2008-09 CFL Tracking Study

ENERGY STAR Consumer Products Lighting Project

Market Progress Evaluation Report

PREPARED BY

KEMA

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Prepared for: Northwest Energy Efficiency Alliance
Portland, OR

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E. Executive Summary

E.1 Program History

NEEA began its consumer lighting market initiatives in 1997 to advance consumer awareness and use of compact fluorescent lamps (CFLs) and fluorescent light fixtures throughout the region. Its earliest projects addressed such market barriers as high first cost; lack of product availability; lack of consumer awareness; incompatibility of CFLs with existing fixtures, dimmers, timers and photocells; performance problems; poor aesthetics of energy-efficient lighting products; and consumer dislike of fluorescent technologies by providing financial incentives to manufacturers; retailer education; marketing and mass advertising; and branding.

NEEA's project began targeting retailers in 2000 (by providing salesperson training as well as advertising and marketing support) and shifted its focus to manufacturers in 2005, coordinating a regional manufacturer buydown promotion. The promotion provided broad geographic sales coverage (including rural markets) through distribution channels including grocery, drug, hardware, mass merchandise, do-it-yourself, and wholesale chains.

NEEA coordinated similar promotions in 2006 and 2007, emphasizing smaller CFL distribution channels (such as drug and grocery stores) and CFL sales in non-metropolitan areas. In 2007 alone, participating retail chains sold approximately 1.8 million ENERGY STAR CFLs through NEEA's promotions and total regional sales of ENERGY STAR CFLs exceeded 18 million lamps. NEEA concluded that additional support of the Northwest lighting market was longer necessary and ceased its active interventions in the market in early 2008.

E.2 Key Findings

We utilized data from our CFL sales and market share assessment, lighting retailer shelf surveys, and supplier interviews to assess CFL availability, diversity and affordability; Northwest ENERGY STAR CFL sales and market share; and CFL supplier perspectives on NEEA's withdrawal from the incentive market in 2008 as well as on the Energy Independence and Security Act (EISA) of 2007.

- **Product availability and diversity.**
    - The proportion of Northwest lighting retailers that carried CFLs increased between 2006 and 2008, as did the proportion of lighting retailers in the region that carried both twister and non-twister style CFLs. These changes are

particularly apparent among stores in non-metropolitan areas and among drug/grocery/small hardware stores. In the midst of these changes, the average share of lighting product shelf space devoted to CFLs in each store did not change, suggesting that newer market entrants are displaying CFLs to a similar extent as longer-term market participants.

- The average number of twister models per store increased dramatically, while the average number of non-twister models held constant (despite the presence of newer market entrants in the survey sample). The most dramatic increases in availability were apparent in drug/grocery/small hardware stores and stores in non-metropolitan areas. Disparities in product offerings between stores in metropolitan areas (which typically offered a larger number of CFL models) and non-metropolitan areas also decreased.
- CFL suppliers reported little or no difficulty in supplying the Northwest CFL market in 2008.

- **Product affordability.** There was little or no change in the average retail CFL price across all store types and regions between 2006 and 2008. Average retail prices may have increased disproportionately in drug/grocery/small hardware stores in general, and particularly in metro-area drug/grocery/small hardware stores. CFL supplier comments on price aligned well with those from the lighting retailer shelf survey.
- **Northwest ENERGY STAR CFL sales.** Total ENERGY STAR CFL sales for 2008 reached approximately 24.7 million, representing a 36 percent increase over total sales for 2007. The proportion of total CFL sales between big box and non big box stores remained constant between 2007 and 2008. The proportion of incentive CFL sales shifted between store categories, with a one-third increase to big box stores and concurrent drop in drug/grocery/small hardware chains.
- **Northwest ENERGY STAR CFL market share.** Northwest residential ENERGY STAR CFL market share of total residential medium screw-base lamp sales for 2008 was between 35 and 48 percent, compared with only 20 percent at the national level. These results demonstrate that current Northwest residential ENERGY STAR CFL market share of total residential MSBL sales is considerably higher than in the United States as a whole. The data also show that Northwest CFL market share continued to increase in 2008, while U.S. market share declined to below the 2007 level.
- **NEEA's withdrawal of incentives in 2008.** We interviewed representatives of CFL manufacturers and retailers who participated in NEEA's 2007 Fall Change a Light

Promotion. Approximately half of these representatives reported that NEEA's withdrawal from the incentive market resulted in decreased overall CFL sales, but nearly all of these reported that these losses were minimized or entirely supplanted by revenue from specialty lamp and non-rebated lamp sales. So while their total sales (in terms of number of CFLs) may have decreased somewhat, they sold more (higher-priced) specialty lamps and thus their revenues were not dramatically impacted.

- **The Energy Independence and Security Act (EISA) of 2007.** Retailer representatives' perspectives on the impacts of EISA were fairly consistent, but manufacturers were less forthcoming with their perspectives.
    - Not surprisingly, all of the retailer representatives reported that their companies will sell only the technologies permitted by the law once the efficacy mandated changes begin to take place. Most mentioned that the ultimate effect of EISA depends on the level of availability of CFL replacements for applications in which incandescent lamps are typically used.
    - Two of the manufacturers' representatives we interviewed work for companies that manufacture only CFLs, thus their products likely comply with EISA already. One of these representatives suggested that the firms that produce both CFLs and incandescent lamps will attempt to stall the legislation for as long as possible and that the legislation will have no effect until enforcement mechanisms are added for noncompliant manufacturers.
    - Representatives of most of the firms that manufacture both CFLs and incandescent lamps reported simply that their companies are prepared for the change, and that they will comply with the legislation by phasing inefficient products out of production. Given the comparatively large market presence of these companies, it is not surprising that these representatives were less forthcoming regarding their plans than their (smaller CFL-only) competitors.

E.3 Conclusions and Recommendations

The Northwest market for ENERGY STAR CFLs continued to make progress in 2008 despite the absence of NEEA's active promotional efforts. Regional CFL sales increased dramatically over 2007 estimates, and CFL availability and diversity also increased.

Results from the MPER4 study suggested the possibility of some backsliding in market progress if grocery, drug, and discount stores were unable to offer relatively low prices for CFLs, but these predictions were not realized between 2007 and 2008 – possibly because of the

continuously high (even increased) level of CFL promotion in the region between 2007 and 2008 by utility program administrators. Northwest ENERGY STAR CFL market share also remained substantially higher than national estimates and continued to increase since 2007.

During the same period, promotional CFL sales in the Northwest increased somewhat, and despite a moderate shift in the proportion of total incentive CFL sales away from drug/grocery/small hardware stores and toward big box stores, total regional CFLs between big box and drug/grocery/small hardware stores has not changed since 2006. Energy-efficiency program sponsors in the Northwest continued to support drug/grocery/small hardware channels by providing CFL incentives, particularly for non-twister products. These incentive programs continued to support CFL market progress in the region in absence of NEEA's active CFL promotions.

The largest of these promotions was administered by BPA and other program sponsors and focused primarily on non-twister (specialty) CFLs. CFL suppliers reported that increased sales of non-twister lamps in 2008 – many of which were supported by BPA's promotion – helped to offset any declines in sales of twister-style lamps. CFL suppliers suggest that involvement from energy-efficiency program sponsors could continue to shape the Northwest lighting market going forward – and although they clearly have financial interest in continued energy-efficiency program support, the non-twister market progress in 2008 may support their assertion.

Based on these findings, we recommend the following:

1. **NEEA should continue to track Northwest ENERGY STAR CFL sales and adopt enhanced tracking techniques**, incorporating additional resolution to its sales data collection efforts. Such enhancements include:
    - CFL sales tracking by store type, region, and lamp style (twister versus non-twister) to enable early detection of any geographic areas, sales channels, or lamp types that may require additional market support.
    - Tracking of retail prices for CFLs to enhance monitoring of potential changes in the market.
    - Tracking non-CFL sales in the Northwest to aid calculation of accurate estimates of Northwest residential ENERGY STAR CFL market share of total residential MSBL sales.
2. **NEEA should consider conducting follow-up research with Northwest consumers in the future.** NEEA has not conducted consumer research on CFLs since Fall 2006,

and the dramatic changes in the Northwest CFL market during 2007 and 2008 may have had a considerable impact on consumer perceptions and behavior regarding CFLs. Such research may also assist NEEA in understanding:

- Possible impacts of increased regional CFL sales on consumer installation and storage rates;
- Consumer reactions to the specialty CFL market; and
- Consumer knowledge of (and emerging demand for) solid-state lighting technologies.

3. **NEEA should continue providing a regional leadership role for residential lighting products by establishing a 5 to 10 year plan.** A changing lighting market will continue to require focused, collaborative, regional efforts to set common market transformation goals and ensure logical allocation of energy-efficient lighting program incentives to accomplish these goals. NEEA should thus continue offering strategic guidance regarding the direction of residential lighting programs in the form of a regional plan for lighting market support and transformation over the next 5 to 10 years.

   Such a plan could establish:

   - An over-arching lighting market strategy for the region; and
   - Agreed-upon long-term regional lighting market transformation goals.

1. Introduction

This report represents KEMA's fifth evaluation of the Northwest lighting market for the Northwest Energy Efficiency Alliance (NEEA) beginning with the 2005 Market Progress Evaluation Report (MPER1) for NEEA's ENERGY STAR® Consumer Products Program.[1]

1.1 Project Overview

NEEA launched its first consumer lighting market initiatives in 1997 to advance awareness and use of energy-efficient compact fluorescent lamps (CFLs) and fluorescent light fixtures among Northwest residential customers. The project was designed to address market barriers including high first cost; lack of product availability; lack of consumer awareness; incompatibility of CFLs with existing fixtures, dimmers, timers and photocells; performance problems; poor aesthetics of energy-efficient lighting products; and consumer dislike of fluorescent technologies. The project provided financial incentives to manufacturers; retailer education; marketing and mass advertising; and branding.

During the late 1990s, the number of products that qualified for inclusion in NEEA's initiatives expanded. As a result, the project strategy evolved from targeting manufacturers to retailers in 2000. The project provided retailers with salesperson training as well as advertising and marketing support to encourage ENERGY STAR product promotion and marketplace acceptance. NEEA leveraged local utility activities and regional and national initiatives to encourage improvements in ENERGY STAR product quality.

In 2004, the project focused on improving the quality and consumer acceptance of CFLs in response to market data suggesting consumer issues with product performance. The project provided cooperative marketing opportunities and field services to retailers to promote ENERGY STAR products, and coordinated financial incentive offerings for qualifying products. The project also coordinated with national efforts such as ENERGY STAR's Change a Light, Change the World campaign and the lighting quality research conducted by the Program for Evaluation and Analysis of Residential Lighting (PEARL). Finally, the project supported advancement of new lighting technologies (e.g., dimmable, reflector CFLs) and supported efforts to encourage proper disposal of burned-out CFLs.

[1] KEMA, 2005, 2006, 2007, and 2008.

In 2005, the project coordinated a regional manufacturer buydown promotion to reduce the market price of CFLs in the region and establish promotional distribution channels to move high-quality, low-priced products into the market. The promotion provided broad geographic sales coverage (including rural markets) through distribution channels including grocery, drug, hardware, mass merchandise, do-it-yourself, and wholesale chains.

NEEA expanded upon the success of the project in 2005 by coordinating similar promotions in 2006 and 2007 with a specific focus on consumers who had had limited access to high-quality, low-priced CFLs as well as those who had never purchased CFLs. The 2006 and 2007 promotions emphasized non-traditional CFL distribution channels (such as drug and grocery stores) and rural areas, and excluded large do-it-yourself chains and wholesale clubs from participating.

In 2007 alone, participating retail chains sold approximately 1.8 million ENERGY STAR CFLs through NEEA's promotions and total regional sales of ENERGY STAR CFLs exceeded 18 million lamps.[2] NEEA concluded that additional support of the Northwest lighting market was longer necessary and ceased its active interventions in the market in early 2008.

1.2 Evaluation Overview

The objectives of this study are to track and monitor the following elements of the Northwest CFL market:

- **Product availability** in terms of the percentage of shelf space dedicated to ENERGY STAR CFLs in retail stores (including big box and non big box retailers);
- **Product affordability** in terms of continued reduction of the lowest average price for ENERGY STAR CFLs in retail stores (again including non big box and big box retailers);
- **ENERGY STAR CFL sales and market share in the Northwest**; and
- **Retailer and manufacturer representatives' reactions to and perspectives** on:
    - NEEA's withdrawal of incentives from the Northwest lighting market at the end of 2007; and
    - The Energy Independence and Security Act (EISA) of 2007.

[2] Fluid Market Strategies, 2009.

To assess the potential impacts of NEEA's withdrawal from active intervention in the Northwest CFL market in 2008, this CFL Tracking Study compares data on these four attributes between the period before NEEA's withdrawal in early 2008 and approximately one year afterward (late winter 2009).

Table 1 provides more detail on the two major data collection activities conducted in support of this evaluation. The table provides information about the sample design, sample size, and data collection dates. Appendix A provides the collection instruments used in support of these efforts. We also conducted a brief review of key assumptions in NEEA's cost-effectiveness (ACE) model, which can be found in Appendix B.

Table 1
2008-09 CFL Tracking Study: Data Collection Activities

Data Collection Activity	Sample Frame Source	Sample Design Overview	Number of Completes	Data Collection Dates
Market Actor Interviews (in-depth telephone interviews)	List of manufacturers and retailers provided by Fluid Market Strategies	Complete interviews with representatives of CFL retailers and manufacturers that participated in past NEEA promotions as well as with key industry observers.	6 retailer representatives; 5 manufacturer representatives; 1 industry observer	Feb – Mar 2009
Retail Store Shelf Surveys (in-store surveys)	List of stores provided by Portland Energy Conservation Institute	Complete retail store shelf surveys stratified across 3 geographic regions (metro east, metro west, non-metro) 3 store categories (national chain, regional chain, independent) and 5 store types (do-it-yourself, drug/grocery, mass merchandise, small hardware, warehouse).	58 retail stores	Nov – Dec 2008

2. CFL Sales and Market Share Assessment

This chapter of the report includes a brief summary of the major regional CFL promotion efforts that occurred in the Northwest during 2008 as well as an overview of ENERGY STAR CFL sales and market share in the Northwest and nationwide.

2.1 2008 Northwest CFL Promotions

Below we provide an overview of the regional CFL promotions that were sponsored in the Northwest during 2008. These included the Change a Light 2008 Specialty CFL Promotion (which was sponsored by the Bonneville Power Administration and others) and major utility promotions. As we will describe in Section 2.2, promotional sales of ENERGY STAR CFLs in the Northwest tracked by Fluid Market Strategies exceeded 6.5 million lamps in 2008.[3] These lamps represent approximately 27 percent of the total regional ENERGY STAR CFLs sales tracked during 2008, compared to 32 percent of total regional sales in 2007.

Note that in addition to the promotions described below, NEEA's 2007 Fall Change a Light (FCAL) promotion continued into the first quarter of 2008. The FCAL promotion reported sales of 452,253 CFLs in 2008 through Fred Meyer, Wal-Mart, Ace Hardware, True Value Hardware, and Albertson's supermarkets. Together, Fred Meyer and Wal-Mart accounted for 95 percent of FCAL sales in 2008 (66% Fred Meyer, 29% Wal-Mart).

2.1.1 Change a Light 2008 Specialty CFL Promotion

The Bonneville Power Administration (BPA) and other organizations sponsored the Change a Light 2008 Specialty CFL promotion. The promotion ran throughout the year and had three main objectives:

- To offer utilities an easy-to-implement opportunity to achieve residential sector energy savings;
- To introduce high-quality specialty CFLs with low promotional pricing through participating retailers in the region (who already had these products on their shelves);

[3] Additional promotions that occurred in the region were not tracked by Fluid Market Strategies; these are described in Section 2.1.2.4.

- To support market transformation of quality, high-end specialty bulbs.[4]

The program provided incentives for twister-style CFLs as well as globe, reflector, 3-way, a-lamp, and candelabra CFL styles, and also offered incentives for candelabra-style cold cathode lamps. Incentives ranged from $0.50 per lamp (for bare twisters) up to $2.65 per lamp (for dimmable reflectors). Portland Energy Conservation Institute (PECI) implemented the promotion and more than 40 utilities participated.[5]

Big box stores (such as warehouse, mass merchandise, and DIY stores) sold nearly all of the CFLs through the BPA promotion. Three-quarters of the CFLs sold through Costco alone (75%), and more than 90 percent sold through big box stores (including warehouse clubs, mass merchandise stores, and do-it-yourself stores). Table 2 provides more detail.

Table 2
Number and Percent of Total of CFLs Sold by Retailer Chain,
BPA Change a Light 2008 Specialty CFL Promotion

Retail Chain	Total CFLs Sold	Percent of Total CFLs
Costco	2,935,926	75%
Lowes	264,087	7%
Fred Meyer	235,819	6%
The Home Depot	198,547	5%
BiMart	118,608	3%
Wal-Mart	56,771	1%
Jerrys Home Improvement	37,625	1%
Haggen/Top Foods	14,560	<1%
Albertsons	12,676	<1%
Small Hardware stores	11,625	<1%
Grovers	9,731	<1%
Total	**3,895,975**	**100%**

Source: Fluid Market Strategies, 2009.

[4] BPA Change a Light Promotion, 2008a.
[5] BPA Change a Light Program, 2008b.

2.1.2 Utility Promotions

Fluid Market Strategies collected data for several other utility promotions in the Northwest during 2008. Below we provide a brief overview of the utility promotions on which Fluid Market Strategies gathered data – operated by Puget Sound Energy, Snohomish County Public Utility District, and Idaho Power Company – as well as a number of other promotions that were not tracked by the project. There is less information available regarding these promotions than the BPA specialty lamp promotion described above.

2.1.2.1 Puget Sound Energy

In 2009, Puget Sound Energy's (PSE) Residential Retail Lighting Program promoted CFLs through a retail markdown incentive that enabled its customers to receive CFL discounts of up to $4.00 per lamp at more than 200 participating retail locations. The promotion applied discounts to twister-style CFLs as well as specialty lamps such as globes, reflectors, and 3-way lamps.[6]

Through this promotion, the utility provided incentives for approximately 1.4 million CFLs in 2008. The promotion involved more than a dozen retailers. The Home Depot provided incentives for approximately 45 percent of the promotion's total CFLs, followed by Walgreens (21%), Lowes (6%) and McLendon Hardware (5%). The remaining retailers each sold less than 5 percent of PSE's total promotional CFLs (Table 2-2).

[6] Consortium for Energy Efficiency, 2008.

Table 3
Number and Percent of Total of CFLs Sold by Retail Chain,
PSE 2008 CFL Coupon Promotion

Retail Chain	Total CFLs Sold	Percent of Total CFLs
The Home Depot	619,906	45%
Walgreen's	284,247	21%
Lowes	120,404	9%
McLendon Hardware	78,492	6%
Bartell Drugs	73,765	5%
Hardware Sales	53,170	4%
Fred Meyer	45,422	3%
Wal-Mart	38,635	3%
Ace Hardware	21,433	2%
99 Ranch Grocery	21,258	2%
Other Grocery stores	10,862	1%
Small Hardware stores	8,700	1%
True Value	3,870	<1%
Total	**1,380,164**	**100%**

Source: Fluid Market Strategies, 2009.

2.1.2.2 Snohomish County Public Utility District

Through its CFL Coupon Promotion, the Snohomish County Public Utility District (SnoPUD) distributed coupons to its customers that provided discounts for CFL purchases through participating retailers. The coupons reduced CFL prices to approximately $2.00 per lamp.[7] Through this promotion, SnoPUD provided incentives for approximately 721,000 CFLs.[8]

2.1.2.3 Idaho Power Company

Idaho Power Company Change a Light Promotion, a buy-down promotion for twister-style and specialty CFLs designed to increase CFL sales and garner energy savings.[9] Participating

[7] Consortium for Energy Efficiency, 2008.
[8] Fluid Market Strategies, 2009.
[9] Consortium for Energy Efficiency, 2008.

retailers included Ace Hardware, Albertsons, Costco, The Home Depot, Lowe's, True Value, and Walgreen's, as well as other mass merchandise, grocery, and small hardware stores. These retailers sold approximately 101,000 CFLs through the promotion during the third and fourth quarters of 2008. Retailers sold the vast majority of CFLs during the fourth quarter (more than 94 percent of total Idaho Power Change a Light promotional sales) and more than two-thirds of the promotion's total sales were achieved in grocery and small hardware stores.[10]

2.1.2.4 Other Northwest CFL Promotions

In addition to the promotions described above, other utilities in the Northwest also offered CFL promotions during 2008. These include (but may not be limited to) the following programs in order of descending budget:

- **Seattle City Light's Twist and Save promotion** used a markdown approach to reduce CFL prices in wholesale, DIY, and mass merchandise chains as well as in drug stores and independent hardware stores. The approximate budget for this promotion in 2008 was approximately $2.65 million.[11]

- **Energy Trust of Oregon's Change a Light, Change the World promotion** reduced the price of specialty CFLs for retailers who did not typically carry CFLs or who carry only high-priced CFLs. The promotion's budget was over $1.5 million for 2008.[12]

- **Tacoma Power's CFL promotion** provided free or discounted CFLs to its customers in retail stores and other through delivery mechanisms. The total 2008 budget for this program exceeded $1 million.[13]

- **PacifiCorp's (Rocky Mountain Power and Pacific Power) Home Energy Savings Program** offered retail mark-down incentives for bare twister and specialty CFLs. The approximate budget for this program was $685,000 in 2008.[14]

[10] Fluid Market Strategies, 2009.
[11] Applied Proactive Technologies, 2008; and D&R International, 2008.
[12] Consortium for Energy Efficiency, 2008; and D&R International, 2008.
[13] Consortium for Energy Efficiency, 2008.
[14] Consortium for Energy Efficiency, 2008; and D&R International, 2008.

