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July 20, 2011

Via Email
Original via Mail

Ms. Alanna Gillis
Acting Commission Secretary
BC Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC V6Z 2N3

Dear Ms. Gillis:

Re: FortisBC Inc's Semi Annual Demand Side Management Report

Please find enclosed for filing FortisBC Inc.'s Semi-Annual Demand Side Management Report to December 31, 2010. Twelve copies will be couriered to the Commission.

Sincerely,

A handwritten signature in blue ink, appearing to be "DS", with a horizontal line underneath.

Dennis Swanson
Director, Regulatory Affairs



FORTISBC INC.

SEMI-ANNUAL DSM REPORT

YEAR ENDED DECEMBER 31, 2010

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REPORT OBJECTIVE

This report provides highlights of FortisBC Inc.'s (FortisBC or the Company) Demand Side Management (DSM) programs for the year ended December 31, 2010. The report format compares actual energy savings and costs to Plan, where applicable, and provides a statement of financial results and an estimate of the DSM incentive amount.

Overview of Results for the Year Ended December 31, 2010

Energy efficiency savings for the year ended December 31, 2010 were 29.3 GWh, or 106 per cent of Plan of 27.5 GWh for the year. Company costs incurred were \$3,712,000 or 94 per cent of the approved Plan of \$3,951,000. Adding the customers' costs yields a Total Resource Cost (TRC) of \$6,288,000 with an overall TRC benefit/cost ratio of 2.0.

ENERGY SAVINGS BY SECTOR

Sector	Plan	Actual	% of Plan
	GWh		Achieved
Residential	12.1	11.6	96%
Commercial	12.1	14.7	122%
Industrial	3.4	3.0	89%
Total savings (GWh)	27.5	29.3	106%

Note: Minor differences due to rounding

For the year ended December 31, 2010, the Commercial energy savings were above Plan at 122 per cent. The Residential and Industrial energy savings were under Plan at 96 per cent and 89 per cent respectively. These results are discussed in more detail later in this report.

Detail of Energy Savings

The following sector tables provide details on the DSM energy savings in each sector, including wholesale DSM activities in the service territories of FortisBC's wholesale customers.

Residential Programs	Plan	Actual	% of Plan Achieved
	GWh		
Home Improvement Program	1.0	4.9	519%
New Home Program	1.4	0.5	34%
Heat Pumps (Air & Ground Source)	6.4	3.2	51%
Residential Lighting	2.4	2.6	109%
Low Income	1.0	0.4	38%
	12.1	11.6	96%

Note: Minor differences due to rounding

The energy saving results from Residential construction and renovation activity were 96 per cent of Plan. The Home Improvement (HIP) program and Residential Lighting exceeded Plan, whereas the New Home, Low Income and Heat Pump programs fell short of forecast. The LiveSmart BC collaboration resulted in 4.4 GWh of retrofit energy savings, which are recorded in the Air Source Heat Pump and Home Improvement programs.

In the New Home program, there were 181 projects recorded, compared to 383 recorded last year, reflecting the impact of a continued market slowdown first observed in 2009. The number of Air Source Heat Pumps dropped from 629 installations to 501 in 2010.

In 2010 the Low Income program distributed approximately 800 energy saving kits, including 387 in the four First Nation territories in the FortisBC service area. This program also provided energy saving kit installation training to First Nation individuals, allowing the First Nation communities to install the kits themselves. FortisBC co-sponsored the ReNEW training program in which graduates developed the skills necessary to work in the energy efficiency industry performing retrofit work, as well as entry-level trade/construction positions.

Commercial Programs	Plan	Actual	% of Plan
	GWh		Achieved
Lighting	5.3	8.0	150%
Building and Process Improvement	6.8	6.7	99%
	12.1	14.7	122%

The Commercial sector recorded savings of 14.7 GWh, or 122 per cent of Plan. Commercial lighting program savings are aggregated through both “at the counter” product rebates and custom lighting retrofits, such as those installed at a large Castlegar retail store producing 0.2 GWh savings. With lighting upgrades and digital controls for the lighting, Interior Health has reduced the electricity used at the Summerland Health Centre by 0.4 GWh annually.

Building and Process Improvement (BIP) projects for 2010 include the retrofit of glass door freezers in a large discount grocery retailer in Penticton which saves 0.5 GWh annually. In Kelowna, a mixed use condominium tower features a centralized geo-exchange system and above-code window glazing and insulation amounting to 1.3 GWh savings. The Water Handling Infrastructure program is also included in BIP and in 2010 there were three municipal water system projects that produced 1.3 GWh of savings.

