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Regulatory Affairs Correspondence
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August 23, 2013

### <u>Via Email</u> Original via Mail

BC Sustainable Energy Association c/o William J. Andrews, Barrister & Solicitor 1958 Parkside Lane North Vancouver, B.C. V7G 1X5

Attention: Mr. William J. Andrews

Dear Mr. Andrews:

Re: FortisBC Energy Inc. (FEI)

Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018

Response to the BC Sustainable Energy Association (BCSEA) Information Request (IR) No. 1

On June 10, 2013, FEI filed the Application as referenced above. In accordance with Commission Order G-99-13 setting out the Preliminary Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to BCSEA IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc: Commission Secretary

Registered Parties (e-mail only)



Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 (the Application)

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Page 1

1	1.0 To	opic:	Demand side management
2	Re	eference:	Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and
3			Conservation & Demand Side Management, May 2013; Attachment I-
4			1, FEU EEC 2014-2018 Plan, Program Description and Cost-
5			Effectiveness Results, Final Report, ICF Marbek, May 2, 2013;
6			Section 3.3, Overview of Results, Exhibit 7: Summary of Savings and
7			Cost-Effectiveness Results for the Residential Sector Program
8			Portfolio, p. 15 (pdf p.1138 of 1444)
9	1.	1 Please	e provide functioning Excel spreadsheet files containing all details of the
10		cost-e	ffectiveness analysis reported, including inputs, computations, and
11		interm	nediate outputs that to allow anyone to trace, test, and replicate the
12			ations under assumed and alternative input variables. The response
13		should	d include cost-effectiveness analysis done for the individual measures or
14		measi	ure packages per program participant as well as that done at the program
15		level.	
16			
17	Respons	e:	

### Response:

- 18 Please refer to Confidential Attachment 1.1 for the full working model used to produce the FEU
- 19 EEC 2014-2018 Plan.
- 20 Note that the FEU are providing these fully functioning spreadsheets/models confidentially due
- 21 to the considerable time, effort and expense of both internal resources and external contract
- 22 resources which have been invested in the development of these spreadsheets/models on
- 23 behalf of all rate-paying customers. The models were developed for the FEU and are proprietary
- 24 to the Companies on behalf of all customers. The Companies are concerned that public
- 25 disclosure and availability could allow others to use or adapt these spreadsheets/models freely,
- 26 and at the expense of the FEU's customers.
- 27 Please follow these steps in order to open and view the full working model:
- 28 1. Save all files in one central location.
  - 2. Open the file named "Cost effective Tool, Current.xlsm".
- 30 3. Enter the user name "Marbek" and the password "Marbek" to log in.
- 31 4. Select the Active Program Database named "Cost Effectiveness Tool, Database, 32 Current.xlsm"
- 33 5. Click "done".

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1	2.0	Topic	: Demand side management
2		Refer	ence: Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and
3			Conservation & Demand Side Management, May 2013, Attachment I-
4			1, FEU EEC 2014-2018 Plan, Program Description and Cost-
5			Effectiveness Results, Final Report, ICF Marbek, May 2, 2013,
6			Section 3.4 Program Profiles beginning p. 16 (pdf p.1139 of 1444)
7		2.1	For each program characterized in this section, please provide the definition and
8			the estimated size of the population eligible for each program in each program
9			year 2014-2018, stated separately and in total for the three FEU service regions.

Response:

This response addresses both BCSEA IRs 1.2.1 and 1.2.2 with regard to residential programs discussed in Section 3.4 of the FEU EEC 2014-2018 Plan. Projections for the information requested are not available for the PBR period. Therefore the best representation of this information needs to be drawn from the 2010 CPR data. ICF Marbek has provided the estimates shown in the table below for both eligible populations and use per customer for each of space heating, fireplace and water heater end uses. The eligible population in this case is defined as the number of customers who use natural gas space heating, the number of gas fireplaces and the number of dwellings with natural gas domestic hot water, respectively. This does not entirely reflect the eligible population since the eligible population is the total number of dwellings with each end use, but it is as close an estimation as can be provided at this time.

The pre-treatment annual gas usage per dwelling for each end use varies depending on the type of dwelling and in which region it is located. The usage per customer data provided in the table below also does not entirely reflect the eligible population as it also includes all dwellings that have each end-use. For fireplaces, the data represents use per fireplace.



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# FortisBC Energy Inc. (FEI or the Company) Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 (the Application) Response to B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA) Information Request (IR) No. 1 Submission Date: August 23, 2013

Approximation of Eligible Population and Pre-treatment Natural Gas Use per Dwelling for Residential Dwellings by End-use for FEU.

	Number of Dwellings by Service Region Eligible for Programs 2011				Pre-treatment Annual Natural Gas Usage (2011 GJ/participant)
End use	FEI	FEVI	FEW	Total	
Space Heating	650,192	50,756	1,418	702,366	68
Applies to the following programs:					
Energy Efficient Home Performance program					
Appliance Service program (furnace)					
Furnace Replacement program					
New Technologies program					
Fireplace	406,145	61,506	1,361	469,012	19
Applies to the EnerChoice Fireplace program					
Appliance Service program (fireplace)					
Domestic Hot Water (DHW)	670,472	68,775	1,237	740,484	18
Applies to the ENERGY STAR Water Heater program					
Customer Engagement Tool*	767,508	92,554	2,296	862,358	N/A
Applies to all customers if an online tool is deployed; and regional targeting strategies for mailed reports for initial pilots					
New Residential Construction**				26,400	N/A
Applies to the New Home program - SFDs***				6,118	
New Home program - Row/Townhouse/Duplex***				3,408	

Note: Low Flow Fixture program is not included on chart since this program involves regional partnerships

Corresponding with the annual gas savings per participant in each profile, please

provide the pre-treatment annual gas usage per participant for the end uses

affected by the measure or set of measures targeted by the program.

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Response:

Please refer to the response to BCSEA IR 1.2.1.

<sup>\*</sup> Data for Customer Engagement Tool is based on 2011 FEU active residential contract accounts rather than number of dwellings from CPR

<sup>\*\*</sup> Based on CMHC 2011 BC housing starts totalling 26,400 including apartment units as of second quarter 2013

<sup>\*\*\*</sup> Numbers calculated based on FEU reported 69% (2007-2010) new construction market share of CMHC 2011 BC housing start data



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1	3.0	Topic:	Demand side management
2		Reference	e: Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and
3			Conservation & Demand Side Management, May 2013, Attachment I-
4			1, FEU EEC 2014-2018 Plan, Program Description and Cost-
5			Effectiveness Results, Final Report, ICF Marbek, May 2, 2013,
6			Section 3.4.1 Home performance, p. 16 (pdf p.1139 of 1444)
7 8		3.1 Wh	nat qualifies a participant for the "champion bonus" of \$500?

Response:

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- Please note that the BCSEA IR 1.3 series refers to the Home Performance Program outlined in Section 3.4.1 of the 2014-2018 EEC Plan. The Home Performance Program is, in essence, the 2014 and ongoing version of a LiveSmart BC type of whole home retrofit program, which is a joint initiative between the British Columbia Provincial Government and utility partners. There is uncertainty about the 2014 program design due to factors such as the Provincial Government's future funding for the program, the administrative platform, and the introduction of the new NRCan Home Energy Rating System and its impact on program design, energy assessment requirements, and rebate administration. The utility partners are hosting a fall Program Design workshop to gather feedback from industry experts to help guide the future success of this program.
- The objective of the "Champion Bonus" is to promote deeper retrofits and is an incentive for homeowners who conduct multiple upgrades. The Provincial Government and BC Hydro have contributed to this measure in the past, but the FEU have not. Former versions of the bonus have met with limited success.
- The 2013 iteration of LiveSmart BC is experiencing slow uptake since the program does not offer windows or heating systems, which have had the most program participants in the past. In response, the utility partners are piloting champion bonus offers in the Southern Interior where homeowners are participating in community challenges branded as "Energy Diets". The pilot test offers presented in the table below are currently under development and are not yet finalized at the time of writing.



