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March 31, 2015

Via Email
Original via Mail

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

Re: FortisBC Inc. (FBC)

Annual Demand Side Management (DSM) Report for the Year Ended December 31, 2014 (the 2014 DSM Report)

Please find enclosed for filing FBC's 2014 DSM Report.

The Executive Summary of completed monitoring and evaluation reports are provided in Appendix C. The full evaluation reports are filed separately as Confidential Appendix C and FBC requests that the Commission hold these reports in confidence. These reports contain customer-specific information that should not be disclosed to the public. In addition, the methodology and processes used in the reports is proprietary to the consultants hired by FBC.

If further information is required, please contact Sarah Wagner at 250-469-6081.

Sincerely,

FORTISBC INC.

Original signed by: Joyce Martin

For: Diane Roy

Attachment

FORTISBC INC.

Annual DSM Report

Year Ended December 31, 2014

March 31, 2015

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1. REPORT OVERVIEW

This report provides highlights of FortisBC Inc.'s (FBC or the Company) Demand-Side Management (DSM) programs for the year ended December 31, 2014. The report reviews the progress of FBC's PowerSense program in meeting the approved 2014 DSM Plan by educating and incenting FBC's customers to conserve energy and improve the energy efficiency of their homes and businesses. The report also provides information regarding integration and collaboration of the DSM programs with other BC utilities. Summaries of how PowerSense met the DSM Regulation requirements in 2014 and FBC's response to BCUC Directives from Order G-186-14 are included. An overview of PowerSense program activities in 2014 is presented, with a comparison of actual energy savings and costs to Plan, and a statement of financial results including benefit/cost ratios is provided. A summary of historical FBC DSM costs and energy savings for the past five years is included in Appendix B. Finally, the executive summary of completed monitoring and evaluation reports are provided in Appendix C. The full evaluation reports are filed separately and FBC requests that the Commission hold these reports in confidence. These reports contain customer-specific information that should not be disclosed to the public. In addition, the methodology and processes used in the reports are proprietary to the consultants hired by FBC.

This will be the last year that FBC and FortisBC Energy Inc. (FEI) file Annual Reports that have different formats. The Annual Reports for both companies for 2015 onward will have the same format.

1.1 *OVERVIEW OF RESULTS FOR THE YEAR ENDED DECEMBER 31, 2014*

Energy efficiency savings for the year ended December 31, 2014 were 14.6 GWh, or 114 percent of the 12.8 GWh Plan. Company costs incurred were $3,473,000 or 116 percent of the $3,001,000 filed Plan. Adding customer costs to the Company's program costs yields a total resource cost (TRC) of $5,996,000 with an overall TRC benefit/cost ratio of 1.7. The method used to determine benefits is provided in the Financial Results section.

1.2 *ADEQUACY UNDER THE DSM REGULATION*

A public utility's plan portfolio is adequate for the purposes of Section 44.1 (8) (c) of the UCA regarding long-term resource plans, only if the plan portfolio includes all of the following, as set out in section 3 of the DSM Regulation:

a) a demand-side measure intended specifically to assist residents of low income households to reduce their energy consumption;

b) a demand-side measure intended specifically to improve the energy efficiency of rental accommodations;

c) an education program for students enrolled in schools in the public utility's service area; and

d) an education program for students enrolled in post-secondary institutions in the public utility's service area.

PowerSense addressed each of these adequacy requirements in 2014. The low income and rental requirements were met though the Low Income and Rental programs, including Energy Savings Kits, refrigerator upgrades in low income rental units, and a project to provide upgrades to First Nation homes. The education requirements were addressed through programs like Energy is Awesome, Beyond Recycling and sponsorship of BC Post-Secondary Co-op Energy Conservation. More details on these initiatives are provided in the Overview of PowerSense Activities in the Residential Sector and Supporting Initiatives sections.

1.3 *RESPONSE TO BCUC DIRECTIVES*

There were no specific PowerSense DSM Directives in the PBR 2014-18 Decision. The BCUC approval for the 2015-16 DSM Plan was issued Dec 3rd 2014 (Order G-186-14) and the Directives related to the Annual Report are summarized in Table 1-1:

Table 1-1: FBC Response to BCUC Directives (Order G-186-14)

Directive Reference	BCUC Directive to FBC	FBC Response
Directive 7	FBC is directed to include in its next DSM Annual Report an update on its efforts to increase DSM expenditures and plan savings back to the levels included in the 2012 LTRP ($9 million and 34 GWh/year).	The 2015 approved DSM Plan expenditure and savings are $7.3 million and 26.2 GWh, which moves towards the 2012 LTRP goals. The next long-term DSM Plan, in the Company's LTERP due to be filed June 2016, will inform the DSM expenditure filings for 2017 and subsequent years
Directive 13	Commission Panel directs FBC to include in its next DSM Annual Report a review and discussion of whether opportunities exist in expanding DSM funding to 2013 actual levels for residential heat pumps, lighting and new home programs while continuing to obtain cost-effective energy savings.	PowerSense will address this directive in the 2015 and 2016 Annual Reports, once the 2015-16 DSM Plan for residential heat pumps, lighting and new home programs has been implemented.
Directive 14	Commission Panel directs FBC to include in its next DSM Annual Report a review and discussion of whether opportunities exist in expanding DSM funding to 2013 approved levels for municipal water while continuing to obtain cost-effective energy savings.	PowerSense will address this directive in the 2015 and 2016 Annual Reports, once the 2015-16 DSM Plan for municipal water handling has been implemented.
Directive 15	Commission Panel directs FBC to include in its next DSM Annual Report a review and discussion of whether opportunities exist in expanding DSM funding to 2013 approved levels for industrial customers while continuing to obtain cost-effective energy savings.	See FBC Response to Directive 7. The current Industrial Efficiency program offering, in the approved 2015-16 DSM Plan, is generic enough to accommodate a wide range of customer projects, and the spending rules include the ability to increase up to 25 percent of sector budget (or more with Commission approval), thus not limiting participation.
Directive 17	Commission Panel directs FBC to include in its next DSM Annual Report an update on FBC's efforts to identify and mitigate (through DSM programs) market barriers to energy efficiency investment and consumption decisions of its industrial customers. FBC is also required to include in its next DSM Annual Report an update on its proposal to increase the funding available for energy efficiency studies.	FBC is undertaking a number of activities, including hosting and facilitating an Industrial program design workshop on March 5, 2015, to better understand its industrial customers' requirements including their investment criteria. In 2015 the Company will undertake further research into other program models and best practices, including how to increase energy efficiency studies uptake.
Directive 21	FBC is directed to file, confidentially if appropriate, the full versions of EM&V reports with its DSM Annual Report.	FBC is compliant with this directive in the current DSM Annual Report and will follow it in subsequent DSM Annual Reports.

2. OVERVIEW OF POWERSENSE ACTIVITIES

In 2014 PowerSense offered programs and achieved budget and energy savings consistent with its 2014 DSM Plan filing. There were significant budget and energy savings reductions and PowerSense focussed its efforts to meet those reduced targets. PowerSense reduced the value of many rebates, cancelled a number of programs and minimized its marketing efforts. It also reduced staffing levels and other administrative costs.