2.2 ENERGY STAR CFL Sales

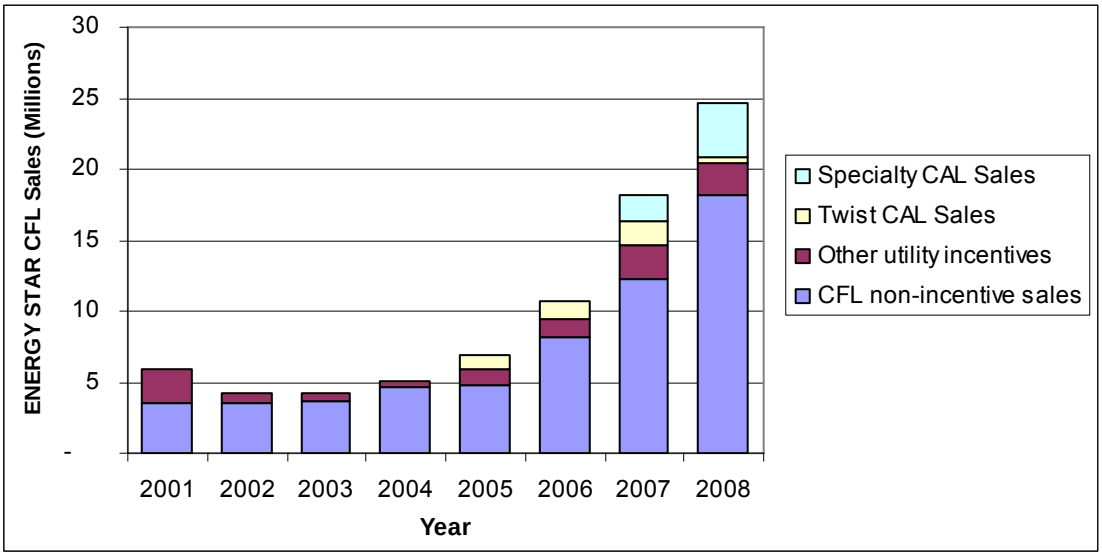
As described in prior ENERGY STAR Consumer Products lighting project Market Progress Evaluation Reports (MPERs), there have been several improvements to the methods used by NEEA's implementation contractors to track CFL sales over time. The most recent of these improvements occurred in 2006 in an effort to more accurately track sales of CFLs for which utility incentives were provided versus those for which no incentives were provided.[15] The current method relies upon reports of actual CFL sales through several major retail channels in the Northwest as well as reports from local utilities and other energy-efficiency program sponsors.[16]

Figure 2-1 shows ENERGY STAR CFL sales for the region based on NEEA estimates broken down by utility incentive versus non-incentive sales. "Twister CAL" sales include sales through the prior Savings with a Twist and Fall Change a Light promotions starting in 2005, and "Specialty CAL" sales include data from the spring/specialty Change a Light promotions starting in 2007. Total ENERGY STAR CFL sales for 2008 reached approximately 24.7 million, representing a 36 percent increase over total sales for 2007. Total ENERGY STAR CFL sales for 2008 in the Northwest exceed those of any prior year for which data are available.

[15] See prior MPERs for a thorough discussion of the methods used to develop estimates of ENERGY STAR CFL estimates.

[16] Note that because tracking methods have improved over time, it is likely that annual estimates from earlier years tracked a smaller proportion of the overall Northwest CFL sales than estimates for later years.

Figure 1
Estimated ENERGY STAR CFL Sales in the Northwest, 2001-2008

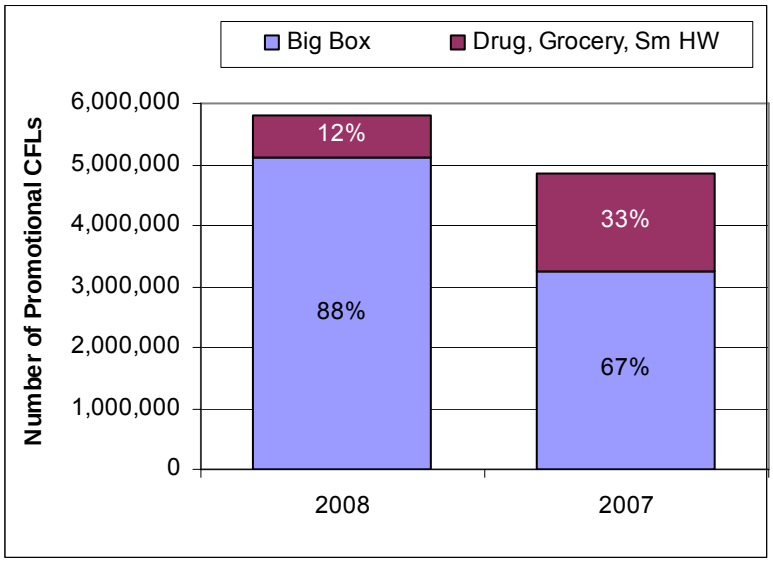


Sources: PECI, 2001–2006; Fluid Market Strategies, 2009, 2008a, 2008b, and 2007b.

Energy-efficiency program sponsors in the Northwest provided incentives for approximately 6.6 million CFLs in 2008, an 11 percent increase over 2007. Although incentive sales were higher overall, incentive sales declined by approximately 15 percent as a proportion of total 2008 CFL sales as compared to 2007 sales (27% and 32%, respectively). There was also a shift in the proportion of overall incentive CFL sales tracked by channel in terms of the mix of stores through which the incentives were provided.[17] As shown in Figure 2-2, the proportion of total tracked promotional sales through big box stores increased by approximately one-third (from 67% to 88%), while the proportion of tracked promotional sales through drug, grocery, and small hardware (non big box) stores dropped by nearly two-thirds (from 33% of the regional total in 2006 to 12% in 2008).

[17] Note that some promotional CFL sales were not tracked by retail channel. Seventeen and 11 percent of total promotional CFLs were not tracked by channel and in 2007 and 2008, respectively. All of the 2008 promotional CFLs that were not tracked by channel (n = 721,403) were sold through the Snohomish County Public Utility District's CFL Coupon Promotion.

Figure 2
Tracked Promotional CFL Sales by Store Category and Year



Source: Fluid Market Strategies, 2009.
Number of Northwest promotional CFLs tracked with details on retail channel: 2007 n = 4,868,350; 2008 n = 5,811,229.

Figure 2-3 shows the proportion of ENERGY STAR CFL sales by state in the Northwest for 2006 through 2008.[18] For the past three years, sales in Washington have comprised approximately half of the region's total ENERGY STAR CFL sales. Total ENERGY STAR CFL sales in 2008 reached more than 12.8 million in Washington, more than 6.4 million in Oregon, more than 3.0 million in Idaho, and more than 2.4 million in Montana.[19]

While these results closely mimic the proportional allocation of the region's 2008 population[20] between Washington and Oregon (51 and 30 percent of the population, respectively), Iadho accounts for a greater proportion of regional ENERGY STAR CFL sales than regional

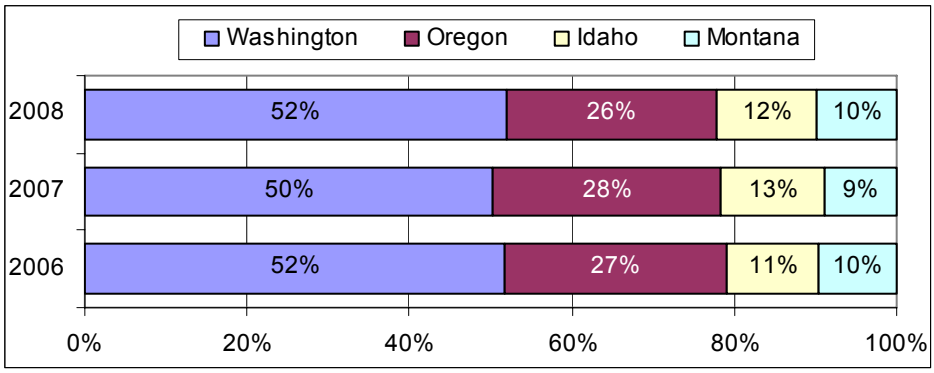
[18] Note that 2007 sales reported herein are slightly higher than those reported in MPER4 (KEMA, 2008) because 30,312 CFLs were added to Q4 sales after the reporting period. These were SnoPUD coupon sales that occurred at Bartell Drug stores (Fluid Market Strategies, 2009).

[19] Time series data at the state level is not presented herein for years prior to 2006 because while the current NEEA contractor calculates sales by state based on actual store-level data, the prior contractor extrapolated total regional sales to the state level proportionally based on the each state's population. Thus, the data for years prior to 2006 is not comparable with data from 2006 through 2008.

[20] Population estimates are from U.S. Census, 2009.

population (8 percent of the population, 12 percent of sales). Montana's proportion of regional sales and population align somewhat more closely (at 10 and 12%, respectively).

Figure 3
Estimated ENERGY STAR CFL Sales in the Northwest by State, 2006-2008



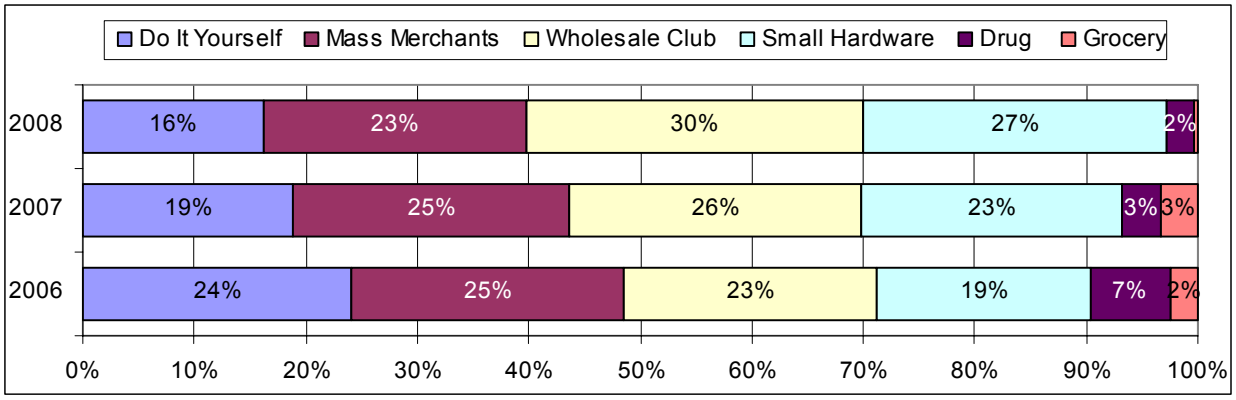
Sources: Fluid Market Strategies, 2009, 2008b and 2007b.
2008 n=24,710,098; 2007 n = 18,157,300; 2006 n = 10,751,907.

Figure 2-4 shows the proportion of Northwest CFL sales across store types for 2006 through 2008. The proportion of regional CFL sales through big box stores (DIY, mass merchants, and whole sale clubs) versus non- big box stores (drug, grocery, and small hardware stores) has remained fairly constant since 2006 (roughly 70% big box, 30% non big box), but there were some changes within each of these store type categories.

- Sales trends for DIY, wholesale clubs, and small hardware stores continued in 2008 in the same direction as prior years; the proportion of sales in DIY stores has dropped by 3 percentage points since 2007, while sales through wholesale clubs increased by 4 percentage points.
- Sales in small hardware stores also increased by 4 percentage points between 2007 and 2008. During this same period, drug store CFL sales dropped by approximately 1 percentage point and grocery store sales dropped by more than 2.5 percentage points (from 3% to 0.4%).

These results may be related to the decline in the number of total promotional CFL sales through drug, grocery, and small hardware (non big box) stores between 2007 and 2008 (Figure 2-2 above).

Figure 4
Estimated ENERGY STAR CFL Sales in the Northwest by Store Type, 2006-2008*



Sources: Fluid Market Strategies, 2009, 2008b, and 2007b.
2008 n= 23,988,695; 2007 n = 18,157,300; and 2006 n = 10,751,907. Note that 2008 data excludes 721,403 CFLs for which Snohomish PUD provided incentives as these incentives were not tracked by retail channel.
* 2006 sales include 795 CFLs sold through lighting specialty stores which represent less than 0.01 percent of total 2006 sales. (No CFL sales through lighting specialty stores were tracked in 2007 or 2008.)

2.3 ENERGY STAR CFL Market Share

ENERGY STAR CFL market share is defined as the ratio of total residential ENERGY STAR CFL sales to total residential medium screw-base lamp (MSBL) sales. Total residential MSBL sales are comprised of CFLs and "non-CFLs" such as incandescent and halogen lamps. Estimating ENERGY STAR CFL market share in the Northwest is challenging because while NEEA's implementation contractors track Northwest residential ENERGY STAR CFL sales, there exists no parallel data source for Northwest residential non-CFL sales. However, national data on residential CFL and non-CFL sales are available and can be used to estimate Northwest sales. Below we present two separate estimates of Northwest residential ENERGY STAR CFL market share based on different data sources. We also compare these to national estimates.

2.3.1 Approach

2.3.1.1 Northwest Market Share

Below we present two estimates of Northwest residential ENERGY STAR CFL market share. Each relied upon the same method but was based on different data sources. To estimate Northwest ENERGY STAR CFL market share, we first calculated national CFL and non-CFL medium screw-base lamp sales per household over time and estimated a linear function based

on the relationship of these two estimates. We then applied this function to household-level estimates of Northwest ENERGY STAR CFL sales (based on data from Fluid Market Strategies and the U.S. Census) to estimate Northwest non-CFL sales. After extrapolating to the population level (again based on U.S. Census data), we calculated Northwest CFL market share by dividing the total number of Northwest residential ENERGY STAR CFLs sold into total Northwest residential MSBL sales (the sum of Northwest CFLs and Northwest non-CFLs).

2.3.1.2 National Market Share

As a point of comparison for the estimates of Northwest residential ENERGY STAR CFL market share, we also present an estimate of national ENERGY STAR CFL market share of total residential MSBL sales below.

2.3.2 Data

2.3.2.1 Northwest Market Share

Our first estimate of Northwest residential ENERGY STAR CFL market share of total residential MSBL sales is based on national data from the 2005 California Residential Market Share Tracking (RMST) – Lamps Report[21] used in MPER4.[22] However, this source collected data on an inconsistent set of retail channels – with attrition of key channels over time – and has thus grown increasingly unreliable. The 2007 update to this source[23] suggests several widely differing estimates for 2006 and 2007 California and non-California residential MSBL sales (rather than an individual estimate for each), so we have continued to rely on the 2005 Lamps Report (used in the prior MPER) to develop an estimate of Northwest residential ENERGY STAR CFL market share. This estimate was based on the relationship between U.S. residential MSBL CFL and non-CFL sales through 2005 from the RMST and extrapolated through 2008.

Our second estimate of Northwest residential ENERGY STAR CFL market share is based on U.S. DOE estimates of CFL and incandescent lamp *shipments* from 2000 through 2008. To adjust shipments to sales (for consistency between the RMST and DOE data sources), we

[21] Itron, 2006.
[22] KEMA, 2008.
[23] Itron, 2008.

assumed that lamp sales are approximately 75 percent of shipments based on NEMA data.[24] In addition to providing estimates for 2006, 2007, and 2008, the added advantage of using the DOE data to estimate Northwest residential ENERGY STAR CFL market share is that it is the same source used to estimate national market share to which the Northwest estimates are compared.

2.3.2.2 National Market Share

We relied upon D&R International's 2009 "ENERGY STAR CFL Market Profile" for estimates of residential ENERGY STAR CFL market share of total residential MSBL sales.

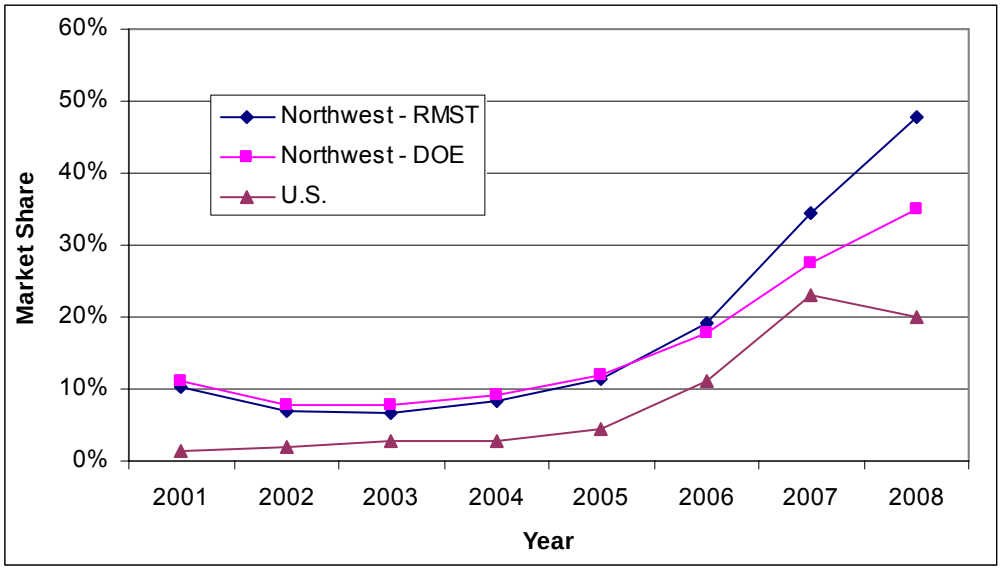
2.3.3 Results

Based on the analyses described above, we calculated two estimates of Northwest residential ENERGY STAR CFL market share for 2008. Based on the data and approach used in MPER4 (the 2005 RMST), CFL market share in the Northwest in 2008 was 48 percent of total residential MSBL sales (Figure 2-5). Based on the 2008 data from the U.S. Department of Energy, Northwest market share was 35 percent in 2008. Both of these estimates are up from less than 20 percent just two years ago (in 2006).

These results suggest that actual Northwest residential ENERGY STAR CFL market share for 2008 was between 35 and 48 percent, compared with only 20 percent at the national level, demonstrating that current Northwest residential ENERGY STAR CFL market share of total residential MSBL sales is considerably higher than in the United States as a whole. The data also suggest that Northwest CFL market share continued to increase in 2008, while U.S. market share declined to below the 2007 level.

[24] Sanders, M., 2008.

Figure 5
Estimated ENERGY STAR CFL Market Share
of Total Residential Medium Screw-Base Lamp Sales for the Northwest and U.S., 2001-2008*



Sources: NW ENERGY STAR CFL sales: PECI, 2001–2006; Fluid Market Strategies, 2009, 2008b and 2007b.
U.S. ENERGY STAR CFL Sales – for Northwest -RMST line: Itron, 2006; for Northwest - DOE line: U.S. DOE, 2009.
U.S. and NW population estimates 2000-2008: U.S. Census 2009.
U.S. market share: U.S. DOE, 2009.
* Note that the national market share estimate of 20 percent provided for 2007 in our MPER4 report (KEMA 2008) was based on draft ENERGY STAR data and was subsequently updated to 23 percent.

3. Shelf Survey Findings

This section of the report presents details on the 2008 lighting retailer shelf surveys, including a description of the methodology and presentation of key findings from our analyses of the survey data. Because the primary focus of this report is to ascertain whether there have been any changes in product availability, affordability, and diversity since NEEA's withdrawal from active lighting market interventions in early 2008, this section of the report compares 2006 data from MPER3 with the current evaluation's shelf survey results. Appendix C provides comparisons with shelf survey results from prior MPERs.

In this section we also compare results across four categories representing two groups of store types and two regions – metropolitan (metro) big box; metro drug/grocery/small hardware; non-metropolitan (non-metro) big box; and non-metro drug/grocery/small hardware – to highlight changes that have occurred in the market over the past two years (and since NEEA's withdrawal of lighting incentives in 2008). In this section, "big box" refers to warehouse, mass merchandise, and do-it-yourself (DIY) stores. Appendix C presents more detailed results across all 5 store type categories (warehouse, DIY, mass merchandise, drug and grocery, and small hardware stores).

3.1 Approach

KEMA field staff visited a total of 58 Northwest lighting retailers between November 2008 and January 2009. The field staff inventoried the CFLs found on the shelves at each retail store location and also recorded shelf space measurements.

The sample frame for the lighting retailers was taken directly from the third Market Progress Evaluation Report (MPER3) of NEEA's ENERGY STAR Consumer Products – Lighting project[25], the original source of which was the prior project implementation contractor's (PECI) 2006 lighting retailer database. To make direct comparisons between current results and those from MPER3, our 2008 efforts focused on stores that were surveyed during the previous evaluation effort. Consistent with MPER3, we stratified the sample by Metro West, Metro East and Non-Metro; store type; and within store type, by store ownership type (national, regional or

[25] *Ibid.*

franchise chain versus independent store).[26] Table 4 shows the distribution of retailers in the sample frame by strata.

Table 4
Retailer Shelf Survey Sample Frame

Store Type	Store Ownership Category (Number of Chains)	Geographic Location							
		Number of Stores				Percent of Stores			
		Metro West	Metro East	Non-Metro	Total	MSA West	MSA East	Non-Metro	Total
Warehouse	National chain (1)	21	3	9	33	1%	0%	0%	1%
DIY	National chains (3)	83	26	46	155	3%	1%	2%	6%
Drug and Grocery	National chains (4)	528	125	184	837	21%	5%	7%	33%
	Regional chains (6)	126	15	55	196	5%	1%	2%	8%
Mass Merchandise	National chains (4)	181	61	121	363	7%	2%	5%	14%
	Regional chains (7)	6	12	28	46	0%	0%	1%	2%
	Independents	15	1	28	44	1%	0%	1%	2%
Small Hardware	Franchises (3)	147	55	308	510	6%	2%	12%	20%
	Regional chains (20)	46	13	26	85	2%	1%	1%	3%
	Independents	89	38	154	281	3%	1%	6%	11%
Total		**1,242**	**349**	**959**	**2,550**	**49%**	**14%**	**38%**	**100%**

Table 3-2 shows the completed retailer shelf surveys by strata. During 2008 we conducted a total of 58 surveys including 19 in Idaho, 7 in Montana, 20 in Oregon, and 12 in Washington.

[26] See MPER3 (KEMA, 2007) for more details on these categories.

Table 5
Retailer Shelf Survey Completes by Strata

Store Type	Store Category (Number of Chains)	Geographic Location							
		Number of Stores				Number of Stores			
		Metro West	Metro East	Non-Metro	Total	Metro West	Metro East	Non-Metro	Total
Warehouse	National chain (1)	1	1	1	3	2%	2%	2%	5%
DIY	National chains (3)	3	3	2	8	5%	5%	3%	14%
Drug and Grocery	National chains (4)	3	3	3	9	5%	5%	5%	16%
	Regional chains (6)	3	2	2	7	5%	3%	3%	12%
Mass Merchandise	National chains (4)	2	2	3	7	3%	3%	5%	12%
	Regional chains (7)	1	1	1	3	2%	2%	2%	5%
	Independents	1	0	2	3	2%	0%	3%	5%
Small Hardware	Franchises (3)	2	1	2	5	3%	2%	3%	9%
	Regional chains (20)	2	1	2	5	3%	2%	3%	9%
	Independents	2	2	4	8	3%	3%	7%	14%
Total		**20**	**16**	**22**	**58**	**34%**	**28%**	**38%**	**100%**

KEMA calculated sample expansion weights by strata and applied them to each sample retailer such that the findings presented in this section represent the population of lighting retailers in the region that sell CFLs (as approximated by PECI's 2006 database). For affordability results across store types in the Northwest, we also applied sales weights based on regional CFL sales data gathered by Fluid Market Strategies.[27]

3.2 Affordability

Field staff collected pricing information for every CFL model observed on the shelf. As in prior evaluations, field staff recorded price (before and after rebate, when applicable) and number of CFLs per package. Below we present affordability results store type and geographic location.

[27] Fluid Market Strategies, 2009.

3.2.1 Average Price

The average CFL price in the Northwest increased by 40 cents between 2006 and 2008 (from $3.89 to $4.29), a 10 percent change.[28] The data suggest similar changes in average CFL price across CFL styles (twister versus non-twister; see Appendix C) but suggest that changes in CFL prices in a specific region/store type category may be driving the overall average CFL price.

The data suggest that there was little change in CFL prices by region within the Northwest between 2006 and 2008, with the CFL price increasing by similar margins within metro areas as in non-metro areas (23 and 22 cents, respectively; see Figure 3-1). Thus, while the average CFL price in metro areas was still higher than in non-metro areas in 2008, there was no noteworthy change in the gap between metro and non-metro prices between 2006 (44 cents) and 2008 (43 cents).

