Saturation, Penetration, Transformation: How Do You Know When a Market Has Changed?

Stephen Grover, ECONorthwest
David Cohan, Northwest Energy Efficiency Alliance
My K. Ton, Ecos Consulting

ABSTRACT

Sales of compact fluorescent bulbs in the Northwest exceeded 6.5 million units in 2001, a 25-fold increase over projections made in 2000. We know that sales were driven by the energy crisis in California and the resulting media coverage, utility coupons, rate hikes and retail advertisements. What we do not yet know is whether the market has been transformed or if this is simply a (large) blip in long-term sales trends that will disappear in the near future. Long-term sales will depend on consumers' overall satisfaction with the bulbs they have purchased and their willingness to pay full retail price. Many current purchases were subsidized by up to 95 percent with utility coupons, making it difficult to determine how consumers will act in the future when such subsidies are not available.

As part of the evaluation of the Northwest Energy Efficiency Alliance's ENERGY STAR® Residential Lighting Program, a tracking system was created to monitor CFL sales data in the region and two consumer satisfaction surveys were fielded, the first in June of 2001 and the second in April of 2002. These surveys indicate that satisfaction with past CFL purchases is a key factor influencing future CFL purchases. While most respondents were satisfied with their CFLs and intend to purchase more in the future, those who are dissatisfied with CFLs tended to switch back to incandescent bulbs. Of those that are dissatisfied with their CFLs, the most common cause was insufficient brightness and poor light quality. Program efforts such as expanded retailer training and more accurate labeling will help customers choose the most appropriate CFL for each application, thereby reducing these problems in the future.

Introduction

The Northwest Energy Efficiency Alliance's ENERGY STAR® Residential Lighting Program promotes residential lighting products that meet ENERGY STAR® technical lighting specifications and are labeled with the ENERGY STAR® logo. Implemented by ECOS Consulting, Inc. (ECOS) throughout the four-state Alliance territory of Washington, Montana, Idaho and Oregon, the Lighting Program is currently in its second phase, and is scheduled to run through December 2002. ECONorthwest is evaluating the Lighting Program for the Alliance while it is being implemented so that evaluation findings can be used to make the current program more effective. Phase I of the Lighting Program successfully addressed barriers relating to CFL availability from manufacturers. Phase II, the current phase, expands the program's retail presence to address customer barriers, including first cost, concerns about light quality, and issues regarding convenience and compatibility with existing household lights and light fixtures. In addition, the Lighting Program addresses retailer concerns about the marketability of CFLs by providing field staff who travel to

participating stores to train and educate employees. The program also provides product information, cooperative marketing funds, websites, and advertising and promotional materials. The program does not market directly to consumers and does not include any direct financial incentives to consumers.

The advent of the West Coast energy crisis in the Spring of 2000 profoundly affected the Lighting Program. As 2000 progressed, the effects of the situation in California began to be felt in the Pacific Northwest. Drought conditions in the Pacific Northwest during the Summer and Fall of 2000 also led to increased demands on energy resources throughout the West. Consequently, by the end of 2000, awareness and promotion of energy conservation, and CFLs in particular, reached unprecedented levels. From the program's perspective, the main consequence of the crisis was the creation of the regional ENERGY STAR® Coupon Campaign (Coupon Campaign) by the Bonneville Power Administration with strong support from the Eugene Water and Electric Board and Portland General Electric. The Campaign was based on a fulfillment house concept in which utilities wishing to participate ordered coupons through a central clearinghouse operated by ECOS Consulting, the same contractor that implements the Alliance's Lighting Program. Redeemed coupons were sent by retailers back to ECOS, which then billed the participating utilities for each coupon received. To avoid confusion in the discussions on data below, it is important to remember that the Coupon Campaign was not part of the Alliance Lighting Program although it took advantage of the retailer network that had been developed under it.

In large part, the Coupon Campaign was designed to offer an alternative to utilities whose initial desire was to mail free CFLs to their customers. Massive mail-outs would have undermined the long-term market transformation strategy of the Alliance program that was based on having consumers purchase quality-assured (i.e. ENERGY STAR®) bulbs from standard retail outlets at market prices. The Coupon Campaign maintained the underlying integrity of the Alliance program while satisfying the utilities' need to quickly react to their needs for energy conservation. Most important, coupons were redeemable only for ENERGY STAR® products sold at retail outlets. And though consumers paid only a fraction of the normal retail price, they at least saw what that price was so they would not suffer from "sticker shock" if they returned to purchase additional bulbs at a later date.