With less marketing and outreach activities, PowerSense concentrated resources on improving productivity and customer service. Most significantly, an on-line, "cloud-based" application process and fully automated data reporting program was introduced (Demand Side Management Central (DSMC)). PowerSense also worked to strengthen partnerships with BC Hydro and FortisBC Energy Inc. (FEI) (collectively with FortisBC, the BC Utilities, or utility partners) and stakeholders to provide more consistent and comprehensive energy efficiency offers to residential customers.

To provide a more seamless customer experience, marketing and program collaboration with FEI continued from 2013; however, greater integration was not pursued until late 2014.

Triggered by the July provincial DSM Regulation amendments that modified low income program requirements and specified that the Long Run Marginal Cost (LRMC) be based on BC clean or renewable energy, a new DSM plan filing for 2015-16 was submitted in August, 2014.

The following overview outlines the programs PowerSense offered in 2014 as well as portfolio level Supporting Initiatives and Planning and Evaluation activities.

2.1 *RESIDENTIAL SECTOR*

The number and type of residential sector programs offered in 2014 was significantly reduced compared to those offered in 2013 due to budget and savings reductions in the 2014 DSM plan. The following outlines highlights of program activities:

- Although the residential Home Improvement program offer was reduced, it included incentives for insulation, heat pumps, and heat pump water heaters. Beginning in July, customers applied for the program through the DSMC online application process. PowerSense collaborated with BC Hydro and FEI to provide a province-wide retrofit rebate offer through the Home Energy Rebate Offer (HERO) program. By focusing on the most cost-effective retrofit measures and using a "whole house" approach, the utility partners worked together to provide incentives to customers for insulation and draft proofing, space heating, water heating and ventilation. Marketing efforts were also integrated between the BC utilities.
- The BC utilities partnered with the Ministry of Energy and Mines to develop a proposal to provide three year funding to support a Home Performance Stakeholder Council with the goal of developing the recommendations of the Home Energy Performance Strategy report completed in late 2013.

- The New Home program offer was reduced from a rebate offer for either a Performance or Prescriptive path to a rebate that only covered the cost of an EnerGuide home evaluation. Marketing efforts continued to be integrated with EEC natural gas rebate offers. Customers applying for rebates accessed joint program information and a joint rebate application containing both gas and electric measures. Customers began applying for the program through the DSMC online application process midyear.

- The Appliance Retail Program was discontinued in 2014. From 2011 to 2013 this program provided incentives to customers purchasing ENERGY STAR refrigerators, clothes washers, freezers and dishwashers. In 2014, a small pilot program ran in the Kelowna Home Depot location offering a double-up rebate on the most efficient ENERGY STAR® certified clothes washers and refrigerators. The pilot program tested customer uptake on the higher efficiency qualifications for refrigerators and clothes washers.

- The Residential Lighting program continued to offer instant point-of-sale rebates on ENERGY STAR certified lighting products. The program worked in collaboration with BC Hydro's twice-yearly campaign to provide continuity to customers and lighting retailers across the BC market.

- The long-standing air source heat pump loan continued for electrically-heated customers' homes. The pilot Residential Efficiency Loan Program (RELP), an on-bill financing program, ended in early 2014 due to low uptake and a regulatory change.

- PowerSense continued to distribute Energy Savings Kits to low income households. PowerSense also worked with FEI and BC Hydro on a direct mail piece through the Ministry of Social Development's cheque stub run which reached over 180,000 recipients provincially and invited qualified customers to apply for a free kit.

- In partnership with the Ministry of Energy and Mines and in collaboration with the BC Non-Profit Housing Association, PowerSense replaced 992 refrigerators, which were 15 or more years old, with new ENERGY STAR refrigerators in low-income multi-unit residential buildings.

- PowerSense sought and received funding from the Ministry of Energy and Mines to collaboratively provide retro-fit upgrades for up to 80 First Nation homes. An RFP was issued in late 2014 for work to begin in 2015.

2.2 *COMMERCIAL AND INDUSTRIAL SECTORS*

PowerSense continued to offer core Commercial and Industrial sector programs with few changes from previous years. The following outlines the key programs offered:

- The Commercial Product Rebate[1] program offered prescribed rebates for commercial lighting, HVAC, refrigeration, and commercial kitchen appliances. The program was

[1] Formerly marketed as Energy Rebate Centre (ERC)

offered through point-of-sale rebates at lighting wholesalers and directly to customers. In mid-2014 the offers list was updated and LED lighting offers were expanded. For the first time, marketing of the program was market specific with efforts focussed on the restaurant and hotel/motel sectors. The program was added to the DSMC portal in September.

- The Custom Building Efficiency Program, which provides offers for larger, more complex energy efficiency measures and upgrades, remained largely the same from 2013, although the energy modelling offer was enhanced. The eligibility policy and process structures were improved, and the program was added into the DSMC portal in mid-2014.
- The Building Optimization Program was not expanded but existing customers continued to make improvements to their buildings' operations and significant energy savings were realized.
- PowerSense worked collaboratively with the FEI Energy Efficiency and Conservation (EEC) team to offer low-cost comprehensive energy walk-through assessments, which included some direct installation of low-flow water and ENERGY STAR lighting measures, for medium size businesses.
- In collaboration with BC Hydro and FEI, PowerSense assumed the Ministry of Energy and Mines' LiveSmart Business Efficiency Advisor (BEA) program and was able to offer free walk-through audits for small commercial enterprises. The energy advisor for the PowerSense service area focussed efforts on the hotel/motel sector.

2.3 *SUPPORTING INITIATIVES*

The Supporting Initiatives projects fulfill the education adequacy requirements in the DSM Regulation, as well as support customers to better understand energy usage and how to reduce it. In an effort to maximize cost-effectiveness, programs and promotions were conducted in collaboration with FEI whenever possible. The following is a brief overview of activities:

- Education Programs (elementary and secondary) – Energy is Awesome (curriculum-based education packages for educators and volunteer presenters), and sponsorship of Destination Conservation (Elements Society), and Beyond Recycling (Wildsight) programs;
- Education Programs (post-secondary) – sponsorship of BC Post-Secondary Co-op Energy Conservation (Redbird Communications) for Selkirk College and BC Electrical Association lighting training for electricians;
- Community Outreach – participation in local home, garden and trade shows;
- Community Outreach – A joint pilot program with BC Hydro and FEI focusing on household energy efficiency items was offered in the fall. Air Miles were given to RONA customers who purchased items such as weather stripping, thermostats, and low flow

shower heads. The pilot results were less than forecast and the BC Utility partners are discussing ideas for alternative promotions within home improvement retailers;

- Community Events – sponsorships of CHBA Tommie Awards, City of Grand Forks Solar Car Competition, and SICA – Invest Northwest, and BC Electrical Association conferences;
- Contractor Program – Although PowerSense and FEI disaggregated the Trade Ally program, PowerSense restarted the creation of its own contractor program to provide an on-line customer reference tool and to expand relations and further promote PowerSense rebate programs with contractors that install energy efficiency measures.

2.4 *PLANNING AND EVALUATION*

The Planning and Evaluation activities in 2014 included completing customer surveys and reports necessary for program planning, and conducting program evaluations. FBC collaborated with BC Hydro and FEI in planning the first BC-wide dual-fuel Conservation Potential Review, and worked together with FEI to issue a joint commercial end-use survey to be undertaken in 2015.