Average CFL prices by store category within the Northwest tell a different story. While average CFL prices increased across all store types, the change was substantially greater in drug/grocery/small hardware stores than in big box stores. The average CFL price increased between 2006 and 2008 by 86 cents within drug/grocery/small hardware stores and by only 39 cents within big box stores and (see Figure 7). Thus, the gap between average CFL prices in big box stores versus non-big box stores increased by 47 cents (from $1.45 in 2006 to $1.92 in 2008).

[28] We applied weights based on bulb style, price category and estimated sales. Average price paid is further weighted across store types, assuming equal distribution of store types across geographic types (non-metro and metropolitan). See MPER3, Appendix D (Section 12.1.3) for details regarding the weighting scheme, required assumptions, and sensitivity analysis on the assumptions.

Figure 6
Average Price Paid for CFLs by Geography and Year

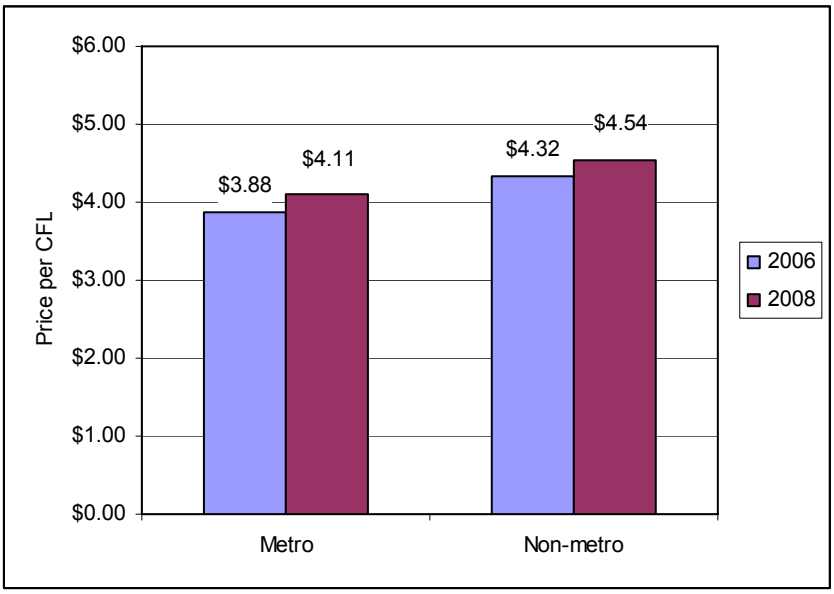


Figure 7
Average Price Paid for CFLs by Store Category and Year

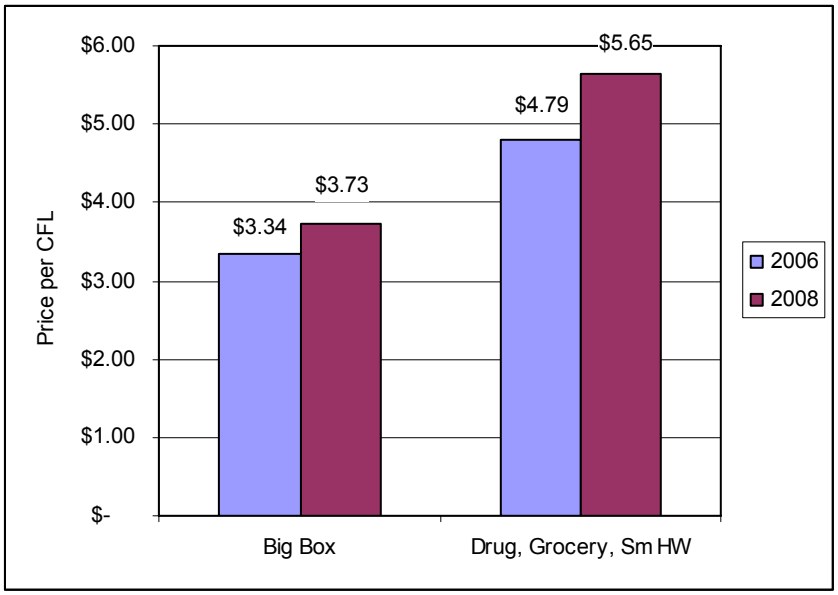


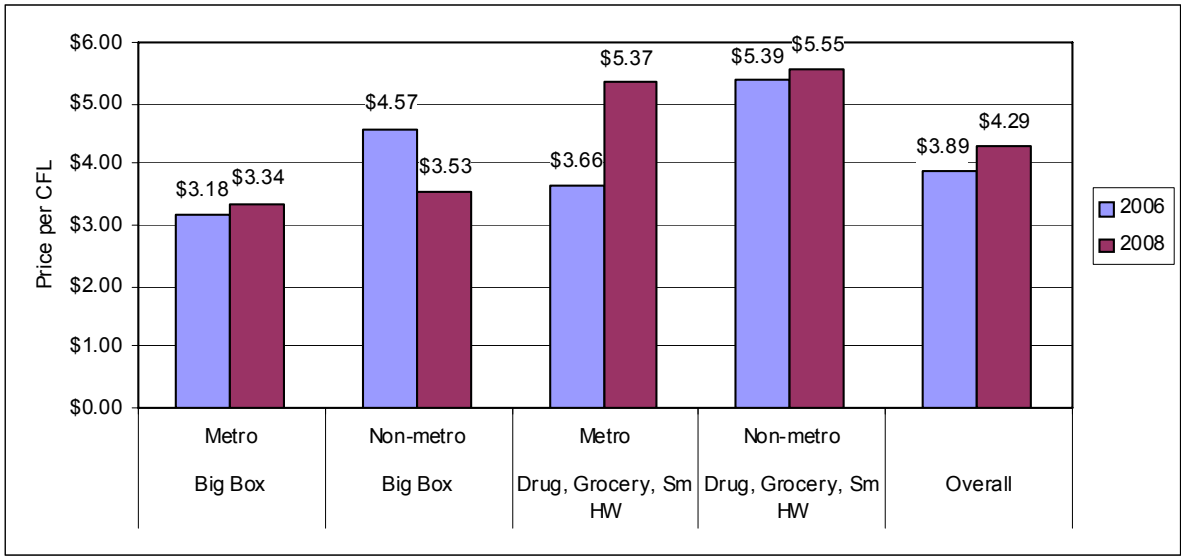
Figure 7 above shows that average CFL prices increased across all store types and that the change in prices was substantially greater in drug/grocery/small hardware stores than in big box stores. We examine the differences by store type and geography more closely in Figure 8.

- Within drug/grocery/small hardware stores, the increase in average CFL prices in metro areas was far greater than in non-metro areas. The average metro drug/grocery/small hardware store CFL price increased by $1.71 from 2006 to 2008 (from $3.66 to $5.37), a change of 48 percent. In comparison, prices in non-metro drug/grocery/small hardware stores increased by 16 cents (from $5.39 in 2006 to $5.55 in 2008), a change of only 3 percent.

- Within big box stores, the average CFL price dropped by $1.04 in non-metro areas (from $4.57 to $3.53), a 23-percent change. The average CFL price increased by 16 cents in metro big box stores (from $3.18 to $3.34), a 5 percent change.

These results suggest that the overall increase in regional average CFL prices from $3.89 to $4.29 between 2006 and 2007 were affected most substantially by an increase in average metro-area CFL prices within drug/grocery/small hardware stores.

Figure 8
Average Price Paid for CFLs by Geography, Store Category, and Year



3.3 Availability

To assess the availability of lighting products, field researchers collected information on the total linear feet and number of shelves for all light bulbs, CFLs and ENERGY STAR labeled CFLs. These data enabled calculation of total lighting shelf space in the region, average shelf space

per store dedicated to CFLs, the percentage of stores carrying any CFLs, and the percentage of stores carrying CFLs of specific styles. Results below are presented for all CFLs by store type and geographic location.

3.3.1 Total Shelf Space

Total shelf space dedicated to CFLs increased between 2006 and 2008 from 60,000 to nearly 95,000 linear feet, or 22% of total lighting shelf space. The total shelf space dedicated to ENERGY STAR CFLs nearly doubled as well, from 46,000 to 83,000 linear feet, or 19% of total lighting. Both of these increases are largely attributable to increases in linear feet of shelf space dedicated to CFLs and ENERGY STAR CFLs in drug/grocery/small hardware stores, which doubled during this period (see Appendix C).

3.3.2 Average Shelf Space

The average percentage of lighting shelf space allocated to CFLs in Northwest retail stores increased from 16 percent in 2006 to 22 percent in 2008. Metro stores dedicated a slightly higher proportion of total retail shelf space to CFLs than non-metro stores in 2008. The proportion of lighting shelf space dedicated to CFLs in non-metro lighting retailers stayed constant between 2006 and 2008 (21%) but increased from 17 to 25 percent in metro areas (Figure 9).

Figure 10 shows that the average proportion of shelf space allocated to CFLs increased across big box and drug/grocery/small hardware store categories between 2006 and 2008, with big box stores still devoting a larger proportion of overall shelf space (on average) to CFLs than other store types. The average percentage of shelf space in drug/grocery/small hardware stores dedicated to CFLs increased by 58 percent (from 13 to 20 percent of total shelf space), while the average percentage in big box stores increased by a smaller margin (14 percent).

Figure 9
Average Percentage of Shelf Space Dedicated to CFLs by Geography and Year

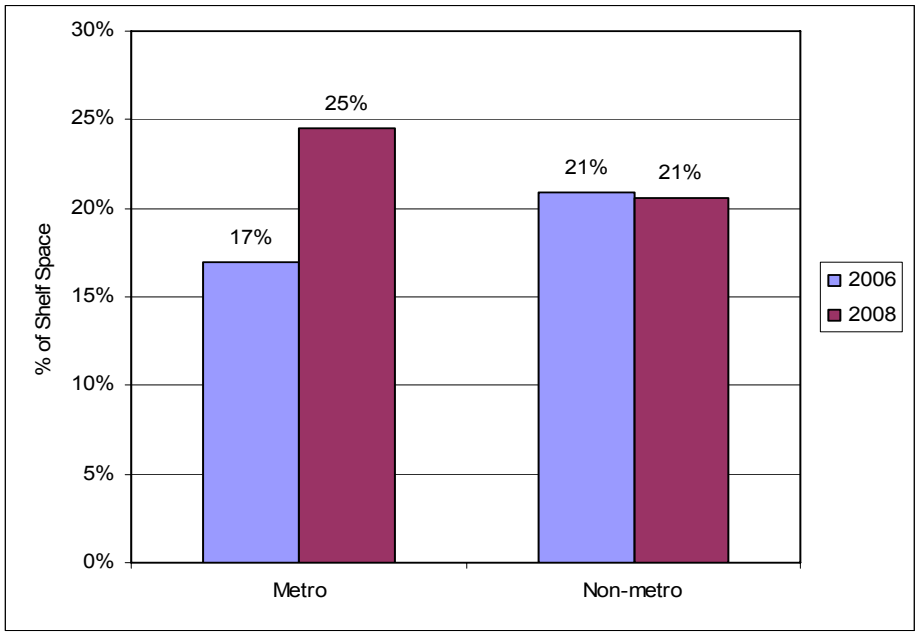


Figure 10
Average Percentage of Shelf Space Dedicated to CFLs by Store Category and Year

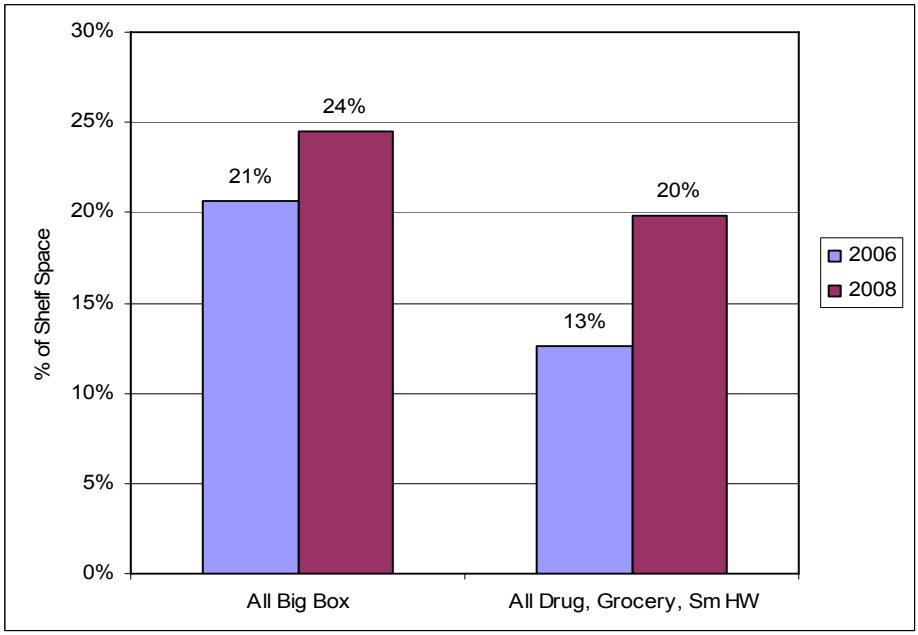
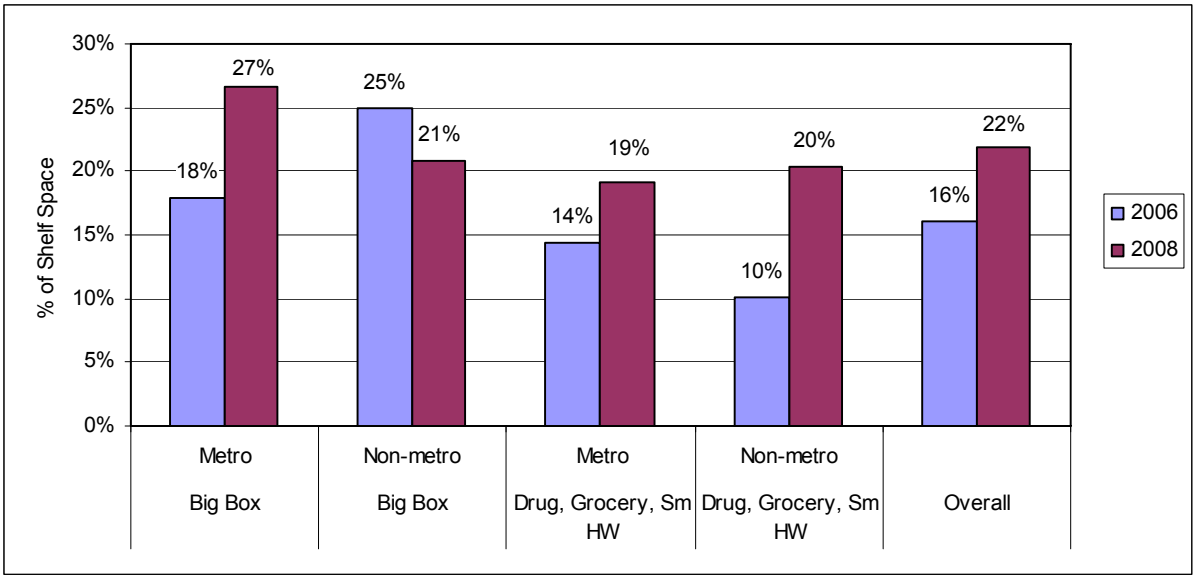


Figure 3-6 provides additional detail regarding changes in the average percentage of shelf space dedicated to CFLs over time by geography and store type together. The figure shows that

the average proportion of lighting shelf space dedicated to CFLs in the Northwest appears to have increased slightly between 2006 and 2008 within all store type/regional combinations except for non-metro big box stores, but the changes over time are not statistically significant. The average proportion of shelf space dedicated to CFLs in non-metro drug, grocery, and hardware stores also doubled (from 10% to 20% of total shelf space), but the effects of this shift are tempered at the overall non-metro level by a 16-percent drop in average shelf space dedicated to CFLs in non-metro big box stores (from 25% to 21%).

On average, all store types in metropolitan areas increased the percentage of shelf space dedicated to CFLs. The average percentage of shelf space dedicated to CFLs increased by approximately 50 percent in metro big box stores (from 18% to 27%) and by 36 percent in other metro store types (from 14% to 19%).

Figure 11
Average Percentage of Shelf Space Dedicated to CFLs by Geography, Store Category, and Year



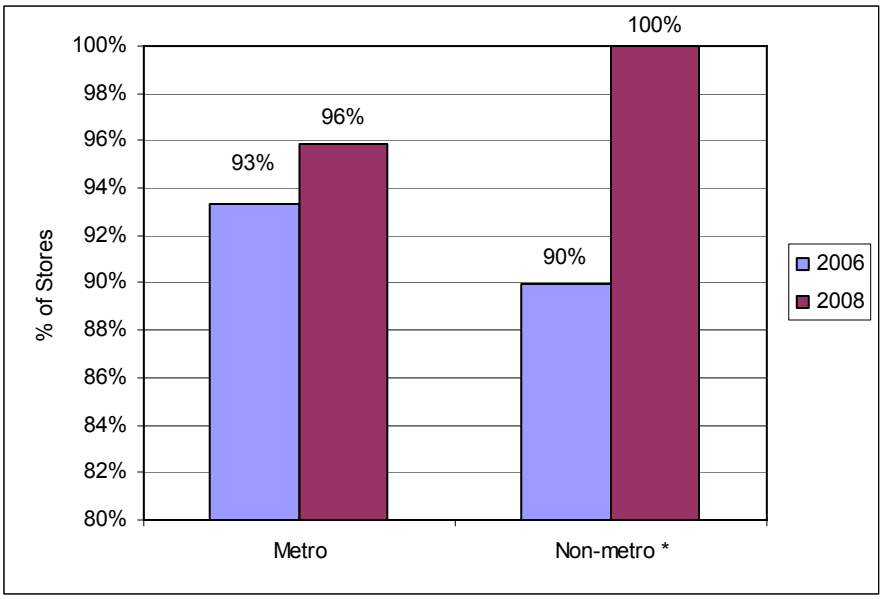
3.3.3 Percentage of Stores Carrying (Any) CFLs

Overall, 97 percent of lighting retailers surveyed in the Northwest carried CFLs in 2008, compared to 92 percent in 2006. The proportion of stores within metro areas that sold CFLs in 2008 is statistically the same as in 2006. Within non-metro areas, however, the percentage of

lighting retailers carrying CFLs increased significantly (Figure 12): all of the non-metro lighting retailers we surveyed in 2008 were carrying CFLs, versus only 90% in 2006.[29] The proportion of stores carrying CFLs in metropolitan areas remained statistically the same between years.

Figure 13 suggests an increase in the percentage of drug, grocery and small hardware stores that carried CFLs between 2006 and 2008 from 92 percent to 99 percent, respectively (although the difference is not statistically significant, likely because of small sample sizes in each of the two study periods).

Figure 12
Percentage of Stores Carrying CFLs by Geography and Year



* * Difference between 2006 and 2008 results is statistically significant.

[29] We report statistical significance at the 90 percent level of confidence.

Figure 13
Percentage of Stores Carrying CFLs by Store Category and Year

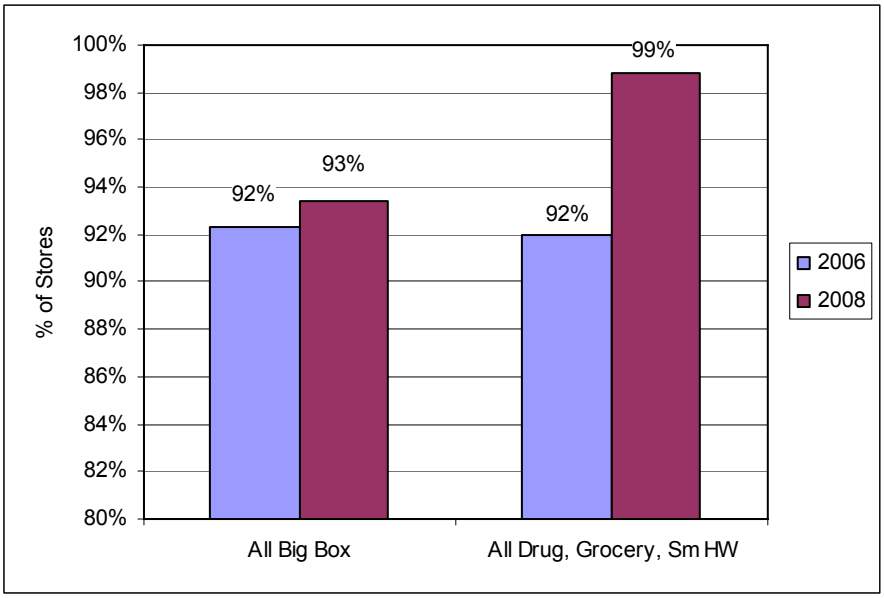
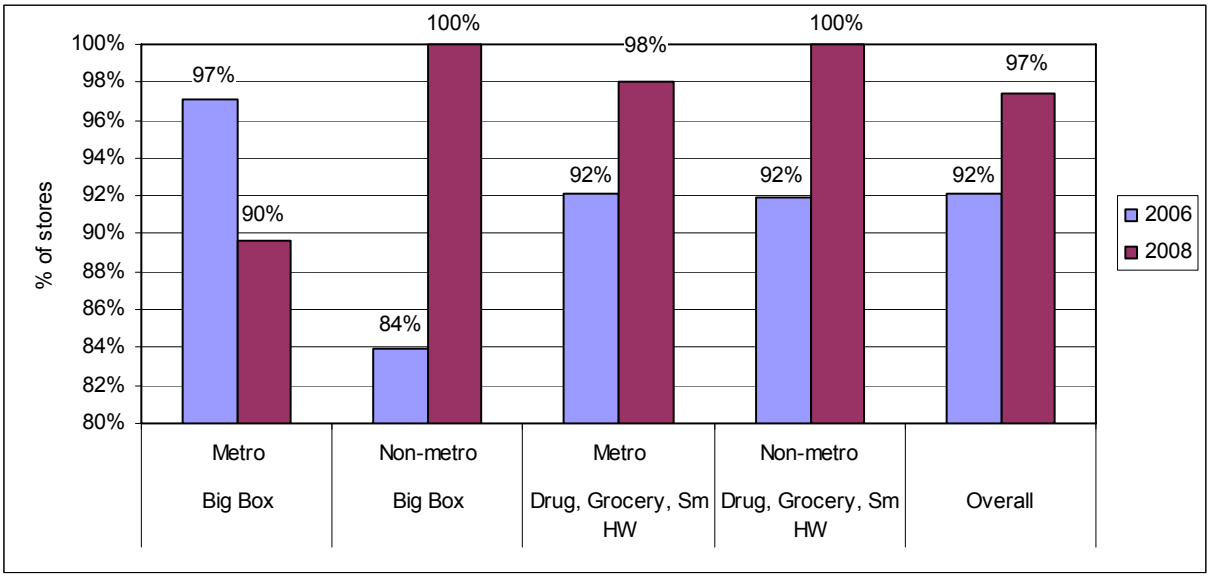


Figure 14 provides additional detail regarding changes in the percentage of stores carrying CFLs over time by geography and store type combined. The significant increase in the proportion of non-metro stores carrying CFLs between 2006 and 2008 (shown in Figure 12 above) is likely driven by the increased proportion of non-metro big box stores and drug/grocery/small hardware stores carrying CFLs between the two years (changes of 16 and 8 percentage points, respectively; see Figure 14). Note that none of the changes at the store category/geography level are statistically significant between years.