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Comprehensive energy upgrade bonus	Incentive
Step 1: Install <b>three</b> qualifying building envelope upgrades from the list below.  ✓ Insulation – Attic or Cathedral Ceiling (100% coverage required)  ✓ Insulation – Wall (at least 80% coverage)  ✓ Insulation – Basement Wall (at least 80% coverage)  ✓ Insulation – Crawlspace wall or floor above crawlspace (100% coverage)  ✓ Ventilation – Heat Recovery Ventilator  ✓ Air Sealing – Base target plus 25% reduction.	
Step 2: Install a qualifying high efficiency heating system <b>OR</b> install a complete Energy Star windows upgrade.  ✓ Eligible Heating System Upgrades:  ○ Electrically Heated Homes – High Efficiency Air Source or Geothermal Heat Pump  ○ Gas Heated Homes – High Efficiency Gas Furnace or Boiler (with a DC variable speed motor)  ○ Heat system upgrades must be completed by a certified contractor.  ✓ Eligible Energy Star Windows Upgrades:  ○ Upgrade 75% of windows to Energy Star Zone -up	Okanagan - \$750 East Kootenay \$1,500

Further analysis and discussions with industry experts will determine what qualifies a participant for the "champion bonus" of \$500 in the 2014 and ongoing iterations of the Home Performance Program.

3.2 How much does the Company budget for pre-treatment inspection and diagnosis, i.e., an "energy audit," for each targeted home?

### Response:

Currently the Provincial Government provides a \$150 subsidy for Home Energy Assessments and homeowners contribute approximately \$150 for the pre-retrofit assessment and \$150 for the post- retrofit assessment. The FEU contributes to incentives for which energy savings can be captured. FEU made the assumption that the Provincial Government would continue to provide energy assessment subsidies for the PBR period. For that reason, FEU did not provide a budget for energy assessment support. FEU will consider subsidizing energy assessments in community challenges such as "Energy Diets", where clusters of neighbourhood activity substantially reduce the cost of the audit to homeowners.



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3.3 What percentage of those audited are assumed to go on to install the recommended measures, i.e., the "close" rate?

### Response:

Throughout the past iterations of LiveSmart BC, natural gas homes have demonstrated a 70-80% close rate which is defined as installing one or more measures and completing the post-retrofit assessment for rebate eligibility.

3.4 How much on average per treated customer is the Company budgeting for post-installation inspection?

### Response:

The Company has not budgeted funds for post-installation inspections other than for future program evaluation studies. As part of the NRCan agreement with Certified Energy Advisors (CEA), the CEA is responsible for certifying that the measure has been installed in accordance with program terms. NRCan maintains the relationship with CEAs for quality control of the entire process. The FEU assumed that a version of this established system will be employed for the PBR period.

3.5 What percentage of completions does the Company plan to inspect and verify installation?

### Response:

Please refer to the response to BCSEA IR 1.3.4. The Certified Energy Advisor inspects all installations through the post-retrofit assessment process.



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3.6 Why is the program not designed to provide for direct installation of electric efficiency measures such as high-efficiency lighting (specialty compact fluorescent lamps, solid state lamps), at least for the portion of the Company's gas service area shared with FortisBC (electric)?

### Response:

The FEU's Home Performance program profile only includes measures that support the reduction of natural gas. However, as stated in section 3.4.1 in the FEU 2014-2018 EEC Plan, "this program will promote energy- efficiency home retrofits in collaboration with utility partners" and government. In the past, the LiveSmart BC program included electric measures such as Energy Star fans in the program offering and such electric measures may become part of a comprehensive program offer in the future. In general, the financial viability and cost effectiveness of large scale direct install programs through jointly administered Provincial programs targeting the ability to pay market have not been established. Smaller scale trials of this concept are being explored. For example, FortisBC electric provides funding for the direct installation of lighting measures within the community "Energy Diet" programs.

In summary, the FEU have presented measures where there are gas savings for the purposes of cost benefit analysis. The comprehensive offer for the Provincial home retrofit joint initiative between utilities and the Provincial Government is still under discussion for 2014 and will evolve over the five year PBR period. Electric utilities will determine what electric measures are to be included in the comprehensive offer.

3.7 Please provide any analysis conducted by or for FortisBC of the cost-effectiveness of installation of cost-effective <u>electric</u> efficiency measures in this or any other FortisBC <u>gas</u> DSM program.

### Response:

- The FEU cannot provide access to analyses for cost-effectiveness of electric efficiency measures. These would be undertaken by FortisBC Inc.
- For clarity, in joint initiatives, electric utilities provide incentives and claim savings for electrically heated homes while FEU provides incentives and claims savings for natural gas heated homes.
- 35 Cost benefit calculations are run independently although evaluation reports are shared for
- 36 consistency of inputs. Electric utilities would include all electric measures within this analysis
- 37 which is run independently to the natural gas cost benefit calculation. The comprehensive



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- program is presented to customers as a seamless package, but each utility manages its own budget and cost effectiveness tests.
- There are a few residential natural gas measures or programs that result in electric savings in addition to gas savings. Examples of these include washers, furnaces and new homes program.
- 5 In these instances, electric savings are included in the alternative energy savings benefits in
- 6 TRC/mTRC calculations. FEU costs and partner costs are included in the costs side of the
- 7 equation. FEU does not report the electric energy savings to ensure that there is no way that
- 8 energy savings are double counted.

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3.8 Why does the program not target programmable or "smart" (e.g., wireless) thermostats?

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### Response:

FEU to date has not funded programmable thermostats, since the FEU technical team was not convinced that energy savings claims could be validated. There are many different brands and models, and their performance is dependent on the user's ability to program them. The FEU will continue to evaluate programmable thermostats and related new technologies for future programs or promotions.

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3.9 Why does the program not incorporate early furnace replacement in conjunction with the building shell retrofits encouraged by the home performance program, instead of or in addition to the stand-alone furnace replacement program?

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### Response:

- There are numerous reasons why the Furnace Replacement Program is not included in the Home Performance Program: budget considerations; the costly home energy assessment requirement for the Home Performance Program that can create a barrier to entry; and the requirement for program design considerations for the Furnace Replacement Program that promote *early* rather than *emergency* replacements.
- 34 A substantial budget increase would be required for FEU to replace the former government
- 35 funding that provided a standing offer for heating system incentives through the Home
- 36 Performance Program. The measure would also face cost-effectiveness challenges as outlined



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- 1 in the response to BCSEA IR 1.4.5. The FEU's proposed Champion Bonus is envisioned as a
- 2 cost effective way for FEU to be able to capture heating system savings, while promoting
- 3 deeper home retrofits. Results from the 2013 Champion Bonus pilots will help inform future
- 4 program design.
- 5 Research and anecdotal evidence from customers suggest that the current Home Energy
- 6 Assessment requirement is a barrier to program participation. The assessments are completed
- 7 as a gateway to other rebates, rather than for the intrinsic value of the assessment itself.
- 8 Program partners are discussing ways to create a more effective energy retrofit "coaching"
- 9 model through a BC Hydro pilot and through the community Energy Diets. NRCan is also re-
- 10 evaluating the assessment requirement in the 2014 launch of the new Home Energy Rating
- 11 system.
- 12 Energy savings for the Furnace Replacement Program are conditional on program guidelines
- that enforce *early* rather than *emergency* replacement. The FEU believe that the best way to do
- this is by limiting the offer to outside the heating season. Evaluation of the 2013 versus the 2012
- 15 pilot will help inform future program design. As such, the FEU believe it would be difficult to offer
- a time limited measure within a comprehensive Home Performance program. That being said,
- 17 the FEU is piloting this concept by extending the furnace offer in the Kootenay Energy Diet. In
- 18 this pilot, Certified Energy Advisors will receive a \$50 incentive, rather than the contractor, to
- 19 oversee the application process for customers.
- 20 FEU, in collaboration with utility partners, are looking at the best ways to integrate stand-alone
- 21 and Home Performance offers. This may take some time. Presenting a panel of offers wherever
- 22 possible is key to the FEU's communications efforts, so that FEU's customers are presented
- with a comprehensive energy retrofit offer.