The Monitoring and Evaluation activities in 2014 included the comprehensive evaluation of the Commercial Product Rebate program and completion of the first half of the evaluation of the Home Improvement program. The executive summary of the Commercial Product Rebate program evaluation report is included in Appendix C.

In 2014, PowerSense began implementation of the "cloud-based" DSMC software for tracking and reporting DSM programs. Programs were added throughout the year and customers were able to apply online for the Home Improvement program, New Home program, Energy Saving Kits, Commercial Product Rebate program, and Custom Business Efficiency program. Residential Lighting and HERO were also set up in DSMC in 2014.

2.5 *POWERSENSE PROGRAMS OFFERED IN 2014*

The following tables summarize the PowerSense program offerings and indicate program status and progress of integration with FEI's EEC programs.

Table 2-1: Residential Programs 2014

Program and Measures	Status	Integrated with FortisBC Energy Utilities for combined offer
ENERGY STAR Appliances	Pilot	No
ENERGY STAR Retail Lighting Rebate	Ongoing	No (electricity only)
Heat Pump (Air Source and Geo-Exchange)	Ongoing (Air Source) Discontinued (Geo-Exchange)	No (electricity only)

Program and Measures	Status	Integrated with FortisBC Energy Utilities for combined offer
TLC Heat Pump Maintenance	Suspended*	-
New Home	Reduced	Yes (Marketing and Application Process)
Home Improvement (Retrofit)	Reduced	Yes (Marketing)
HERO (Retrofit)	New	Yes
Reduce Your Use (energy assessments)	Discontinued	-
On-Bill Financing	Completed in Q1	Yes
Low Income – Direct Installation Common Area Lighting	Completed	-
Low Income – Direct Installation In-suite Measures	Suspended*	-
Low Income – Refrigerator Replacement	One time	No (electric only)
Low Income – Energy Savings Kits	Ongoing	Yes
Rental and Low-Income Housing	RFP issued in 2014	Yes (where appropriate)
Supporting Initiatives	Ongoing	Yes (where appropriate)
Contractor program	Enhanced	No
WaterSavers (low-flow measures)	Suspended*	-

Table 2-2: Commercial and Industrial Programs 2014

Program and Measures	Status	Integrated with FortisBC Energy Utilities for combined offer
Commercial Product Rebate** program	Ongoing	No
Building Improvement (New)	Ongoing	In progress
Building Improvement (Retrofit)	Ongoing	No
Municipal Water Infrastructure	Suspended	No (electric only)
Building Optimization	Closed to new participants	Yes
Partners in Energy	Ongoing	No
Energy Efficiency Studies	Ongoing	Yes
Industrial Efficiency	Ongoing	No
Irrigation Pumps	Ongoing	No (electric only)
Green Motors (motor rewinds)	Discontinued	-

* Suspended in 2014 due to budget constraints, with the intent to resume in 2015 and/or 2016.
** Formerly marketed as Energy Rebate Centre (ERC)

3. ENERGY SAVINGS BY SECTOR

The energy savings that PowerSense achieved in the year ended December 31, 2014 are shown in the table below.

Table 3-1: Energy Savings by Sector

SECTOR	Approved	Actual	% of Plan Achieved
	GWh		
Residential	5.8	8.7	150%
Commercial	6.2	5.3	85%
Industrial	0.8	0.6	77%
Total Savings (GWh)	12.8	14.6	114%

Note: Differences due to rounding

Overall PowerSense achieved 114 percent of the Plan goal of 12.8 GWh savings in 2014. Residential energy savings exceeded Plan with 150 percent of savings, whereas Commercial and Industrial sector energy savings were below Plan at 85 and 77 percent respectively. These results are discussed in more detail in the following sections.

3.1 *DETAIL OF ENERGY SAVINGS*

The following tables provide details on the DSM energy savings in each sector, including DSM activities in the service territories of the municipal Wholesale customers.

Table 3-2: Residential Energy Savings

Residential	Plan	Actual	% of Plan Achieved
	GWh		
Home Improvement Program	2.3	1.4	60%
Low Income and Rental	0.7	2.3	323%
Residential Lighting	2.1	3.4	160%
Heat Pumps	0.6	0.9	156%
New Home Program	0.1	0.7	748%
Total Savings (GWh)	5.8	8.7	150%

Note: Differences due to rounding

In the year ended December 31, 2014, the energy savings results from Residential programs were 150 percent of Plan. The Energy Diet promotions and closing of several PowerSense programs at the end of 2013 caused spillover of rebate processing into the beginning of 2014, which contributed to achieving savings beyond the 2014 Plan in most programs.

The Low Income and Residential Lighting programs exceeded Plan with savings of 323 and 160 percent. The point-of-purchase incentive campaigns in March-April and October were effective and contributed to the success in Residential Lighting. The Heat Pump and New Home

programs also exceeded Plan with 156 and 748 percent savings. The Home Improvement program fell short of forecast with 60 percent of savings.

The LiveSmart BC collaboration was closed to new applicants on March 31, 2014 and resulted in 0.5 GWh of retrofit energy savings, which are recorded in the Heat Pump and Home Improvement (HIP) programs. The HERO program, a new province wide collaboration between the three primary BC Utilities, launched mid-year contributing 0.2 GWh savings to the Heat Pump and Home Improvement programs.

PowerSense continued to provide energy savings kits containing energy efficient measures for low-income households. Approximately 775 kits were provided to qualified low income, senior homeowners, and home or apartment renters through community outreach activities, food banks or direct mail. The program was implemented in partnership with the EEC group.

Table 3-3: Commercial Energy Savings

Commercial	Plan	Actual	% of Plan Achieved
	GWh		
Lighting	3.4	3.4	100%
Building and Process Improvement	2.6	1.9	73%
Irrigation	0.2	0.0	0%
Total Savings (GWh)	6.2	5.3	85%

The Commercial sector recorded savings of 5.3 GWh, or 85 percent of the 2014 Plan. Many of these savings were realized through the Commercial lighting programs, including “at the counter” product rebates and custom lighting retrofits, such as the lighting upgrade at a South Okanagan greenhouse, producing 0.15 GWh of savings.

BIP energy savings were 1.9 GWh or 73 percent of Plan. An example of a Building and Process Improvement (BIP) custom project is a heating and ventilation upgrade at an elementary school in the Okanagan, contributing 0.13 GWh of savings.

In 2014 the municipal water infrastructure program was discontinued. Similarly with reduced resources, PowerSense did not have the capacity to design and launch a new irrigation program, albeit efficient pump incentives were available through the DSMC portal.

Table 3-4: Industrial Energy Savings

Industrial	Plan	Actual	% of Plan Achieved
	GWh		
Industrial Efficiency	0.8	0.6	77%
Total Savings (GWh)	0.8	0.6	77%

The Industrial Efficiency program achieved savings of 0.6 GWh, or 77 percent of the 0.8 GWh Plan for 2014. An example of an Industrial Efficiency project is the process improvement at a Kootenay lumber mill which resulted in 0.3 GWh of energy savings.

The table below disaggregates the Wholesale DSM savings, which are included in the sector tables above.

Table 3-5: Wholesale Energy Savings by Municipality

Wholesale Activity	GWh	MW	% of GWh*
Penticton	0.3	0.06	24%
Summerland	0.4	0.03	29%
Grand Forks	0.1	0.01	10%
Nelson	0.5	0.06	37%
Total Savings (Wholesale)	1.3	0.17	100%

*Of savings attributable to the Wholesale class

Note: Differences due to rounding.