There were no Irrigation projects recorded in 2010.

Attached as Appendix C is the New Commercial Building Improvement Program Monitoring and Evaluation Report. FortisBC will be addressing the major concerns in this report including updating the New BIP business case to limit the scope of eligible technologies, restating the baselines and ensuring follow-up on the larger scale projects. A FortisBC staff meeting with program delivery representatives was held in June of 2011 to review and address the report recommendations.

Industrial Programs	Plan	Actual	% of Plan Achieved
	GWh		
Compressed Air	0.9	0.1	12%
Industrial Efficiencies	2.4	2.9	118%
	3.4	3.0	89%

Note: Minor differences due to rounding

The Industrial Efficiency program achieved savings of 3.0 GWh or 89 per cent of the 3.4 GWh in the 2010 Plan. No savings were recorded for compressor projects in the first half of the year, and a single entry was recorded in the second half.

Examples of Industrial Efficiency projects include an insulation manufacturing plant in Grand Forks, where process improvements led to 0.6 GWh of savings. Process improvements at a Princeton sawmill are responsible for 0.3 GWh of savings. New equipment leading to process improvement at the Columbia Brewery in Creston led to 0.1 GWh of savings.

The following table disaggregates the Wholesale DSM results, which are included in the sector tables above.

Wholesale Activity	GWh	MW	% of GWh¹
Grand Forks	0.2	0.0	3%
Summerland	0.5	0.1	10%
Nelson	0.6	0.1	13%
Penticton	2.1	0.4	47%
Kelowna	1.2	0.2	26%
Total (Wholesale)	4.6	0.8	100%

¹ Of savings attributable to the wholesale class

The total Wholesale energy savings, which were acquired within the service areas of the five municipal electric utilities served by FortisBC, were 4.6 GWh and 0.8 MW to December 31, 2010. The largest DSM savings results occurred within Kelowna and Penticton municipal utility service areas (those with the largest number of customers), in new BIP and HIP programs respectively. Nelson Hydro savings were primarily from commercial lighting projects and HIP programs.

PROGRAM COSTS

The table below presents the year end actual costs incurred by the Company compared to Plan.

Summary of Costs by Sector

Sector/Component	Plan	Actual	% of Plan
	\$000s		
Residential	1,515	1,838	121%
Commercial	1,380	1,123	81%
Industrial	389	241	62%
Conservation Culture	148	155	104%
Monitoring & Evaluation	208	84	41%
Planning & Administration	311	270	87%
	3,951	3,712	94%

Note: Minor differences due to rounding

Costs amounted to \$3,712,000 or 94 per cent of the approved Plan to December 31, 2010. A breakdown of utility program costs per sector follows and Appendix A contains a more detailed breakdown of total program costs, including the Customer portion of costs.

Costs per Sector

Residential	Plan	Actual	% of Plan
	\$000s		
Home Improvement Program	294	434	148%
New Home Program	254	247	97%
Heat Pumps (Air & Ground Source)	624	749	120%
Residential Lighting	243	278	114%
Low Income	100	131	131%
	1,515	1,838	121%

Note: Minor differences due to rounding

The utility cost of Residential programs was \$1,838,000 or 121 per cent of Plan. The largest cost component of Residential programs was the Heat Pumps Program followed by the HIP program, both of which include incentives paid through the LiveSmart BC collaboration. Total incentives paid to Residential participants amounted to \$1,145,800 in 2010, compared to \$967,600 Plan due to the surge in HIP. Fixed overhead costs, ongoing program promotion and increased sponsorships have held or increased costs beyond Plan, despite the drop in participation in the New Home and Heat Pump programs.

Commercial	Plan	Actual	% of Plan
	\$000s		
Lighting	722	526	73%
Building and Process Improvement	658	597	91%
	1,380	1,123	81%

Commercial, including water handling infrastructure, program costs to December 31, 2010 amounted to \$1,123,000 or 81 per cent of Plan. Commercial incentives paid out in 2010 amounted to \$510,500. Included in this total are the three municipal water infrastructure projects, which received incentives of \$87,000.