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3.10 Why does the program not incorporate incentives for high-efficiency fireplace replacement, either instead of or in addition to the stand-alone fireplace replacement program?

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### Response:

Please refer to the response to BCSEA IR 1.3.9 for considerations about stand-alone offers versus their incorporation into the Home Performance program. The EnerChoice fireplace program would be easier to integrate than an early furnace replacement because there is no requirement for a seasonal offer. In the past, the EnerChoice measure was included in the LiveSmart BC brochure, with instructions to apply at FortisBC.com/ Enerchoice. With the current administration system managed by the Ministry of Energy, Mines and Natural Gas, it is difficult



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to preclude "double- dipping" into the two offers, both funded by the FEU. The utility partners are looking at options for an integrated rebate administration platform for 2014 and beyond. This will take time to define requirements, develop technology and implement with appropriate controls. The utility partners are also looking at options for marketing a comprehensive list of home retrofit measures that incorporate all stand-alone and joint offers.

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### Response:

The FEU are seeking partnership opportunities for direct install programs for low flow fixtures as outlined in Section 3.4.6 of the FEU 2014-2018 EEC Plan. Communities engaging in Energy Diets and other community retrofit programs can provide a proposal, and if accepted, the FEU will provide financial and in-kind support for low flow fixture distribution or direct-install programs. In this way, low flow fixtures will be included as part of regionally targeted Home Performance programs.

Why does the program not provide for direct installation of low flow water fixtures,

instead of or in addition to the stand-alone program for these measures?



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1	4.0	Topic:	Demand side management
2		Reference	Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and
3			Conservation & Demand Side Management, May 2013, Attachment I-
4			1, FEU EEC 2014-2018 Plan, Program Description and Cost-
5			Effectiveness Results, Final Report, ICF Marbek, May 2, 2013,
6			Section 3.4.2. Furnace replacement program, p. 18 (pdf p.1141 of
7			1444)
8		4.1 Plea	ase confirm that the Furnace Replacement program is not targeted at the
9		cus	tomers with furnaces or boilers that are at or near the end of life expectancy.

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### Response:

Confirmed. The program is not targeting customers whose furnaces are at or near the end of life. The program requires that the furnaces either be operating or (as with the 2013 pilot program) that the equipment does not require repairs which cost in excess of \$1,000. In addition, industry feedback suggested that running the program outside of the heating season as is done would also help to limit "emergency" replacements.

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4.2 What is the Company's best estimate of the number of gas furnaces and boilers sold annually in its service territories, by efficiency level, for each of the last five years and for each of the next five years?

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### Response:

- Shipment data for furnaces and boilers into BC is not available to the utilities although we are informally told that there are typically about 20,000 units shipped to B.C. per year. These units are split between replacements and new construction. It should be noted that shipment data to BC typically underestimates the number of furnaces coming into the province since the East Kootenays and Fort Nelson are often supplied out of Alberta.
- 30 All furnaces sold in BC must now be condensing units and have an AFUE greater than 90%.
- 31 There is no further breakdown of overall efficiency available regarding overall sales in BC.
- 32 However, other approaches can be used to estimate the annual "demand" for furnaces in BC.
- 33 The capital stock turnover model looks at the size of the installed base of furnaces, the average
- 34 furnace life expectancy and then estimates the share that is expected to fail in each year. A
- 35 study based on the 2008 Residential End Use Survey, and updated to 2010, estimated the
- 36 installed base of furnaces and boilers at approximately 655,000. Assuming that standard



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1 efficiency furnaces have an average life of 30 years, and mid efficiency furnaces have a life of 2 25 years, and assuming the mix of failing furnaces is approximately 80% standard and 20% mid 3 efficiency, the expected failure rate is 3.4% per year. Rather than applying this failure rate to the 4 market size of 655,000 furnaces, it is necessary to recognize that the furnace market has grown 5 over time, and this failure rate actually applies to a smaller base. Assuming a population growth 6 of about 25% since these furnaces were installed, the failure rate is estimated at about 16,900 7 furnaces per year. It should be noted that the actual number of furnaces replaced each year will 8 vary depending on factors such as the state of the economy which impacts the customer's 9 decision to replace or repair.

Forecasting the number of new additions for future years is typically derived from CMHC data and then adjusted by the capture rate of new housing by FEU, and the share of new FEU customers that use natural gas for heating. Based on recent forecast data, FEU expects to add about 4,300 furnaces per year over the next 5 years. The actual number will vary with the number of new home starts and the capture rate of natural gas for space heating. Over the past five years FEU estimates that there were about 5,160 additional furnaces per year on average.

The capital stock turnover model plus the estimate of new additions results in an estimated demand for furnaces of about 21,200 furnaces per year. This estimate seems reasonable in comparison to the BC shipment estimate of 20,000 furnaces; given that part of BC demand is provided through Alberta's shipments.

As well as not having furnace shipment data, FEU does not have access to furnace efficiency data. In the last evaluation of the furnace upgrade program¹ it was determined that the average AFUE of new furnaces was 93%. The only other information available can be taken from the "Switch 'N Shrink" program that encouraged customers to move off oil and propane to natural gas. As this program did not specify minimum efficiency levels for the new equipment, the range of efficiencies recorded by this program may be indicative of the population. However caution must be exercised in extrapolating this data to the overall market, since this subset of data represents less than 1,000 furnaces, and the \$1,000 Switch N Shrink rebate may influence participants to select a more expensive, and more efficient, furnace than customers would select in the absence of this rebate program.

The distribution of efficiencies observed when combining results from the 2011 and 2012 Switch

'N Shrink program is as follows:

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<sup>&</sup>lt;sup>1</sup> "Evaluation of Terasen's 2005-07 Heating System Upgrade Program – Final Report", Sampson Research and Habart & Associates Consulting in, April 7 2008, P 62



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AFUE	Share
90 - 92	9%
93 – 94.5	5%
94.6 - 95	50%
>95.1	35%

What fraction of the annual equipment sales volumes provided in response to the

preceding question does the Company estimate represent (1) end-of-life

replacement, i.e., natural turnover; (2) early retirement of existing gas heating

equipment; and (3) new installations, i.e., new construction or substitution from

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### Response:

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non-gas heating.

It is difficult to determine the breakdown of equipment sales based on replacement decision. Sub-points (1) and (2) imply that customers know when their furnace will be at end-of-life and make a conscious choice to either wait for end-of-life, pay for repairs, or do an early replacement. However, it appears unlikely that customers make this distinction. The last evaluation of a furnace upgrade program<sup>2</sup>, where the intent of the program was to encourage the selection of a more efficient furnace when they upgraded, found that 91% of the participants' furnaces were operating at the time of replacement. So customers appear to make a judgement that the furnace is nearing end-of-life, but most do not wait for the failure before making the replacement decision.

