

Buying Success: Bulk Purchase Programs As Agents of Market Transformation

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ABSTRACT

Between 1989 and 1995 BC Hydro's Power Smart program conducted a number of initiatives to promote and encourage the use of screw-based integrated compact fluorescent light bulbs (CFLs) by residential customers. Individual programs were evaluated, and energy savings attributable to programs were estimated and reported where possible. Residential CFL initiatives initiated in 2001, however, are aimed at long-term transformation of markets that make lasting changes in consumer patterns of energy use. This paper presents early results for Power Smart's CFL market transformation efforts involving consumer promotional campaigns, and a pilot project involving bulk purchase of CFLs by the utility, and in partnership with retailers, distribution of two free CFLs to utility customers in two small, rural communities. Results from a longitudinal market assessment of the energy impacts of recent (2001-2002) province-wide CFL campaigns, and a cross-sectional evaluation of immediate energy savings from a ten-week pilot project (spring 2002) indicate that bulk purchase programs can result in the acceleration of market transformations.

Introduction

BC Hydro's Power Smart program has a long history of working with CFL manufacturers and retailers through the Power Smart Product Endorsement Program, which entitled some 600 manufacturers and retailers to use the Power Smart brand to promote a wide range of endorsed products from 1989 through 1995. Marketing included the use of consumer promotional campaigns and point-of-sale materials that served to raise awareness of CFLs and to educate consumers on the benefits and features of CFLs. Investment in the program ranged from a low of \$ 200,000 to a high of \$ 1 million (CAD) per year. In 2001, BC Hydro established a new ten-year demand-side management (DSM) plan designed to deliver 3,500 GWh/year of energy through a ten-year investment of \$600 million (CAD²).

Program Description

Market Initiatives. In 2001, an expanded CFL program was launched, going beyond direct endorsement of Power Smart products by adopting the position that 'It is Power Smart to buy Energy Star[®] products', thus allowing BC Hydro to leverage greater value from market forces in other jurisdictions. Energy savings for CFL initiatives, targeted in the ten-year DSM plan, are 490 GWh/year. In the spring and fall of 2001, province-wide consumer promotional campaigns included distribution of mail-in-coupons through bill inserts (1.4 million residential customers), radio and newspaper

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² At current exchange rates, \$ 600 million CAD is about \$ 425 million USD.

promotions, Internet advertising, bill board and transit advertising, point-of-sale materials and home shows. In addition, Power Smart information booths including knowledgeable staff and interactive displays, visited participating retail outlets through-out the province spending two to three days in each location. During 2002, CFL coupons were provided in the residential bill with educational inserts, and the Power Smart booths continued to visit participating retail outlets.

Immediate or Direct Initiatives. In 2002, Power Smart rolled out a pilot initiative involving the bulk purchase of CFLs by BC Hydro, and in partnership with retailers, distribution of two free CFLs to utility customers in two small communities. Two different communities from two of four regions in the BC Hydro service area were chosen for the pilot. The first included the community of Courtenay and the Comox Valley area (26,000 households) situated on Vancouver Island, an electric capacity constrained island with a mild marine climate. The second area chosen was the community of Quesnel (10,500 households) in the northern interior of the province, with a severe winter climate. Smaller communities were chosen for the launch to enable BC Hydro to evaluate the programs, customer incentives, and communications tactics in a controlled and cost-effective manner. The pilot ran from March 1 through May 31, 2002 and included direct mail, regular publicity on local radio stations and in local newspapers, point-of-sale materials, and inclusion in retailer flyers.

All residential accounts in the two pilot areas received a direct mail piece including a voucher for two free Energy Star[®] CFL bulbs. Vouchers were redeemable at Power Smart booths established at participating retailers in the pilot communities. A total of 8 different bulb models (3 tube-style, 3 spiral-style and 2 a-line-style) by three manufacturers were distributed by the program. The model of CFL that the customer received corresponded with the brands sold by the retailer where the customer collected the free bulbs. Of the two bulbs given away per customer, one was a higher wattage CFL (23 or 24 watts) and one a lower wattage (14 or 20 watts). Upon redemption of the vouchers, customers also received a discount coupon for \$5³ off *any* Energy Star[®] labelled CFL bulb purchased at a participating retailer.