The purpose of this paper is twofold. First, an overview of CFL sales within the program territory is presented to illustrate the magnitude of sales in the Northwest. Second, now that the energy crisis has lessened and the Coupon Campaign is winding down, the critical question is what level of CFL sales can be maintained. To help answer this, the second part of the paper presents results of three consumer surveys designed to elicit information on satisfaction with CFLs, market barriers, and intentions to purchase CFLs in the future.

CFL Market Overview

As part of the evaluation of the Lighting Program, ECONorthwest developed a market tracking system to monitor CFL sales over time and to help identify future market trends. The objectives of the tracking system are to:

- Develop a picture of overall CFL sales within the program territory
- Determine the share of CFL sales that are flowing through program channels

- Combine the market assessment information with other data sources to evaluate the potential sustainability of observed CFL sales trends.

The market tracking system uses existing data on CFL sales to estimate sales for the remaining market where data are not available. Quarterly CFL sales data are gathered by ECOS both directly from program participants and through long-term relationships it has developed with most of the large retailers in the territory. ECOS uses these data to produce its own estimates of participating retailers' sales for each quarter. The reports for the fourth quarter of 2000, and all four quarters of 2001 were available for use in the market assessment.

ECOS also records coupon redemption information from the Coupon Campaign. ECONorthwest obtained a dataset from ECOS of all coupon redemptions that had been redeemed as of December 31, 2001. Each redeemed coupon represents one bulb sold and identifies the retailer who redeemed it and the utility service territory. This information was combined with the participant sales data and incorporated into the sales estimates for the entire market. ECONorthwest also obtained from ECOS a list of participating retailers during 2001 for use in developing the market tracking system. Participants are defined as retailers that have a relationship with the Lighting Program, either through participating in a cooperative marketing agreement or being visited by field reps.

Estimating Non-Participating Retailer Sales

In order to develop a market tracking mechanism, non-participating retailers needed to be identified and characterized along with the participating retailers. To accomplish this, Dun and Bradstreet (D&B) data were used to determine the number of retailers in the overall CFL market and to characterize these retailers by store type and size.[1]

To develop the potential market of CFL retailers, the first step was to determine the appropriate SIC codes for ECOS' list of participating stores by matching store names and addresses to D&B data. Through this matching process it was determined that the 1,060 participating stores represented twelve SIC categories for which the D&B data contain over 27,000 stores in the program territory. We know, however, that not all of these stores sell light bulbs. To address this, the original list of stores from D&B was analyzed and stores that were considered unlikely to sell light bulbs (i.e., pet stores, clothing stores, gas station convenience stores) were removed from the dataset. For the SIC codes containing relatively few stores, this was done by hand. For the Wholesale Non-Durable Goods category (SIC 5199), only Costco was kept, as it is also a retail outlet and has had a very large amount of retail CFL sales. The other stores in this category were removed to prevent double counting of wholesale and retail CFL sales.

Additionally, the categories with the largest shares of non-participant stores (Grocery, Drug, Miscellaneous Retail) were reviewed. Based on interviews with Lighting Program staff at ECOS and at the Alliance, it appears that only the larger stores within each category are likely to be selling CFLs. For example, within the grocery store category, the larger

[1] Dun and Bradstreet collects data on businesses within SIC codes and provides information such as store location, contact information, annual revenues, and number of employees. For larger stores (those with at least 50 employees), D&B has close to 100 percent coverage of the market.

grocery chains are more likely than the small convenience stores to sell CFLs outside the program. To account for this, only the top 10 percent of stores (in terms of revenue) for these segments were kept as part of the potential CFL market. This assumption will be revisited in the future and more stores added to the population as the situation warrants. The adjustments described in this and the preceding paragraph reduced the number of non-participant stores from 27,090 to 2,475.