The total Wholesale energy savings, which were acquired within the service areas of the four municipal electric utilities served by FBC, were 1.3 GWh and 0.17 MW in 2014. The largest DSM savings results occurred within Summerland and Nelson municipal utility service areas.

4. PROGRAM COSTS BY SECTOR

Table 4-1 presents the actual costs incurred in the year ended December 31, 2014, compared to the approved Plan. The percent of plan savings achieved by sector is shown for comparison purposes.

Table 4-1: Costs by Sector/Component

SECTOR/COMPONENT	Plan	Actual	% of Plan Costs	% of Plan Savings
	($000s)			
Residential	1,037	1,694	163%	150%
Commercial	1,134	1,184	104%	85%
Industrial	148	188	127%	77%
Supporting Initiatives	190	207	109%	-
Monitoring & Evaluation	202	205	102%	-
Planning & Admin	290	373	129%	-
Recoveries from 2013	-	(378)	-	-
Total	3,001	3,473	116%	114%

The total costs amounted to $3,473,000 or 116 percent of the 2014 Plan, commensurate with overall savings. The total net cost benefited from belated, one-time recoveries from FEI for 2013 that landed in the FBC 2014 fiscal year.

Generally, the Sector and Component expenditures exceed the relative magnitude of Plan savings, as the Company retained core staffing pending the amended DSM Regulation[2] that precipitated the revised 2015-16 DSM Plan filing in August 2014 that was subsequently approved by Order G-186-14.

Table 14 in Appendix A (DSM Summary Report) contains an additional breakdown of total program costs, including the customer portion of incremental project costs. It also shows that $1.9 million of expenditures, or 55% of the total FBC costs, were used in customer incentives.

A breakdown of utility program costs per sector and program component follows.

4.1 *DETAIL OF COSTS*

The following tables provide details on the DSM program costs for each sector and component in the PowerSense portfolio.

[2] Demand-Side Measures Regulation 326/2008, as amended by B.C. Reg 141/2014 effective July 10, 2014.

Table 4-2 - Residential Costs

Residential	Plan	Actual	% of Plan Achieved
	($000s)		
Home Improvement Program	394	394	100%
Low Income and Rental	242	502	208%
Residential Lighting	176	291	165%
Heat Pumps	158	252	160%
New Home Program	67	254	379%
Total	1,037	1,694	163%

The utility cost of the Residential programs was $1,694,000 or 163 percent of Plan for 2014. The New Home program continued to be very successful and while the costs are over budget, they are commensurate with savings. The Home Improvement program was on budget, although costs exceeded savings, which was partially due to the development of the HERO program. Due to carried-over 2013 contractual commitments, the Low Income and Rental programs exceeded their savings objectives and budget for the year. Similarly, the Residential Lighting, Heat Pump and New Home program expenditures and savings were ahead of Plan due to the significant number of 2013 applications received towards the end of 2013 and processed in 2014.

Table 4-3: Commercial Costs

Commercial	Plan	Actual	% of Plan Achieved
	($000s)		
Lighting	510	646	127%
Building and Process Improvement	592	533	90%
Irrigation	32	5	16%
Recoveries from 2013	-	(291)	-
Total	1,134	893	79%

Commercial sector costs in 2014 amounted to $893,000 or 79 percent of Plan. The largest cost component of Commercial programs was the Lighting program, which includes incentives paid through the Commercial Product Rebate program. The expenditures for Irrigation are well below budget due to the aforementioned capacity issue.

Table 4-4: Industrial Costs

Industrial	Plan	Actual	% of Plan Achieved
	($000s)		
Industrial Efficiency	148	188	127%
Total	148	188	127%

Industrial sector costs incurred by the Company were $188,000 for 2014, or 127 percent of Plan. The Industrial sector expenditures exceed Plan and the savings fell short of Plan, partially because of retaining an extra FTE in the Technical Advisor role until the 2015-2016 DSM Plan was accepted. The Industrial sector is also characterized by large projects that generally occur less frequently than in other sectors, therefore, PowerSense Technical Advisors may engage with industrial customers over a long period of time before a project eligible for a rebate materializes.

Portfolio level costs, which are not specifically associated with individual programs, include the following components: Supporting Initiatives, Monitoring and Evaluation, and Planning and Administration. These costs are summarized in the table below.

Table 4-5: Portfolio Costs by Component

COMPONENT	Plan	Actual	% of Plan Achieved
	($000s)		
Supporting Initiatives	190	207	109%
Monitoring & Evaluation	202	205	102%
Planning & Administration	290	373	129%
Recoveries from 2013	-	(87)	-
Total	682	785	115%

The Supporting Initiative costs for 2014 were $207,000 or 109 percent of the $190,000 Plan. Supporting Initiatives spending continued to drive community outreach and direct customer communication, which has traditionally been a strong component of PowerSense programming. In 2014, the community ambassador roles were discontinued because of reduced budget, and PowerSense representatives attended few community events. The Earth Hour promotion was not promoted by PowerSense due to budget reductions in 2014.

The Planning and Evaluation (P&E) budget is separated into two main components: Monitoring and Evaluation (M&E), and Planning and Administration. Monitoring and Evaluation was on budget in 2014. Planning and Administration was over budget, mainly due to retaining an extra 0.5 FTE pending the 2015-2016 DSM Plan acceptance. One of the main expenditures under P&E is on program evaluations and reports conducted by third party consultants. The executive summary of the evaluation report completed in 2014 is included in Appendix C.

5. FINANCIAL RESULTS

This section provides the financial and benefit/cost test results for 2014 and includes information about how the benefits were calculated for the total resource cost test (TRC) and the modified total resource cost test (mTRC)[3].

The table below presents the financial and benefit cost tests by program. It also includes the Planning and Evaluation costs, which are allocated to the programs by savings achieved.

Table 5-1: Financial Results for Year ended December 31, 2014 by Program

Program	Program Benefits	Utility Program Costs	Planning & Evaluation		Customer Incurred Costs	Total Resource Costs	Total Resource Benefit/Cost Ratio	
			Planning & Admin.	Monitoring & Eval.				
	($000s)						TRC	mTRC
Residential								
Home Improvement	1,305	394	36	20	306	755	1.5	1.5
Low Income and Rental	1,098	502	59	32	-	593	1.9**	1.9
Residential Lighting	1,166	291	87	48	203	629	1.5	1.5
Heat Pumps	766	252	22	12	544	830	1.6	1.6
New Home Program	783	254	19	10	7	290	2.7	2.7
Residential Total	**5,117**	**1,694**	**222**	**122**	**1,059**	**3,098**	**1.7**	**1.7**
Commercial								
Lighting	1,801	646	86	47	415	1,194	2.0	2.0
Building and Process Improvement	1,756	533	49	27	916	1,526	1.4	1.5*
Irrigation	-	5	-	-	-	5	0.0	0.0
Commercial Total	**3,557**	**1,184**	**135**	**74**	**1,331**	**2,725**	**1.6**	**1.7**
Industrial								
Industrial Efficiency	367	188	16	9	132	344	1.2	1.2
Industrial Total	**367**	**188**	**16**	**9**	**132**	**345**	**1.2**	**1.2**
Supporting Initiatives		207				207	-	-
Recoveries from 2013		(378)				(378)		
Total	**9,041**	**2,895**	**373**	**205**	**2,522**	**5,996**	**1.6**	**1.7**

Note: Minor differences due to rounding

* mTRC benefits applied to certain program measures

** Low Income benefits increased by 40 percent

An overall total resource benefit/cost ratio of 1.6 was achieved in 2014. The benefit/cost ratios for the individual programs are also detailed in the table above. The Residential sector program performance resulted in a benefit/cost ratio of 1.7 and the Commercial sector achieved a benefit/cost ratio of 1.6 and the Industrial sector benefit/cost ratio was 1.2.