Figure 14
Percent of Stores Carrying CFLs by Geography Store Category, and Year

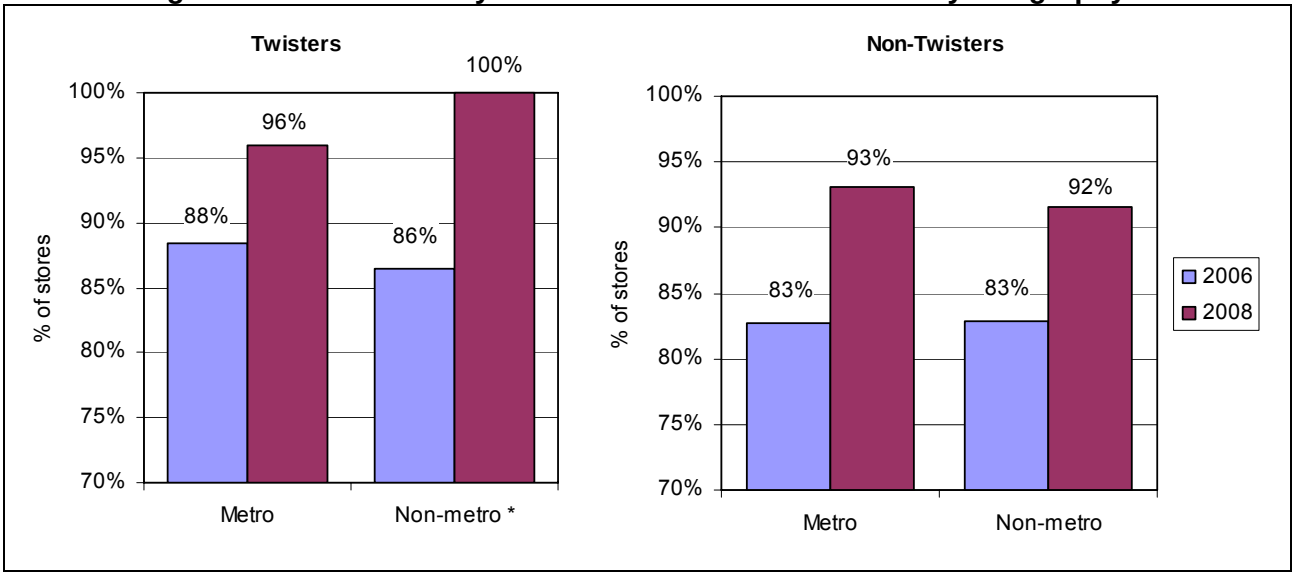


3.3.4 Percentage of Stores Carrying CFLs by Style (Twister and Non-Twister)

In 2006, approximately 88 percent of the stores we surveyed carried twister-style CFLs; this proportion increased by 9 percentage points to 97 percent in 2008. The proportion of stores carrying non-twister style CFLs also increased by 9 percentage points between 2006 and 2008, from 83 to 92 percent. The percentage of stores carrying reflector, covered, and 3-way CFLs increased during this same period, while the percentage of stores carrying tube, circle-line, and pin-based CFLs decreased (see Appendix C for more details including further disaggregation of non-twister styles).

The percentage of metro stores that carry twisters and the percentage that carry non-twisters were both statistically unchanged between 2006 and 2008 (Figure 15). The proportion of non-metro stores that carry non-twisters was also statistically unchanged during this period but the proportion that carried twisters increased by a statistically significant margin (from 86% to 100%). This change is not surprising given that all of the non-metro stores we surveyed carried CFLs (see Figure 12 above). The substantial increases in the percentage of total stores that carry non-twisters may have been influenced by BPA's Change A Light promotion, which provided incentives for nearly 3.9 CFLs region-wide and focused primarily on non-twisters.

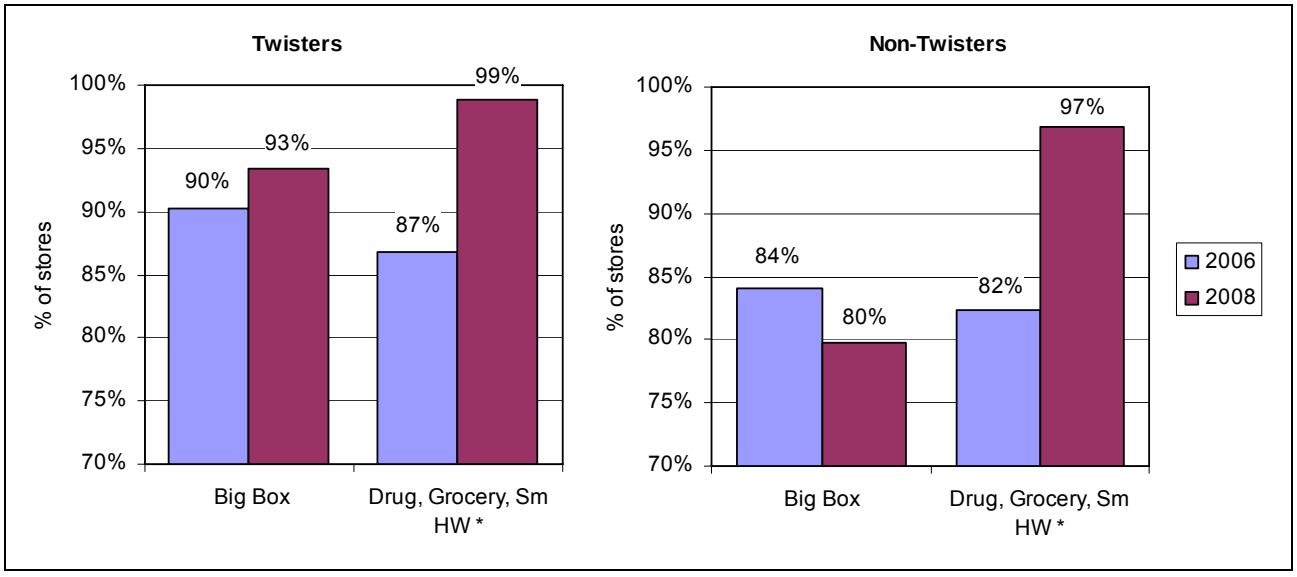
Figure 15
Percentage of Stores That Carry Twister and Non-Twister CFLs by Geography and Year



* Difference between 2006 and 2008 results is statistically significant.

The percentage of big box stores that carried twister style CFLs was statistically unchanged between 2006 and 2008, and the same was true for non-twister style CFLs in big box stores. Within drug/grocery/small hardware stores, however, the proportion of stores carrying both twisters and non-twisters increased by statistically significant margins between 2006 and 2008.

Figure 16
Percentage of Stores That Carry Twister and Non-Twister CFLs by Store Category and Year

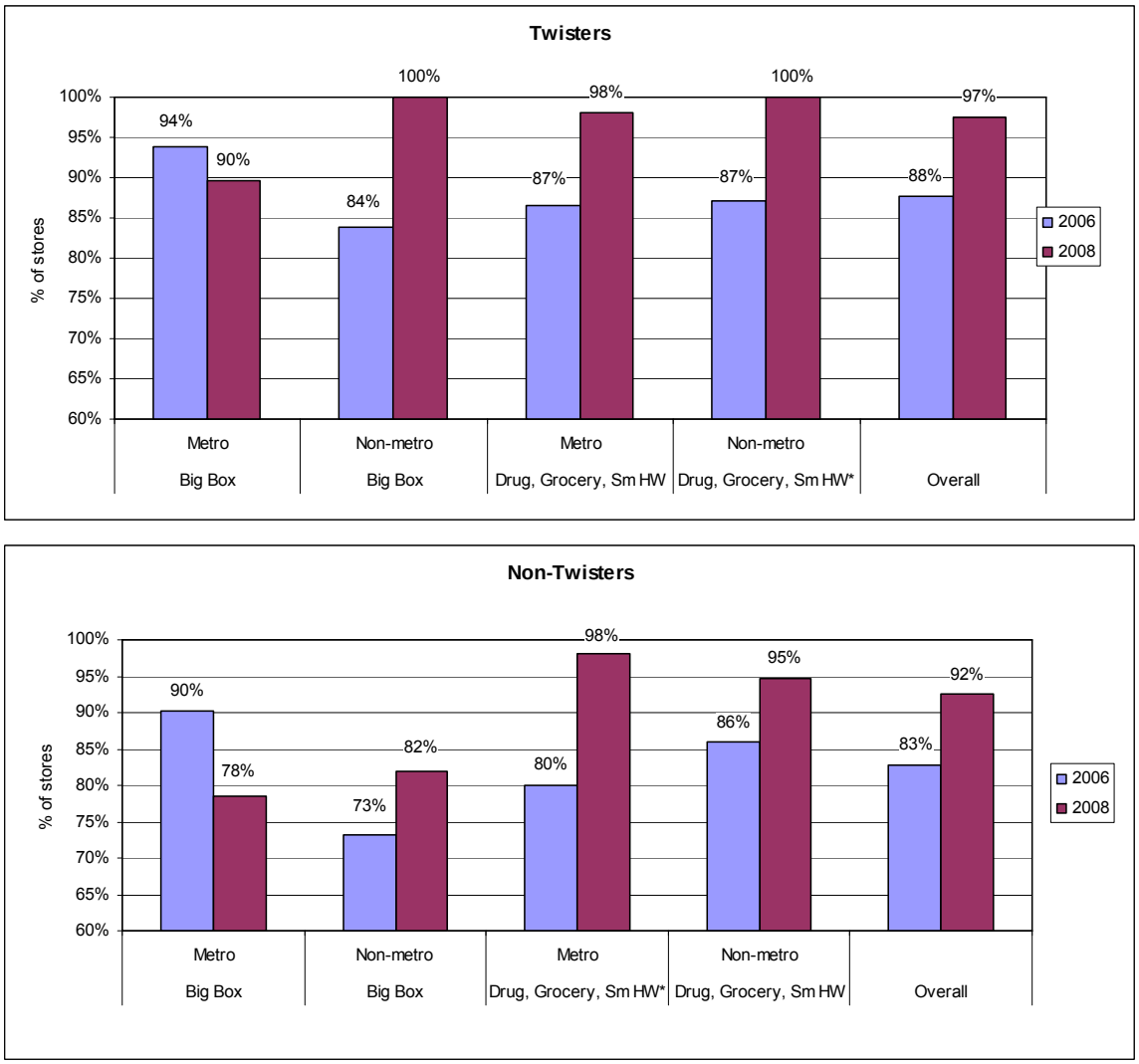


* Difference between 2006 and 2008 results is statistically significant.

Figure 3-12 provides additional detail regarding changes in the percentage of Northwest lighting retailers that carry twister and/or non-twister style CFLs over time by geography and store category together. Over time, the percentage of stores that carry twister and non-twister CFLs increased between 2006 and 2008 across all geography/store category combinations with the exception of metro big box stores, in which the percentage for both twisters and non-twisters declined somewhat (although not by statistically significant margins).

The figure shows that the proportion of drug, grocery, and small hardware stores in non-metro areas that carry twisters increased and the proportion in metro areas that carry non-twisters increased between 2006 and 2008, both by statistically significant increments. These results are related to those in Figure 16 above, which show that the proportion of stores carrying both lamp types increased significantly in the drug/grocery/small hardware store category.

Figure 17
Percentage of Stores That Carry Twister and Non-Twister CFLs by Geography, Store Category, and Year



* Difference between 2006 and 2008 results is statistically significant.

3.4 Diversity

Field researchers recorded data on lamp style (twister, three-way, reflector, etc.) and wattage as part of the shelf survey to assess the diversity of CFLs available to Northwest consumers. Below we discuss diversity in terms of the average number of twister and non-twister CFL models available in each store; Appendix C provides additional information on CFL diversity.

3.4.1 Average Number of Models per Store

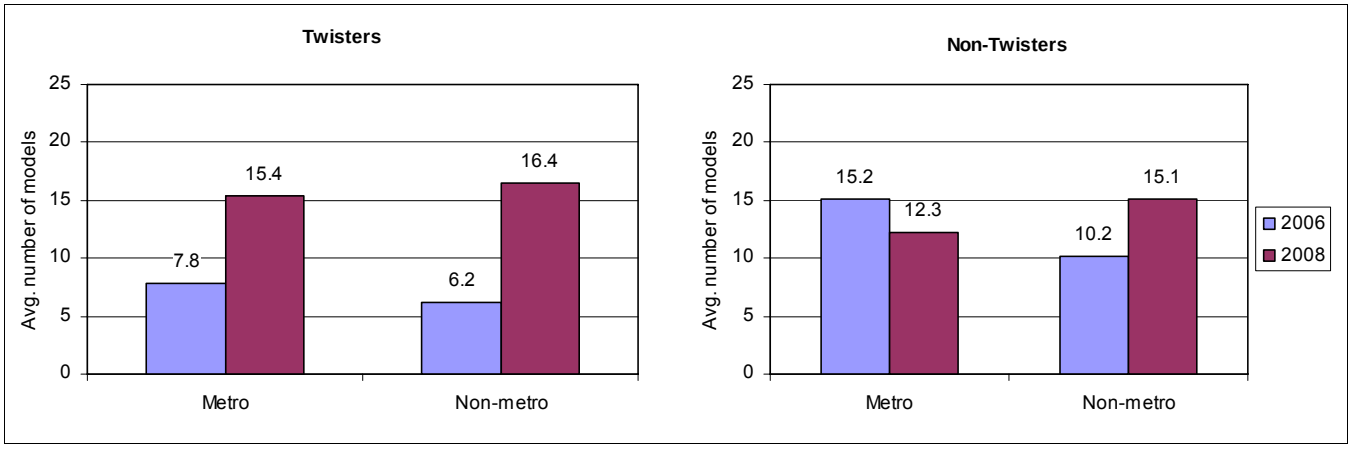
The shelf survey data suggest that the average number of CFL models carried by lighting retailers in the Northwest increased from 20.5 models per store in 2006 to 29.1 models per store in 2008.[30] The number of twister models carried in each store more than doubled (from 7.2 to 15.8), while the number of non-twister models has remained the same (13.3 in both 2006 and 2008).

In 2008, metro and non-metro stores carried similar numbers of twister and non-twister CFL models per store, on average, but non-metro stores carried approximately 3 more non-twister models than metro stores (Figure 3-13).

- The average number of twister CFL models carried on average per store in non-metro areas nearly tripled between 2006 and 2008 (from 6.2 to 16.4 models, respectively), and the number of models in metro stores nearly doubled (from 7.8 to 15.4 models).
- The average number of non-twister CFL models carried on average per store in non-metro stores increased by nearly 5 models (from 10.2 to 15.1) between 2006 and 2008, while the average number in metro areas dropped by approximately 3 models (from 1.52 to 12.3) in the same period.

[30] Given the complex weighting scheme applied to the data to achieve estimates of average CFL number of models, and given the complexity associated with calculation of accurate standard errors for these estimates, we are unable to determine whether differences among average CFL prices are statistically significant. Nonetheless, the data provide strong indications of the directionality of changes in the average number of models carried by lighting retailers in the Northwest.

Figure 18
Average Number of Twister and Non-Twister CFL Models per Store by Geography and Year



By store category (Figure 3-14), big box stores carried more twister models per store, on average, than drug/grocery/small hardware stores in both 2006 and 2008. Among non-twister models, however, big box stores carried more models than drug/grocery/small hardware stores in 2006, but that balance reversed in 2008.

- The average number of twister CFL models carried per store in big box stores increased by approximately 4 models between 2006 and 2008 (from 13.7 to 18.0 models, on average), while the number of twister models in drug/grocery/small hardware stores increased more dramatically, more than tripling (from 4.9 models in 2006 to 15.1 in 2008).
- The average number of non-twister CFL models carried on average per store dropped by approximately 8 models, on average, in big box stores between 2006 and 2008 (from 23.7 to 16.0), while the average number in drug/grocery/small hardware stores increased by roughly 3 models (from 9.7 to 12.6) in the same period.

Figure 19
Average Number of Twister and Non-Twister CFL Models per Store by Store Category and Year

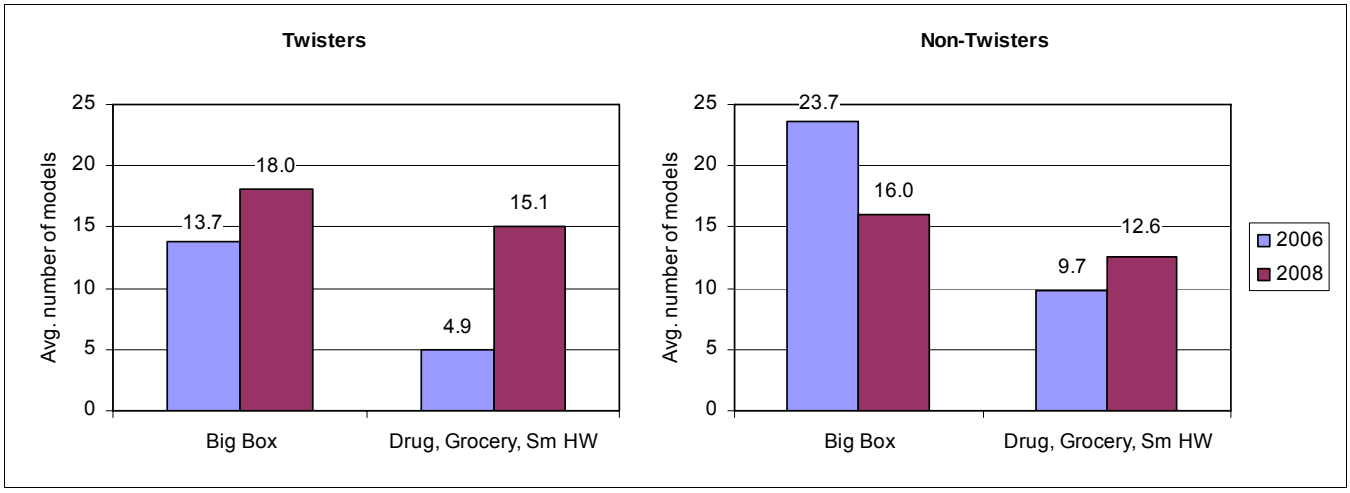


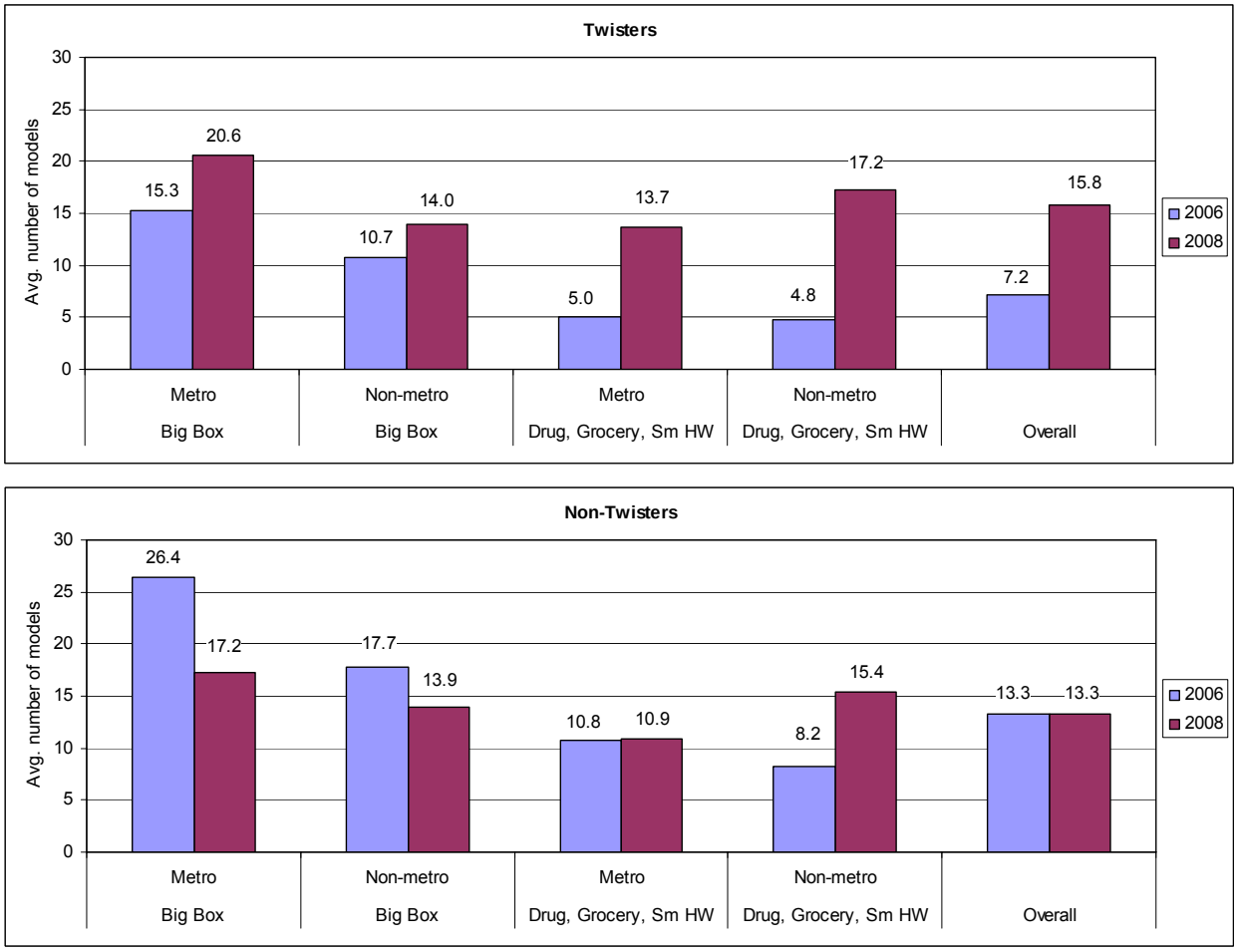
Figure 3-15 presents data on the average number of twister and non-twister CFL models carried per store by geography, store category, and year. As shown, the average number of twister models per store increased across all geography/store category combinations between 2006 and 2008.

- In big box stores, the average number of twister models increased by approximately 5 models between 2006 and 2008 in metro stores and by 3 models in non-metro stores.
- Changes were far more dramatic in drug/grocery/small hardware stores, with the average number of twister models in metro stores nearly tripling (from 5.0 to 13.7 models) and more than tripling in non-metro stores (from 4.8 to 17.2 models).

Among non-twisters:

- The average number of models per store decreased in big box stores (by approximately 9 models per store in metro stores and 4 models in non-metro stores).
- In drug/grocery/small hardware stores, the average number of non-twister models did not change in metro stores but nearly doubled in non-metro stores (from 8.2 to 15.4 models). This change is obscured by the decreased number of non-twister models in big box stores across both metro and non-metro areas.