To determine with more certainty how many of the non-participant retailers were actually selling CFLs, a small sample (10–20) of non-participating stores within each SIC code (188 total) were called and asked if they sold CFLs. The percentage of non-participating stores within each SIC code that sold CFLs was multiplied by the number of non-participants described above to determine a final non-participant population for each category. Based on this process, the entire population of stores (participants plus non-participants) that are included as potential sellers of CFLs is 2,573 as shown in Table 1.

Table 1. Population of Stores Selling CFLs

SIC Description (Code)	Participating Retailers	Population of Retailers Selling CFLs	Participant Share of Population
Elec. Apparatus & Equip (063)	31	157	20%
Wholesale Non-Durable Goods (199)	12	12	100%
Lumber & Other Bldg Supplies (211)	342	381	90%
Hardware Stores (251)	182	439	41%
Department Stores (311)	56	198	28%
Variety Stores (331)	35	49	71%
Misc. General Merchandise (399)	104	124	84%
Grocery Stores (411)	68	766	9%
Misc. Home Furnishings (719)	10	26	39%
Household Appliance (722)	1	11	10%
Drug Stores (912)	106	291	36%
Misc. Retail Stores (999)	113	119	95%
TOTAL	1,060	2,573	41%

To determine CFL sales of non-participants, D&B data on employees per store were used to calculate the average CFL sales per employee per quarter for retailers with available retailer sales data. The CFL sales excluded those purchased using a coupon, as the purpose was to extrapolate to stores where coupons were not accepted. To adjust for the fact that non-participating stores are less likely to promote CFLs as aggressively as the participating stores, the final CFL sales estimates were calculated assuming that non-participating retailers were only 25 percent as successful in selling CFLs as their participant counterparts.[2]

CFL Sales Estimation Results

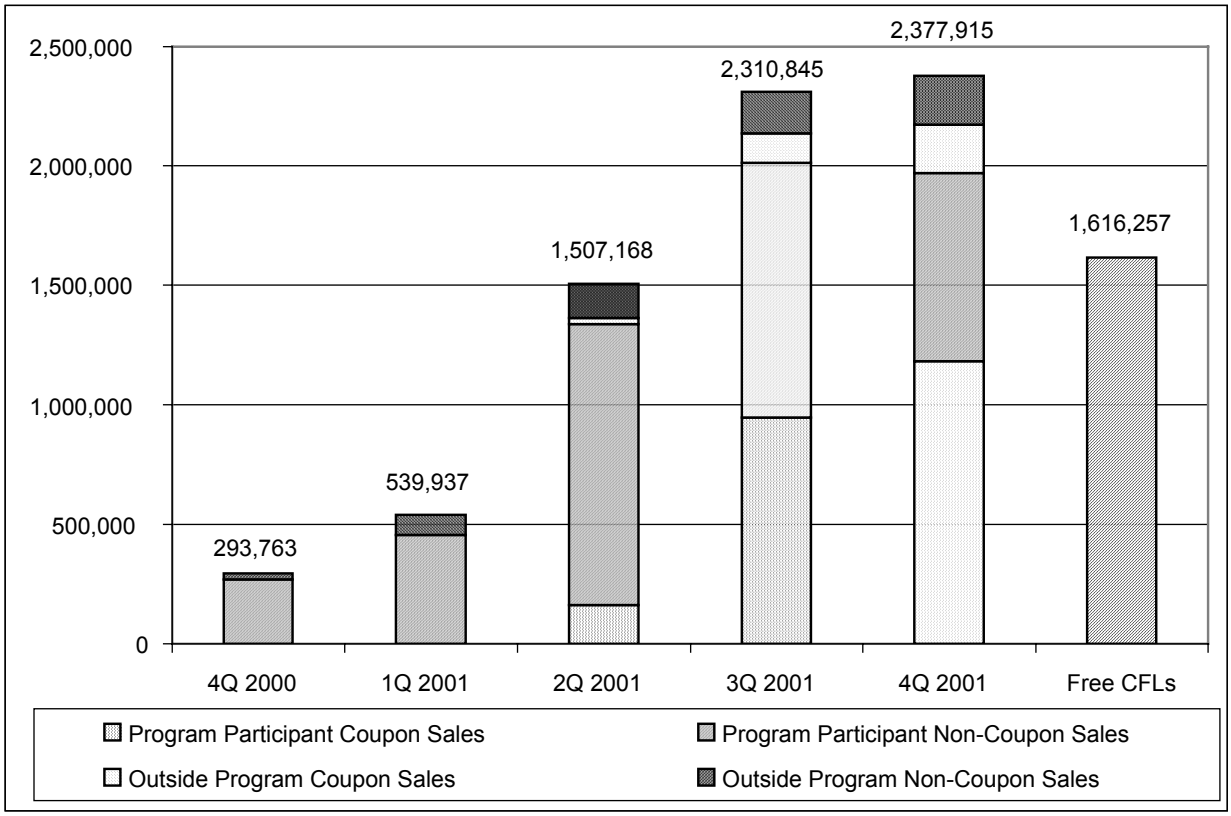
Total CFL sales in the region are shown in Figure 1 and Table 2 below. "Participant" sales refer to sales for retailers that are participating in the Lighting Program. For both