Please refer to the response to BCSEA 1.4.2 for further information on new construction installations. Regarding fuel substitution, the 2008 Residential End Use Study<sup>3</sup> determined that about 3% of FortisBC Energy (formerly Terasen Gas) natural gas customers changed their space heating fuel over a five-year period. The bulk of these occurred on Vancouver Island.

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<sup>&</sup>lt;sup>2</sup> "Evaluation of Terasen's 2005-07 Heating System Upgrade Program – Final Report", Sampson Research and Habart & Associates Consulting in, April 7 2008, p. 14.

<sup>&</sup>lt;sup>3</sup> "2008 Residential End Use Study", Sampson Research, November 2009, p. 5-5.



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4.4 Does the Company acknowledge that some participants in the Furnace Replacement program will be drawn from the segment of the market purchasing new equipment to replace equipment at or near the end of its life?

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### Response:

- The following response provides background information that addresses BCSEA IRs 1.4.4, 1.4.5, 1.4.6, 1.4.6.1, 1.4.6.2, 1.4.8, 1.4.9.
- 8 In addition, for a more detailed analysis of methodology, please refer to the Furnace Early
- 9 Replacement Program Preliminary Evaluation (Attachment 4.12 to BCSEA IR 1.4.12).
- 10 A key consideration for determining savings in an early replacement program is estimating the
- 11 "remaining life of the furnace" or how much longer the customer would have left their furnace in
- 12 operation absent the incentive program. As discussed on pages 14-15 of the Preliminary
- 13 Evaluation included in Attachment 4.12 to BCSEA IR 1.4.12, the most appropriate estimate of
- 14 the remaining life for the furnaces replaced as part of the pilot program was found to be 4.3
- 15 years, which was determined by averaging all contractor responses from the application form,
- which ranged from one year to over 15 years. An end-of-life or "emergency" replacement would
- 17 be recorded as a "zero" or short period of advancement of the furnace replacement purchase
- 18 decision.

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- 19 The Company acknowledges that some participants' furnaces in the 2012 pilot were at or near
- 20 the end of its life as some contractors provided low estimates. These low estimates are
- 21 included in the 4.3 average which, as discussed below, is used to calculate the energy savings
- 22 estimate which is a factor in the cost- effectiveness evaluation of the pilot program. Emergency
- 23 replacements, or "zeros" were declined in the application process wherever possible and future
- 24 program design involves precluding these situations.

In the 2012 pilot, the program terms and contractor communications stated that emergency replacements were not allowed. However, this resulted in some confusion for customers and contractors. In the 2013 pilot, the terms were more clearly stated in that applications would be rejected for emergency replacements or where contractors deemed that repair costs would be greater than \$1,000. The \$1000 cut-off was determined through pilot evaluation and feedback received at the January 2013 Program Design Workshop. In addition, FEU developed a prequalification process, in which customers had to respond appropriately to questions about the condition of their old furnace before receiving a pre-qualification code. Further, by running the pilot outside the heating season, from April through August, the incidents of emergency replacements should be reduced. Evaluation of the 2013 pilot program will determine if these program improvements were indeed effective and improvements will be made for future program iterations.



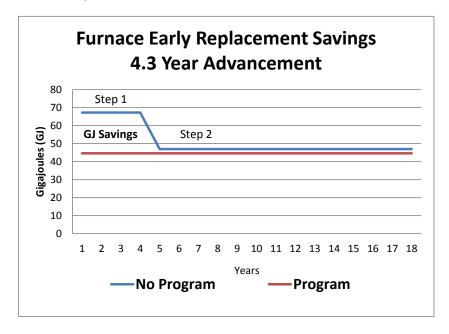
## FortisBC Energy Inc. (FEI or the Company) Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 (the Application)

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Other key considerations in describing gas savings per participant in the Furnace Replacement program relate to the diagram below.



The upper line in the diagram (No Program) shows the customer's natural gas consumption if the rebate program did not exist, and shows a higher level of consumption until such time as the furnace is replaced with a more efficient unit, at which point consumption drops. The lower line in the diagram (Program) shows the consumption the customer will experience when participating in the program. The energy savings is the area between the two sets of lines.

### Period 1

During Period 1 (Years 0 - 4.3), the savings is represented by the difference in consumption between the old existing furnace and the replaced furnace, and is the largest amount of savings. These savings occur for the length of time for which FEU believes the furnace would have continued to operate, if the customer had not been provided an incentive to upgrade to a high efficiency model. In the preliminary evaluation for the pilot program (refer to Attachment 4.12, provided in the response to BCSEA IR 1.4.12), this period of advancement was determined to be 4.3 years based on developing an average of all contractor estimates of remaining life at the time of removing the old equipment.

### Period 2

During Period 2 (Years 4.3 to 18), the savings is the difference between the efficiency of the furnace installed during the program, and the furnace that would have been installed had there not been a program. For example, if the customer installed an AFUE 96 furnace during the program, but only an AFUE 92 (base code) furnace without the program, the savings in Period 2 would be the difference in consumption between AFUE 96 and AFUE 92.



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1 It should be noted that for the pilot program, 59% of participants said that they would have

2 purchased the same high efficiency furnace even without a program. Therefore Period 2

- 3 savings i adjusted downward to account for this. Period 2 savings represents the weighted
- 4 average of those who purchased a more efficient furnace and the 59% who said they did not.
- 5 The following chart demonstrates the estimated savings for furnaces and boilers for both Period
- 6 1 and Period 2 savings. The savings estimates are based on the billing analysis done as part of
- 7 the evaluation of the Terasen Gas 2005 2007 Heating System Upgrade Evaluation.

### 8 Estimated Energy Savings per Year for Each Savings Period

	Furnace	Boiler
Period 1 savings (Standard upgrade)	24.0 GJ	11.1 GJ
Period 1 savings (mid upgrade)	11.9 GJ	11.1 GJ
Period 2 savings (difference between code and ENERGY STAR)	1.7 GJ	7.4 GJ

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For ease of reference, an NPV of the annualized savings that combine Period 1 and Period 2 savings over the 18-year measure life of the new furnace is presented in the table below. This is the savings estimate used in cost benefit models.

### Annualized Energy Savings: Based on 4.3 Year Purchase Advancement

	Standard Furnace	Mid Furnace	Boiler
Annualized Savings (NPV)	10.0 GJ	5.5 GJ	8.8 GJ

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4.4.1 If so, how does the Company account for such participants in its costeffectiveness analysis of the program?

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### Response:

22 Please refer to the response to BCSEA IR 1.4.4.

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4.5 Please provide the rationale for not designing and implementing a program to encourage customers already in the market for replacement heating equipment



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to upgrade to top-efficiency equipment, i.e., instead of or in addition to the program targeting early retirement.

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### Response:

Please refer to the response to BCUC IR 1.4.4 for further explanation about calculating energy savings per participant in an early replacement program. In the early replacement program, the greatest savings opportunity is Period 1, where the incentive urges the customer to replace their furnace prior to end of life. Without the focus on early replacement, the energy savings opportunity is diminished, resembling Period 2 savings which is the difference between base or code furnaces and higher efficiency models.

As part of developing the Furnace Early Replacement Program, sensitivity analysis was conducted to assess a program targeting the general population of furnace replacements. Through this analysis, it was determined that a replacement of a furnace with "zero" years of advancement would have an MTRC of 0.76; thus, this element of a potential furnace replacement program was deemed by the Companies not to be cost-effective and therefore was not included in the pilot program.

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4.6 Has the Company analyzed the cost-effectiveness of offering a program targeting the natural replacement market, separately from or instead of the early retirement program?

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### Response:

Please refer to the response to BCSEA IR 1.4.5. Such a program would not be cost effective.

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4.6.1 If so, please provide the analysis and supporting documentation.