Customers interested in acquiring the CFL bulbs redeemed their vouchers through the Power Smart Youth Team (PSYT) booth at participating local retailers. The PSYT booths included knowledgeable staff and interactive displays to help educate customers on the benefits of CFL bulbs, how to choose the right bulb, and the best places to use them. There was one PSYT booth for each community that rotated through various participating local retailers based on a well-publicised schedule. The booths operated 4 to 5 days per week, including the weekends, throughout the ten-week pilot. The \$5 discount coupon was distributed through the PSYT booth to encourage customers to purchase additional CFL bulbs from their local retailer. There was a limit of one voucher and one coupon per household in the community.

Evaluation Approach

The evaluation was designed to determine market energy and demand impacts (savings) associated with recent province-wide CFL consumer promotions (2001 – 2002); secondly, to provide a baseline for ongoing measurement of market impacts within the province; and thirdly, to determine the immediate energy and demand impacts (savings) associated with the pilot.

Market Impacts. The evaluation of CFL market impacts (Gin Johnston, 2002) included data collection activities on the consumer demand and supply sides of the CFL market (Xenergy Inc., 2002). Consumer data to characterise the demand side of the market were collected through a telephone survey of residential customers (n=600), while supply side data were collected through a retailer telephone

³ All dollar references herein refer to the Canadian dollar, currently valued at about \$ 0.71 USD.

survey (n=390), interviews of other supply side market actors, and in-store audits (n=40). Data collection protocols addressed information for characterising the CFL market for 1999-2002. Customers and retailers were selected to represent four regions within the province, excluding the pilot communities. In addition, sampling for retailer surveys involved stratification by the type of store (grocery, drug, home improvement and hardware, merchandise) and four size categories.

Immediate Impacts. The evaluation of immediate effects associated with the pilot used a cross-sectional quasi-experimental design involving surveys of residential customers and retailers, and in-store audits before and after pilot project implementation in the two pilot communities and in two comparison communities (Fielding et al., 2002). The comparison communities were chosen to reflect the geography, climate, and size of the pilot communities. The town of Duncan on Vancouver Island (24,000 households) served as the comparison for the communities in Courtenay and the Comox Valley area, while Vernon in the mainland interior (15,000 households) served as the comparison community for Quesnel. Table 1 indicates the samples for the residential customer survey, and the in-store audits of retailers' lighting stock, before and after implementation of the pilot.

Table 1: Pilot Residential Survey & Retailer Stocking Samples

Community	Residential Surveys			Retailers Stocking Survey		
	Before	After		Before	After	
		Part.	NonPart.		Part.	NonPart.
Pilots	420	200	200	24	14	10
Comparisons	400		200	17		17
Totals	820	200	400	41	14	27

Market Impacts

To characterise the residential screw-based CFL bulb market in BC, Xenergy, Inc. (2002) addressed the supply and demand sides of the market separately. CFL installations reported by consumer survey respondents were used to estimate the historical market impact of the consumer promotions (February 2001 through June 2002) on CFL sales in BC Hydro's service area. CFL sales attributed to the province-wide promotions were then used to estimate market energy and demand savings.

Characteristics of the Supply Side

Some 2,700 retailers in BC Hydro's service area sell light bulbs and could be potential CFL retailers (395 drug stores, 1,050 grocery stores, 440 home improvement and hardware (HIH) stores, and 815 merchandise stores). Four strata for each store type were defined based on the number of employees: largest, large, medium and small. Sixty-five percent to 90% of retailers were in the small stratum, while less than 3% fell into the largest stratum. All of the largest drug stores and the large/largest HIH stores sell CFLs, as do 85% of the large/largest grocery stores. There is considerable unrealised potential for selling CFLs in the small category for all store types where 0% - 5% currently sell CFLs, and in the medium-sized grocery stores, and medium/large merchandise stores where 25% - 30% currently sell CFLs.

There was no single model that described the CFL distribution channels. Large drug stores and HIH stores generally purchase directly from manufacturers. Grocery, merchandise and medium-sized HIH stores were most likely to obtain CFLs through central buyers. Small and medium-sized HIH stores were the only groups relying to any extent on independent distributors. The main

information channels about CFLs for stores reflected the distribution channels, with retailers in most categories frequently mentioning BC Hydro as a key information source.

