAR fixtures said they do promote them.

Findings Regarding Primary Information Channels

- Retailers do not use market research routinely or systematically. No retailer surveyed described a formalized market research approach to provide market intelligence.

- Retailers do not depend upon trade associations for information on the lighting market. Among wholesalers, trade associations appear to play a larger role in providing market information.

Findings Relating to Key Decision Criteria

- Regardless of the type of retailer, smaller organizations seem to make purchase decisions at the store level, and chains and larger organizations tend to make purchase decisions at a more centralized level.

- Identifying style trends is important to retailers. Style, quality, consistency with other product offerings in the store, and price point were consistently named as important factors for stocking considerations. Among furniture/home decor stores, style was paramount. Wholesalers said that price and reliable delivery are prime considerations.

- While style is an important consideration for builders, the key criterion is price.

Findings Regarding Awareness of Attributes of Energy Efficient Light Fixtures

- Retailers most commonly cite longevity of the lamps as the primary benefit of compact fluorescent technologies to consumers. The three respondents who stock ENERGY STAR lighting fixtures described the benefits to consumers as longevity of lamps, energy efficiency, and competitive price.

- Wholesalers seem to pride themselves on a thorough understanding of available fixtures, their technologies, and their benefits. Since wholesalers interact with fixture installers and other tradespeople who have a working knowledge of fixtures, it is necessary for them to understand the products they sell.

Findings Relating to Interactions with and Awareness of the Program

- Four of 23 retailers said that their stores currently distribute ENERGY STAR residential fixtures. The majority of survey respondents were unaware of the ENERGY STAR Residential Lighting Fixture Program, although a few mentioned being aware of ENERGY STAR in general (appliances, computer monitors, etc.).

- Unfamiliarity with the program was the most common reason retailers gave for not stocking ENERGY STAR fixtures. Among those respondents who were not aware of ENERGY STAR, but who seemed aware of compact fluorescent fixtures, their unwillingness to stock compact fluorescent fixtures seems to be a combination of ignorance regarding the benefits of compact fluorescent fixtures, and a feeling that consumers do not want them.

- Of the six fixture wholesalers surveyed, two said that they distribute ENERGY STAR residential fixtures. One-half of wholesalers (3) said that they are aware of the ENERGY STAR Residential Lighting Fixture Program.

- Builders were uniformly unaware of the program.

- Both retailers and wholesalers believe that local electric utilities could have a great deal of impact on promotion of compact fluorescent fixtures.

Consumer Survey Findings

Findings Regarding Interactions with Other Market Actors

- Sixty-five percent of the respondents reported being in the market for new fixtures within the past two years. Those in the market for new fixtures tend to be homeowners, have post-high school education, live in a household with at least one working-age adult, and have annual household incomes greater than $40,000. Only 35% of Montana residents reported having been in the market within the past two years.

- Reasons given for being in the market were, in descending order of mention, remodeling or adding new fixtures, replacing a broken fixture, replacing a fixture that did not perform well, or redecorating or relandscaping.
- Home improvement centers and discount/department stores are, in general, the most popular places to shop for light fixtures, followed by hardware stores/lumberyards and lighting stores/showrooms. Next to home improvement centers, hardware stores and lumberyards are the preferred sources of outdoor fixtures. Discount and department stores are the biggest source of torchieres. Lighting stores and showrooms are significant sources of indoor fixtures and torchieres, but are less important as sources of outdoor fixtures. Furniture and home decor stores are significant sources only of torchieres.
- Almost 24% of people in the market visited only one store, though only 9% said one store was a reasonable number to visit. Only 16% of shoppers visited more than three stores. Similarly, only 12% of shoppers considered it reasonable to visit more than three stores. People who were remodeling or adding new fixtures tended to visit more stores. Most of those respondents visited two or more stores and half visited three or more stores.

Findings Regarding Primary Information Channels

- There is a large discrepancy between the information sources people said they trust and those they actually consult to purchase light fixtures. Of the five most trusted sources, only two are frequently consulted. Those two, in-store displays and personal acquaintances, are sources people would encounter during the course of shopping and their regular activities. The other three sources require people to make a special effort to research the information.
- Utility information is well-regarded but, at present, is a minor source of information about light fixtures. Utility activities such as advertising and bill stuffers may represent an important untapped opportunity to bring trusted information to consumers with little or no special effort on consumers' part to obtain it.

Findings Relating to Key Decision Criteria

- The data suggest that people tend to first find the fixtures that meet their performance, style, and safety needs (i.e., satisfy their top criteria), and then select from among the candidate fixtures based on purchase price and cost to operate.