Figure 20
Average Number of Twister and Non-Twister CFL Models per Store by Geography, Store Category, and Year



3.5 Fixture Showroom Surveys

During 2008, NEEA supported pilot projects designed to stimulate adoption of ENERGY STAR residential light fixtures in the new construction market. These projects included training sessions conducted in four lighting showroom chains for showroom staff and builder representatives.[31] During the month of December 2008, KEMA staff conducted comprehensive fixture inventories and brief interviews with store managers in a small sample of showroom

[31] ICF International and APT, 2008.

locations in which the training sessions were conducted. While data from these inventories are presented in another report, Appendix D presents a summary of results in table form.

4. Market Actor Interview Findings

4.1 Overview

During early 2009, KEMA staff completed interviews with 12 lighting market actors. We interviewed representatives from five of the seven CFL manufacturing firms that sold CFLs through the Fall 2007 Change a Light (FCAL) promotion and representatives from six of the sixteen retail chains that sold FCAL CFLs (Table 6).[32] We also conducted one interview with a knowledgeable observer of the national market for CFLs. We used this final interview as an opportunity to add context to the suppliers' comments. Appendix A provides the guides used to interview the manufacturer and retailer representatives.

Table 6
Market Actor Sample Frame and Completed Interviews

Respondent Group	Sample Frame (n)	Completed Interviews	
		n	% of Frame
Manufacturer's representatives	7	5	71%
Retailer's representatives (corporate level)	16	6	38%
Industry observers	n/a	1	n/a
Overall		**12**	

Below we present our interview findings for the national and Northwest CFL markets. At the national level, we present findings on general changes in the market between 2007 and 2008; sales (including overall sales, promotional vs. non-promotional sales, and forward-looking sales expectations); CFL price; and the perceived current and future effects of the Energy Independence and Security Act of 2007. For the Northwest market, we present findings on general changes in the market between 2007 and 2008; sales (overall promotional versus non-promotional); CFL price; and challenges faced by manufacturers and retailers in 2008 in terms of supplying the Northwest CFL market.

[32] We attempted to reach the same representatives with whom we conducted the interviews for MPER4, but in a few cases we were unable to reach the same individuals. In these cases, we spoke with knowledgeable alternative contacts instead.

4.2 National Market

4.2.1 General Market Changes

CFL suppliers agreed that throughout the U.S., CFL sales are higher where promotions are active and that specialty CFL sales have increased over time, but they offered inconsistent perspectives as to nature of a shift in the national lighting market. Some reported that the market has shifted away from incandescent lamps and toward CFLs since 2007 while others reported a reverse shift (toward less efficient technologies). Interestingly, both groups cited the economy as the primary reason for the perceived shift:

- Representatives who reported that the market has begun to shift away from incandescent lamps and toward CFLs cited the suffering economy as a factor that motivated consumers to save energy and thus to purchase CFLs during 2008.
- Representatives who reported a market shifting toward incandescent lamps cited the economy as a reason for consumer hesitation to pay the higher retail price for CFLs as opposed to incandescent lamps.

Generally, supplier representatives reported that when and where utilities and other energy-efficiency program sponsors are more involved in the market, sales of bare twister and specialty CFLs are higher than in other areas. Most of these representatives mentioned that consumers are motivated by the energy savings associated with CFLs and the desire to be "green." One added that a high level of consumer awareness is another factor contributing to increased CFL sales at the national level.

The majority of the retailer and manufacturer representatives included in our interviews agreed that the demand for and sales of specialty lamps increased at the national level in 2008. The specialty categories in which interview participants perceived the greatest positive changes include 3-way and reflector/PAR CFLs as well as dimmable CFLs (to a lesser extent). A small number of retailer representatives also reported increased consumer interest in light-emitting diode lamps (LEDs) for household applications.

4.2.2 Sales

4.2.2.1 Overall

Supplier comments regarding overall CFL sales between 2007 and 2008 were inconsistent. Retailer representatives reported changes in CFL sales varying from an 18 percent increase

over 2007 sales to a 5 percent decrease. Manufacturer representatives' perspectives were also inconsistent: one representative reported an increase in sales of approximately 10 percent while another reported a 20 percent decline in sales between 2007 and 2008. These inconsistent sales patterns among the different CFL suppliers suggest that the market changes that occurred in 2008 impacted each in a different manner, likely related to the level of 2008 promotional activities, lamp types sold, and (for manufacturers) the types of retail chains with which they partnered.

- **2008 CFL Promotions.** Supplier representatives reported that energy-efficiency program activities that provide incentives for CFLs are directly linked to CFL sales volumes, and that geographic areas and/or retailers involved in promotions are selling more CFLs.

- **Lamp Type.** As noted above, several supplier representatives reported increased specialty lamp sales in 2008 over 2007. One retailer representative reported a very large increase and suggested two primary reasons for it: increased consumer demand for specialty lamps and lower prices fueled by energy-efficiency program incentives. In contrast, however, other retailer representatives claimed that CFL sales were down slightly among all lamp types nationwide because of the economy.

4.2.2.2 Promotional vs. Non-Promotional Sales

Most suppliers agreed that the proportion of their national-level sales comprised by promotional CFLs versus non-promotional CFLs has increased over time.

- Two out of the three retailer representatives who could comment on the issue claimed that throughout the U.S., there has been a "dramatic" increase in the percentage of their total CFL sales comprised by promotional CFLs (compared with non-promotional lamps).

- Manufacturers' representatives generally agreed, but were less able to comment on the magnitude of these changes.

One retailer representative commented that while promotional CFLs increased in terms of the proportion of total CFLs sales between 2007 and 2008, bare twister CFL sales were down somewhat nationwide because of a reduction in promotions for these types of products. However, this retailer representative also claimed an increase in sales of specialty lamps and attributed this increase to increased promotional focus on specialty products.

Two retailer representatives reported an interesting relationship between consumer acceptance of CFLs and the stability of CFL sales in areas in which CFL promotions are offered. From their

point of view, consumer awareness and acceptance are highest in areas with recurrent or constant programs. Thus, in areas in which there are no active programs promoting CFLs, sales growth is slow and consistent. In contrast, sales growth in promotional areas is very high during the promotional periods but slower when the promotions stop, making sales in these areas more difficult to forecast accurately. Each of these two representatives reported that the level of promotional influence on sales differs by retailer type, but both who felt this way claimed a decrease in sales in program areas that have stopped or scaled back their incentive programs.

4.2.2.3 Sales Expectations

General. Retailer representatives generally agreed that CFL sales will increase in 2009 and beyond, but were inconsistent in terms of the magnitude of the expected change; responses ranged from predictions of "a slight increase" to "a double-digit increase" between 2008 and 2009. All but one manufacturer representative reported that they expect no major changes in sales between 2008 and 2009, with the last expecting a small increase in national sales in 2009.

Two retailer representatives commented on the potential roles of energy efficiency program sponsors in affecting 2009 sales. One reported that the extent to which sales increase depends on the level of utility involvement, suggesting that the potential for utility programs to increase sales could be dramatic given that consumers are looking to reduce their electricity bills. Another retailer representative suggested that because he expects that electricity rates will continue to rise, consumers will be looking for inexpensive ways to increase energy efficiency.

The manufacturer representatives reported slightly gloomier perspectives on forward-looking sales expectations. Most manufacturer representatives reported that because of the current economic situation in the U.S., they expect "similar" sales in 2009 as in 2008, while only one reported expectations of increased sales during 2009 and beyond. More than one manufacturer representative speculated that growth in sales could pick up again in 2010.

Specialty CFLs and Other Efficient Lamp Types. Suppliers reported that despite some concerns about product quality, they believe specialty CFLs in particular will continue to increase in sales. Regarding dimmable CFLs in particular, several retailer representatives and two manufacturer representatives voiced concern. They reported that potential for selling these products exists, but felt that there are three key challenges facing the market for dimmable products:

1. Consumer satisfaction with existing dimmable products is generally low;
2. Dimming ranges are typically narrow; and

3. Availability of quality dimmable products is currently limited.

Two manufacturer representatives claim to have newly-developed dimmable products and hope these will help alleviate some of the existing barriers for dimmable CFLs. One suggested that to help address some of these challenges, energy-efficiency program sponsors should set high quality standards for specialty CFLs as a requirement for program participation.

Most supplier representatives reported that specialty CFLs, compact fluorescent fixtures, and/or specialty CFLs will require price discounts to gain market share. Several supplier representatives commented that energy-efficiency program sponsors will play a critical role in shaping the market for specialty CFLs based on:

- The level of incentives they offer in the future; and
- The types of specialty products for which they offer these incentives.

Most retailer representatives expect varying degrees of increased 3-way and reflector CFL penetration in the future, but one manufacturer representative suggested that sales of covered (as opposed to bare twister) CFL types will increase in particular. Another manufacturer representative reported that LEDs may soon surpass CFL technologies for mini-reflector applications (e.g., some types of track lighting).

4.2.3 CFL Prices

Interviewers asked the supplier representatives to compare Northwest CFL prices with pricing throughout the rest of the United States. The vast majority of respondents reported that prices in the Northwest are similar to prices throughout the rest of the country. One retailer representative and two manufacturer representatives added that prices in California are slightly lower than they are in the Northwest and other parts of the country. Another retailer representative mentioned that prices for CFLs in their Northwest stores may be slightly lower than in other states.

4.2.4 Effects of the Energy Independence and Security Act of 2007 (EISA)

Interviewers asked the retailer and manufacturer representatives for their perspectives on the effects of the Energy Independence and Security Act of 2007 (EISA). Retailer representatives' perspectives were fairly consistent, while manufacturers were less forthcoming with their perspectives on the impacts of the Act.

- Not surprisingly, all of the retailer representatives reported that their companies will sell only the technologies permitted by the law once the efficacy mandated changes begin to take place. Most mentioned that the ultimate effect of EISA depends on the level of availability of CFL replacements for applications in which incandescent lamps are typically used.
    - One retailer representative claimed that they would push to shift from incandescent lamps to CFLs before legislation mandated this transition.
    - Another reported that the market has already begun to shift away from incandescent lamps and toward CFLs because retailers have begun to feel governmental pressure to remove less-efficient products from their shelves.
- Two of the manufacturers' representatives we interviewed work for companies that manufacture only CFLs, thus their products likely comply with EISA already. One of these representatives suggested that the firms that produce both CFLs and incandescent lamps will attempt to stall the legislation for as long as possible and that the legislation will have no effect until enforcement mechanisms are added for noncompliant manufacturers.
- Representatives of most of the firms that manufacture both CFLs and incandescent lamps reported simply that their companies are prepared for the change, and that they will comply with the legislation by phasing inefficient products out of production. Given the comparatively large market presence of the companies they represent, it is not surprising that these representatives were less forthcoming regarding their plans than their (smaller CFL-only) competitors.
    - One representative reported the belief that retailers have already begun to make the transition to CFLs, as evidenced by no longer putting incandescent lamps on sale or on end-caps.

4.3 Northwest Market

4.3.1 General Market Changes

Retailer and manufacturer representatives diverged somewhat in terms of their perspectives on the CFL market in 2008 versus 2007. Retailer representatives reported lower CFL prices, increased consumer awareness, greater availability of specialty lamps, increased sales of specialty lamps, and reduced sales of incandescent lamps – suggesting a lessened need for CFL promotions. Manufacturer representatives, on the other hand, reported that while CFL

prices have declined somewhat, CFL promotions may still play a role in achieving even more significant market penetration of CFLs in the Northwest.

The majority of the suppliers who participated in our interviews reported that their sales of CFLs in the Northwest have been impacted to some extent by NEEA's withdrawal of incentives from the market. When asked to comment on the extent of these impacts, however, roughly half reported that their sales were somewhat lower in 2008 than 2007, while the other half reported that their sales either stayed the same or increased slightly.

Less than a third of the CFL suppliers reported that NEEA's withdrawal from the incentive market resulted in decreased overall CFL sales. Nearly all of these, however, reported that these losses were minimized or entirely supplanted by revenue from specialty lamp and non-rebated lamp sales. So while their total sales (in terms of number of CFLs) may have decreased somewhat, they sold more (higher-priced) specialty lamps and thus their revenues were not dramatically impacted. Most retailer representatives reported that non-promotional sales stayed relatively constant in the Northwest and that promotions for standard twisters in previous years were replaced with promotions for specialty lamps in 2008.

4.3.2 Sales

4.3.2.1 Overall

The majority of the suppliers who participated in our interviews reported that their Northwest CFL sales were impacted to some extent by NEEA's withdrawal of incentives from the market. When asked to comment on the extent of these impacts in terms of CFL sales, however, a different story emerges: roughly half reported that their sales were lower, while the other half reported that their sales either stayed the same or increased slightly.

- Two retailer representatives and three manufacturer representatives claimed that their overall Northwest CFL sales were down in 2008, ranging from "slightly lower" to "significantly lower."
- Four retailer representatives and two manufacturer representatives suggested that their Northwest CFL sales remained constant or increased by as much as 12 percent between 2007 and 2008.

Nearly all retailer representatives who reported lost revenue from reduced Northwest twister CFL sales (which they largely attributed to NEEA's withdrawal of CFL incentives) agreed that these losses were minimized or entirely supplanted by revenue from specialty lamp and non-rebated lamp sales. One retailer representative claimed that his stores reduced the impact of

the twister promotion void by increasing the square footage of their displays and by relocating CFLs to the more prominent front section of the lighting aisle.

4.3.2.2 Promotional vs. Non-Promotional Sales

Most retailer representatives suggested that non-promotional sales stayed relatively constant in the Northwest and that promotions for standard twisters in previous years were replaced with promotions for specialty lamps in 2008. This resulted in the following changes between previous years and 2008:

- The percentage of promotional twister sales to total twister sales declined somewhat (reported by all but one retailer representative);
- Promotional specialty CFL sales increased somewhat as a percentage of both specialty sales and overall CFL sales.

There was some disagreement among manufacturer representatives' reports on the proportion of promotional to non-promotional sales in the Northwest between 2007 and 2008:

- Three manufacturer representatives mentioned decreased overall promotional CFL sales in the region as a result of NEEA discontinuing its promotions, and (not surprisingly) the majority of these declines were apparent in the bare twister lamp category (as opposed to non-twister [specialty] lamps).
    - One in particular reported that promotional sales in the bare twister category declined by approximately 33 to 50 percent between 2007 and 2008.
- One representative claimed that there was essentially no change between 2007 and 2008.
- The last could not comment on the change between years but mentioned that heavy over-stocking of discounted CFLs in 2007 among some Northwest retailers lead to sales of those lamps continuing in 2008.

The variation in the reports of the different manufacturer representatives may be related to the differences in the volume of CFL sales through NEEA's 2007 FCAL campaign among the companies represented as well as the overall size of their companies. In other words, it is logical to conclude that smaller companies would perceive the absence of NEEA's incentives to a greater degree than larger operations.

4.3.3 CFL Prices

Interviewers asked CFL supplier representatives to estimate prices for promotional and non-promotional twister-style CFLs in the Northwest for 2008. The vast majority commented that prices differed by packaging size (single-pack versus multi-pack), so interviewers recorded their perspectives on pricing for both types of packages. Not surprisingly, as shown in Table 7, reported prices were lower for promotional CFLs and those sold in multi-packs than for non-promotional and single-pack CFLs.

Table 7
Range of Reported Northwest Prices for Twister-Style CFLs
by Packaging Type and Promotion Availability

Package/Promotion Description	Range of Reported Prices
Promotional CFLs	
Single-pack twister CFL	$0.99 - $1.99
Multi-pack twister CFL	$0.66 - $2.00
Non-Promotional CFLs	
Single-pack twister CFL	$1.99 - $4.99
Multi-pack twister CFL	$1.25 - $4.00

Notably, all of the respondents who could comment on promotional single-pack twister prices in the Northwest reported that prices were approximately one to two dollars per lamp. This is unchanged from the average Northwest promotional price in 2007 for single-pack promotional twister-style CFLs of less than 30 Watts (as reported by supplier representatives in MPER4.)[33]

4.3.4 Supplying the Northwest Market

The majority of CFL suppliers claimed that they had no difficulty supplying the Northwest CFL market in 2008 or had only minor or short-term supply challenges. In fact, one manufacturer representative claimed that his firm actually had an excess supply of CFLs in 2008 overall. However, one retailer representative claimed that they had substantial issues in 2007 and again (to a lesser extent) in 2008. He attributed the issues in both years to bad forecasting from their manufacturer, but noted that the larger issues of 2007 were attributable not just to bad forecasting but also to high consumer demand for CFLs.

[33] KEMA, 2008.

5. Synthesis of Findings

In this chapter we synthesize findings from the CFL sales and market share assessment, lighting retailer shelf surveys, and supplier interviews in terms of the four key study objectives, which were to track the following:

- Product availability in terms of the percentage of shelf space dedicated to ENERGY STAR CFLs in retail stores (including big box and non big box retailers);
- Product affordability in terms of continued reduction of the lowest average price for ENERGY STAR CFLs in retail stores (again including non big box and big box retailers);
- ENERGY STAR CFL sales and market share in the Northwest; and
- Retailer and manufacturer representatives' reactions to and perspectives on:
    - NEEA's withdrawal of incentives from the Northwest lighting market at the end of 2007; and
    - The Energy Independence and Security Act (EISA) of 2007.

5.1 Product Availability and Diversity

During the lighting retailer shelf surveys, field staff collected data on several measures of CFL availability including total regional lighting shelf space allocated to CFLs, the average percentage of lighting shelf space dedicated to CFLs per store, the percentage of stores carrying CFLs and the percentage of stores carrying CFLs by style (twister and non-twister). The survey also collected information on CFL product diversity, including, the average number of twister and non-twister CFL models per store. The survey results suggest the following changes in the market:

- **More lighting retailers in the region carried CFLs in 2008 than in 2006**, particularly in non-metro areas, but the share of lighting product shelf space devoted to CFLs did not change substantially between 2006 and 2006. These results suggest that newer market entrants are displaying CFLs to a similar extent as longer-term market participants.

- **More lighting retailers in the region carried twister-style CFLs** in 2008 than in 2006. The proportion of stores carrying all types of CFLs increased by approximately 9 percent between 2006 and 2008. In particular, the proportion of non-metro area and drug/grocery/small hardware stores that carry twister-style CFLs both increased by statistically significant margins.

- **More lighting retailers carried non-twister CFLs** in 2008 than in 2006, with a statistically-significant increase in the proportion of drug/grocery/small hardware stores carrying non-twisters such as reflector, globe and dimmable CFLs.

- **The average number of twister models carried per store nearly doubled** between 2006 and 2008 across all store types**.** The most dramatic increase was among drug/grocery/small hardware stores, which carried more than three times as many twister CFL models in 2008 as in 2006. Non-metro stores also exhibited a sizeable increase in the average number of twister models carried per store.

- **There was no change in the average number of non-twister models carried per store** between 2006 and 2008. The number of non-twister models declined or stayed the same across all geography/store type combinations except in non-metro drug/grocery/small hardware stores, which nearly doubled the average number of non-twister models carried. This is a noteworthy positive development given that the percentage of drug/grocery/small hardware stores in the region selling non-twisters increased dramatically and that these channels typically have a smaller array of products available than big box stores.

- **Differences in diversity of product offerings by geography were less apparent** in 2008 than in 2006. In 2006, metro stores carried more CFL models on average than non-metro, and big box stores typically carried more CFLs than drug/grocery/small hardware stores (with the gap ranging from 9 to 14 models per store). These differences narrowed to a gap of only 3 or 4 models per store in 2008.

We also gathered data on CFL availability from a sample of representatives of CFL manufacturers and retailers that participated in prior NEEA CFL promotions. Those who could comment reported that they had no difficulty supplying the Northwest CFL market in 2008 or had only minor or short-term supply challenges.

5.2 Product Affordability

We gathered data on CFL prices during the shelf surveys and during interviews with representatives of CFL manufacturers and retailers that participated in prior NEEA CFL promotions. The estimate of average CFL retail price in the Northwest increased by approximately 10 percent between 2006 and 2008, from $3.89 to $4.29 (a 40-cent increase). Given the uncertainty surrounding the estimates, the results suggest little to no change in average retail price over the last two years across all store types and regions. The results do

indicate that average retail prices may have increased in drug/grocery/small hardware stores in general and particularly in metro-area drug/grocery/small hardware stores.

Interviews with CFL supplier representatives supported the average price CFL price estimate yielded by the shelf surveys, suggesting that non-promotional single-pack CFLs cost between $1.99 to $4.99 in 2008. All of the respondents who could comment on 2008 promotional single-pack twister prices in the Northwest reported that prices were approximately $0.99 to $1.99 per lamp, which is the same range they reported regarding 2007 CFL prices when we interviewed them in support of MPER4.

5.3 CFL Sales and Market Share

Total ENERGY STAR CFL sales for 2008 reached approximately 24.7 million, representing a 36 percent increase over total sales for 2007. The proportion of total ENERGY STAR CFL sales through wholesale clubs and small hardware chains increased by small margins between 2007 and 2008 (approximately 4 percentage points each), while sales through other store types decreased slightly.

The proportion of total CFL sales between big box and non big box stores remained constant between 2007 and 2008. The proportion of incentives allocated to each store category shifted, with a one-third increase to big box stores.

Northwest residential ENERGY STAR CFL market share for 2008 was between 35 and 48 percent, compared with only 20 percent at the national level, demonstrating that current Northwest residential ENERGY STAR CFL market share of total residential MSBL sales is considerably higher than in the United States as a whole. The data also suggest that Northwest CFL market share continued to increase in 2008, while U.S. market share declined to below the 2007 level.

5.4 Supplier Perspectives on Market Changes Since NEEA's Withdrawal of Incentives

Retailer and manufacturer representatives diverged somewhat in terms of their perspectives on the CFL market in 2008 versus 2007. Retailer representatives reported lower CFL prices, increased consumer awareness, greater availability of specialty lamps, increased sales of specialty lamps, and reduced sales of incandescent lamps – suggesting a lessened need for CFL promotions. Manufacturer representatives, on the other hand, reported that while CFL

prices have declined somewhat, CFL promotions may still play a role in achieving even more significant market penetration of CFLs in the Northwest in the future.

The majority of the suppliers who participated in our interviews reported that their sales of CFLs in the Northwest have been impacted to some extent by NEEA's withdrawal of incentives from the market. When asked to comment on the extent of these impacts, however, roughly half reported that their sales were somewhat lower, while the other half reported that their sales either stayed the same or increased slightly.

Among the CFL supplier representatives who reported that NEEA's withdrawal from the incentive market resulted in decreased overall CFL sales, nearly all reported that these losses were minimized or entirely supplanted by revenue from specialty lamp and non-rebated lamp sales. So while their total sales (in terms of number of CFLs) may have decreased somewhat, they sold more (higher-priced) specialty lamps and thus their revenues were not dramatically impacted. Most retailer representatives reported that non-promotional sales stayed relatively constant in the Northwest and that promotions for standard twisters in previous years were replaced with promotions for specialty lamps in 2008.

5.5 Supplier Perspectives on the Energy Independence and Security Act of 2007

During the in-depth interviews with representatives of retailers and manufacturers that participated in NEEA's 2007 Fall Change a Light CFL promotion, interviewers asked the respondents for their perspectives on the effects of the Energy Independence and Security Act of 2007 (EISA). Retailer representatives' perspectives were fairly consistent, while manufacturers were less forthcoming with their perspectives on the impacts of the Act.