Availability. Currently, commercially available CFL models are not the best technology for outdoor applications in some areas of the province⁴ and are not the best technology for all lighting fixtures (e.g., recessed lights or pot lights).

Retailer Awareness. The telephone survey of retailers indicated high awareness of CFLs by retailers for almost all of the largest stores. On average, retailers first became aware of CFLs in 1997. Retailer awareness of CFLs has grown considerably over time and 79% of retailers who sell incandescent bulbs are now aware of CFLs. Of retailers who sell CFLs, 60% were aware of some of BC Hydro's program activities in 2002. Once again, awareness was highest for the large/largest stores. Most retailers rated high CFL prices as the most significant sales barrier, followed by lack of customer awareness.

Accessibility. Generally, a wide range of commercially available CFLs are accessible to consumers in the BC service territory. The retail stocking survey indicated 100 CFL models in the BC market. There were 7 major CFL styles in the market, and a number of dimmable and 3-way models available. The Home Depot locations led all retailers with an average of 15-19 CFLs models available. The most commonly available bulb sizes were the 15 watt (22%) and 20 watt (18%) models. The share of spiral bulbs has grown, and they now represent the second most common style carried. Nearly 60% of bulbs were rated 10,000 hours of life and almost 40% were rated at 6,000 hours.

The average linear total lighting shelf space was 2,410 inches, and the average linear CFL shelf space was 148 inches (or 6.1% of total lighting shelf space). CFLs occupied a much larger percent of total shelf space in the two most populated regions within the province.

Affordability. CFL prices ranged from \$4 to \$37. The average minimum price across all retailers was \$9.21.

Retailer Acceptance. Retailers who sell CFLs indicated that the most significant barriers for increasing CFL sales are prices and lack of customer awareness. Large drug stores and grocery stores also rated lack of salesperson knowledge as a significant barrier. Consistent with the ratings given by retailers who sold CFLs, those who did not sell them ranked high prices and lack of customer demand as the first and second most significant reasons for not stocking CFLs. The third most common reason was that the stocking decision was made by a central buyer who had chosen not to obtain CFLs.

Sales & Market Share. Based on AC Nielsen HomeScan panel data for incandescent bulb sales in BC, annual sales in BC Hydro's service area were estimated to be 11.3 million bulbs (7.3 per household). CFL industry sales and market share data were very difficult to obtain. Although the AC Nielsen HomeScan data provided estimates of CFL market share, these were not considered valid due to the lack of coverage of Uniform Product Codes for CFLs. In addition, the AC Nielsen MarketTrack system did not define the CFL product segment and failed to provide an estimate of market share. Consequently, shelf space and store employment data were used to derive an independent estimate of CFL market share across store categories. The HIH and merchandise store categories had approximately equal market shares, together providing some 80% of CFLs sold. Grocery stores accounted for 16% and drug stores for some 2% of CFLs sold. These estimates differed from available estimates for neighbouring US states in two key ways: 1) the grocery store share in BC was larger, and 2) the HIH share was smaller (ECONorthwest, 2002).

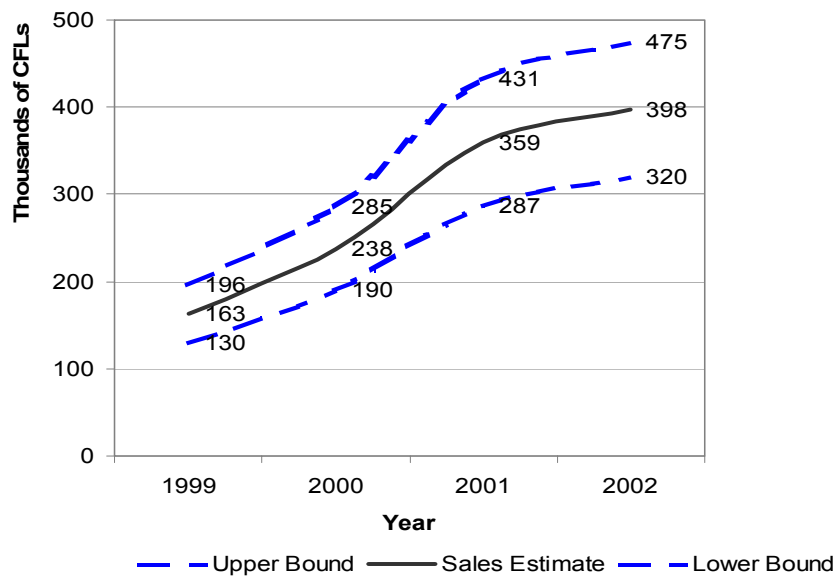
⁴ CFLs are not recommended for use at temperatures below -10° C (14° F). Thus, CFLs are not the best technology for outdoor applications in many areas of British Columbia due to the mountainous terrain, northern climate or both. Communities more than 2000 feet above sea level in the interior of Vancouver Island and the interior of the mainland experience four to six months of snow cover.