- Consumers' selection criteria appeared to influence their chosen shopping destinations: importance of purchase price was associated with shopping at discount or department stores while consideration of style was associated with shopping at furniture or home decor stores.
- Selection criteria also appeared to influence the information sources consumers consulted: performance considerations were associated with in-store displays of operating fixtures. Those who ranked style among their top four selection criteria were relatively less likely to turn to acquaintances for information.

Findings Regarding Awareness of Attributes of Energy Efficient Light Fixtures

- A sizable minority of the respondent pool has had direct experience with compact fluorescent technologies: 26% of respondents have one or more compact fluorescent bulbs in their home; 18% have compact fluorescent fixtures. A larger minority has had indirect experience with compact fluorescent technologies: 41% of respondents do not have compact fluorescent fixtures, but have seen pin-based bulbs, mostly in stores or at a friend's house.
- Among the respondents, awareness of compact fluorescent attributes is relatively high and attitudes toward the technology are mostly positive. It is also likely that attitudes could be further improved with increased market saturation of high-quality fixtures and bulbs (instant start capabilities, high-quality light, and an array of features) in a variety of styles.
- Based on opinions and attitudes toward compact fluorescent technologies, respondents were found to fall into one of three clusters, labeled "Price Conscious," "CF boosters," and "Uninformed." Cluster membership varied with direct experience with compact fluorescent technologies, but not with general awareness.

Findings Relating to Interactions with and Awareness of the Program.

- Thirty-seven percent of survey respondents said they recognized the ENERGY STAR logo. Recognition was reported to be driven by purchases of other appliances bearing the logo, particularly computers. The link between ENERGY STAR logo recognition and general awareness of compact fluorescent fixture technologies is significant.

- Eleven people said they were familiar with the ENERGY STAR Residential Lighting Fixture Program. Out of seven people who said they bought ENERGY STAR light fixtures, only one reported familiarity with the program.
- Given the importance of computer purchases in generating awareness of the ENERGY STAR logo, it should not be too surprising that people familiar with the logo are typically young, educated, mobile, and relatively well off financially.

Recommendations

- Continue to engage EPA regarding the necessity of including high power factors as part the program requirements. If the necessity cannot be demonstrated, then advocate for lower power factor requirements to reduce production costs and alleviate ballast shortages that hinder fixture production.

- Ensure that participating manufacturers offer a variety of styles among available program products. Style is a primary factor driving the consumer decision-making process.

- Engage electric utilities in a proactive effort to inform consumers regarding the benefits and availability of ENERGY STAR Residential Lighting Fixture Program products. Utility information is well-regarded but, at present, is a minor source of information about light fixtures.

- In efforts to garner manufacturer participation, concentrate initially on large manufacturers of residential lighting fixtures. Manufacturers that distribute their products through large retailers and that target the mid- to low-level markets are more likely to participate.

- In efforts to increase distribution channels, concentrate initially on home improvement centers since these are the stores most likely to stock ENERGY STAR Residential Fixture Lighting Program products and the stores that consumers most often frequent. Initial program efforts to increase the level of staff training in stores such as Home Depot appear to be appropriately targeted.

- Work directly with retailers to ensure that in-store marketing signage and collateral materials are available to consumers. Manufacturers do not ordinarily supply such materials to their retail customers. Depending on them to do so is likely to result in spotty availability of marketing and point-of-purchase (POP) materials.

- Ensure that the ENERGY STAR Residential Lighting Fixture Program is represented at lighting industry trade shows. Since promotion of new items is primarily carried out at trade shows, these events offer an effective means of informing industry players about the program.

- Target sales staff to receive program information to improve their understanding of energy efficiency and the ENERGY STAR products. It is important that consumers have ready access to information at the point of purchase since selecting a fixtures is generally not considered a major purchase that requires extensive research.

- Focus publicity efforts on establishing the ENERGY STAR label as a widely recognized and meaningful symbol. The fact that people can and do purchase ENERGY STAR fixtures without being aware of the program suggests that program awareness is less important to program success than ENERGY STAR brand recognition.

- If residential new construction is to continue to be a focus of the program, education efforts must be targeted to reach those specifying the fixtures, which is often not the builder. In addition, program fixtures must compete on price with standard efficiency fixtures or else alternate strategies for overcoming builders' split incentives must be developed.

Guide to the Remainder of This Document

The remainder of this document follows an outline that closely reflects the organization of the Executive Summary.

- Section 1 discusses in more detail the evaluation objectives, describes the current status of program interventions, and summarizes the methodologies used in this analysis.
- Section 2 gives an overview of the market structure, focusing on flows of products and information through the distribution chain.
- Sections 3 through 5 present analysis and results of the three primary data collection efforts: manufacturers, wholesalers and retailers, and consumers.

Where appropriate, findings from this data collection effort are related to findings from published sources.

- Section 6 documents results relating in various ways to product market share.
- Section 7, summarizes the status of expected market effects and discusses in more detail the various conclusions presented in the Executive Summary.