- Not surprisingly, all of the retailer representatives reported that their companies will sell only the technologies permitted by the law once the efficacy mandated changes begin to take place. Most mentioned that the ultimate effect of EISA depends on the level of availability of CFL replacements for applications in which incandescent lamps are typically used.
- Two of the manufacturers' representatives we interviewed work for companies that manufacture only CFLs, thus their products likely comply with EISA already. One of these representatives suggested that the firms that produce both CFLs and incandescent lamps will attempt to stall the legislation for as long as possible and that the legislation will have no effect until enforcement mechanisms are added for noncompliant manufacturers.

Representatives of most of the firms that manufacture both CFLs and incandescent lamps reported simply that their companies are prepared for the change, and that they will comply with the legislation by phasing inefficient products out of production. Given the comparatively large market presence of these companies, it is not surprising that these representatives were less forthcoming regarding their plans than their (smaller CFL-only) competitors.

6. Conclusions and Recommendations

6.1 Conclusions

The Northwest market for ENERGY STAR CFLs continued to make progress in 2008 despite the absence of NEEA's active promotional efforts. Total regional CFL sales topped 24.7 million lamps, an increase of 36 percent over 2007 sales. While the retail CFL price stayed about the same from 2006 levels, there were dramatic increases in CFL availability – particularly among non-metro and drug/grocery/small hardware (non big box) stores, which were a focus of NEEA's CFL promotions for several years. CFL diversity also increased throughout the region with considerable growth in the number of stores selling non-twister (specialty) CFLs, particularly among drug/grocery/small hardware stores.

Northwest CFL market share has continued to increase since NEEA's withdrawal of incentives, reaching 35 to 48 percent in 2008. These results compare with approximately 20 percent just 2 years ago (in 2006). ENERGY STAR CFL market share is also considerably higher in the Northwest than across the U.S. as a whole, and continued to increase between 2007 and 2008 while national market share declined to below its 2007 level.

In MPER4 we reported that "there could be some backsliding in market progress if grocery, drug, and discount stores do not offer attractive prices and aggressively promote CFLs in the absence of CFL promotions.[34]" This statement was supported by suggestions from representatives of CFL manufacturers, retailers, and Northwest utilities that CFLs would disappear from many of these channels – or that these channels would stock only one or two CFL models at prohibitively high prices – if CFL promotions did not continue. These predictions were not realized between 2007 and 2008 and may have been prevented by the continuously high (even increased) level of CFL promotion in the region between 2007 and 2008 by utility program administrators.

During the same period, promotional CFL sales in the Northwest increased by approximately 11 percent. Despite a moderate shift in the proportion of total incentive CFL sales away from drug/grocery/small hardware stores and toward big box stores, total regional CFLs between big

[34] KEMA, 2008.

box and drug/grocery/small hardware stores has remained constant since 2006. And despite the shift in incentives, program sponsors still supported drug/grocery/small hardware channels by providing incentives for more than three-quarters of a million CFLs, many of which were non-twister products. These incentive programs continued to support CFL market progress in the region in absence of NEEA's active CFL promotions.

The largest of these promotions was administered by BPA and other program sponsors and focused primarily on non-twister (specialty) CFLs. CFL suppliers reported that increased sales of non-twister lamps in 2008 – many of which were supported by BPA's promotion – helped to offset any declines in sales of twister-style lamps. CFL suppliers suggest that involvement from energy-efficiency program sponsors could continue to shape the Northwest lighting market going forward – and although they clearly have financial interest in continued energy-efficiency program support, the non-twister market progress in 2008 may support their assertion.

6.2 Recommendations

Based on the above conclusions, we recommend the following:

1. **NEEA should continue to track Northwest ENERGY STAR CFL sales and adopt enhanced tracking techniques.** CFL sales data will continue to be necessary to track future progress of the Northwest CFL market. This function will be increasingly important in detecting future market changes as other energy-efficiency program sponsors in the region alter or discontinue their own CFL promotions.
    - We suggest that NEEA **add additional resolution** to its CFL sales data collection efforts**.** Tracking CFL sales by store type, region, and lamp style (twister versus non-twister) will enable early detection of any geographic areas, sales channels, or lamp types that may require additional market support. If possible, retail prices would also be extremely useful for monitoring the market.
    - NEEA should also consider **tracking non-CFL sales in the Northwest** to aid calculation of accurate estimates of Northwest residential ENERGY STAR CFL market share of total residential MSBL sales. Currently, there are no other estimates of MSBL sales at the state or regional levels.
2. **NEEA should consider conducting follow-up research with Northwest consumers in the future.** NEEA has not conducted consumer research on CFLs since Fall 2006, and the dramatic changes in the Northwest CFL market during 2007 and 2008 may have had a considerable impact on consumer perceptions and behavior regarding CFLs. Such research may also assist NEEA in understanding:

- **Possible impacts of increased regional CFL sales on consumer installation and storage rates**. Results from recent evaluations of California's upstream mass market CFL promotions suggests that installation rates have declined and storage rates have increased as CFL promotions have expanded over time, with negative implications for near-term CFL savings potential.
- **Consumer reactions to the specialty CFL market**. Energy-efficiency program sponsors in the Northwest have recently increased their attention toward specialty CFLs. As such, it has become increasingly important to gauge consumer understanding of the proper applications for these products. Also, given supplier concerns regarding specialty CFL quality, consumer research could reveal possible consumer dissatisfaction with specialty lamps.
- **Consumer knowledge of (and emerging demand for) solid-state lighting technologies** such as light-emitting diode lamps (LEDs). A small number of retailer representatives also reported increased consumer interest in LEDs in for household applications, so it will be important to obtain baseline market data as the market for these technologies begins to grow.

3. **NEEA should continue providing a regional leadership role for residential lighting products by establishing a 5 to 10 year plan.** As the specialty CFL market matures, emerging lighting technologies increase in availability and popularity, and requirements of the 2007 Energy Information and Security Act begin to go into effect, major changes will continue to occur in the Northwest lighting market. This changing market will continue to require focused, collaborative, regional efforts to set common market transformation goals and ensure logical allocation of energy-efficient lighting program incentives to accomplish these goals. NEEA should thus continue offering strategic guidance regarding the direction of residential lighting programs in the form of a regional plan for lighting market support and transformation over the next 5 to 10 years.

   Such a plan could establish:

   - **An over-arching lighting market strategy for the region** to which utility representatives can refer when crafting their own energy-efficiency program offerings for lighting. Such a strategy may include "transition plans" for phasing specific lighting technologies into and out of incentive programs over time to ensure a coordinated regional effort in absence of NEEA's active lighting promotions.
   - **Agreed-upon long-term regional lighting market transformation goals** and market progress indicators for all residential lighting technologies. As emerging

lighting technologies such as LEDs and other solid-state products come to the forefront of the market, a regionally-coordinated effort will enable energy-efficiency program sponsors to work toward common goals for each technology and for the lighting market as a whole.

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1. Data Collection Instruments

A.1 Shelf Survey Instrument

A.2 Market Actor Interview Guide

A.1 Shelf Survey Instrument

KEMA

NORTHWEST ENERGY EFFICIENCY ALLIANCE CFL TRACKING STUDY
Lighting Retailer Shelf Survey

Contact Information

PLEASE FILL IN THIS SECTION USING THE INFORMATION CONTAINED IN THE SAMPLE DATABASE

Field Staff Name:	Date of Survey:
Store name:	Strata:
Store address:	Store city:
Store state:	Store zip code:

A1. **What type of store is this? [CIRCLE ONE ONLY.]**

Warehouse (Sam's, Costco).....1
Do-It-Yourself (for example, Home Depot).....2
Drugstore, Grocery Store.....3
Mass Merchandise (for example, Wal-Mart, Target).....4
Small Hardware Store.....5
Other (Describe) _____.....6

A2. **Types of Products Sold [CIRCLE ALL THAT APPLY.]**

ENERGY STAR® CFL bulbs.....1
Standard CFL bulbs (Non ENERGY STAR®).....2
Standard Fluorescent Tubes (Non ENERGY STAR®).....3

Bulb Information

A3. Are there any end-cap lighting displays? Yes ☐ No ☐

A4. Are CFL bulbs featured in the end-cap displays? Yes ☐ No ☐

A5. Are ENERGY STAR® CFL bulbs featured in the end-cap displays? Yes ☐ No ☐

A6. Are CFLs in a specially-labeled section of lighting product (e.g. ENERGY STAR®)? Yes ☐ No ☐

IF YES, ENTER NAME OF SECTION: _____

A7. **What type of POP are present that promote CFL bulbs? [CIRCLE ALL THAT APPLY]**

1 Display with instant rebate forms (note rebate sponsor) _____
2 Retailer sign
3 Brochures
4 ENERGY STAR clings
5 Aisle violator
6 Bulb wheel
7 Other (Describe) _____
8 No identifying material present
9 "Savings with a Twist" Sign

SHELF SPACE ALLOCATION - Light Bulbs

Please go to ALL of the sections in the store where Light Bulbs can be found. For each different department, please list:

Notes: (1) When tallying floor displays or pallets, add the linear feat of all exposed (viewable) sides for each shelf.
(2) Choose one of the following two: Linear Feet per Shelf and Total Linear Feet

1. **All Light Bulbs-** Linear Feet per Shelf, # of Shelves, Total Linear Feet for all light bulbs, including CFL, incandescent, halogens, fluorescent, etc.
2. **CFLs-** A subset of (1): the Linear Feet per Shelf, # of Shelves, Total Linear Feet that are dedicated to CFLs (with or without an Energy Star® label)
3. **ENERGY STAR® CFLs**- A subset of (2): the Linear Feet per Shelf, # of Shelves, Total Linear Feet that are dedicated to Energy Star® CFLs.

	All Light Bulbs			CFLs			ENERGY STAR® CFLs		
Dept. Code	**Linear Feet Per Shelf**	**# of Shelves**	**Total Linear Feet**	**Linear Feet Per Shelf**	**# of Shelves**	**Total Linear Feet**	**Linear Feet Per Shelf**	**# of Shelves**	**Total Linear Feet**
B1_1	B1_2	B1_3	B1_4	B1_5	B1_6	B1_7	B1_8	B1_9	B1_10
B2_1	B2_2	B2_3	B2_4	B2_5	B2_6	B2_7	B2_8	B2_9	B2_10
B3_1	B3_2	B3_3	B3_4	B3_5	B3_6	B3_7	B3_8	B3_9	B3_10
B4_1	B3_2	B3_3	B3_4	B3_5	B3_6	B3_7	B3_8	B3_9	B3_10
B5_1	B5_2	B5_3	B5_4	B5_5	B5_6	B5_7	B5_8	B5_9	B5_10
B6_1	B6_2	B6_3	B6_4	B6_5	B6_6	B6_7	B6_8	B6_9	B6_10
B7_1	B7_2	B7_3	B7_4	B7_5	B7_6	B7_7	B7_8	B7_9	B7_10
B8_1	B8_2	B8_3	B8_4	B8_5	B8_6	B8_7	B8_8	B8_9	B8_10
B9_1	B9_2	B9_3	B9_4	B9_5	B9_6	B9_7	B9_8	B9_9	B9_10
B10_1	B10_2	B10_3	B10_4	B10_5	B10_6	B10_7	B10_8	B10_9	B10_10

Department Codes: Electrical - 1, Kitchen - 2, Hardware - 3, Lighting - 4, Furniture - 5, Other (Specify)- 6.

	All Light Bulbs			CFLs			ENERGY STAR® CFLs		
Dept. Code	Linear Feet Per Shelf	# of Shelves	Total Linear Feet	Linear Feet Per Shelf	# of Shelves	Total Linear Feet	Linear Feet Per Shelf	# of Shelves	Total Linear Feet
B11_1	B11_2	B11_3	B11_4	B11_5	B11_6	B11_7	B11_8	B11_9	B11_10
B12_1	B12_2	B12_3	B12_4	B12_5	B12_6	B12_7	B12_8	B12_9	B12_10
B13_1	B13_2	B13_3	B13_4	B13_5	B13_6	B13_7	B13_8	B13_9	B13_10
B14_1	B14_2	B14_3	B14_4	B14_5	B14_6	B14_7	B14_8	B14_9	B14_10
B15_1	B15_2	B15_3	B15_4	B15_5	B15_6	B15_7	B15_8	B15_9	B15_10
B16_1	B16_2	B16_3	B16_4	B16_5	B16_6	B16_7	B16_8	B16_9	B16_10
B17_1	B17_2	B17_3	B17_4	B17_5	B17_6	B17_7	B17_8	B17_9	B17_10
B18_1	B18_2	B18_3	B18_4	B18_5	B18_6	B18_7	B18_8	B18_9	B18_10
B19_1	B19_2	B19_3	B19_4	B19_5	B19_6	B19_7	B19_8	B19_9	B19_10
B20_1	B20_2	B20_3	B20_4	B20_5	B20_6	B20_7	B20_8	B20_9	B20_10
B21_1	B21_2	B21_3	B21_4	B21_5	B21_6	B21_7	B21_8	B21_9	B21_10
B22_1	B22_2	B22_3	B22_4	B22_5	B22_6	B22_7	B22_8	B22_9	B22_10

Department Codes: Electrical - 1, Kitchen - 2, Hardware - 3, Lighting - 4, Furniture - 5, Other (Specify)- 6.

CFL Bulb Profile

- For **Brand, Style, and Rebate Codes**, see tables below. Use the "Notes" space to enter characteristics such as bug light, sold out, natural light, etc.
- For **Watts** list the actual wattage of the CFL, not the incandescent equivalent. if the bulb is 3-way, list all levels separated by "/".
- For **Price**, use price **per package** before sale or rebate, as shown on package or shelf for pack. if a rebate is available, indicate the rebate type (from table) and the rebate amount. If the bulb is on sale, indicate the sale price (not the amount of the sale discount.)
- Indicate if package has an Energy Star® label on it.
- Indicate is the bulb is dimmable.
- Use additional sheets if needed

Codes

Brand	Brand Code
Commercial Electric	1
Cooper Electric	2
Feit Electric	3
General Electric	4
Lights of America	5
MaxLite	6
Osram Sylvania	7
Philips Lighting Co	8
Technical Consumer Prod's	9
Westinghouse	10
Greenlight	11
Good Earth	12
Bright Effects	13
Lithonia	14
Sea Gull	15
Durabright	16
Other (DESCRIBE)	97

Style	Style Code
2-tube	1
4-tube	2
Twister	3
Globe	4
Spot	5
Incand. Style	6
Circline	7
Replacement pin	8
Reflector (Flood)	9
Other	97

Rebate	Rebate Code
Utility	1
Retailer	2
Manufacturer	3
Other	97
Can't Determine	98

CFL Bulb Profile (please use as many pages as necessary)

Brand (see table)	Style (see table)	Qty in Pack	Price per package before rebate or sale	Rebate Type (see table)	Rebate Amount	Rebate Visibility	Sale Price (if package is on sale)	Watts 1	Watts 2 (for 3-way)	Watts 3 (for 3-way)	ES® label on package (check if Yes)	Bulb is dimmable (check if Yes)
D1 Notes:			$		$	Good Bad	$				☐	☐
D2 Notes:			$		$	Good Bad	$				☐	☐
D3 Notes:			$		$	Good Bad	$				☐	☐
D4 Notes:			$		$	Good Bad	$				☐	☐
D5 Notes:			$		$	Good Bad	$				☐	☐
D6 Notes:			$		$	Good Bad	$				☐	☐
D7 Notes:			$		$	Good Bad	$				☐	☐
D8: Notes:			$		$	Good Bad	$				☐	☐
D9 Notes:			$		$	Good Bad	$				☐	☐
D10 Notes:			$		$	Good Bad	$				☐	☐
D11 Notes:			$		$	Good Bad	$				☐	☐
D12 Notes:			$		$	Good Bad	$				☐	☐

A.2 Market Actor Interview Guide

[EXPLAIN PURPOSES OF INTERVIEW.]
[PROVIDE ASSURANCES OF CONFIDENTIALITY.]
[IF NECESSARY, EXPLAIN THAT "NORTHWEST" INCLUDES ID, MT, OR AND WA.]

Introduction

I'm calling from KEMA, Inc. on behalf of the Northwest Energy Efficiency Alliance (NEEA). In the past you have provided us with useful information regarding your company's participation in NEEA's regional CFL promotions and on the CFL market in general. I'd like to talk with you about any changes you may have seen in the market since 2007 and about the 2007 Energy Independence and Security Act (EISA).

Market Changes in 2008

Q1. Let's start off by talking about the lighting market in general. Can you tell me what types of changes you've seen (if any) in the national market for residential lighting products since 2007? [PROMPT IF NECESSARY: These could be changes in product types, availability, price, the types of retailers carrying particular products, regional differences, etc.]

_____

_____

_____

Q2. How did your national sales of CFLs in 2008 compare with your sales in 2007? [PROBE FOR PERCENT INCREASE OR DECREASE.]

_____

_____

_____

Q2a. [IF CHANGES MENTIONED IN Q2] Did the extent of these changes differ by lamp type, retailer type, geography, or anything else? [IF NECESSARY: For example, maybe most of your sales increase/decrease was in a particular lamp style while other styles remained fairly constant, or maybe sales in a particular retail channel really took off in 2008?]

Q3. Did you see any major changes in 2008 as far as the percentage of your CFL sales that were promotional sales versus non-promotional sales? By "promotional sales" I mean those for which you received incentives from a utility or other energy-efficiency body.

Q4. Thinking about the Northwest specifically – that is, Idaho, Montana, Oregon, and Washington – did you see any changes in the lighting market in the Northwest during 2008? [USE PROMPT FROM Q3 IF NECESSARY. PROBE FOR CHANGES IN PROMOTIONAL/NON-PROMOTIONAL SALES.]

Q5. Were there any differences in CFL sales in the Northwest between 2007 and 2008? [PROBE AS IN Q2.]

Q5a. [IF CHANGES MENTIONED IN Q2] Did the extent of these changes differ in any ways in the Northwest that were different from what you observed at the national level?

Q6. What would you say was the average price for a less than 30-Watt twister-style CFL in the Northwest during 2008? [PROBE FOR DIFFERENCES BY TIME OF YEAR, STATE, ETC.]

Q6a. Does this differ from the national average? If so, how?

Reasons for Market Changes

R1. What do you think is responsible for the changes we've just discussed at the national level?

R2. What about the changes in the Northwest?

R3. [IF NOT MENTIONED ABOVE: NEEA stopped providing incentives for CFLs in the Northwest at the end of 2007.] How do you think NEEA's withdrawal from the CFL market [at the end of 2007] has influenced the market over the past year?

R3a. Have you seen any negative changes in the Northwest CFL market – such as increased prices, less availability – since NEEA stopped providing CFL incentives? [PROBE FOR DIFFERENCES BY PRODUCT TYPE, RETAILER TYPE, GEOGRAPHY.]

_____

_____

_____

CFL Supply

S4. **[Manufacturer's representatives Only]** Are there factors inherent in the manufacturing, importing or distributing processes that have restricted the production and supply of CFL products in the past year or so? [IF YES, DESCRIBE. IF NECESSARY, PROMPT WITH EXAMPLES – E.G., SHORTAGES OF MANUFACTURING INPUTS (LABOR, RAW MATERIALS), IMPORTATION ISSUES, ETC.]

_____

_____

_____

S4b. **[Manufacturer's representatives Only]** [ASK IF S4 ≠ DK] Has there been any progress recently to reduce these barriers?

_____

_____

_____

S4c. **[Manufacturer's representatives Only]** [ASK IF S4 ≠ DK] What can be done to overcome these barriers? [PROBE AS TO WHETHER THERE IS A ROLE FOR NEEA, NEMA, DOE, EPA, ENERGY TRUST, UTILITIES, OTHER ORGANIZATIONS IN OVERCOMING BARRIERS.]

_____

_____

S5. Have you experienced any difficulties supplying the market or meeting the demand for CFLs in the Northwest over the past few years, or do you anticipate any such difficulties in the next few years? [IF YES, PROBE FOR DIFFERENCES BY PRODUCT STYLE/WATTAGE, STORE TYPE, STATE, ETC.]

Looking Forward

S8. What are your expectations for CFL sales in 2009 and beyond? [PROBE FOR REASONS BEHIND THESE EXPECTATIONS.]

S8a. Do you foresee any differences in sales potential for different CFL styles, or in different store types, or any other differences? [PROBE FOR DIFFERENCES BY PRODUCT STYLE/WATTAGE, STORE TYPE, ETC.]

[End Call if Retailer]

Manufacturer's representatives Only:

Energy Independence and Security Act of 2007

In December 2007 Congress passed a new Energy Bill. One component of the bill calls for a gradual phase-out of inefficient lamps over the next 4 to 12 years.

S9. Does your company manufacture incandescent lamps?

1. Yes
2. No

S9a. [IF S9 = YES] Has this legislation affected how you currently manufacture incandescent lamps or how you plan to do so over the next few years? How? [PROBE: Will you stop producing incandescents by a certain date? Or will you phase out production? When do you think this will occur?]

_____

_____

_____

S9b. [IF S9 = NO] How do you think this legislation will affect production of incandescent lamps? [PROBE: Do you think incandescent bulb manufacturer's representatives will stop producing them by a certain date or phase out production? When do you think this will occur?]

_____

_____

_____

S10. How do you think the legislation will affect retailers who carry incandescent lamps? [PROBE: Do you think they'll continue to sell incandescents until they sell through their stocks? Any other effects?]

_____

_____

_____

Those are all of the questions I have for you today. Thank you so much for your time and your valuable comments.

[CLOSE.]

2. Cost-Effectiveness (ACE) Model Review

B.1 February 19, 2009 Memo: NEEA ACE Model Assumptions – Revised

B.2 April 1, 2009 Memo: NEEA Residential CFL Baseline, 2008

2.1 February 19, 2009 Memo: NEEA ACE Model Assumptions – Revised

memo

To:	Anu Teja and Christine Jerko, Northwest Energy Efficiency Alliance	Date:	February 19, 2009
From:	Tami Rasmussen and Kevin Price KEMA, Inc.		
Copy:	Jenna Canseco and Tyler Mahone KEMA, Inc.		
Subject:	NEEA ACE Model Assumptions - Revised		

The purpose of this memorandum is to provide NEEA with an independent estimate of average first cost per CFL as well as sales data from FY2008 to update assumptions made in the Alliance Cost-Effectiveness (ACE) Model. The basis of the analysis approach with respect to average first cost per CFL is a recent lighting shelf survey conducted by KEMA in the Northwest. The study builds on the experience of several prior shelf inventory studies conducted by KEMA and it reflects the most current status of the CFL market in the Northwest. Assumptions related to sales in NEEA territory will be updated using the FY2008 sales data supplied by Fluid Market Strategies.

This memo has been revised to provide a final price estimate and to add non-ENERGY STAR sales to the Northwest sales estimate.

Background

NEEA's ACE Model uses forecasted pricing assumptions based on evaluation data. To reflect the market as accurately as possible, these pricing assumptions require updating as new data becomes available. KEMA's shelf inventory study in Oregon, Washington, Idaho and Montana provides insight into the current CFL market.

Sales assumptions included in the ACE Model also rely on forecasting. NEEA must update sales assumptions to maintain an accurate representation of the CFL market.