Characteristics of the Demand Side

On average consumers have a total of 35 screw-in light bulbs installed in each residence. Consumers who purchase CFLs have installed an average of 3.1 bulbs, 2.8 inside the home and 0.3 outside the home. Overall CFLs represent 8.8% of all installed screw-in bulbs. Approximately 74% of consumers indicated they were aware of CFLs. Home owners were more aware than renters, and those with higher electric bills were more aware of CFLs than consumers with lower electric bills. Only 25% of BC consumers have ever purchased a CFL. The proportion of consumers purchasing CFLs was estimated with a margin of error of less than 5% at the 95% confidence level.

As shown in Figure 2, based on the consumer survey the quantities of installed CFLs for the residential sector has grown since 1999.

**Figure 2: Estimated CFL Installations
BC Hydro Service Territory By Year**



Among customers who have installed CFLs, the average installations grew from 0.5 bulbs in 1999 to 1.1 bulbs in 2002. The margin of error for the average number of CFLs installed was less than 10% at the 95% confidence level. Although prices paid for CFLs varied widely, nearly 40% reported purchasing their most recent one for under \$10, and the mean price for the most recent CFL purchase was \$13. The most significant relationship between demographics and CFL installations is a strong correlation with education level. Consumers in the highest education level group had installed over five times as many CFLs per household as those in the lowest education group.

Historical Market Effect. The estimates of CFLs sales in the BC service areas since 1999 and noted in Table 3, were based on the consumer survey, a replication of the methodology recently used in neighbouring US states (ECONorthwest, 2002). The overall effect was calculated from the CFL installation rates for respondents who said they were aware of BC Hydro programs and those who said they were not. The installation rates for the two groups were not statistically significant prior to 2001⁵.

⁵ Between 1995-2000 Power Smart was relatively inactive in the market, employing primarily point-of-sale material on a relatively small scale.

Table 3: Effect of BC Hydro Program on CFL Installations

Year	Average Number of CFLs Installed		Change in CFL Installations All Households
	Aware BCH	Aware Other Source	
2001	0.82	0.57	75,300
2002 ¹	1.22	1.59	196,100

¹ Note, 2002 estimate extrapolated from Jan-June 2002 data.

Market Energy Impacts

The engineering algorithms noted below were used to calculate the energy savings or market impacts associated with BC Hydro's province-wide consumer campaigns during the two fiscal years ending March 31, 2003. CFL sales during the calendar year were translated into fiscal years, and reported CFL sales associated with BC Hydro coupons were subtracted in order to estimate the net market impact.

Market Energy Savings

kWh savings / year = (number of CFLs - number of coupons) * savings per CFL * hours of use per year

Market Demand Savings

MW savings = (number of CFLs – number of coupons) * savings per CFL * coincident peak factors

Savings per CFL for market energy savings were assumed to be 40 watts, hours of use per day 3.5 hours and annual savings per CFL of 51.1 kWh/year⁶. Note that these are conservative assumptions when compared to the estimate of immediate effects based on surveys of pilot participants (63 kWh/yr. annual savings per CFL) used in the following sections. However, it is considered unlikely that education levels achieved through the marketplace could have the same impact on behaviour as in the intensive pilot project.