[2] A much more detailed discussion of the market assessment process used in the Lighting Program evaluation is available in the Lighting Program evaluation report, which is posted at the Alliance's website www.nwalliance.org.

participating and non-participating retailers, CFL sales are identified as either "Coupon" or "Non-Coupon" sales based on the store-level data on coupon redemptions.

As shown in Table 1 and Figure 1, we estimate that over 7 million CFLs have been sold in the Alliance territory during the 5 quarters covered by this analysis. Outside the Lighting Program, in addition to retail sales, over 1.6 million CFLs were given away free by utilities, bringing the total of CFLs distributed to 8,643,885 in the Northwest. From the survey results described below, we know that on average each household purchased about four bulbs.[3] Dividing the estimated 8,643,885 CFLs distributed by 4 bulbs per household results in 2,160,971 Northwest households purchasing CFLs in the past 15 months. From the U.S. Census, there are 4,433,433 households within the Alliance territory, indicating that approximately 49 percent of these households obtained a CFL during this period.

Figure 1. Total Northwest CFL Sales by Quarter (7,029,628 bulbs total) and Free CFLs Distributed



[3] From the consumer survey, the mean number of CFL bulbs purchased was 3.89 and the median number was 2. We use the mean rather than the median to provide a more conservative approximation of the number of households that have obtained a CFL.

Table 2. CFL Sales by Quarter and Retailer Type

Category	4Q 2000	1Q 2001	2Q 2001	3Q 2001	4Q 2001	TOTAL
Program Participant Coupon Sales	0	0	161,149	949,021	1,180,838	2,291,008
Program Participant Non-Coupon Sales	268,717	454,678	1,176,186	1,065,263	789,193	3,754,037
Outside Program Coupon Sales	0	0	25,137	122,336	201,089	348,562
Outside Program Non-Coupon Sales	25,046	85,259	144,696	174,225	206,795	636,021
Total Sales	293,763	539,937	1,507,168	2,310,845	2,377,915	7,029,628
Free Mailout CFLs						1,614,257
Total CFLs Distributed						**8,643,885**

While the CFL sales figures are extraordinary relative to the almost non-existent pre-crisis levels, it useful to view them in the context of the total light bulb market. A typical household has approximately 35 light sockets so even for the households that bought four CFLs a very large number of potential applications remain. From a broader market perspective, approximately 52,153,920 incandescent bulbs are sold in the Northwest each year[4], or about 65 million over the five quarters covered in this evaluation. Compared with this broader market, total CFL sales are only 11 percent of incandescent sales. While much progress has been made, CFLs still comprise only a small part of the overall residential lighting market.

Consumer Surveys

As the preceding market analysis shows, there has been a tremendous increase in CFL sales within the Alliance territory. To determine the sustainability of this level of sales, consumer surveys were conducted in June 2001 and April 2002 to collect data on key CFL indicators including consumer awareness, market barriers, satisfaction, and future purchase intentions.

The survey samples were designed to be proportional to the overall Northwest population, stratified first by state and then by demographic zone (urban, rural, suburban) within each state. A further stratification based on those who owned CFLs (either by purchasing them or receiving them free) and those who did not was made to ensure a full range of respondent experiences within each stratum.