Industrial	Plan	Actual	% of Plan
	\$000s		
Industrial Efficiencies	302	216	71%
Compressed Air	87	25	29%
	389	241	62%

Industrial sector costs were \$241,000 for the period, or 62 per cent of Plan. Incentives paid during the period amounted to \$80,300, which was well below the \$273,800 Plan due to low activity. Industrial DSM projects tend to be large in savings, and the incentive amount is often limited by the two-year payback clause.

Supporting Initiative Costs

Costs that are not specifically associated with individual programs are summarized in the table below.

Components	Plan	Actual	% of Plan
	\$000s		
Conservation Culture	148	155	104%
Monitoring & Evaluation	208	84	41%
Planning & Administration	311	270	87%
	667	509	76%

These costs include the Conservation Culture component which was just over budget at \$155,000 or 104 per cent of Plan. In 2010 the Conservation Culture program community ambassadors helped distribute energy saving kits to low-income customers and gave out 10,000 clotheslines to customers in the FortisBC service area. The community ambassadors attended approximately 78

events from May to December, raising awareness and educating the public about energy efficiency and conservation. The Conservation Culture program also promotes awareness through initiatives such as the award winning community challenge for Earth Hour (What Would You Do with an Hour in the Dark).

During PowerSense month in October, a total of 33 Conservation Excellence awards were presented at two regional events in Kelowna and Castlegar. In a pilot hot water conservation program, 600 next generation (1.5 US gallons per minute (gpm)) low-flow shower heads were distributed to customers through an interactive website and at community events.

The supporting initiative category of costs also includes the Planning and Evaluation budget, which is shown in its two main components “Monitoring and Evaluation” and “Planning and Administration”. Both were under budget, especially Monitoring and Evaluation which was at 41 per cent of Plan due to resourcing issues that will be addressed in 2011. The Planning & Administration expenditure was \$270,000 which was 87 per cent of plan.

In Appendix A, the program development costs are further broken out from the planning and administration costs. Additional detail by sub-category will be available in future reports.

FINANCIAL RESULTS

Program benefits are calculated on the present value of avoided power purchases, based on the 2010 BC Hydro Rate Schedule 3808 over the measure lifespan, plus a Deferred Construction factor. An overall benefit/cost ratio of 2.0 has been achieved in 2010, which is higher than the benefit/cost ratio of 1.7 attained in 2009.

FINANCIAL RESULTS for Year Ending December 31, 2010

by Program

Program	Program Benefits	Planning & Evaluation					Total Costs	Benefits less Costs	Benefit Cost Ratio
		Program Costs	Program Dev.	Planning & Admin.	Monitoring & Eval.	Customer Costs			
Residential	(\$000s)								
Heat Pumps	1,446	749	8	22	9	408	1,196	250	1.2
New Home program	307	247	1	3	1	32	285	22	1.1
Residential Lighting	713	278	7	17	7	(11)	298	415	2.4
Home Improvement	2,991	434	13	32	14	469	962	2,029	3.1
Low Income	92	131	1	3	1	-	136	(44)	0.7
Residential Total	5,549	1,838	30	77	33	898	2,876	2,673	1.9
Commercial									
Lighting	2,942	526	21	53	23	218	841	2,101	3.5
Building and Process Improvement	2,702	597	17	44	19	1,167	1,845	857	1.5
Commercial Total	5,644	1,123	38	97	42	1,385	2,687	2,957	2.1
Industrial									
Industrial Efficiencies	1,113	216	7	19	8	286	536	577	2.1
Compressed Air	24	25	0	1	0	8	35	(11)	0.7
Industrial Total	1,137	241	8	20	9	294	571	566	2.0
Conservation Culture	-	155					155		
Total	12,330	3,357	76	194	84	2,577	6,288	6,042	2.0

Note: Minor differences due to rounding

The benefit/cost ratios for the individual programs are also detailed in the table above. The Residential sector programs performance resulted in a benefit/cost ratio of 1.9 for the sector, up from the 1.3 result in the previous year. The Commercial sector (including Irrigation) financial result for 2010 achieved a benefit/cost ratio of 2.1, similar to the 2.2 result for last year. The Industrial sector benefit/cost ratio was stronger at 2.0, compared to 1.5 in 2009.

Government Programs

The Company continues to collaborate with the provincial government on various initiatives, and the first phase of the LiveSmart BC program for residential energy efficiency retrofits provided considerable activity in the HIP and Heat Pump (Air Source) programs. On April 1, 2010 the second phase of the residential LiveSmart BC program opened to new entrants, but the

simultaneous closure of the federal ecoEnergy Retrofit offer has dampened customer demand for energy efficient home retrofits.