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### Response:

32 Please refer to the response to BCSEA IR 1.4.5. Such a program would not be cost effective.

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4.6.2 If not, why not?



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Please refer to the response to BCSEA IR 1.4.5. Such a program would not be cost effective.

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6 7 4.7 Please provide minimum requirements for participation in the Furnace 8 Replacement program, including efficiency level, equipment type, annual usage, 9

or other attributes necessary to qualify.

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### Response:

- 12 The minimum requirements for participation in the Furnace Replacement Program were based
- 13 on experience gained in the 2012 and 2013 pilot programs. The requirements are defined by
- 14 two categories, requirements for the old furnace or boiler that is about to be replaced, and
- 15 requirements for the **new** furnace or boiler.
- 16 Requirements for the **old** heating system that is about to be replaced:
  - The applicant must be a current residential natural gas customer of FEI
- 18 The equipment must be in working order or as in the 2013 pilot iteration, must not require repairs in excess of \$1000 (amount determined through industry feedback at the 19 20 January, 2013 Program Design workshop)
  - The application must not be for new construction
  - There must be only one rebate per household

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- Requirements for the **new** heating system:
  - Furnace must be ENERGY STAR rated at 95% AFUE or higher
- 26 Boiler must be ENERGY STAR rated at 94% AFUE or higher
- 27 Equipment must be the primary heating system in the home, and not be a back-up for a heat pump system 28
  - The equipment must be installed in accordance with the requirement of the BC Safety Authority and/or gas authority with jurisdiction in the customer's area and in accordance with the manufacturer's specification and all applicable laws, codes, standards and ordinance



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Furnace must be purchased within program deadline dates

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### Response:

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9 Please refer to the response to BCSEA IR 1.4.4 for further information and Attachment 4.12 10 provided in response to BCSEA IR 1.4.12 for the 2012 Program Evaluation Report that 11 describes the methodology in detail.

average for existing heating equipment retired under the program?

How many more years of service life does the Company assume remains on

Please provide the gas savings calculations per participant for equipment installed as a result of the program, showing the efficiency baseline used during

the remaining life of the existing equipment, separate and apart from the

efficiency baseline assumed after the existing equipment would have been

An estimate of 4.3 years of remaining life was developed by taking an average of all the Contractors' responses regarding each furnace or boiler replaced during the 2012 pilot program.

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### Response:

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replaced naturally.

Please refer to the response to BCSEA IR 1.4.4 and Attachment 4.12 provided in the response to BCSEA IR 1.4.12 for the 2012 Program Evaluation Report that describes the methodology in detail.

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32 33 34 4.10 Please explain how the incremental cost figures on the top line (Standard Efficiency Furnace: \$1,597, Mid-Efficiency furnace: \$1,597, Boilers: \$3,315) should be interpreted in relation to the baseline efficiency levels prevailing in the marketplace for the same type of equipment.



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#### 1 Response:

- 2 Please refer to the table below for responses to BCSEA IR 1.4.10.1 through BCSEA IR 3
- 4 The FEU interpreted that these questions are referring to the differences in full replacement or
- 5 installed costs of baseline or "code" heating systems in relation to installed costs of the program
- 6 eligible, high efficiency models. These costs were determined through program evaluation
- 7 based on data provided by contractors on individual application forms at the time the new
- 8 system was installed.

	Base "Code" AFUE	High Efficiency Option	Average Equi	Incremental Cost (NPV)	
	5.00 60.00 7.11 62	ingincidity opion	Base "Code" AFUE	High Efficiency Option	
Furnace Upgrade	90-92 AFUE	≥95 AFUE	\$3,388	\$4,365	\$1,597
Boiler Upgrade	85 AFUE (Non-condensing)	≥94 AFUE	\$5,873	\$8,713	\$3,315

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The \$1,597 represents the incremental cost between eligible (≥95 AFUE) and base "code" for the average of all furnaces replaced during the program while the \$3,315 represents the average incremental cost of all the boilers replaced. Please refer to the response to BCSEA IR 1.4.11 for details on the calculation that includes equations and inputs.

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In a conventional DSM program, the incremental cost is determined by subtracting the cost of 16 the base "code" heating system from the cost of the upgraded or program furnace. The same 17 principle is applied in an early replacement program, except that the time difference between 18 when the furnace is replaced in response to the program's incentive(beginning of year 1) and 19 when it would be replaced if waiting for the system to fail (determined to be year 4.3) must be 20 taken into consideration. The incremental cost is therefore determined by taking the net present 21 value (NPV) of the base "code" heating system and the NPV of the high efficiency model and

22 then subtracting these two amounts.

- 23 Data regarding installed costs was extracted from application forms. The actual installed cost
- 24 data was collected from the customer's invoiced cost (less tax) for each furnace. In addition, the
- 25 contractor was asked to provide an estimate of the difference in cost between the installed
- 26 eligible (≥95 AFUE) furnace and a lower cost base "code" furnace.
- 27 This installed cost data was presented at the January 10, 2013 Program Design Workshop.
- 28 Contractors in attendance confirmed that these installed cost estimates were reasonable.

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### FortisBC Energy Inc. (FEI or the Company) pproval of a Multi-Year Performance Based Ratemaking Plan for 2014

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1 4.10.1 How does the \$1,597 figure for standard efficiency furnaces relate to mid-2 efficiency boilers? 3 4 Response: 5 Please refer to the response to BCSEA IR 1.4.10. The \$1597 figure relates to the NPV of 6 incremental costs and therefore the furnace NPV does not relate to the boiler NPV. However, 7 the FEU interpret the question as an ask about the relative costs of standard efficiency furnaces 8 and mid-efficiency boilers. The installed cost of a standard efficiency "code" furnace was 9 determined to be \$3388 while the installed cost of a mid-efficiency boiler was \$5873. 10 11 12 13 4.10.2 How do these figures relate to the costs of top-efficiency models? 14 15 Response: 16 Please refer to the response to BCSEA IR 1.4.10. 17 18 19 20 4.10.3 Do the figures include installation labour? 21 22 Response: 23 Yes. The figures presented in the response to BCSEA IR 1.4.10 represent the installed costs of 24 furnaces and boilers. 25 26 27 28 4.10.4 Do the figures represent the full price of new equipment? 29 30 Response: 31 Yes. Please refer to the response to BCSEA IR 1.4.10 for the installed costs of new equipment.



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### FortisBC Energy Inc. (FEI or the Company)

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4.11 If not provided in response to IR 1.1, please provide the equations, inputs, and intermediate calculations that produce the incremental costs listed. The response should include treatment of the "direct cost less the NPV of the cost of the furnace that would have been installed in the future."

### Response:

- 8 Please refer to the response to BCSEA IR 1.4.10 for inputs into the incremental costs and
- 9 Attachment 4.12, provided in the response to BCSEA IR 1.4.12 for the evaluation report that
- 10 further describes the methodology
- 11 Incremental cost is the difference in cost between the program furnace that was installed by the
- 12 participant and the cost of the furnace that would have been installed had there not been a
- program (base furnace). In the case of the pilot program, approximately 59% of participants
- reported that they would have installed the same (program) furnace while ~ 41% of participants
- 15 reported that they would have installed a less expensive base model furnace which we assume
- to be the code furnace. Hence the cost of the base furnace is a blend of code furnace (~41%)
- 17 and the program furnace (~59%).
- Please refer to Attachment 4.11 for the details of the calculation. Important notes on the working spreadsheet are provided below.
  - The installed cost of the High Efficiency furnace is obtained from the invoices as inputted on application forms.
  - The incremental cost of the eligible high efficiency furnace over the code furnace was provided by the contractor. Subtracting the incremental cost from the installed cost of the high efficiency furnace provides the cost of a code furnace.
  - The cost of the base furnace is further adjusted to account for the fact that approximately 59% of respondents stated that they would have installed a High Efficiency rather than a base furnace. The adjusted base furnace is now a blended cost of the code furnace (~41%) and the HE furnace (~59%). So this basically reduces the incremental cost of the furnace.
  - A residual value is included in the calculation of incremental costs to balance out the cashflow. This recognizes the fact that without the program, there is still useful life in that furnace, because it is replaced 4.3 years later than those furnaces replaced in the program.