The Low Income program attained a benefit/cost ratio of 1.9 with the 40 percent benefits lift as per the DSM Regulation, s4(2)(b).

[3] Ibid.

Program benefits are primarily based on the present value of avoided power purchase costs which are calculated using the long-term avoided power purchase cost[4] over the measure lifespan, plus a deferred construction expenditure (DCE) factor of $35.60 per kW-year.

Total resource costs shown in Table are a total of Company costs and customer costs. The customer costs are the customers' portion of incremental costs for new construction measures and the energy efficiency portion of retrofit measure costs. In the calculation of the TRC and mTRC tests, the incremental portion of cost is adjusted by the program NTG (net-to-gross) ratios.

The modified total resource benefit/cost ratio (mTRC) is also shown in Table . The benefits used in the mTRC were boosted using FBC's LRMC[5] of BC clean resources plus a fifteen percent adder for non-energy benefits (NEB). The mTRC benefits were applied the commercial new building construction measures, which required NEB to achieve an mTRC greater than unity (1.0).

The mTRC results do not differ substantially from the TRC results. The Commercial sector benefit/cost ratio increased from 1.6 to 1.7 with the use of mTRC. Residential and Industrial benefit/cost ratios were unaffected by incorporation of the mTRC as none of these programs required the mTRC to pass the TRC benefit cost test. Overall, the Total benefit/cost ratio increased from 1.6 to 1.7 using the prescribed mTRC method.

The Company's DSM program expenditure related to the measures that are subject to the mTRC was estimated to be $195,000 or 5.6 percent of the 2014 DSM expenditure, which is within the regulated mTRC impact cap.

[4] As per the 2012 LTRP, approved by BCUC Order G-110-12, the long-run avoided power purchase cost was $84.94/MWh.

[5] Ibid. The long-run marginal cost (LRMC) was $111.96/MWh for BC "clean" resources.

6. ON-BILL FINANCING PILOT PROGRAM

The On-Bill Financing (OBF) pilot program, which was marketed as the Residential Energy Efficiency Loan program, was mandated by the provincial government and provided loans of up to $10,000 to residential customers in the South Okanagan to make energy efficiency improvements to their homes. The loans are to be repaid on the customers' electricity bills over the next 10 years. This pilot program was launched on November 1, 2012 and was closed on March 31, 2014.

The OBF pilot program costs are separate from the DSM budget and in accordance with BCUC Order G-163-12, FBC created a non-rate base deferral account to capture the OBF pilot program costs. In 2014, the FBC portion of the OBF pilot program costs were $9,000.

Appendix A
DSM SUMMARY REPORT IN BCUC FORMAT

Table 1: FBC Demand Side Management Summary Report for Year ended December 31, 2014

Sector/Program	Utility Program Costs				Planning & Evaluation		Total Utility Costs	Customer Incurred Cost	Total Resource Cost	Program Benefits*	Energy Savings	Benefit/Cost Ratios				Levelised Cost
	Direct Incentives	Direct Information	Program Labour	Program Dev.	Planning & Admin.	Monitoring & Eval.						Total Resource*	Modified Total Resource**	Rate Impact	Uility Cost	
	($000s)										MWh					¢/kWh
Residential																
Home Improvements Program	205	28	97	64	36	20	450	306	755	1,305	1,391	1.5	1.5	0.6	2.9	5.2
Low Income and Rental	424	5	33	40	59	32	593	-	593	1,098	2,286	1.9	1.9	0.7	1.9	6.5
Residential Lighting	244	4	23	20	87	48	427	203	629	1,166	3,411	1.5	1.5	0.6	2.7	4.6
Heat Pumps	166	3	57	27	22	12	286	544	830	766	865	1.6	1.6	0.6	2.7	9.8
New Home Program	187	5	37	24	19	10	283	7	290	783	733	2.7	2.7	0.7	2.8	3.5
Residential Total	**1,225**	**45**	**248**	**176**	**222**	**122**	**2,039**	**1,059**	**3,098**	**5,117**	**8,686**	**1.7**	**1.7**	**0.7**	**2.5**	**5.8**
Commercial																
Lighting	367	35	238	5	86	47	779	415	1,194	1,801	3,353	2.0	2.0	0.6	2.3	4.7
Building and Process Improvement	207	10	263	53	49	27	609	916	1,526	1,756	1,926	1.4	1.5	0.8	2.9	8.1
Irrigation	(4)	-	9	-	-	-	5	-	5	-	-	0.0	0.0	0.0	0.0	-
Commercial Total	**571**	**46**	**510**	**58**	**135**	**74**	**1,393**	**1,331**	**2,725**	**3,557**	**5,279**	**1.6**	**1.7**	**0.7**	**2.6**	**6.2**
Industrial																
Industrial Efficiency	132	2	54	-	16	9	212	132	344	367	614	1.2	1.2	0.7	1.7	8.4
Industrial Total	**132**	**2**	**54**	**-**	**16**	**9**	**212**	**132**	**345**	**367**	**614**	**1.2**	**1.2**	**0.7**	**1.7**	**8.4**
Supporting Initiatives	-	40	167	-	-	-	207	-	207	-	-	-	-	-	-	-
Recoveries from 2013	-	-	-	-	-	-	(378)	-	(378)	-	-	-	-	-	-	-
TOTAL	**1,928**	**133**	**978**	**234**	**373**	**205**	**3,473**	**2,522**	**5,996**	**9,041**	**14,580**	**1.6**	**1.7**	**0.7**	**2.6**	**5.9**

Note: Minor differences due to rounding

* Benefits calculated using the long-term avoided power purchase cost of $84.94/MWh.