DSM INCENTIVE FOR 2010

The table below presents the calculation of the DSM incentive for 2010.

	TRC Net Benefits (\$000s)			Performance	Incentive (\$000s)
	Actual to Dec 31st	Base 3-yr average	Eligible for Incentive		
Residential	2,813	3,092	2,552	83%	(77)
Commercial	3,135	3,089	3,135	101.5%	63
Industrial	602	518	602	116%	12
Total	6,550	6,699	6,289		0

Actual TRC Net Benefits to December 31, 2010 amounted to \$6,550,000, falling short of the Base Net Benefits of \$6,699,000. The Actual Net Benefits are limited by any sector expenditure over 110 per cent of Plan, resulting in reduced Eligible Net Benefits for the Residential sector. The Net Benefits for each sector are compared to a 3-year rolling average baseline to determine each sector's incentive amount.

The Industrial sector performed well above the baseline average, earning an incentive of \$12,000. The Commercial sector was slightly above the baseline average with an incentive of \$63,000. The Residential sector was below the 3-year baseline with a negative incentive calculated.

Under FortisBC's DSM Incentive Mechanism, a negative incentive in any sector(s) is(are) used to offset any positive incentive amount(s) in other sectors, but the sum total cannot fall below zero. Therefore, the calculated DSM incentive is \$0 (zero) for the year ended December 31, 2010. A more detailed description of the Incentive Mechanism calculation is found in Appendix B.

APPENDIX A DSM SUMMARY REPORT IN BCUC FORMAT**Demand Side Management Summary Report in BCUC Format
Year Ended December 31, 2010**

Sector/Program	Utility Program Costs			Planning and Evaluation			Total Utility Costs	Customer Incurred Cost	Total Resource Cost	Benefit/Cost Ratios			
	Direct Incentives	Direct Information	Program Labour	Program Dev.	Planning & Admin.	Monitoring & Eval.				Total Resource	Total Resource	Rate Impact	Levelised Cost
	\$000s												
<u>RESIDENTIAL</u>													
Heat Pumps	399	116	235	8	22	9	788	408	1,196	1.2	0.4	3.9	
New Home Program	154	55	38	1	3	1	252	32	285	1.1	0.4	5.3	
Residential Lighting	150	60	68	7	17	7	309	(11)	298	2.4	0.5	2.9	
Home Improvements Program	329	80	26	13	32	14	493	469	962	3.1	0.8	2.0	
Low Income	114	8	9	1	3	1	136	-	136	0.7	0.7	8.5	
Residential sub-total:	1,146	318	375	30	77	33	1,978	898	2,876	1.9	0.7	3.0	
<u>COMMERCIAL</u>													
Lighting	206	217	103	21	53	23	623	218	841	3.5	0.5	1.4	
Building and Process Improvements	304	172	121	17	44	19	678	1,167	1,846	1.5	0.5	2.8	
General Service sub-total:	510	389	224	38	97	42	1,301	1,385	2,687	2.1	0.5	2.1	
<u>INDUSTRIAL</u>													
Industrial Efficiencies	75	57	83	7	19	8	250	286	536	2.1	0.6	1.7	
Compressors	5	2	18	0	1	0	27	8	35	1	0	0	
Industrial sub-total:	80	59	102	8	20	9	277	294	571	2.0	0.7	2.0	
Conservation Culture:	-	66	89	-	-	-	155	-	155	-	-	-	
TOTAL	1,737	831	790	76	194	84	3,712	2,577	6,288	2.0	0.6	2.5	

APPENDIX B DSM INCENTIVE CALCULATION

Total resource cost (TRC) Net Benefits are the gross benefits of lifecycle energy and capacity savings less the total resource cost (FortisBC program costs plus customer-incurred costs) for the energy savings measures installed.

The **Base TRC Net Benefits (Base)** are based on a yearly average of actual costs, savings and benefits for the immediately preceding three year period. The costs are escalated to the incentive year dollars and the benefits are priced at the incentive year BC Hydro Rate Schedule 3808.

The **DSM incentive mechanism** measures the variance between the actual TRC Net Benefits (Actual) and the Base TRC Net Benefits (Base) set for each sector for the year. There are different incentive or penalty levels based on the size of the variance for each of the three sectors. Incentives for the sectors are calculated for performances of 100 per cent to 150 per cent of Base. There is no calculation for performance between 90 per cent and 100 per cent of Base for all sectors. Calculations for performance of less than 90 per cent of Base produce negative results. Maximum penalty is applied to performances of less than 50 per cent of Base.