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4.12 Please provide the evaluation reports cited for the incremental costs and gas savings per participant.

### Response:

Please refer to Attachment 4.12 for the Furnace Early Replacement Program Preliminary Evaluation Year 1 Pilot Report.



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1	5.0	Topic:	Demand side management
2			
3		Reference:	Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and
4			Conservation & Demand Side Management, May 2013, Attachment I-
5			1, FEU EEC 2014-2018 Plan, Program Description and Cost-
6			Effectiveness Results, Final Report, ICF Marbek, May 2, 2013,
7			Section 3.4.3 EnerChoice Fireplace Program, p. 20 (pdf p.1143 of
8			1444)
9		5.1 Pleas	e provide details of the derivation of the incremental costs and per-
10		partic	ipant savings reported for retrofit and new installations, including supporting
11		docur	mentation from the listed sources.

Response:

Please refer to the response to BCUC IR 1.233.3.2 for an explanation on the incremental costs associated with the EnerChoice Fireplace program for the retrofit market. For new installations, further discussion with the Hearth Patio and Barbecue Association of Canada (HPBAC) indicated a very low penetration of EnerChoice fireplaces in new residential construction, as builders opted to install inexpensive and inefficient fireplaces. Although FEU regards manufacturer cost as the appropriate way to assess incremental cost, the FEU thought it was reasonable to increase the cost to \$300, to reflect the larger incremental cost from base models routinely purchased by builders and developers.

Please refer to the response to BCUC IR 1.233.3 for the assumptions associated with energy savings of EnerChoice fireplaces. Supporting documentation is not available.

5.2 What is the rationale for paying customer incentives that are twice the incremental costs reported for retrofits, and 100 percent of the incremental costs for new homes? The response should explain why the Company has chosen this incentive design for fireplaces but not for other programs which offer incentives covering a smaller percentage of incremental costs.

### Response:

Please refer to the response to BCUC IR 1.233.3.2 which explains the rationale for the EnerChoice fireplace incentive being twice the incremental cost reported for retrofits including an explanation as to why the FEU chose this program design as compared to the incentive offered in the Furnace Replacement program.



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As explained in the response to BCSEA IR 1.5.1, the rationale for the incentive being 100 percent of the incremental cost for new homes was based on discussions with members of the HPBAC relating to the low market penetration of efficient EnerChoice fireplaces in new residential construction.

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1	6.0	Topic:	DSM savings in GJs			
2 3 4 5 6		Reference:	Exhibit B-1-1, Appendix I, Table I-1: BC's Energy Objectives Met by FEU EEC Activity, p.4 (pdf p.1091 of 1444); Attachment I-1, FEU EEC 2014-2018 Plan, Program Description and Cost-Effectiveness Results, Final Report, ICF Marbek, May 2, 2013, Exhibit 2 - Results for the Total EEC Program Portfolio, p.6 (pdf.1129 of 1444)			
7 8 9 10	"The FEU's EEC proposals are designed to implement all cost-effective (as defined by the Demand Side Measures Regulation) demand-side measures. The estimated net present value of natural gas savings (net of free ridership) for the 2014 to 2018 period is projected to be a total of 23,503,471 million GJs." [Appendix I, p.4, underline added]					
11 12		Exhibit 2 - Results for the Total EEC Program Portfolio, p.6 (pdf.1129 of 1444) shows the breakdown of the 23,503,471 PJs natural gas savings figure.				
13 14 15 16	<b>D</b>	GJs DSN	ase explain what is meant by the <u>NPV</u> of natural gas savings expressed in . Should "net present value of" be deleted and the figure be described as <i>I</i> ll natural gas savings <u>net</u> of freeridership?			
17	Resp	onse:				
18 19 20	meas	ure installed	IPV of savings refers to the annual natural gas savings generated by each as a result of the activities outlined in the FEU 2014-2018 EEC Plan, ure life, with the resultant values discounted using the Companies' weighted			

In this case, the NPV of savings refers to the annual natural gas savings generated by each measure installed as a result of the activities outlined in the FEU 2014-2018 EEC Plan, multiplied by measure life, with the resultant values discounted using the Companies' weighted average cost of capital, and with free riders netted out. As such, the NPV of natural gas savings accounts for savings that occur outside the FEU 2014-2018 EEC Plan period. Discussion of NPV can be found on page ES-2 and throughout Attachment 217.2A, provided in the response to BCUC IR 1.217.2 in this proceeding.

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6.2 Please provide a table showing estimated GHG emissions reductions corresponding to the estimated annual net natural gas savings due to DSM by year shown in Exhibit 2.

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### Response:

The table below provides the estimated GHG emissions reductions corresponding to the estimated annual net natural gas savings due to DSM by year shown in Exhibit 2 of the FEU 2014-2018 EEC Plan.



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### 1 Estimated annual GHG emissions reductions for the Total EEC Program Portfolio, 2014-2018<sup>4</sup>

	Annual GHG Emissions Reductions, Net (tCO2/yr)				
Year	Service To	Total			
rear	FEI	FEVI	Total		
2014	32,500	3,401	35,901		
2015	64,033	6,946	70,979		
2016	88,413	10,412	98,825		
2017	115,525	13,785	129,310		
2018	142,158	17,154	159,312		

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A GHG emissions factor source of 0.051 tCO2e/GJ was used. Source: Greenhouse Gas Emission Assessment Guide for British Columbia Local Governments. 2008. http://www.townsfortomorrow.gov.bc.ca/docs/ghg assessment guidebook feb 2008.pdf



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### 7.0 Topic: Customer Care Enhancement Project

2 Reference: Exhibit B-1, p.14

"Recent customer focused enhancement initiatives included the successful completion of the Customer Care Enhancement Project (CCE Project). The FEU successfully completed the stabilization phase of the CCE Project in the second quarter of 2012. The CCE Project was delivered on-time and under budget and successfully transitioned to an internally-delivered customer service operation, going live as planned on January 1, 2012. Final project costs were \$109 million as compared to a budget of \$115 million, a significant savings achieved while still meeting the timeline and project deliverables."

7.1 Has the Customer Care Enhancement Project improved the Company's ability to promote conservation and efficiency measures by customers? If so, how? If not, why not?

### Response:

Yes. Having the Company's own dedicated Call Centre staff allows the FEU to communicate more pro-actively with customers about EEC initiatives that might be applicable to their situation when they call the contact center. In addition, the CSRs can be used to support more direct initiatives. For example, the Companies are currently planning a telephone outreach campaign to small and mid-size commercial customers to generate interest from this customer segment in available EEC programs. This outreach campaign will be undertaken by Call Centre staff during times of slower call volumes.