Table 3 provides information on the samples used in each of the consumer surveys. In each survey, we collected responses from households that had recently purchased CFLs or incandescent light bulbs. The first customer survey (Wave I) was fielded in May and June of 2001, at the height of an information blitz on energy conservation and West Coast Energy Crisis. The second survey (Wave II) was fielded in April 2002 after the energy crisis abated. An additional survey (Call Back) was fielded in April 2002 and involved calling back both

[4] Approximately 1.3 billion incandescent bulbs are sold in the U.S. each year, according to the *Residential Market Share Tracking Lamps* study prepared by RER for Southern California Edison (January 2001). Based on the share of the U.S. population in the Alliance service territory (4%), we estimate that incandescent lamp sales in the program area are 52,153,920 annually.

CFL and incandescent purchasers from Wave I to determine retention rates, satisfaction levels, and follow through on stated intentions to purchase CFLs in the upcoming year.

Table 3. Survey Samples

Respondent Group	Surveys		
	Wave I	Wave II	Call Back
CFL Purchasers	246	202	
Incandescent Purchasers	316	166	180
Free CFL Recipients	38	32	
CFL Purchasers and Free Bulb Recipients Combined			163
Total Sample	600	400	343

One of the important components of the CFL bulb market has been the Coupon Campaign that provided $6 CFL coupons to millions of residential customers in the Pacific Northwest. Given the high degree of exposure to these coupons, we asked whether customers would require coupons in the future to continue purchasing CFLs. Table 4 provides some information on how important these coupons are for future CFLs purchases. For each customer type, the willingness to purchase CFLs in the future without a coupon falls a bit from the first to the second survey wave. This is likely due to the lessening of the energy crisis by the time the second survey was fielded. In general, over half of all lighting customers indicate that they would purchase a CFL in the future even if coupons were not available.

Table 4. Influence of Coupons on Future CFL Purchase Intentions

Likely to Purchase if Coupons Not Available	CFL Purchasers		Free CFL Recipients		Incandescent Purchasers	
	Wave I	Wave II	Wave I	Wave II	Wave I	Wave II
Yes	94%	67%	62%	56%	53%	51%
No	6%	30%	32%	44%	21%	45%
Don't Know	0%	3%	6%	0%	26%	3%
# of respondents	246	183	38	27	316	108

In the long run, satisfaction with the product will be the key factor that determines CFL sales. Table 5 provides information on satisfaction with CFLs from both survey waves. In general, CFL consumers appear to be minimally satisfied with their CFL purchases, with only 50 percent of survey respondents indicating that they are either 'Satisfied' or 'Very Satisfied' with their CFLs.[5] This pattern also holds for free CFL recipients, with even fewer respondents 'Very Satisfied' compared with CFL purchasers.

[5] Respondents were considered as 'Very Satisfied' if they gave a satisfaction rating of 9 to 10 on a 10- point scale. Responses in the 6 to 8 point range were coded as 'Satisfied', responses of 3 to 5 were coded as 'Moderately Dissatisfied', and responses of 1 or 2 were coded as 'Dissatisfied'.

Table 5. Satisfaction with CFL Bulbs

Satisfaction	CFL Purchasers		Free CFL Recipients	
	Wave I	Wave II	Wave I	Wave II
Very Satisfied	46%	34%	34%	25%
Satisfied	14%	44%	20%	39%
Moderately Dissatisfied	37%	18%	43%	32%
Dissatisfied	3%	5%	3%	4%
# of respondents	167	192	32	22

For those that indicated that they were dissatisfied with their CFLs for any reason, additional questions were asked to find out the exact reason for the dissatisfaction. The responses from these questions are summarized in Table 6. From the first survey wave, the most common response was that CFLs were not as bright as incandescents. Not fitting fixtures and light quality also contributed to dissatisfaction levels. From the second survey wave, brightness was still an issue and light quality was also a very common reason given for dissatisfaction with CFLs. Concerns about brightness indicate a need for more accurate information on labels regarding appropriate wattage conversions. Similarly, better labeling and education on bulb color ratings will help provide information to consumers as to the light color they are purchasing.