If the sum of the sector incentives or penalties is greater than zero, then that sum is the DSM incentive for FortisBC for the year. If the sum is less than zero, then there is no DSM incentive for FortisBC for the year and no penalty is charged.

The sector incentive rates are determined using the following table:

Incentive Performance Level						
<50%	<70%	<90%	90-100%	>100%	>110%	>120%
DSM Sector Incentive Rates						
-6.0%	-4.5%	-3.0%	0.0%	3.0%	4.5%	6.0%
-4.0%	-3.0%	-2.0%	0.0%	2.0%	3.0%	4.0%
-3.0%	-2.0%	-1.0%	0.0%	1.0%	2.0%	3.0%

**APPENDIX C NEW COMMERCIAL BUILDING IMPROVEMENT PROGRAM
MONITORING AND EVALUATION REPORT**

POWERSENSE NEW COMMERCIAL BUILDING IMPROVEMENT PROGRAM EVALUATION

FINAL REPORT

Prepared for:

**PowerSense Dept.
FortisBC Inc.
Kelowna, British Columbia**

By:

Sampson Research Inc.

With:

Innes Hood Consulting Inc.

May 31, 2011

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Disclaimer

The opinions expressed in this report are the responsibility of the author, Sampson Research, and do not necessarily represent the views of FortisBC.

Currency Units

All dollar figures presented in this report, unless stated otherwise, are expressed in Canadian funds.

1 EXECUTIVE SUMMARY

1.1 Introduction

This report summarizes the findings from a process and impact evaluation of the PowerSense New Commercial Building Improvements Program (New BIP). During the evaluation period of September 2006 to September 2009, New BIP processed 64 participant applications from 37 FortisBC retail or wholesale customers, and expended \$517,245 in rebates. Total claimed energy and demand savings are 10.8 GW.h and 2.8 MW respectively.

1.2 Evaluation Objectives and Methodology

The evaluation included process, market and impact components. Information and data collected via program tracking records and documentation, interviews and on-site visits with program participants, interviews with program management and program delivery staff, and a desk review of program records. Energy and demand savings were calculated for each site visit participant using either modelling or engineering calculations. Current program baseline assumptions for HVAC, lighting, building envelope, motors and other systems were reviewed for relevancy.

1.3 Summary of Evaluation Findings

Summary comments are provided on the review of program documents, the review of program baselines, program operations, site visits, and program savings.

1.3.1 Document Review

FortisBC appears to be doing a reasonable job of records management. All participant records requested for purposes of the evaluation were available. Billing histories for the site visit participants were readily available.¹

1.3.2 Program Operations

There is no standard program application form for New BIP. No additional terms or conditions are placed on New BIP participants beyond those indicated as part of FortisBC's Electric Tariff.²

Customer processing and record keeping for the New BIP program is about to be improved with the adoption of the Nexus customer management system expected in 2012. This system is expected to provide program personnel with access to active projects, allowing for real time updates of program status.

The consistent application of baseline assumptions among the regions was highlighted during staff interviews.

¹ Billing records for wholesale customers are maintained by the municipal utilities. Copies of these records were requested and obtained via FortisBC staff.

² Additional detail available through Schedule 90 - Energy Management Service, Terms and Conditions, Electric Tariff, B.C.U.C. No. 1, Sheet 73.

EXECUTIVE SUMMARY

1.3.3 Barriers to Participation

The relatively small size of the FortisBC rebate means that some trade allies are reluctant to recommend the program to their new building clients.

1.3.4 Program Baselines

The qualifying technology list for New BIP is broad, ranging from water treatment plants to computer systems.

There was general agreement among those interviewed that baselines are moving up in the industry. However, some new construction projects continue to be built to code (minimum) despite attempts by the FortisBC advisor to convince the owners to improve their design.

A significant and recent development affecting New BIP is the elimination of rebates for ground source heat pump systems except for designated market segments (condominiums) and where natural gas service is not available. Prior to this, the baseline assumption was that electric resistance heating was the baseline regardless of whether gas service was available or not.

In addition to changes in the program baseline, adoption of an Energy Code (ASHRAE 90.1-2004) by the Province of BC in September 2008 has an impact on the program baseline as minimum performance requirements are now established for a range of building systems and components.