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1	8.0	Topic	PBR and DSM		
2 3		Refer	ence: Exhibit B-1; Exhibit B-1-1, Appendix I, FortisBC Energy Efficiency and Conservation & Demand Side Management, May 2013		
4 5 6 7 8 9	Poen	8.1	Please confirm that the Company's proposed Performance-Based Ratemaking plan does not include the Energy Efficiency and Conservation Demand Sid Management for which acceptance of an expenditure schedule is sought under s.44.2 of the UCA. Alternatively, please explain.		
		onse:			
10 11 12 13	section section	on 44.2(a e EEC p	s noted on page 9 of the Application FEI is seeking "Acceptance pursuant to be specifically of the Act of the following EEC expenditure schedules for the FEU to be specifications are as described in Appendix I". The EEC expenditures are not subject to large for capital and O&M expenditures, nor any of the PBR incentive mechanisms.		
14 15 16 17	The Companies are not proposing any change to the currently-approved financial treatment for EEC expenditures. The Companies are proposing that the FEU continue to earn their regulater rate of return on EEC expenditures. Please refer to the responses to BCUC IRs 1.213.1 ar 1.213.1.1 for a discussion of the financial treatment for EEC.				
18 19					
20 21 22 23 24	Resp	8.2 onse:	Please set out the pros and cons of bringing the DSM portfolio within the proposed PBR framework, and explain why the Company chose not to do so.		
25 26	Pleas	e refer	to the responses to BCUC IRs 1.213.1 and 1.213.1.1 for a discussion of the ment proposed for EEC expenditures.		
27 28					
29 30 31 32 33	Resp	8.3 <b>onse:</b>	Please provide a brief description of the accounting mechanism by which DSI expenditures are recovered in rates.		

Please refer to the response to BCUC IR 1.213.1.



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 8.4 Is the Company proposing any changes for 2014-2018 in the accounting mechanism by DSM expenditures are recovered in rates (other than regarding the length of the amortization period)? If so, please explain.

### Response:

Please refer to the responses to BCUC IRs 1.213.1 and 1.213.1.1.

Please describe how the Company proposes to treat pre-test period DSM spending in relation to the rate base for test-period PBR purposes.

### Response:

In addition to the information provided in the response to BCUC IR 1.213.1, and as described in Section D4.2.6 of the Application, FEI is proposing to transfer any pre-2014 amounts captured in the non-rate base EEC Incentives account to the existing rate base EEC deferral account as of January 1, 2014.



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1 9.0 Topic: Customer satisfaction with energy conservation information

Reference: Exhibit B-1-1, Appendix C-2, Benchmarking Study of Scorecard

Design and Application – Canadian Natural Gas Distribution Utilities,

**p.4** 

"4.2 CUSTOMER KEY PERFORMANCE INDICATORS The customer performance area is part of the original Kaplan and Norton balanced scorecard model. Customer satisfaction surveys are the most common type of measurement used by the responding companies. Some companies have only one general customer satisfaction survey, while others differentiate between new and existing customers. Customer satisfaction surveys for industrial clients are sometimes separated from commercial and residential customers. FEU's "customer survey score" is the company's KPI for customer satisfaction and measures customers' overall satisfaction with the company, accuracy of meter reading, energy conservation information, contact centre performance, and field operations." [underline added]

9.1 How many of the other Canadian natural gas distribution utilities reported including customers' perceptions regarding the utility's energy conservation information in their customer key performance indicator measures? Please describe the methods by which they evaluated this measure.

### Response:

In its research efforts, FEI did not ask specifically whether customers' perceptions regarding utility's energy conservation information were included in the customer key performance measures.



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1	10.0	lopic	:	Neutral third party involvement in DSM decision-making re 1ES			
2 3 4		Refer	ence:	Exhibit B-1-1, Appendix I, p.15; Attachment I4 FortisBC Energy Efficiency and Conservation Program: Administration and Annual Review, March 25, 2013, Price Waterhouse Cooper			
5 6 7	With reference to "Directive 4, page 4, Appendix H to Report on Inquiry into the Offeri of Products and Services in Alternative Energy Solutions and other New Initiatives" F quotes the Commission Directive:						
8 9 10 11 12 13 14 15 16			because DSM of decision sufficient are di admini providi and/or	Commission Panel finds that where there is a potential conflict of interest see the FEU may be providing capital or services to a project receiving the or other incentive funds, there should be a neutral third party involved in the on making process to award such funds. FEU's proposed guidelines do not ently protect against this potential conflict of interest. Accordingly, the FEU irected to bring forward a proposal for mechanisms for approval and istration of funds by a neutral third party where the FEU may be involved in ling capital or services to a project receiving DSM or other incentive funds or there is a potential for FEU to benefit, either directly or indirectly, from that ig." [pdf p.1102 of 1444]			
18 19		Under	the hea	ading "Compliance Undertaken," FEI states:			
20 21 22			in cas	FEU have engaged Price Waterhouse Coopers to act as a fairness advisor ses where EEC funds are being provided to projects with a third party all energy component. Their proposal is included at Attachment I4."			
23 24 25 26	Respo	10.1 onse:		e confirm that the proposed neutral third party administration of Company programs applies only to EEC funding of thermal energy services (TES).			
27 28 29	The proposed neutral third party administration of EEC programs applies to programs applications for EEC incentives for projects that have a third party thermal energy servi ownership component.						
30 31							
32 33 34 35		10.2		confident that there are no Company EEC incentives to projects in which EU have an interest, beyond TES projects? Is so, why?			



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1 Response:
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The Companies interpret the question to mean, "Is FEU confident that there are no EEC incentives being provided to projects in which the FEU have an ownership or financial interest,

beyond TES projects. If so, why?" [Emphasis added]. In that context, the answer is no. FEU

Please confirm that FEI's approach is to apply the neutral third party

administration concept to EEC incentives to all TES projects, including those in

5 have made an incentive available under the terms and conditions of the Efficient Boiler Program

which the FEU are not involved.

6 to its Call Centre in Prince George.

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### Response:

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15 Confirmed.

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### 21 Response:

The FEU's proposal should provide transparency and comfort that program terms and conditions are being applied equally to EEC program applications that have a third party thermal energy services component, as all applications for projects with such a component would be subject to third party review.

10.3.1 Please explain the rationale for this approach.

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1 11.0 Topic: Historical DSM Expenditure Levels

Reference: Exhibit B-1-1, Appendix I, s.4, Table I-3: Incentive and Non-Incentive Expenditures Since 2009

11.1 Please expand Table I-3 to show total FEI and FEVI expenditures (by Incentive and Non-Incentive by Year); requested expenditures (by separate utility or total FEI and FEVI as applicable); and approved expenditures.

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### Response:

The table below provides an expanded version of Table I-3, including actual, requested and approved EEC expenditures for the period 2009-2012.

Actual, Requested and Approved FEU Expenditures, 2009-2012<sup>5</sup>

	EEC Expenditures (\$00	Year				
	EEO Expelialtares (400	2009	2010	2011	2012	
FEI	Actual Expenditures	Incentive	\$3,245	\$10,548	\$5,669	\$12,635
		Non Incentive	\$2,498	\$5,261	\$7,668	\$8,082
		Total	\$5,743	\$15,809	\$13,337	\$20,717
FEVI	Actual Expenditures	Incentive	\$98	\$870	\$1,448	\$1,792
		Non Incentive	\$419	\$1,022	\$1,397	\$1,251
		Total	\$517	\$1,892	\$2,845	\$3,043
Total FEU	Actual Expenditures	Incentive	\$3,343	\$11,418	\$7,117	\$14,427
		Non Incentive	\$2,917	\$6,283	\$9,065	\$9,333
		Total	\$6,260	\$17,701	\$16,182	\$23,760
	Requested Expenditures	Total	\$18,795	\$25,845	\$29,619	\$64,500
	Approved Expenditures	Total	n/a	\$31,104	\$35,301	\$29,707

<sup>&</sup>lt;sup>5</sup> 2009 Approved Expenditures n/a as EEC Application Decision granted approval for funding for the period 2008-2009 and did not break approved amounts out by year. 2012 Requested Expenditures include \$24 million for three New Initiatives that did not form part of the 2012-2013 EEC Plan: Solar Thermal, Thermal Energy for Schools and Furnace Early Replacement Program. Of these New Initiatives, \$10 million for Thermal Energy for Schools and \$4 million for Solar Thermal were not approved and the Furnace Early Replacement Program was approved at a reduced level of \$2 million.