Table 6. Reasons for Dissatisfaction with CFLs Relative to Incandescents

Reasons for Dissatisfaction	Wave I	Wave II
Not as bright	39%	51%
Does not fit fixtures	10%	9%
Too long to light up	2%	0%
Light Quality	6%	45%
Too Expensive	2%	0%
# of respondents	51	48

Table 7 provides information on consumer intentions on purchasing CFLs in the upcoming year. Respondents self-reported intentions in each of these surveys are high, ranging from 63 to 80 percent saying that they intend to purchase a CFL within the upcoming year. Intention levels were somewhat lower for incandescent purchasers in each survey, with these customers still reporting relatively high (63 to 64 percent) intention rates for CFL purchases in the upcoming year in both surveys.

Table 7. Intentions for Purchasing CFLs by Customer Type and Survey

Intend to Purchase Within the Next Year	CFL Purchasers		Free CFL Recipients		Incandescent Purchasers		Overall	
	Wave I	Wave II	Wave I	Wave II	Wave I	Wave II	Wave I	Wave II
Yes	80%	75%	79%	71%	64%	63%	72%	71%
No	14%	25%	16%	29%	15%	37%	15%	29%
Don't Know	5%	0%	6%	0%	21%	0%	13%	0%
# of respondents	246	183	38	27	316	108	600	318

While stated purchase intentions provide some information on the potential sustainability of CFL purchases over time, information is also needed on what factors will positively and negatively affect intentions over time. Table 8 shows how dissatisfaction with recent CFL purchases affects consumers' intentions of purchasing more CFLs in the future: dissatisfied customers in Wave II say that they are much less likely to purchase CFLs in the future. The higher intention rates found in the Wave I survey are possibly due to the survey being fielded at the height of the energy crisis, when customers in the Pacific Northwest were inundated with calls for energy conservation. The Wave II survey results are particularly informative as they suggest that bad experiences with CFLs can result in an unwillingness of consumers to try them again in the future.

Table 8. Effect of Dissatisfaction on Future CFL Purchase Intentions

Intend to Purchase Within the Next Year	Wave I Dissatisfied with CFLs		Wave II Dissatisfied with CFLs	
	Yes	No	Yes	No
Yes	78%	92%	33%	67%
No	22%	8%	67%	33%
# of respondents	111	148	152	54

In the end, stated purchase intentions do not provide as much information as revealed purchase behavior. The purpose of the callback survey was to re-contact respondents from the first survey wave and determine how many had followed through with their originally stated intentions of purchasing CFLs within the upcoming year. These results are presented in Table 9 and reflect the responses of both CFL and incandescent purchasers. Overall, 47 percent of respondents we re-contacted had either purchased a CFL (29 percent) or purchased both CFLs and incandescents (18 percent) since the original survey. Those that had originally purchased CFLs had better rates of follow-through, with 50 percent purchasing a CFL since the original survey. For incandescent purchasers in the original survey, the follow-through rate was slightly lower at 43 percent.

Table 9. Follow-Through With Purchase Intentions From First Survey Wave

Type of Light Bulbs Purchased in the Past 10 Months	Intend to buy a CFL in the next year: All	CFL Purchasers from Wave I	Incandescent Purchasers from Wave I
CFLs	29%	36%	20%
Incandescents	26%	23%	31%
Both Incandescents and CFLs	18%	14%	23%
None	26%	27%	25%
# Respondents	242	131	111

Table 10 shows lighting purchase results from the Call Back survey broken out by satisfaction levels with CFLs from the original survey. The first column of this table shows what types of light bulbs have been purchased in the 10 months preceding the Call Back survey. As expected, satisfaction levels with the original CFLs have a distinct effect on future purchase patterns. The vast majority of those who were very satisfied with their CFLs in Wave I and who had made a lighting purchase in the preceding 10 months chose to purchase CFLs. For those that were somewhat dissatisfied or not satisfied with the original CFLs, the majority of subsequent lighting purchases were for incandescents rather than CFLs.