The system peak occurs on a winter weekday between 5 pm– 9 pm. To calculate cumulative energy savings it was assumed that on a monthly basis the (net number of) CFLs are installed halfway through the installation month, and that the installations occur evenly throughout the initial installation month, while after the installation period it is assumed all CFLs have been installed. The peak coincidence factor was assumed to be 0.9, the proportion of occupied households 0.9, and the proportion of CFLs on 0.5.

Results. Cumulative net (of coupons) market demand and energy savings attributable to BC Hydro promotions during February 2001 and June 2002, were estimated to be 5.7 MW and 15.0 GWh/year, as March 31 2003.

Immediate Impacts

The pilot project was successful from the process, market and impact perspective. As summarised in Table 4 and described below, the pilot achieved positive results on all five 'A' indicators of market transformation. The five 'A' framework provides a structure to identify market barriers and develop strategies to overcome these barriers, in order to achieve market transformation (Arthur D. Little, Inc., 2002).

⁶ Based on assumptions used to calculate energy savings for Power Smart programs conducted during 1989-1995, and a residential end-use survey conducted in 1996.

Table 4: Results For The 5 A Indicators of Market Transformation

Availability	No change, CFLs for outdoor cold temperatures and recessed light fixtures are not commercially available
Awareness	Increased consumer awareness Increased retailer awareness
Accessibility	More CFL models available Wider range of wattages available Increased shelf space allocation Increased number of retailers stocking CFLs
Affordability	Lower prices
Acceptance	High customer satisfaction High customer participation High retailer satisfaction

Summary of Indicators of Market Transformation

Availability. Commercially available CFL models are not the best technology for outdoor applications in some areas of the province (see footnote 3) and are not the best technology for all lighting fixtures (e.g., recessed lights). CFLs appropriate for cold temperatures and recessed fixtures did not become commercially available during the ten-week pilot project.

Customer Awareness. Overall the pilot initiative was successful, significantly increasing awareness of CFLs from 62% to 92% in the pilot communities, while awareness of CFLs in the two comparison communities showed only a slight (from 68% to 72%, not statistically significant) increase over the same time period. The majority of pilot community residents (89%) were aware of the voucher for two free CFLs.

Retailer Awareness. Overall the pilot was successful, increasing awareness of CFLs among retailers from 64% to 100% in the pilot communities. Retailer awareness of CFLs in the comparison communities increased from 59% to 88%.

Customer Acceptance. Participation within the pilot communities was high, with 65% of customers redeeming their vouchers for the two free CFLs. Despite having to wait in line to receive the free CFLs (58% indicated they had to wait), 93% of participants were very or somewhat satisfied with process to pick-up the bulbs. Among CFL participants, 70% indicated that their understanding of CFL features and attributes increased through exposure to the CFL program, and 86% rated the knowledge of CFLs by Power Smart Youth Team representatives as excellent or good.

Three months after receiving the free CFLs, 90.5% of participants reported installing one of their free CFLs, and 61.5% reported installing the second free CFLs, for an average reported three-month installation rate of 75%⁷. Of the bulbs not installed, 27% of respondents indicated they intend to install the bulb in the next month, and an additional 30% in the next six months. Because the survey was conducted so soon after the end of the program, it was assumed that 27% of the non-installed bulbs would eventually be installed, thus for the calculation of immediate energy savings, an installation rate

⁷ Mid-campaign market research suggested that there may be a tendency for participants to install the lower wattage CFL (Mitton, 2002). Ongoing research with participants has been designed to address this issue (available in July 2003, the research will allow assessment of installation rates for lower and higher wattage CFLs one year after the participant received the free CFLs).

of 82%. The installation rate will be confirmed by follow-up surveys of participants in June 2003 and by on-site audits of customer residences in October 2003.

Retailer Acceptance. Overall, 93% of participating retailers were very satisfied with the CFL promotion campaign. The PSYT booth was very successful with retailers indicating that the booth was well positioned within the store, and increased traffic to the store. The majority of retailers noted that the PSYT did a good job educating customers and retail staff regarding the benefits of CFLs and how to choose the right bulb and place to use the bulb. The majority of retailers indicated that the Power Smart advertising and promotion campaign (involving radio, newspaper, television, point-of-sale materials, and direct mail) were effective in achieving high awareness among customers. Major benefits of the CFL promotional campaign for retailers included increased CFL sales, increased overall sales, and, increased traffic to and within the store.