** Benefits for some measures calculated using BC clean power levelized price of $111.xy/MWh plus 15% NEBs.

Appendix B

HISTORICAL SUMMARY OF FBC'S DSM COSTS AND ENERGY SAVINGS

Table 1: Historical FBC DSM Costs and Energy Savings 2009-2010

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2009 (Actual)							**2010 (Actual)**						
		Spend ($000s)			Energy Savings (MWh)			TRC[3]	Spend ($000s)			Energy Savings (MWh)			TRC[3]
		Planned	Actual	Variance	Planned	Actual	Variance	(B/C)	Planned	Actual	Variance	Planned	Actual	Variance	(B/C)
1	**Residential**														
2	Home Improvements	273	145	128	1,024	1,032	8	1.4	294	434	(140)	953	4,948	3,995	3.1
3	Building Envelope[1]														
4	Heat Pumps	515	677	(162)	5,642	3,188	(2,454)	0.7	624	749	(125)	6,377	3,239	(3,138)	1.2
5	Residential Lighting	263	306	(44)	2,822	3,349	526	2.8	243	278	(35)	2,383	2,589	206	2.4
6	New Home Program	341	496	(155)	1,216	1,735	518	2.2	254	247	7	1,392	477	(915)	1.1
7	Appliances[1]														
8	Electronics[1]														
9	Water Heating[1]														
10	Low Income[1]								100	131	(31)	1,000	385	615	0.7
11	Behavioural[1]														
12	*Residential Total*	**1,391**	**1,624**	**(233)**	**10,705**	**9,304**	**(1,401)**	**1.3**	**1,515**	**1,838**	**(323)**	**12,105**	**11,638**	**764**	**1.9**
13	**Commercial**														
14	Lighting	724	422	302	5,505	7,638	2,133	3.0	722	526	196	5,304	7,971	2,667	3.5
15	Building and Process Improvements	563	639	(75)	6,095	8,713	2,618	1.8	658	597	61	6,751	6,685	(67)	1.5
16	Computers														
17	Municipal (Water Handling)[2]														
18	Irrigation[2]														
19	*Commercial Total*	**1,287**	**1,060**	**227**	**11,600**	**16,351**	**4,751**	**2.2**	**1,380**	**1,123**	**257**	**12,055**	**14,655**	**2,600**	**2.1**
20	**Industrial**														
21	Compressed Air	71	41	30	811	398	(413)	0.9	87	25	62	938	114	(823)	0.7
23	EMIS														
22	Industrial Efficiencies	274	195	79	2,189	2,305	116	1.6	302	216	86	2,412	2,853	441	2.1
24	*Industrial Total*	**345**	**236**	**109**	**3,000**	**2,703**	**(297)**	**1.5**	**389**	**241**	**148**	**3,350**	**2,967**	**(383)**	**2.0**
25	**Programs Total**	**3,023**	**2,920**	**103**	**25,305**	**28,358**	**3,053**	**-**	**3,284**	**3,203**	**81**	**27,510**	**29,261**	**2,981**	**2.1**
26	Supporting Initiatives	141	141	0	-	-	-	-	148	155	(7)	-	-	-	
27	Planning & Evaluation	503	402	101	-	-	-	-	519	354	165	-	-	-	-
28	**Total**	**3,667**	**3,464**	**204**	**25,305**	**28,358**	**3,053**	**1.7**	**3,951**	**3,712**	**239**	**27,510**	**29,261**	**2,981**	**2.0**

[1] These programs were included in Home Improvements program

[2] Water Treatment and Wastewater Handling infrastructure were part of Building and Process Improvement

[3] Benefits calculated using RS3808 applicable at the time

Table 2: Historical FBC DSM Costs and Energy Savings 2011

		1	2	3	4	5	6	7
		2011 (Actual)						
		Spend ($000s)			Energy Savings (MWh)			TRC[3]
		Planned	Actual	Variance	Planned	Actual	Variance	(B/C)
1	**Residential**							
2	Home Improvements	2,145	479	1,666	8,960	3,692	(5,268)	1.6
3	Building Envelope[1]							
4	Heat Pumps	694	532	162	3,397	2,257	(1,140)	1.0
5	Residential Lighting	438	239	199	3,420	3,308	(112)	2.2
6	New Home Program	54	205	(151)	105	689	584	1.0
7	Appliances[1]							
8	Electronics[1]							
9	Water Heating[1]							
10	Low Income	305	245	60	540	1,447	(907)	1.0
11	Behavioural[1]							
12	*Residential Total*	**3,636**	**1,700**	**1,936**	**16,422**	**11,393**	**(6,843)**	**1.3**
13	**Commercial**							
14	Lighting	1,114	1,995	(881)	7,370	20,577	13,207	2.3
15	Building and Process Improvements	572	606	(34)	3,010	1,386	(1,624)	0.7
16	Computers							
17	Municipal (Water Handling)	432	231	201	3,560	2,199	(1,361)	1.6
18	Irrigation[2]							
19	*Commercial Total*	**2,118**	**2,832**	**(714)**	**13,940**	**24,162**	**10,222**	**1.9**
20	**Industrial**							
21	Compressed Air							
23	EMIS	10	9	1	80	-	(80)	-
22	Industrial Efficiencies	603	128	475	9,280	794	(8,486)	2.5
24	*Industrial Total*	**613**	**137**	**476**	**9,360**	**794**	**(8,566)**	**2.4**
25	**Programs Total**	**6,367**	**4,669**	**1,698**	**39,722**	**36,349**	**(5,187)**	**1.8**
26	Supporting Initiatives	725	658	67	-	-	-	-
27	Planning & Evaluation	750	590	160	-	-	-	-
28	**Total**	**7,842**	**5,918**	**1,924**	**39,722**	**36,349**	**(5,187)**	**1.6**

[1] These programs were included in Home Improvements program

[2] Irrigation was included in Municipal (Water Handling)

[3] Benefits calculated using RS3808 applicable at the time

Table 3: Historical FBC DSM Costs and Energy Savings 2012-2013

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		2012 (Actual)							**2013 (Actual)**							
		Spend ($000s)			Energy Savings (MWh)			TRC	Spend ($000s)			Energy Savings (MWh)			TRC	mTRC
		Planned	Actual	Variance	Planned	Actual	Variance	(B/C)	Planned	Actual	Variance	Planned	Actual	Variance	(B/C)	(B/C)
1	**Residential**															
2	Home Improvements	1,719	637	1,082	7,620	4,656	(2,964)	1.7	1,961	725	1,236	8,680	5,222	(3,458)	1.7	1.8
3	Building Envelope[1]															
4	Heat Pumps	703	636	67	3,397	2,161	(1,236)	1.0	698	532	166	3,397	2,100	(1,297)	1.3	1.9
5	Residential Lighting	328	337	(9)	2,530	2,599	69	1.8	313	473	(160)	2,467	3,300	833	1.4	1.4
6	New Home Program	43	314	(271)	90	1,040	950	1.4	45	782	(737)	93	3,000	2,907	1.9	1.9
7	Appliances[1]	247	332	(85)	690	1,248	558		267	241	26	739	578	(161)		
8	Electronics[1]															
9	Water Heating[1]															
10	Low Income	677	308	369	1,774	1,054	(720)	1.3	660	415	245	1,570	2,000	(430)	1.6	1.6
11	Behavioural[1]															
12	*Residential Total*	**3,717**	**2,564**	**1,153**	**16,101**	**12,758**	**(3,343)**	**1.5**	**3,944**	**3,168**	**776**	**16,946**	**16,200**	**(1,606)**	**1.6**	**1.8**
13	**Commercial**															
14	Lighting	1,157	2,152	(995)	7,390	14,256	6,866	2.2	1,170	1,235	(65)	7,140	7,600	460	2.0	2.0
15	Building and Process Improvements	659	612	47	3,410	1,959	(1,451)	1.3	738	594	144	3,730	2,600	(1,130)	1.6	1.6
16	Computers															
17	Municipal (Water Handling)	383	255	128	2,580	1,677	(903)	2.6	177	80	97	1,110	700	(410)	1.4	1.4
18	Irrigation[2]															
19	*Commercial Total*	**2,199**	**3,019**	**(820)**	**13,380**	**17,892**	**4,512**	**2.0**	**2,085**	**1,909**	**176**	**11,980**	**10,900**	**(1,080)**	**1.8**	**1.8**
20	**Industrial**															
21	Compressed Air															
23	EMIS	27	10	17	190	-	(190)	2.0	41	17	24	290	-	(290)	-	-
22	Industrial Efficiencies	323	163	160	2,290	937	(1,353)	-	323	307	16	2,290	2,500	210	1.0	1.0
24	*Industrial Total*	**350**	**173**	**177**	**2,480**	**937**	**(1,543)**	**1.9**	**364**	**324**	**40**	**2,580**	**2,500**	**(80)**	**1.0**	**1.0**
25	**Programs Total**	**6,266**	**5,756**	**510**	**31,961**	**31,587**	**(374)**	**1.8**	**6,393**	**5,401**	**992**	**31,506**	**29,600**	**(2,766)**	**1.9**	**2.0**
26	Supporting Initiatives	725	816	(91)	-	-	-	-	725	706	19	-	-	-	-	-
27	Planning & Evaluation	740	728	12	-	-	-	-	760	748	12	-	-	-	-	-
28	**Total**	**7,731**	**7,300**	**431**	**31,961**	**31,587**	**(374)**	**1.6**	**7,878**	**6,855**	**1,023**	**31,506**	**29,600**	**(2,766)**	**1.6**	**1.7**