1.3.5 Site Visits & Modelling

Nine New BIP participants received a site visit from the evaluation engineer. Modeling of their building's energy savings was completed using information gathered on site, program records, and billing records.

Agreement between program incentive calculations and current calculations of energy savings for the nine projects was poor. The primary reasons for the discrepancies include:

- Variable frequency drives rendered redundant by oversized pumps and/or pump operating procedures
- Discrepancies between program records and installed light fixture counts
- Calculation of program savings for projects where electricity is assumed to be the baseline fuel for space and domestic water heating when natural gas is the baseline fuel (e.g., geothermal, ice plant heat recovery)

1.4 Evaluated Program Savings

1.4.1 Free Riders

Free riders were qualitatively assessed using information collected during site visits, interviews with program management and delivery staff, and a literature search of studies that assessed free rider rates in commercial new building programs in other jurisdictions. Based on this research a free rider rate of 25% is recommended as a reasonable but not unduly punitive free rider percentage, falling within the range of estimates from other commercial new construction programs.

1.4.2 Energy and Demand Savings

Exhibit 1 presents the evaluated savings for the 2006-2009 fiscal years, discounted for fuel switching in geothermal projects. After adjustments, evaluated savings are equivalent to 28% of gross energy savings, and 38% of gross demand savings. Free riders are applied to adjusted gross savings to avoid double counting.³

Exhibit 1: Net Program Savings (Run Rates)
January 2006 to December 2009

	GW.h/yr Run Rate	MW Run Rate
Gross Program Savings	18.974	2.489
Unrealized Savings *	11.764	1.220
Adjusted Gross Savings	7.210	1.269
Free Riders (25%)	1.803	0.317
Net Program Savings	5.407	0.952
Net Savings (%)	28%	38%

* Energy (1 – 0.38), Demand (1 - 0.51)

Totals may not sum due to rounding

Exhibit 2 presents the evaluated savings for New BIP allowing for fuel switching in geothermal projects. The primary reason for presenting these results is to demonstrate the net savings percentage that is reasonable for non-fuel switching projects. It entails adjustments for (1) non-fuel switching variances noted during the site visits, and (2) an estimate of free riders. After adjustments, evaluated savings are equivalent to 48% of gross energy savings, and 49% of gross demand savings. As in the previous exhibit, free riders are calculated using adjusted gross savings as the base to avoid the potential for double counting.

Exhibit 2: Net Program Savings (Run Rates) for Program Planning Purposes

	GW.h/yr Run Rate	MW Run Rate
Gross Program Savings	18.974	2.489
Unrealized Savings *	6.831	0.871
Adjusted Gross Savings	12.143	1.618
Free Riders (25%)	3.036	0.405
Net Program Savings	9.107	1.213
Net Savings (%)	48%	49%

* Energy (1 – 0.64), Demand (1 - 0.65)

Totals may not sum due to rounding

³ The proportion of gross energy savings represented by participants that are free riders is often determined by multiplying gross savings by the free rider percentage. This approach assumes that savings attributed to free riders are mutually exclusive of unrealized savings due to fuel switching, variances in hours of use, technology counts, and the like when, in fact, the two likely overlap to some degree (i.e., the energy savings associated with a free rider may also have been discounted for other variances).

EXECUTIVE SUMMARY

1.5 Summary & Recommendations

1.5.1 Summary

The primary conclusions from this evaluation are as follows:

1. FortisBC's interpretation of eligible technologies and projects for New BIP is generous. This has led to decisions to allow technologies and projects to qualify under the program where there is no reasonable or cost-effective method to evaluate the energy and capacity savings.
2. There is limited post-installation / construction follow-up to verify measure installations, and their efficient operation. These two factors mean that some project savings have not been fully realized, and, in some cases, not realized at all. Limited follow-ups and inspections are a lost opportunity for FortisBC to fully capture savings and to gain valuable experience from the field.
3. More than half of the program energy savings claimed under the 2006-2009 evaluation window were based on geothermal heat pump projects where, in the majority of cases examined, natural gas was the baseline fuel for space and water heating. These projects effectively represented fuel switching and load growth rather than energy and load reduction. FortisBC no longer allows these projects to participate under New BIP.

1.5.2 Recommendations

The following recommendations are organized under program design, program operations, and other.