Table 10. Recent Bulb Purchases by Satisfaction with CFLs from First Survey Wave

Type of Light Bulbs Purchased ir the Past 10 Months	All	Very Satisfied	Satisfied	Somewhat Dissatisfied	Not Satisfied
CFLs	32%	42%	32%	20%	9%
Incandescents	26%	15%	25%	38%	66%
Both Incandescents and CFLs	12%	9%	18%	4%	9%
None	30%	34%	24%	39%	16%
N Respondents	163	66	45	27	12

Conclusions

The events of the last year brought about unprecedented changes in the Northwest CFL market. The Residential ENERGY STAR® Lighting Program's retail network and administrative infrastructure and the Coupon Campaign's retail purchase requirement introduced hundreds of retailers and hundreds of thousands of consumers to CFLs. While it is still too early to assess the degree to which this momentum will be sustained, the initial results from the consumer survey and the market assessment are encouraging.

Several key evaluation results suggest that at least some of the CFL sales observed in 2001 can be sustained:

- **Survey results indicate high intention levels for future CFL purchases.** From the first survey wave, the majority of 'intenders' said they still intend to purchase a CFL within the upcoming year *even if coupons were not available*. This includes over 90 percent of intenders among recent CFL purchasers and 53 percent of intenders that were recent incandescent purchasers. While intentions decreased with Wave II of the survey, over half of the respondents still indicated that they intended to purchase a CFL in the upcoming year even if coupons were not available. In addition, results from the Call Back Survey show that about half of CFL purchase intenders identified during Wave I actually followed through with a CFL purchase.
- **Most CFL sales are not the result of a coupon.** Although coupons are obviously an important factor in the CFL market, coupon sales still comprised less than half of all CFLs sold during the five quarters covered by this evaluation. Over this period, coupons accounted for 38 percent of the almost 7 million CFLs sold. This suggests that CFL sales will not completely disappear with the Coupon Campaign.
- **Satisfaction levels –rather than coupons- are influencing future CFL purchases.** Not surprisingly, satisfaction with past CFL purchases tends to determine whether or not a CFL is purchased the next time a person shops for light bulbs. Respondents who were dissatisfied with CFLs tended to purchase incandescents in subsequent periods. It is important to note that the observed shift back to incandescents for dissatisfied CFL customers came at a time when coupons and discounts for CFLs were still widely available. The most common reasons for dissatisfaction were issues of light quality and brightness. These issues can be addressed through better education and labeling of products.

In conclusion, the West Coast energy crisis and ensuing Coupon Campaign altered the CFL market dramatically in 2001. Awareness of CFLs is now at levels that would have taken years to achieve in the absence of the publicity surrounding the energy crisis and this awareness will remain for at least several years. Sales reached truly phenomenal levels in 2001 but it is unrealistic to assume that such levels will be maintained in the absence of another critical energy situation. As of this writing in mid-2002 there are signs that sales are decreasing. The important question now is whether CFL sales will return all the way to pre-crisis levels or remain significantly higher in the future. Survey results indicate that consumers will continue to purchase CFLs. Consumers are generally satisfied with CFLs and intention levels for future CFL purchases remain high, although they have decreased from the very high levels indicated by the 2001 survey. Results from our Call Back survey indicate that a little over half of those that stated they would purchase a CFL in the future actually followed through with a CFL purchase within ten months of the first survey. Given the relatively short time period and the longer life span of CFLs, these later CFL purchases were likely additional CFLs rather than replacements for previously purchased CFLs. While it is still very early in the analysis, these initial findings provide hope that a substantial portion of the increased CFL sales observed in the Pacific Northwest will continue in the future.

At the same time, while the CFL sales figures are extraordinary relative to the almost non-existent pre-crisis levels, it would be misleading to conclude that the market has yet been transformed in any meaningful way. First, one could immediately point out that after an enormous publicity effort, with information and financial incentives coming from a multitude

of sources, possibly five out of ten households still have not tried a CFL. More important, in terms of the total lighting market, the penetration of CFLs has been minimal. A typical household has approximately 35 light sockets so even for the households that bought four CFLs a very large number of potential applications remain, and the number of cost-effect applications will increase as CFL prices fall over time. From a broader market perspective, even with the enormous increase in sales, CFL sales levels are still only a small fraction of those observed for incandescent bulbs. It is clear, therefore, that while much progress has been made there is still a great deal of change that will have to occur before anyone will be able to state that the residential lighting market has been transformed.