[1] These programs were included in Home Improvements program

[2] Irrigation was included in Municipal (Water Handling)

Appendix C
EXECUTIVE SUMMARY

COMMERCIAL PRODUCT REBATE PROGRAM EVALUATION REPORT

EVERGREEN ECONOMICS

Evaluation of the FortisBC Commercial Product Rebate Program

March 30, 2015

DISCOVERY RESEARCH

Michaels energy

Dr. Phil Willems / PWP

1 Executive Summary

1.1 Introduction

This report presents the findings of the impact and process evaluation of the FortisBC Commercial Product Rebate Program covering the 2012-2014 period. This program was designed to help small- and medium-sized businesses determine which energy efficiency improvements would suit their business needs and to provide them with easy access to a large set of prescribed rebates. Customers access the program via a custom-built online application form, which provides a cost-effective means of reaching a more difficult to reach customer segment.

The evaluation relied on several data collection and analysis methods to complete the impact and process research:

- **Engineering analysis.** The Evergreen team reviewed the background information and technical assumptions used to determine the deemed savings for all measures covered by the Commercial Product Rebate Program. Recommendations for changing savings parameters are made where appropriate based on this review.
- **Participant phone surveys.** A phone survey was conducted on a sample of program participants (n=47). These surveys were used primarily to collect feedback on the program experience as part of the process evaluation.
- **Self-report free-ridership analysis.** A separate component of the participant phone survey was a battery of questions asking what equipment would have been installed if the FortisBC program had not been available. Responses for these questions were scored and used to create an estimate of program free-ridership.
- **Trade ally interviews.** Interviews were conducted with contacts provided by FortisBC (n=10) to evaluate the effectiveness of the program's design and delivery.

Details on each of these analysis methods and the evaluation estimates they produced are discussed below.

1.2 Impact Evaluation Results

1.2.1 Engineering Review

The engineering review examined the background and technical assumption used to develop the deemed savings values for the Commercial Product Rebate Program. General topic areas that were covered in the engineering review included:

- Lighting hours of use
- Lighting wattage reductions
- Electric griddles and convection ovens
- Hot food holding cabinets
- High efficiency air conditioning and RTU controllers
- Variable speed drives on HVAC pumps and fans
- Programmable thermostats

- Commercial refrigeration upgrades
- Air compressor and pool pump upgrades

In general, the deemed savings values for this program in all these areas are well documented, reasonable and consistent with industry practice found in other jurisdictions. We recommend changes to the deemed savings values in a few areas, but these have a small effect on the overall savings being claimed.

The engineering adjustments discussed above were applied to the Commercial Product participant data covering the 2012-2014 evaluation period. Since the vast majority of participation involved lighting measures, the engineering adjustments had a very small effect on the claimed program savings for this period. The engineering adjustments resulted in a 0.1 percent reduction in savings, which yields a 99.9 percent Gross Realization Rate; this rate is used as part of the overall evaluation savings calculation as discussed below.

1.2.2 Net Impact Analysis

The net impact analysis utilized a self-report survey method to estimate a free ridership rate for the program. For the purposes of this analysis, free-ridership measures the rate at which program participants would have installed the same program-qualifying equipment or taken the same action (e.g., installed energy efficient lighting) in the absence of the program. Information needed to support this approach was collected as part of the participant phone survey.

The self-report method calculates free-ridership as the sum of two components:

- The influence of program-related factors on a customer's decision to install equipment, termed the **Program Influence Score,** which can take on a value from 0 to 0.5; and
- The customer's description of actions they would have taken had the program not existed, termed the **Change Score**, which can also take on a value of 0 to 0.5.

The values for the two scores are determined from participant responses to survey questions, and summed to estimate a final free-ridership rate ranging from 0 to 1.0. The following sections describe how the evaluation team scored program influence and change in order to calculate free-ridership and net-to-gross adjustment factors for the program.

The net-to-gross calculation results for the Commercial Product Rebate Program are shown in Table ES-1, along with a breakdown of the major measure groups included in the survey sample. The weighted values are based on the expected *ex ante* savings for the measures installed by participants included in the survey sample. As expected, the net-to-gross value is lower for T8s (a more established measure that has been commonly adopted) and higher for newer technologies such as LEDs.

Table ES-1: Net-to-Gross Results[1]

	Observations	Unweighted Net-to-Gross Ratio	Weighted Net-to-Gross Ratio
All Commercial Products	44	0.49	0.50
LEDs	27	0.59	0.69
T8s	12	0.40	0.26
High Bays*	2	0.50	0.50
Other	3	0.00	0.00

Source: Analysis by Evergreen Economics of data collected through a telephone survey of Commercial Product Rebate program participants.

* Raw survey results of 0.50 for High Bays are shown in the table. However, given the small sample size (n=2), the LED value of 0.69 is assigned to High Bays in the final savings calculations.

1.2.3 Combined Impact Evaluation Results

Savings for the Commercial Product Rebate Program are calculated using each of the analysis components discussed above and are summarized in Table ES-2 for both energy (kWh) and demand (kW). The Gross Realization Rate is based solely on the engineering adjustments as applied to the current participant population. The weighted net-to-gross ratio is the result of applying the measure-level net-to-gross ratios discussed previously to the participant population. Note that the weighted net-to-gross value is also different (higher) between the survey sample and the participant population to better match the distribution of measures in the participant population.

To calculate the final savings for the program, the *ex ante* savings are multiplied by the Gross Realization Rate to determine Gross Annual Savings. This value is then multiplied by the net-to-gross ratio determined from the phone survey data to obtain Net Annual Savings. The Final Realization Rate (0.60) is obtained by dividing the Net Annual Savings value by the original *ex ante* savings total.

[1] 14 percent of participants purchased a combination of LEDs and T8s. However, because the survey only asked free-ridership questions for the primary measures, participants were categorized by whichever type of measure they purchased the most of under the FortisBC Commercial Product Rebate Program.

Table ES-2: Summary of Gross and Net Realized Savings

	Ex Ante Electrical Savings	Gross Realization Rate (%)	Gross Annual Savings	Net-to-Gross Ratio (Weighted)	Net Annual Savings	Final Realization Rate
Energy (kWh)	3,544,882	99.9%	3,543,268	0.60	2,114,444	60.0%
Demand (kW)	821.6	99.9%	821.1	0.60	491.3	60.0%

Source: Analysis by Evergreen Economics of impact evaluation results combined with participation data provided by FortisBC.