By multiplying average CFL price and the number of units sold (for any given year), the ACE Model determines the total cost of CFL purchases in the Northwest. This metric can be analyzed in conjunction with energy savings to determine the cost-effectiveness of CFL purchases with respect to energy consumption. While there are many other factors that

influence cost-effectiveness, sales data and average price are integral components of the ACE Model.

Methods

Since it is difficult to obtain sales data with prices included, KEMA approaches CFL market pricing through shelf inventories. Data from a sample of stores is weighted to represent the population. Since the data from the sample stores only represent a snapshot in time of exactly what is available on the shelf, assumptions regarding weighting were required. KEMA relied on the methodology from the MPER3 Report to maintain consistency (sensitivity analysis was conducted in prior MPERs to determine how the weighting assumptions drive pricing results).

Using shelf survey data collected between November 2008 and January 2009, KEMA quantified average price per CFL paid by consumers in NEEA's territory. Consistent with the prior evaluation, Table B-1 shows that KEMA assumed consumers pay the lowest price for twisters 80 percent of the time. We also assumed that consumers buy twisters <18 watts just over one-third of the time, 18 to 30 watt twisters half the time, and twisters >30 watts just over 10 percent of the time. This weighting scheme was applied to the shelf data collected at the sample of stores, resulting in an expected price paid by customers for twister CFLs for the entire region. For example, the minimum price of a CFL <18 watts is given a 30% weight relative to other lamp wattages (as shown below).

Table B-1
Twister CFL Weights – Wattage and Price Category Assumptions

Twister Wattage	Weights by Category		
	Minimum price	Mean price	Maximum price
<18 watts	30.0%	5.6%	1.9%
18-30 watts	40.0%	7.5%	2.5%
>30 watts	10.0%	1.9%	0.6%
Total	**80%**	**15%**	**5%**

To calculate the average price paid for non-twisters, we used the average mean non-twister price, since non-twister models are heterogeneous (e.g., brand, features, appearance) as compared to twisters (which are homogenous such that price is the main concern). To combine

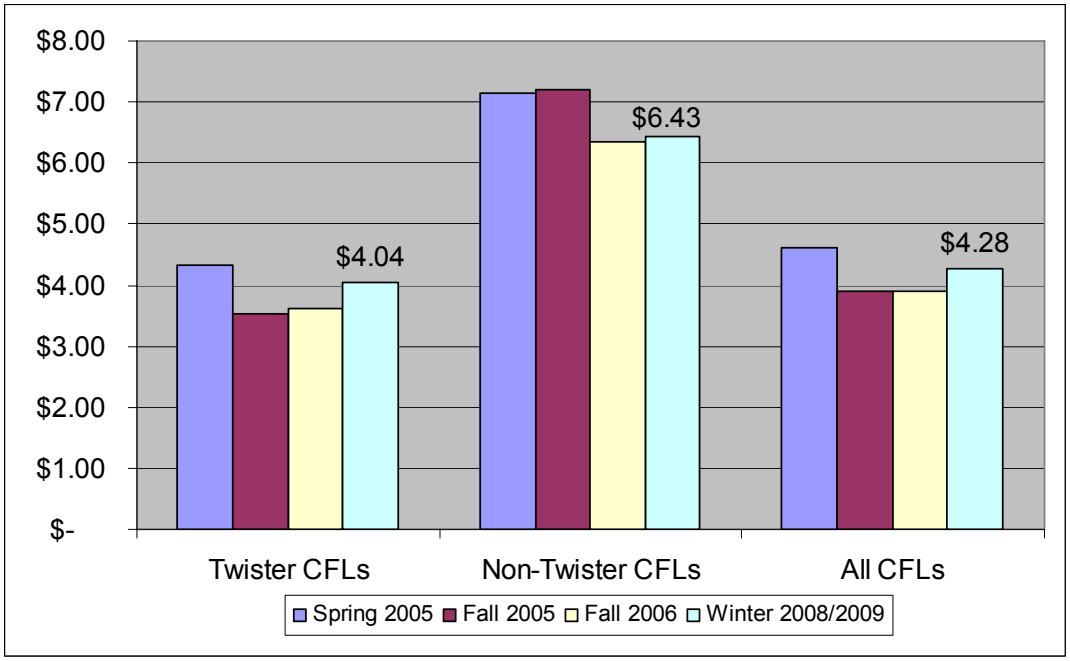
twisters and non-twisters, we assumed that 10 percent of CFL purchases are of non-twisters and 90 percent are of twisters. These same assumptions were used in the prior MPERs.

To quantify CFL sales in the Northwest, KEMA is relying on data from Fluid Market Strategies. Sales data is comprised of both CFLs sold with utility incentives and CFLs sold at market price.

Average Price Adjustment

The average price paid for CFLs by consumers in the Northwest is currently $4.28. We calculated this price based on data from the 2008 shelf surveys, weighted using the assumptions outlined above. As Figure B-1 shows, this is slightly higher than the $4.00 per lamp assumed for 2008-2020. KEMA recommends using this updated average price paid for the ACE Model.

Figure B-1
Average CFL Price Paid By Customers



Sales Data Adjustment

Sales of CFLs in 2008 outpaced forecast assumptions by more than 2 million lamps. Table B-2 shows a comparison between the forecasted 2008 CFL sales from the second version of the

ACE model and preliminary 2008 sales data from Fluid Market Strategies.[35] KEMA recommends using the updated sales data for the ACE Model and building assumptions regarding future sales using the most current available data.

Table B-2
CFL Sales in the Northwest *

Period	Forecasted Sales	Updated Sales
Q1 2008	3,993,750	8,451,089
Q2 2008	3,991,608	5,435,354
Q3 2008	6,306,605	5,197,121
Q4 2008	8,708,038	6,157,100
TOTAL 2008	**23,000,000**	**25,240,665**

*Updated total 2008 CFL sales estimate of 25,240,665 includes 1,344,903 non-ENERGY STAR CFLs.

[35] Fluid Market Strategies is currently working to finalize its 2008 CFL sales estimates.

2.2 April 1, 2009 Memo: NEEA Residential CFL Baseline, 2008

memo

To:	Anu Teja and Christine Jerko – Northwest Energy Efficiency Alliance	Date:	April 1, 2009
From:	Tami Rasmussen, KEMA Inc.		
Copy:	Jenna Canseco, Kevin Price, KEMA Inc.		
Subject:	NEEA Residential CFL Baseline, 2008		

The purpose of this memorandum is to provide NEEA with an independent estimate of 2008 residential ENERGY STAR CFL baseline sales, which will be used to determine the impact of the region's residential ENERGY STAR CFL initiatives. The estimate is based on recent net effects studies conducted across the nation to estimate upstream lighting programs' net market impacts.

Background

The baseline estimate is the theoretical level of CFL sales that would have occurred in absence of regional market interventions. The baseline is theoretical and difficult to estimate because there is no way to really know what would have happened in absence of NEEA, utility and other regional promotions.

This is particularly true in the Northwest due to the nature of NEEA's interventions, which were intended to leverage other regional and national initiatives, and the synergistic effects of other complementary upstream lighting programs nationwide. As such, it is nearly impossible to untangle regional versus other effects.

There are limited methodological options as well as hard data sources with which to address this problem. The most promising approach that is applicable for the Northwest is net effects, which estimates the theoretical total market impacts of a program. Net effects are the difference between total sales for a program area minus baseline sales.

A recent study conducted in California, the Compact Fluorescent Lamps Market Effects Interim Draft Report[(i)], presented net effects results, including per household baseline estimates, from studies conducted in five regions over the period of 2004 to 2007. We combined those

estimates with recent estimates of national CFL sales and regional population data to yield a 2008 Northwest CFL baseline.

Data Sources

Table B-3 below shows the five baseline estimates by region. At the bottom of the table, we computed a simple annual average and rate of change.

Table B-3
Estimates of Baseline Sales of CFLs, 2005 – 2007

Program Region	Baseline Description (e.g., Region)	Source of Baseline Estimate	Baseline Estimate (CFLs per household)		
			2005	2006	2007
Wisconsin	Michigan	Wisconsin Focus on Energy CFL Market Effects Study[ii]	1.0	1.7	3.2
British Columbia	North and South Dakota	Direct and Market Effects of BC Hydro's 2006-07 Residential CFL[iii]	-	1.3	-
Massachusetts	U.S. Excluding Program Areas	Massachusetts program CFL net effects assessment: results memo[iv] *	-	1.0	-
New York	U.S. Excluding Program Areas	NYSERDA program CFL net effects assessment: report appendix[v]	0.5	-	-
California	Based on California net-to-gross supplier surveys and meta-analysis of other net effects studies	DEER CFL Net-to-gross report[vi]/ 2004-2005 California Single-Family Rebate Program Evaluation[vii]/ 2007 RMST[viii] *	0.3	0.5	1.5
Average			0.6	1.1	2.4
Annual Rate of Change in Average			-	*84%*	*113%*

*Average of a high and low estimate

Estimates of national ENERGY STAR CFL shipments and retail sales are shown in Table 2 for 2005 to 2008, as well as the annual rate of change. The source of the national CFL shipment data is the 2009 ENERGY STAR CFL Market Profile[ix], which includes shipment data collected

by D&R International[x]. ENERGY STAR CFL retail sales are calculated as 75 percent of total CFL shipments. [36]

Table B-4
Estimates of National CFL Shipments and
ENERGY STAR CFL Retail Sales, 2005 – 2008

	2005	2006	2007	2008
Shipments of CFLs (000s)	102,000	185,000	397,000	326,000
Retail Sales of CFLs (000s)	76,500	138,750	297,750	244,500
Annual Rate of Change in Sales	-	*81%*	*115%*	*-18%*

The estimate of the number of Northwest households in 2008 is 4.8 million and is based on U.S. Census Bureau, Population Estimates Program[xii].

Analysis Approach

The approach is to leverage the 2007 baseline estimates (the most recently available) and extrapolate them for 2008. Since the rate of growth in the average per household CFL baseline (last row of Table 1) is very close to the rate of growth in the overall market (last row of Table 2), we assume that the rate of growth in baseline is equal to the rate of overall market growth from 2007 to 2008. We then apply that rate of growth to the 2007 baseline estimate to yield an estimate of 2008 baseline. We then apply that baseline to the Northwest population estimate.

Analysis Result

Using the analysis approach described above, the 2008 Northwest baseline is 9.3 million CFLs. The formula is as follows:

2008 Northwest baseline =
*2007 baseline * (1 + rate of growth in market from 2007 to 2008) * number of Northwest households*

The calculation is as follows:

9.3 million = *2.4 CFLs per household * -1.18 * 4.8 million*

[36] Annual estimates of ENERGY STAR CFL sales (from NEMA[xi] national sales reports) from 2001 to 2007 are approximately 75% of annual estimates of total CFL shipments (from the 2009 ENERGY STAR CFL Market Profile). KEMA uses this imports-to-shipments adjustment factor to estimate retail sales for 2005 to 2008.

References

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(xi) Sanders, M. (D&R International), 2008. Personal correspondence to Tami Rasmussen (email). March 14, 2008. Data source cited in email: National Electrical Manufacturers Association (NEMA).

(xii) U.S. Census Bureau, 2008. Population Estimates Program. http://www.census.gov/popest/datasets.html. Updated August 20, 2008. Accessed December 4, 2008.

3. Additional Shelf Survey Findings

3.1 Sample Size

The 2008 shelf survey was conducted at 58 retail establishments in the Northwest. Most of these 58 locations were visited during the 2006 survey period, during which 88 sites were surveyed. The breakdown of stores surveyed by region, store type, and by each combination of geography and store type are presented below in Tables C-3, C-4, and C-5 for both 2006 and 2008.

Table C-1
Shelf Survey Store Visits by Store Type, 2006 and 2008

Region	2006	2008
Metro	52	36
Non-Metro	36	22
Total	**88**	**58**

Table C-2
Shelf Survey Store Visits by Region, 2006 and 2008

Store Type	2006	2008
Big Box	36	24
Drug, Grocery, Sm HW	52	34
Total	**88**	**58**

Table C-3
Shelf Survey Store Visits by Store Type and Region, 2006 and 2008

Store Type	Region	2006	2008
Big Box	Metro	22	15
	Non-Metro	14	9
Drug, Grocery, Sm HW	Metro	30	21
	Non-Metro	22	13
Total		**88**	**58**

3.2 Affordability

The shelf survey collected pricing information for every CFL model observed on the shelf. Similar to the prior surveys, price (before and after rebate, when applicable) and number of CFLs per package were recorded. Results below are presented by category of bulb: twisters less than 18 watts, twisters 18-30 watts, twisters greater than 30 watts and non-twisters.

3.2.1 Range of Prices

Figure C-1 below shows the average range in prices (after any rebates) of twister-style CFLs that are less than 18 watts that were displayed on store shelves during the four study periods.[37] For each store type, the first data point or range is for spring 2005, the second for fall 2005, the third for fall 2006 and the fourth for winter 2008. The bars at the top and bottom of the range are the average maximum and minimum, and the diamond is the midpoint of the range. Since fall 2006, prices for less than 18 watt CFLs in warehouse, do-it-yourself and mass merchandise stores have increased very slightly. In small hardware stores this increase was more prominent, likely the result of substantially higher prices for a select few products in this wattage range. In drug and grocery stores, prices have decreased over the entire period.

[37] Note that the SWAT promotion explicitly excluded this wattage range.

Figure C-1
Average Range of CFL Prices Over Time – Twisters Less than 18 Watts
(Spring 2005, Fall 2005, Fall 2006, Winter 2008)

Figure C-2 below shows the average range of prices of twister-style CFLs between 18 and 30 watts.[38] The average price for 18-30 watt CFLs at drug and grocery stores has declined throughout the entire period. Since fall 2006, do-it-yourself stores have experienced a similar decline, while the average price at small hardware stores declined through fall 2006, but recently returned to 2005 levels. The average price at mass merchandise dipped between 2005 and 2006, but the price reverted back to 2005 levels in 2008. Prices at warehouses stayed constant between 2006 and winter 2008.

[38] This wattage category was the target of the SWAT promotion, which was active in some Northwest stores in the fall of 2005 and 2006. Note that in 2006, SWAT explicitly excluded warehouse and Do-it-Yourself stores and included only CFLs less than 23 Watts

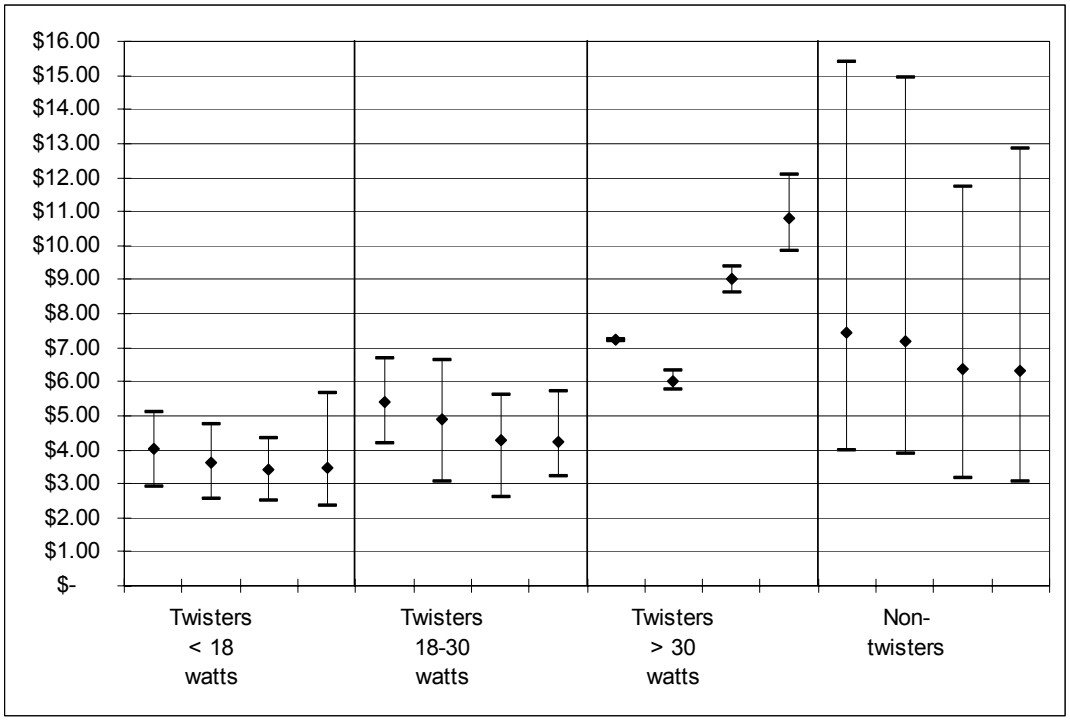
Figure C-2
Average Range of CFL Prices Over Time – Twisters 18-30 Watts
(Spring 2005, Fall 2005, Fall 2006, Winter 2008)

The average price for twisters greater than 30 watts ranged from $6 to $12 during prior evaluations. During the most recent study, this trend was found to be largely unchanged, prices ranging from $6 to $14. Large ranges in prices among bulbs at do-it-yourself stores, along with higher prices in small hardware stores are the only notable differences; the price for twisters greater than 30 watts in small hardware stores was over $13. These higher wattage twisters are intended for non-residential, multi-family/common area or utility applications.

Average price for non-twisters were found to be very similar to prior evaluations. The bulbs have a large range in prices, with an average around $8 in do-it-yourself, drug and grocery, mass merchandise and small hardware stores. As well, warehouse store prices were significantly lower because they do not carry all of the same types of non-twister CFLs.

Figure C- below shows the average range of CFL prices over time among all store types, weighted by each store type's sales volume. Prices for three of four bulb types remained very constant, with prices for high-wattage twisters continuing to increase. The average price for twister-style CFLs greater than 30 watts increased from $6.02 in fall of 2005 to $10.82 in winter 2008. The average weighted price for every other lamp style is lower than in the fall of 2005.

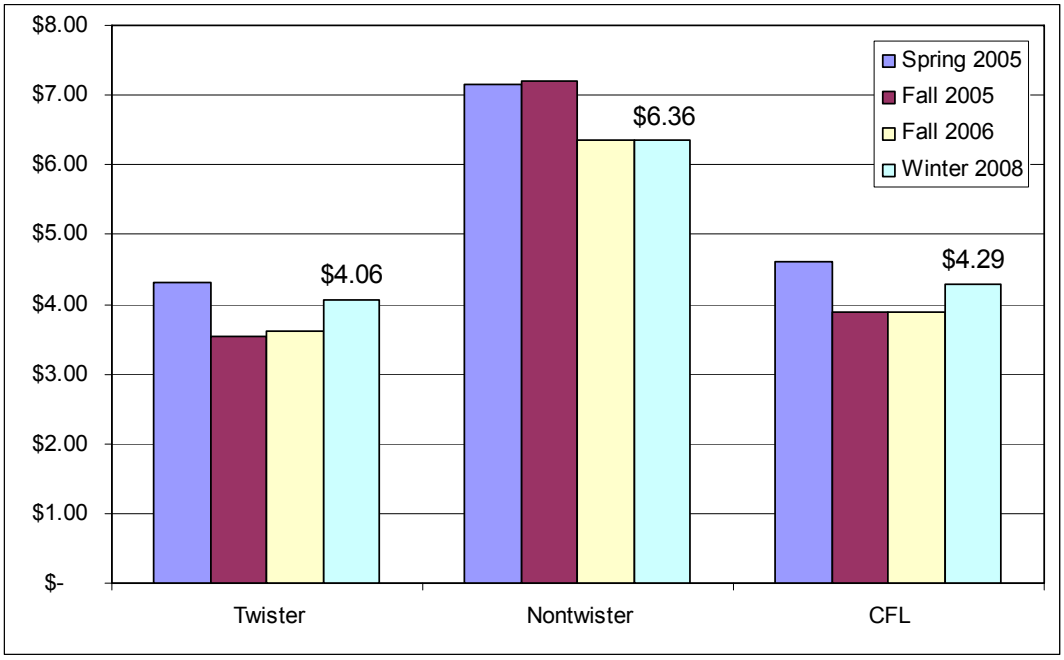
Figure C-3
Average Range of CFL Prices Over Time – Sales Weighted
(Spring 2005, Fall 2005, Fall 2006, Winter 2008)



3.2.2 Average Price Paid by Consumers

Figure C-4 below shows estimates of the average price paid by customers for twisters, non-twisters, and CFLs in general in spring 2005, fall 2005, fall 2006 and winter 2008. The average price paid by customers in the Northwest for twister-style CFLs has increased by $0.44 since 2006. This increase is largely the result of an increase in the average price for high-wattage twisters. The average price paid for non-twisters was constant between 2006 and 2008, after dropping $0.85 between 2005 and 2006. Overall, consumers in the Northwest saw an increase in CFL prices since 2006, currently expecting to pay approximately $4.29 for CFLs.

Figure C-4
Average Price Paid by Customers for Twisters, Non-Twisters and CFLs



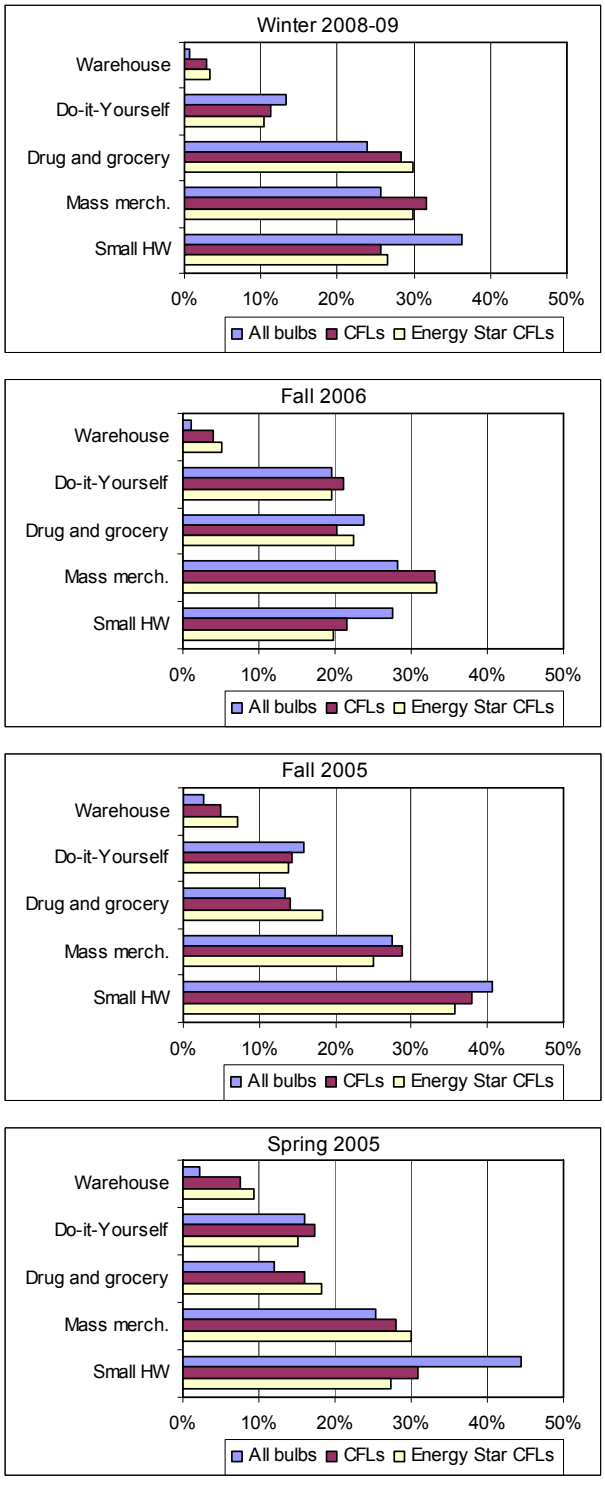
3.3 Availability

The lighting shelf survey assessed the availability of lighting products by collecting information on the total linear feet and number of shelves for all light bulbs, CFLs and ENERGY STAR labeled CFLs.