Program Design and Targeting

1. Opportunities remain for New BIP to influence building design and equipment specifications for its commercial customers. However, the current scope of projects that are eligible for program incentives is too broad to effectively ensure the delivery of cost-effective energy and demand savings. FortisBC should review its list of technologies and projects eligible for program assistance to manage both free ridership and the risk associated with incentivising projects where local expertise to evaluate the legitimacy of the savings estimates is lacking. Provincial and Federal Energy Efficiency Acts and ASHRAE 90.1 provide a basis for updating the technical thresholds for rebate eligibility.
2. The 2006-10 Demand Side Management Five Year Business Plan prepared by FortisBC in October 2005 identified "significant" savings opportunities in municipal water and sewer treatment plants, and load management of municipal water pumps and district irrigation systems with reservoir capabilities. The findings of this evaluation for these two sectors suggests that there is the need to:
 - revisit the decision to include municipal water and waste treatment facilities under New BIP;
 - improve the methods and rigor used to assess opportunities in these sectors; and
 - assign resources to verify savings once the projects are operational.
3. With direction and support provided by provincial and federal governments, the SUCH sector (schools, universities, colleges and hospitals) has taken on a leadership role in energy efficient and green building design and construction. Continued support for this sector under New BIP should be

reviewed and consideration given to transferring it to an advanced or innovative building program stream. This would allow the cost-effectiveness criteria to recognize the influence and complementary mandate of multiple stakeholders and that the baseline for these projects is significantly higher than the commercial sector norm.

4. The value of program designs like New BIP is derived in large part from the advice and interventions of FortisBC's technical advisors. The evaluation identified situations where claims to energy savings were made but incentives not paid out (e.g., payback criteria not met, inability to deliver the rebate, etc.). Claims to energy savings where rebates were not issued need to be fully documented to validate the legitimacy of the savings claims.
5. An updated business case for New BIP is due. The preparation of the business case should include a review and confirmation of the program's strategic goals, objectives, eligibility requirements, and baseline assumptions. The cost effectiveness of the program should be evaluated under a range of assumptions for realized savings and free riders.
6. Incentives for geothermal projects where natural gas service is available, if offered, should be based on incremental electricity savings from installing ground source heat pumps that exceed the efficiency of a standard (baseline) ground source heat pump.
7. Some technologies listed as eligible for rebates under FortisBC New BIP will become the industry standard pending the implementation of ASHRAE 90.1-2010 and the upcoming update to the National Energy Code for Buildings.
 - The baseline for New BIP should be ASHRAE 90.1-2004, and updated to ASHRAE 90.1-2010 when adopted in 2012.
 - The list of qualifying technologies listed on the PowerSense website should be updated to reflect these baselines.

Program Operations

8. Technical advisors expressed uncertainty about whether program baselines are common to, and consistently applied in, all FortisBC's regions. The impact on gross savings is inconclusive, but the downside risk is that older baselines for some technologies might still be used in some areas. All regions should consistently apply the same baseline for evaluating savings opportunities and evaluating the cost effectiveness of participant applications.

Monitoring, Tracking, and Verification of Program Savings

9. There appears to be limited follow-up with program participants to assess whether the energy savings are being fully realized. Three of the nine site visits conducted under this evaluation had unrealized energy savings because the rebated technology was not being used as intended (variable frequency drives), or rebated quantities differed from those used to estimate savings (lighting). In addition to unrealized energy savings, these examples highlight missed opportunities to learn from experience and to apply this knowledge to new projects. Post-construction confirmation of energy savings for projects exceeding \$10,000 in incentives, as specified in FortisBC's Electric Tariff, is designed to address these issues and should be maintained.

EXECUTIVE SUMMARY

10. Provisions for free riders should be mandatory for all new PowerSense business cases. Free rider estimates should be periodically reviewed and updated. In the case of New BIP, a free rider estimate of 25% is reasonable and within industry norms.

Program Evaluation

11. FortisBC should continue program market and impact evaluations at regular intervals (e.g., every three years) and allocate sufficient resources for completing these evaluations.

Other

12. FortisBC should actively consider implementing a project commissioning program, either as a separate program or as requirement for larger projects participating under New BIP. This program would help commercial customers optimize their energy use in the post-construction / building commissioning phase. Commissioning includes documentation, review, fine-tuning and verification of equipment and systems to ensure they are integrated effectively, performing efficiently, and meeting the expectations of building owners and tenants.

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