1.3 Process Evaluation

In August 2014, a phone survey was conducted with businesses that participated in the Commercial Product Rebate Program during the 2012-2014 period. To support the process evaluation, this survey covered a variety of topics including the program participation process, expected energy savings and overall satisfaction with the program. From a total sample frame of 195 participants, we were able to obtain 47 completed surveys for a response rate of approximately 24 percent.

Prior to the purchase of their new energy efficient equipment, participants learned about the FortisBC rebate program in a variety of ways. A majority of participants had not participated in a FortisBC energy efficiency program prior to their recent involvement with the Commercial Product Rebate Program, while a quarter of the participants indicated they had participated in at least one other FortisBC rebate program. The most common methods included learning about the rebate program through a contractor or distributor, by word of mouth (either from a business associate or co-worker), and from a FortisBC representative. Participants were also asked to assess how clear they found the information regarding the requirements to qualify for rebates. A majority of participants (57%) said the information was very clear, and none responded that the information was very confusing.

Throughout the survey, participants were asked several questions regarding satisfaction with various aspects of their participation in the Commercial Product Rebate Program. Participants were asked to rate these features using a scale from 1 to 10, with 1 being not at all satisfied and 10 being very satisfied.

Overall, participants reported a very high level of satisfaction across all aspects of the Commercial Product Rebate Program. More than 65 percent of participant responses were in the 8-10 range across all four categories. Conversely, less than 1 percent provided responses in the 1-4 range. Satisfaction was highest for the program overall, with 79 percent rating satisfaction in the 8-10 point range. Similarly, respondents also had high marks for the program application process, with 76 percent responding in the 8-10 point range. Satisfaction was only slightly lower with the rebate amount (68 percent in the 8-10 range) and with FortisBC overall (66 percent).

In addition to the participant phone surveys, the Evergreen team also conducted in-depth interviews with various entities involved in the program. In February of 2015, Evergreen Economics completed 10 interviews with electrical contractors, wholesalers, lighting retailers and end-user maintenance managers who participated in FortisBC's Commercial Product Rebate Program.

Across the range of trade allies, all of the participants were generally pleased with the Commercial Product Rebate Program. Specifically, multiple participants noted that the point-of-sale rebate process along with the actual rebate levels not only help drive sales, but also make energy efficient equipment affordable to customers that previously could not afford it.

While 40 percent of participants had no recommendations for improving the program, some of the minor improvements that trade allies suggested included:

- Clearly outlining the payment process on large-scale projects;
- Including rebate offerings for solar products;
- Increasing communication on program changes; and
- Providing marketing materials to contractors, wholesalers and retailers to help educate consumers on energy efficient equipment.

1.4 Conclusions and Recommendations

The following conclusions are derived from the FortisBC Commercial Product Rebate Program evaluation; these conclusions are accompanied by recommendations to improve the Commercial Product Rebate Program offering.

The point-of-sale rebate process helps streamline the Commercial Products program. Electrical contractors, wholesalers/retailers and end-user maintenance managers all said the point-of-sale rebate method has been effective in encouraging participation and making the program more efficient by providing immediate rebates. These trade allies also emphasized the simplicity of the program from the customer standpoint as an important benefit.

Recommendation #1: Continue to implement a point-of-sale rebate method for current offerings and look to further streamline large-scale retrofit projects that include lighting fixtures by minimizing paperwork and lag time between energy audit and customers receiving the appropriate rebate.

Participating contractors and wholesalers would like to receive more updates on program changes. Overall, participants were very satisfied with their interactions with FortisBC staff and felt that FortisBC staff members were able to answer any program-related questions they had. However, participants noted that additional communication with FortisBC staff on program changes would be helpful.

Recommendation #2: Email interested contractors and wholesalers with quarterly updates on the Commercial Product Rebate Program, especially highlighting any process changes or rebate updates.

Due to the recent changes, a majority of participants were unaware of the current administrative process. A majority of participants said they were unfamiliar with the new FortisBC online application and tracking website and were unaware of who was responsible for completing the rebate application under the new system.

Recommendation #3: Further educate participating contractors, wholesalers and retailers on the structure of the new online process, including the specific information needed on rebate applications, both from themselves and from end users, in addition to program updates on program-eligible products.

Most end-users (76%) heard about the program through an electrical contractor/distributor or through word of mouth. In contrast, FortisBC staff members were responsible for informing only 13 percent of end-users of the Commercial Product Rebate Program.

Recommendation #4: Continue to leverage contractors as a means to increase program awareness. In addition to working with contractors, consider increasing marketing efforts towards end-users to help educate commercial customers on the benefits of the program and to help drive program participation.

The current deemed savings values are well documented and are generally consistent with savings values used in similar programs. Based on our review of the eligible measures, it appears that the savings values are well documented, and that the deemed savings levels are appropriate for this program. However, a small number of lighting measures (13 out of 45 total) were found to have demand savings that varied significantly from what was expected.

Recommendation #5: Reference the lighting wattage reduction analysis performed by the Evergreen technical evaluators to help make program estimates more accurate and to allow the program to capture additional savings from the high wattage fixture measures.

Net impacts are consistent with similar programs. The net-to-gross ratios estimated for the program are consistent with expectations and the Evergreen team's experience with similar programs. In the Commercial Product Rebate Program, the significant number of T8s rebated through the program resulted in a lower overall net-to-gross ratio for the program. Since this measure is fairly common, it is not surprising that the level of free-ridership will be higher than for newer technologies such as LEDs.

Recommendation #6: Consider phasing out T8s to boost program net impacts.

Using a single lighting hours of use value results in less accurate impact estimates on a yearly basis as the distribution of participating customers across building types will shift over time. Accuracy of the deemed savings values could be improved by adjusting the operating hours based on building type. This is particularly true for lighting and some HVAC measures, where operating hours vary significantly by building type and are an important component in the savings calculations. If building type information is available, then the savings values can be tailored more closely to match the likely operating conditions for these measures.

Recommendation #7: Customer building type information should be collected as part of the program application to improve accuracy of the deemed savings values.

Ongoing management resources are needed to ensure that the program is run efficiently and customers and trade allies have the resources they need to interact with the program successfully. A prior administrator for the program noted that customers and trade allies needed a significant amount of help in filling in the customer rebate application—a task that is met by the

energy efficiency representative assigned to the program. Customers will likely require even more assistance given the recent move to the online application process and a program manager would be integral in improving the customer experience over time. Further evidence of the need for a robust support structure is that most trade allies were unaware of changes in program administrative processes, and many participating contractors and wholesalers would welcome more frequent updates on program changes. If, as recommended, T8s are eventually phased out and if revisions in assumed hours of use result in changes to incentive levels, timely and more frequent communications will need to be incorporated into the program, which would be more likely to happen with management resources dedicated to this program.

Recommendation #8: Have dedicated FortisBC program management resources (0.5 FTE) for the Commercial Product Rebate Program. This would help ensure sufficient resources, including ongoing oversight and direction for program staff, attention to program design and implementation of evaluation recommendations, resource for approving payments, improvement of self-service website instructions, to help answer questions about the participation process and provide timely updates on any program changes