Accessibility. CFL shelf space increased over the baseline by 81% in pilot communities compared to 30% in the comparison areas. Increased shelf space allotted to CFLs had an impact on incandescent shelf space as well. CFL shelf space as a percent of total lighting shelf space (CFLs plus incandescent lamps) increased from 7% to 12% of total lighting shelf space in the pilot areas and interestingly, from 7% to 10% of total lighting shelf space in the comparison communities. Interviews with retailers revealed that the program had some spillover⁸ into one of the comparison areas. A representative from one CFL manufacturer promoted its CFLs with retailers all over the island as a direct result of the BC Hydro program, and in anticipation of a broader CFL initiative. This manufacturer significantly increased its' product line and appears to have gained shelf space market share from the top three players.

The number of retailers stocking CFLs and the models being stocked have increased over the baseline. In the pilot areas, an additional 5 (33%) retailers are stocking CFLs that were not before the pilot, compared to 1 (8%) in the comparison areas. Retailers in the pilot communities are stocking an additional 28 CFL models. Retailers in the comparison group are stocking an additional 18 CFL models.

CFLs continue to be stocked in seven different styles: tube, spiral, globe, bullet, a-line, reflector and circular. The shelf space allocated to spiral shaped CFLs in the pilot communities saw the largest increase, followed by the bullet style.

The range of wattages available has also increased over the baseline. Before the pilot, CFLs were available in 16 wattages ranging from 11 – 30 watts. Now CFLs are available in 21 wattages ranging from 9 to 32 watts in the pilot areas. In addition, the average life expectancy of CFLs stocked has increased from 8557 to 8697 hours, an early indicator of longer-life, better quality bulbs being available in the market.

Affordability. The selling price of CFLs has come down by 11% in the pilot communities and 4% in the comparison communities. The average selling price was \$18.91 (Can) per bulb. It is now respectively, \$16.86 and \$18.09 in the pilot and comparison areas. The decrease in the selling price of CFLs in the comparison areas may be attributed to national chains that set prices at head office, regardless of store location. Some retailers stock exclusively with one manufacturer. Where this is the case, pricing is stable compared to retailers that stock bulbs produced by a variety of manufacturers. As the number of retailers stocking a particular model increases, the price range for that model also increases.

⁸ Spillover and free riders are defined in the following section.

Immediate Energy Impacts

Calculation of the evaluated reductions in electricity use for the pilot involved re-calibration of engineering estimates based on data and information collected during the evaluation, and program tracking systems maintained by program staff. The engineering algorithms used to calculate direct energy savings attributable to pilot efforts are noted below.

Net Energy Savings

kWh savings/year = (number of CFLs from participants – CFLs from free riders + CFLs from spillover) * savings per CFL * hours of use per year

Net Demand Savings

MW savings = (number of CFLs from participants – CFLs from free riders + CFLs from spillover) * savings per CFL * coincident peak factors

A free rider is a demand-side management program participant who would have adopted the technology in the absence of the program (e.g., would have bought a product without an incentive). On the other hand, spillover is found when customers who did not receive direct utility influence (e.g., through incentives) are affected by the program (i.e., implement similar actions without the incentive). Energy savings associated with free riders are not attributed to the program, whereas energy savings associated with spillover are attributed to the program.

Key Assumptions. During the pilot 41,786 bulbs were distributed and based on the participant survey it was estimated that 82% would be installed within nine months of receiving the bulbs, for a total of 34,265 CFLs from participants.

Approximately 13% of respondents in the comparison group purchased a CFL in the last 6 months and did so completely on their own, without any direct influence from the program. These residential customers purchased an average of 2.9 CFLs each. Consequently, CFLs from free riders were estimated to be 7,877.

Two types of spillover CFLs were estimated. First, 1% of respondents in the comparison group indicated they purchased an average of 2.9 CFLs during the previous six months as a result of BC Hydro promotional activities. Second, 8% of participants indicated they purchased an average of 2.3 additional CFLs, after receiving their free bulbs, and also indicated that they did not use the discount coupon for these purchases. Consequently, CFLs from spillover were estimated to be 4,168.