3.3.1 Total Shelf Space

Figure C- below shows the allocation of total shelf space by store type during each study period. In 2008 mass merchandise stores maintained the largest share of total CFL shelf space (32%). Between fall 2006 and winter 2008, the percentage of CFL sales through do-it-yourself stores dropped from 21% to 11%, while drug and grocery sales jumped from 20% to 28% and small hardware sales from 22% to 26%. Figure C- provides further information.

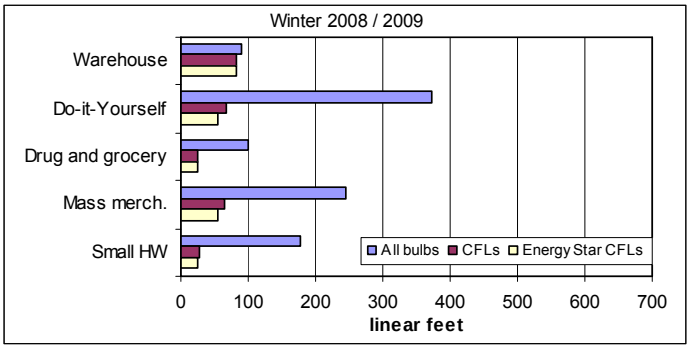
Figure C-5
Allocation of Total Lighting Shelf Space by Store Type

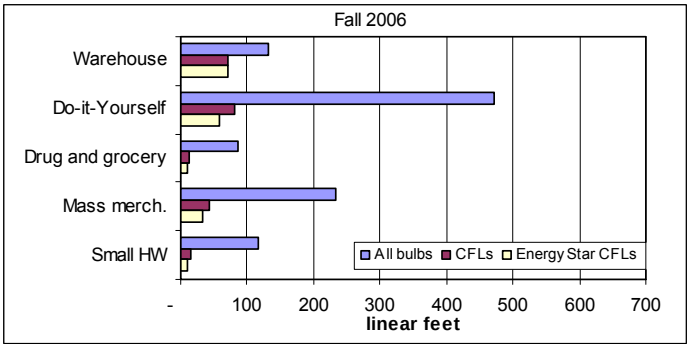


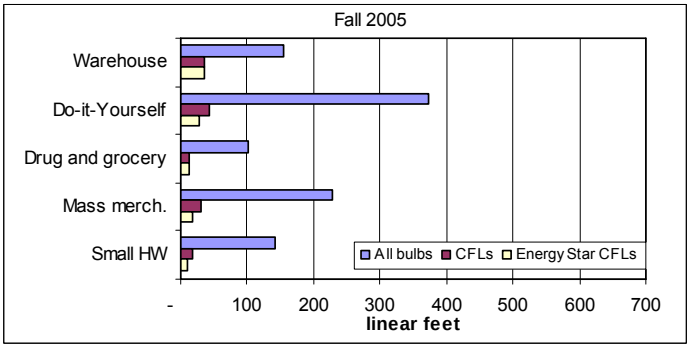
3.3.2 Average Shelf Space

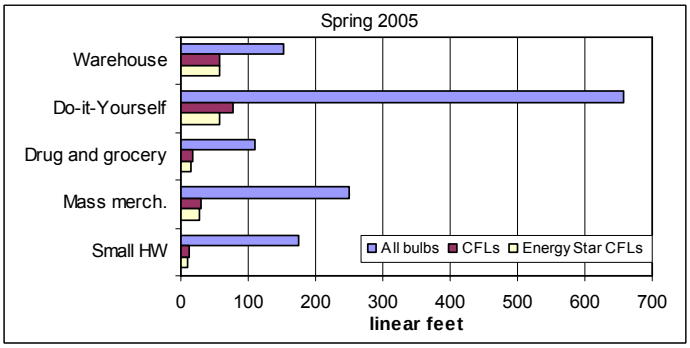
Figure C- shows the average shelf space allocation by store type for all four study periods. As shown, drug and grocery stores are the only stores that have increased their overall lighting display area since fall 2006, while simultaneously more than doubling their shelf space dedicated to CFLs. Do-it-yourself stores are the only stores that reduced the average shelf space dedicated to CFLs between 2006 and winter 2008, down to 69 feet per store. In general, average lighting shelf space dedicated to CFLs declined between spring 2005 and fall 2005, rebounded in fall 2006, and continued to increase through winter 2008.

Figure C-6
Average Shelf Space Allocation by Store Type









3.4 Diversity

The lighting shelf survey examined the diversity of CFLs available to consumers in the northwest. CFLs were examined by both lamp style (twister, 3-way, reflector, etc.) and wattage category.

3.4.1 By Style

Figure C- shows the percentage of stores in the northwest that carry each different style of CFL. Almost all stores in the northwest carry twister-style CFLs (97%). Interestingly, between 2006 and 2008 large increases in the percentage of stores carrying reflector, covered, and 3-way CFLs were coupled by large decreases in the percentage of stores carrying tube, circle-line, and pin-based CFLs.

Figure C-7
Percentage of Stores that Carry CFLs, by Style

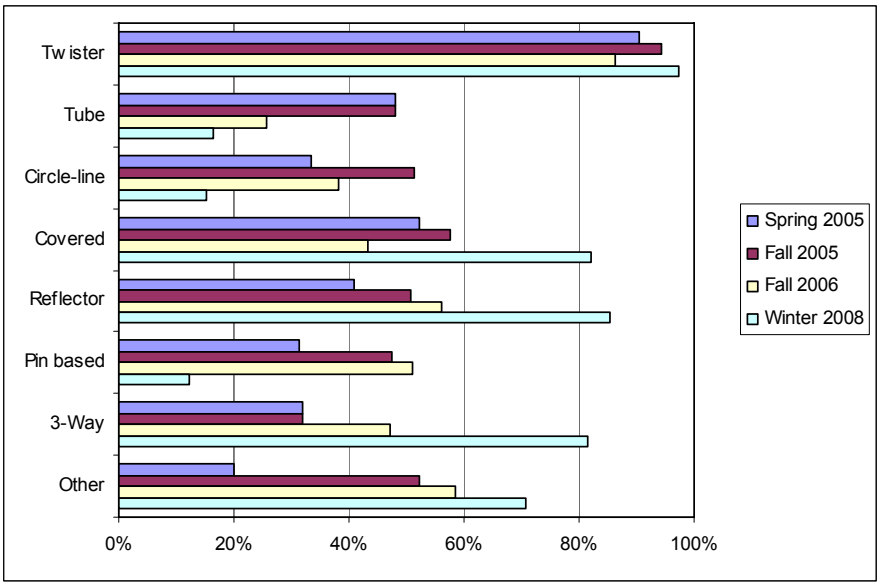


Figure C-8 shows the average number of CFL brands stocked at stores in the northwest, by CFL style. Slightly more than two brands, on average, of both twister and pin based CFLs are stocked at stores in the northwest. The number of brands for twister-style CFLs increased from 1.6 to 2.1 brands per store since 2006, while pin based stayed relatively similar to 2006. The average number of brands stocked for most CFL styles remained similar between years, with only the increase in average number of twister brands and a substantial decrease in average number of circle-line CFLs (from 2.0 to 1.0 brands per store, on average).

Figure C-8
Average Number of CFL Brands Stocked, by Style

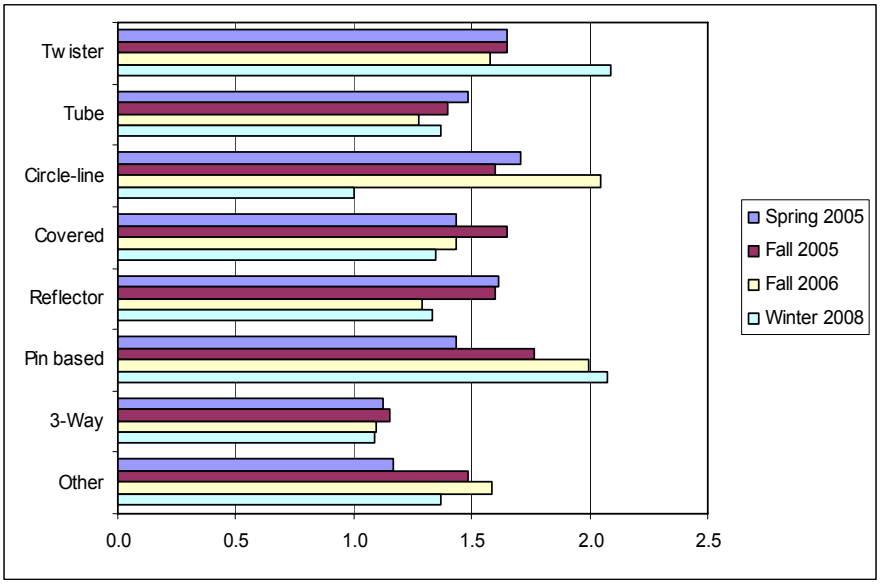
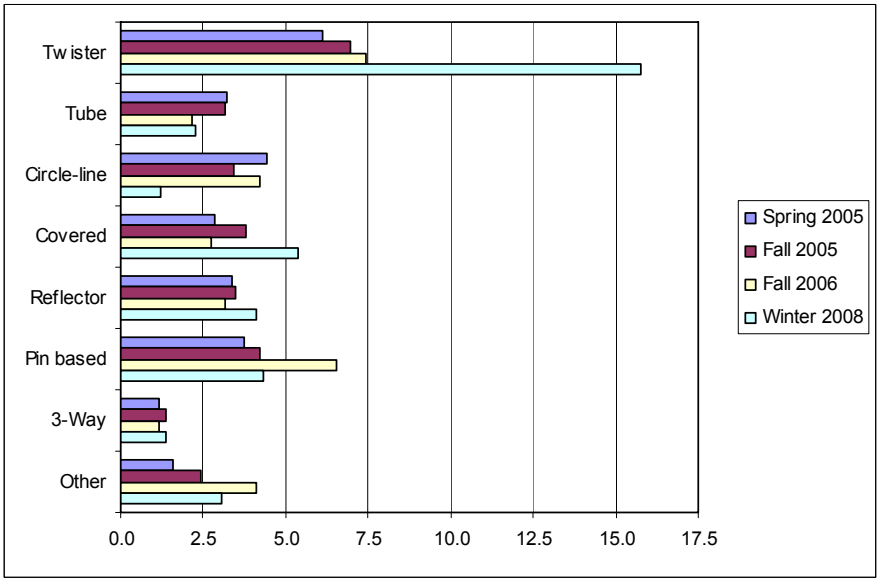


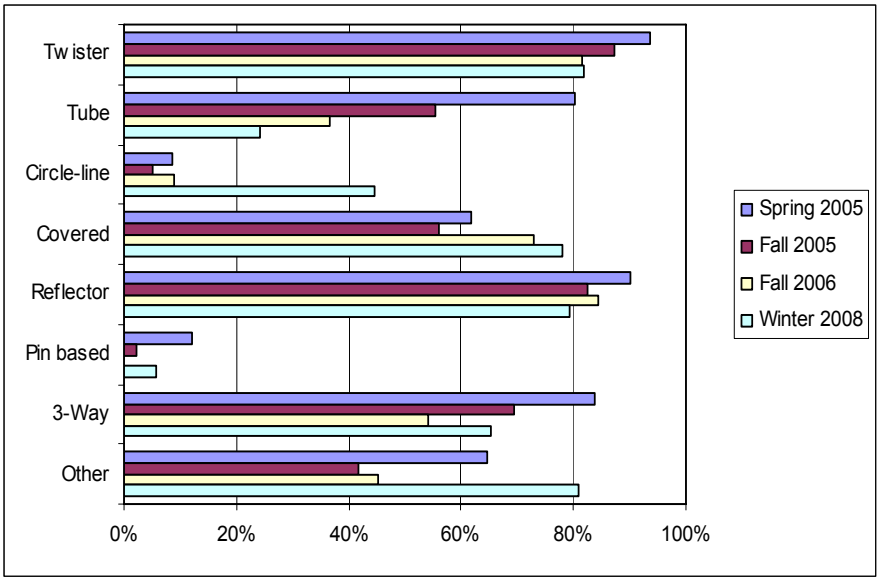
Figure C-9 shows the average number of CFL models stocked in lighting retailers across the Northwest, by style. The average number of twister models more than doubled between 2006 and 2008 after only slight increases between each of the previous study periods. The average number of Circle-line and pin based CFL models encountered at stores in the Northwest dropped between 2006 and 2008. Covered CFL models increased, and the other styles remained relatively constant.

Figure C-9
Average Number of CFL Models Stocked, by Style



The percent of models with ENERGY STAR labels encountered in Northwest lighting retailers is presented by style in Figure C-10. More than 80% of twister models have ENERGY STAR labels, consistent with prior studies. The percentage of tube models with ENERGY STAR labels has declined every year, from 80 percent in spring 2005 to approximately 24 percent currently. The percentage of circle-line models with ENERGY STAR labels increased from less than 10 percent during all prior studies to 45 percent currently. Of models listed as "other" styles, more than 80 percent were found to be ENERGY STAR in 2008, compared to 45 percent in 2006. The percentage of covered, reflector, pin based, and 3-way models with ENERGY STAR labels did not experience as much change.

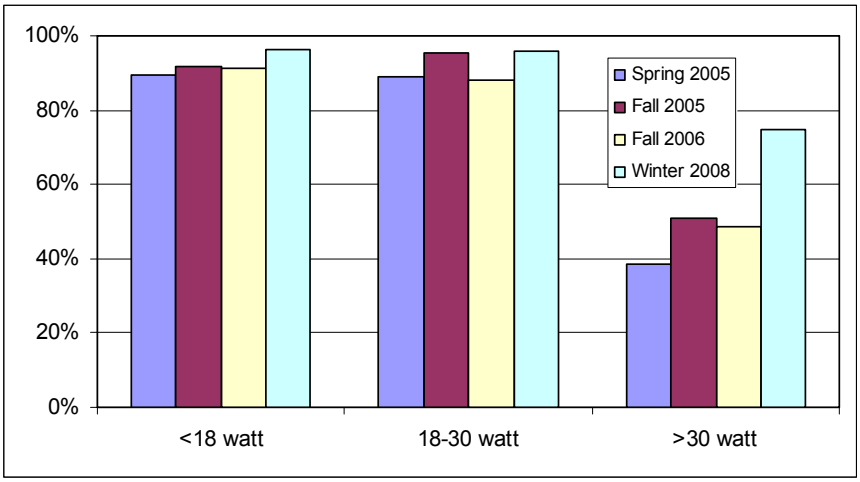
Figure C-10
Percentage of Models with ENERGY STAR Label, by Style



3.4.2 By Wattage Category

The percentage of stores carrying CFL, by wattage category, is presented below in Figure C-11. Nearly every lighting retailer surveyed had both <18 watt and 18-30 watt CFLs (96 percent of stores), while approximately 75 percent had >30 watt CFLs. Previously, the highest percentage of stores with >30 watt CFLs were encountered in fall 2005 (51%).

Figure C-11
Percentage of Stores that Carry CFLs, by Wattage Category



The percentage of CFL models at lighting retailers in the Northwest are presented in Figure C-12, by wattage category. The data suggest a slight increase in the relative proportion of <18 watt CFLs, compared to 18-30 and >30 watt lamps.

Figure C-12
Percentage of CFL Models Stocked, by Wattage Category

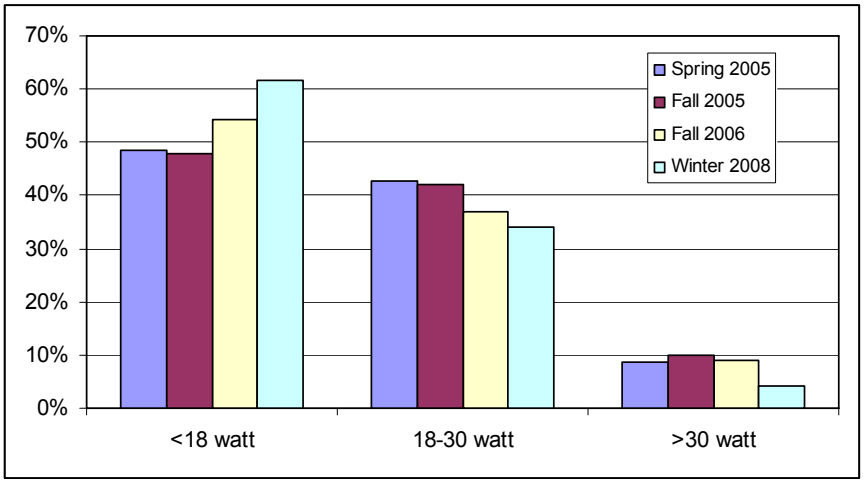
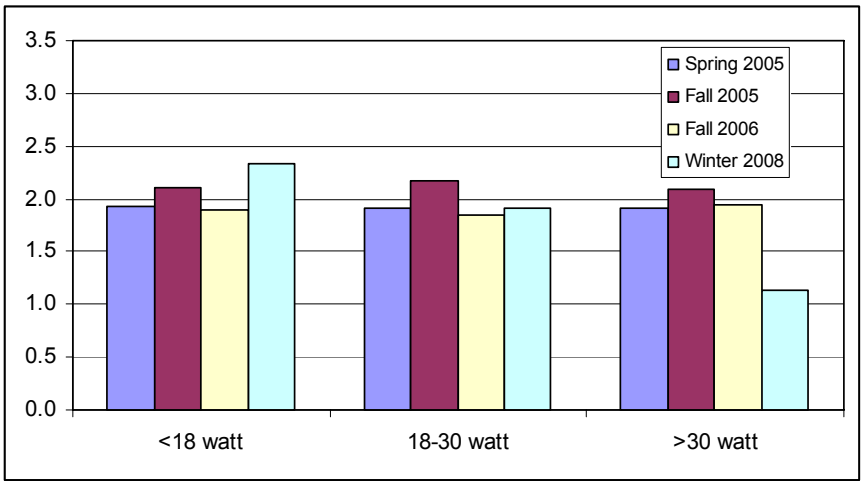


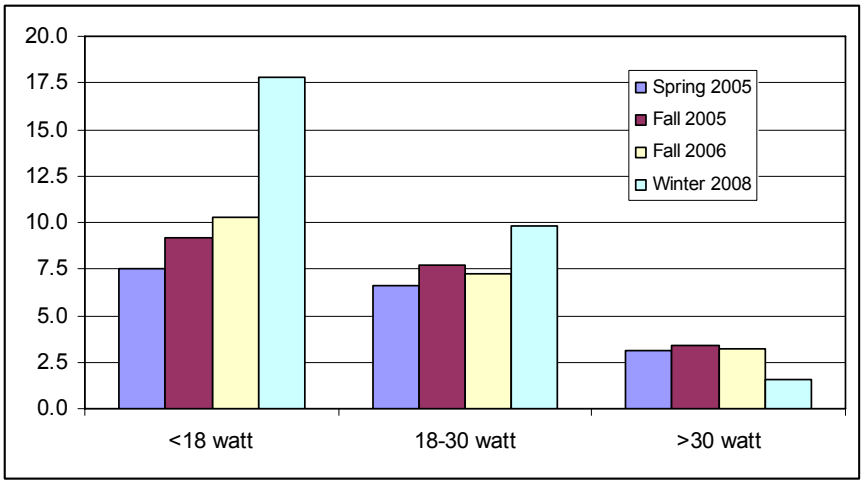
Figure C-13 shows the average number of CFL brands at lighting retailers in the Northwest, by wattage category. Despite the percentage of stores carrying >30 watt CFLs (shown above in Figure C-11), the data suggest that the average number of CFL brands in the >30 watt category has declined since 2006. The data also suggest that stores in the Northwest may be stocking more <18 watt CFLs, on average.

Figure C-13
Average Number of CFL Brands Stocked, by Wattage Category



The average number of CFL models stocked by wattage category is presented below in Figure C-14. Currently, more than 17 CFL models in the <18 watt category are stocked by lighting retailers in the Northwest, compared with 10 models in 2006. The data also suggest a slight increase in the number of 18-30 watt models available, and a slight decrease in the number of >30 watt models available.

Figure C-14
Average Number of CFL Models Stocked, by Wattage Category



4. Fixture Showroom Surveys

Table D-1
Number of Fixture Models - All Three Stores

Display Type	TOTAL FIXTURE MODELS (Stores 1, 2, and 3)											
	Energy Star CFL Fixture			Non-Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	30	0	0	0	0	0	2,052	0	0	2,082	0	0
Floor	0	0	0	0	0	0	0	705	19	0	705	19
Wall	41	0	0	0	0	0	531	34	0	572	34	0
Shelf	0	0	0	0	0	0	0	8	0	0	8	0
Total	**71**	**0**	**0**	**0**	**0**	**0**	**2,583**	**747**	**19**	**2,654**	**747**	**19**

Table D-2
Number of Fixture Models – Store 1

Display Type	NUMBER OF FIXTURE MODELS - Store 1											
	Energy Star CFL Fixture			Non-Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	0	0	0	0	0	0	360	0	0	360	0	0
Floor	0	0	0	0	0	0	0	140	6	0	140	6
Wall	10	0	0	0	0	0	223	0	0	233	0	0
Shelf	0	0	0	0	0	0	0	0	0	0	0	0
Total	**10**	**0**	**0**	**0**	**0**	**0**	**583**	**140**	**6**	**593**	**140**	**6**

Table D-3
Number of Fixture Models – Store 2

Display Type	NUMBER OF FIXTURE MODELS - Store 2											
	Energy Star CFL Fixture			Non-Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	22	0	0	0	0	0	1,085	0	0	1,107	0	0
Floor	0	0	0	0	0	0	0	309	7	0	309	7
Wall	31	0	0	0	0	0	0	34	0	31	34	0
Shelf	0	0	0	0	0	0	0	0	0	0	0	0
Total	**53**	**0**	**0**	**0**	**0**	**0**	**1,085**	**343**	**7**	**1,138**	**343**	**7**

Table D-4
Number of Fixture Models – Store 3

Display Type	NUMBER OF FIXTURE MODELS - Store 3											
	Energy Star CFL Fixture			Non-Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	8	0	0	0	0	0	607	0	0	615	0	0
Floor	0	0	0	0	0	0	0	256	6	0	256	6
Wall	0	0	0	0	0	0	308	0	0	308	0	0
Shelf	0	0	0	0	0	0	0	8	0	0	8	0
Total	**8**	**0**	**0**	**0**	**0**	**0**	**915**	**264**	**6**	**923**	**264**	**6**