To estimate savings per CFL first average bulb savings were estimated. The wattage of the baseline fixture was determined through the participant & non-participant surveys and baseline survey. Participants and non-participants were asked the wattage level of the incandescent bulb that was replaced by the CFL that was recently purchased or received from BCH. Baseline respondents were asked the wattage of the incandescent bulb used most often in their home. Responses from these three instruments were averaged at 61 watts for replaced incandescent lamps. The CFL wattage was based on the CFL nameplate specification (in the range of 14 to 24 watts) of the CFLs given away by the program. Based on the distribution of CFLs given away, the (weighted) average wattage for installed CFLs was estimated at 20 watts. As a result, the average savings per bulb was estimated to be 41 watts, the baseline wattage of 61 less the wattage of the installed CFL of 20 watts.

Determined from the participant survey, hours of use was the average of the self-reported estimates of the hours of use for the two bulbs received from BC Hydro and installed in the home. Participants reported using the installed free CFLs for 4.2 hours per day. Consequently, the energy savings per CFL bulb were estimated to be 63 kWh/year (41 watts * 4.2 hours per day * 365 days/1000).

Once again, to calculate cumulative energy savings it was assumed that on a monthly basis the (net number of) CFLs are installed halfway through the installation month, and that the installations occur evenly throughout the initial installation month. After the installation period it is assumed all CFLs have been installed. The system peak occurs on a winter weekday between 5 pm – 9 pm. The peak coincidence factor was assumed to be 0.9, the proportion of occupied households 0.9, and the proportion of CFLs on 0.5.

Results. Cumulative net direct demand and energy savings for the voucher portion of the pilot at the end of the fiscal year March 31, 2003 were estimated to be 0.5 MW and 1.9 GWh/year.

Energy and demand savings for the pilot project only include savings due to the voucher for two free CFLs based on survey responses three months after receiving the free CFLs. Insufficient time had passed to assess the redemption of the \$5 discount coupon by retailers. Ongoing research addresses the installation rate for free CFLs and those purchased with the discount coupon over longer time periods.

Conclusions

In terms of market effects, CFL industry sales and market share were very difficult to obtain from supply side actors (manufacturers, distributors, retailers) and existing data sources (AC Nielsen, StatsCan). Based on a consumer survey, quantities of CFLs installed since 1999 allowed estimation of CFL sales and installations in BC Hydro's service territory for the years 1999 – 2002. Through identification of those who said they were aware of BC Hydro's CFL initiatives and those who said that they were not, the overall effect of BC Hydro's programs on CFL sales was estimated to be cumulative savings of 15.0 GWh/year as of March 2003 and 5.7 MW for the fiscal year.

The pilot project involving bulk purchase of CFLs by BC Hydro and, in partnership with retailers, distribution of two free Energy Star[®] CFLs by the Power Smart Youth Team was successful. Positive results achieved included:

- increased awareness of CFLs by consumers and retailers;
- increased consumer access to CFLs;
- increased affordability;
- high acceptance or satisfaction with CFLs and the distribution process; and
- cumulative savings of 1.9 GWh/year as of March 2003 and 0.5 MW for the fiscal year.

The pilot program results indicate that the bulk purchase and distribution of free CFLs by BC Hydro can accelerate transformation of the CFL market in BC. The program has since been rolled out to a larger geographical area, the electric capacity constrained Vancouver Island, representing approximately 25% of BC Hydro's 1.4 million residential accounts, and is scheduled to roll out to the rest of the province in 2003. It is anticipated that participation and installation rates may well be lower with less intensive and shorter advertising campaigns, particularly in high density urban areas.

Ongoing research will continue to validate participation rates, installation rates, removed wattage, hours of use, peak coincidence and persistence through customer surveys, on-site audits, and metering of the hours of use of installed CFLs.

Total energy savings associated with direct program effects and market effects for the fiscal year ending March 31, 2003 were 16.9 GWh/yr. and demand savings for the 2002-03 fiscal year were estimated to be 6.2 MW. The current focus of Power Smart initiatives is energy savings. Demand savings are estimated, along with an estimate of the coincidence factor. As capacity becomes more critical to BC Hydro, there is a need to improve the confidence in demand savings estimates.

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