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### 12.0 Topic: Five-Year DSM funding approval request

2 Reference: Exhibit B-1-1, Appendix I, s.5 EEC Plan and Funding Request

"A five year funding approval is being requested in order to establish certainty in the market that FEU will be able to offer the programs listed in the EEC Plan over an extended period. This will allow external parties such as contractors, manufacturers and other program partners to better support EEC initiatives knowing that they will be established for the long term. It will also enable FEU to take advantage of program momentum and it will spare EEC resources from extensive regulatory work so they can dedicate their time to program development and operation."

12.1 Please provide evidence that "external parties such as contractors, manufacturers and other program partners" are of the view that a five-year funding approval would allow them "to better support EEC initiatives knowing that they will be established for the long term."

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### Response:

- Longevity of EEC programs provides stability in the marketplace, and allows program partners time to become conversant with program parameters and related application processes. The
- 18 following evidence is provided to support this claim.
- The excerpts below are from a qualitative report compiled by TNS Canada, February 2011 (please refer to Attachment 12.1 which includes the full report).
  - Summary of findings, slide 5: "...barrier to contractors' full involvement is their reluctance to promote programs that are constantly changing or may end abruptly."
  - Barriers to contractor participation, slide 10: "Number of incentive programs / changes to incentive programs – some contractors indicated that EE incentive programs are rapidly changing, hence, it is difficult to keep abreast of what is currently being offered."

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- The excerpts below are from the final Contractor Study Report submitted by TNS Canada, March 2011, (please refer to Attachment 12.1 which includes the full report):
- Opinions on residential efficiency programs, page 31: "Contractors clearly see the potential of energy efficiency programs to build residential business. They also recognize consumers expect them to be the source of up-to-date program information. However, contractors find it challenging to keep up with changing requirements, leaving many to believe the onus to research current program requirements should fall to the consumer."



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91 per cent of contractors believe that consumers expect contractors to know all the program requirements, while 76 per cent of contractors believe that energy efficiency programs change too often to keep track of.

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- In addition, anecdotal comments gathered through past Contractor program registration drive and focus group sessions attended by contractors, distributor representatives, Certified Energy Advisors and LiveSmart program partners suggest the following themes:
- 8 Consistency in the marketplace is important for customers seeking rebates
- 9 Contractors would like advance warning if programs end
  - Program start/end dates are difficult to keep on top of
- 11 There is too much paperwork, and keeping track of qualifying dates, details, etc., is 12 onerous
  - Inconsistency of rebate programs (coming in and out of market) result in contractor reluctance to promote programs to their customers because of concern over providing inaccurate information

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When asked what their perspective is on the FEU EEC having a longer funding period, the Thermal Environmental Comfort Association, representing more than 300 contractors within the HVAC sector, support incentive and rebate funding stability and have provided a letter of support. (Please refer to Attachment 12.1 which includes the letter of support).

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25 12.2 What other DSM administrators is the Company aware of that have multi-year 26 funding approvals?

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#### Response:

- Please refer to Attachment 12.2 which lists one utility with a portfolio planning cycle of 10 years. five utilities with a portfolio planning cycle of 5 years, two utilities with a portfolio planning cycle of 4 years and twenty-five utilities with a portfolio planning cycle of 3 years. broken down by state, planning cycle which includes the current cycle years, the next cycle
- 33 years as well as a source to the resource referenced.



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With Commission approval of five-year DSM funding, how do the FEU propose to

deal with the possibility that in later years of the five-year funding period the

estimated cost-effectiveness of the DSM portfolio may be different than it is now?

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Response:

12.3

over the PBR period.

9 The Companies fully expect that the estimated cost-effectiveness of the DSM portfolio will 10 change over the five year PBR period. There are a number of opportunities for the Companies 11 to deal with changing conditions. First, the Director of the EEC group and the EEC Program 12 Managers monitor portfolio and program cost-effectiveness on a monthly basis using a monthly 13 management report. The FEU will adjust programs as necessary to ensure that the EEC 14 portfolio remains cost-effective. Second, the Companies will continue to file the EEC Annual 15 Report by March 31 of each year of the PBR period, and will share annual results for the year 16 previous with the EEC Advisory Group (EECAG), as is our normal course of business today. 17 Finally, should conditions change significantly, resulting in a number of measures, programs, 18 activities, and participation levels becoming cost-effective when they previously were not, the 19 FEU may make an application to the Commission for increased funding levels. The FEU would

seek support of the EECAG before making such an application. Combined, these avenues

should provide adequate opportunities to address any material changes to cost-effectiveness

approval of increased DSM spending?

12.3.1 If DSM became more cost-effective at some point during the test period,

for example because of a significant increase in the price of natural gas,

by what mechanism would the FEU be able to obtain Commission

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Response:

32 Please refer to the response to BCSEA IR 1.12.3.

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1 12.4 Is the Company proposing a mechanism for transferring unspent DSM funds from one year to the next year?

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# Response:

No, the Company is not proposing to transfer unspent DSM funds from one year to the next.



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1	13.0 To	pic:	2013 LTRP
2	Re	ference:	Exhibit B-1-1, Appendix I, p.6,
3	FE	I refers to '	the 2013 LTRP, currently under development." [line 9]
4 5 6 7	13.	Comm	e confirm that FEI intends to file the 2013 long-term resource plan with the nission. When does FEI expect to file the 2013 LTRP?
8 9		<del></del> "	U expect to file the 2013 Long Term Resource Plan (LTRP) in the fall o
10 11			
12 13 14 15 16	13.		e DSM portion of the 2013 LTRP be completed before the rest of the 2013? If a draft of the DSM portion of the 2013 LTRP is available, please e it.
17	Response	<u>):</u>	
18 19	•		for DSM activities that is being developed as part of the 2013 LTRP is no leted before the rest of the LTRP, therefore is not yet available for review.



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1	14.0	Topic:	Low-income DSM Program Area									
2		Reference:	Exhibit B-1-1, Appendix I, s.2.4.1; Attachment I-1, FEU EEC 2014-									
3			018 Plan, Program Description and Cost-Effectiveness Results,									
4			Final Report, ICF Marbek, May 2, 2013, 6. Low Income Energy									
5 6			Efficiency Program Area, 6.3 Overview of Results, p.69 (pdf p.1192 of 1444)									
			•									
7			rks very closely with the BC Non-Profit Housing Association and these new									
8		programs will	be developed to address the needs of non-profit housing providers."									
9		"It should be	noted that providing energy-efficiency and conservation programs for low									
10		income custo	omers can be challenging in terms of achieving a positive TRC result,									
11		despite the 3	0% benefits adder. This is because of the relatively high cost of providing									
12		conservation	services to this important customer segment. The ECAP [Energy									
13		Conservation	Assistance Program] program, in particular, uses a full-service approach									
14		that the Com	panies believe is required to engage and install energy savings measures									
15		within this se	ctor. This required approach makes it very difficult to achieve favourable									
16		TRC results i	n the ECAP program."									
17		14.1 Does	FEI have reason to believe that the challenges in achieving favourable									
18		TRC r	esults in the ECAP and other programs in the low income area are being or									
19		will b	e reduced by FEI's consultation with the BC Non-Profit Housing									
20		Assoc	siation?									
21												
22	Resp	onse:										
23	The C	Companies beli	eve that engaging the BC Non-Profit Housing Association, and other key									

Low Income customer stakeholder groups, helps to ensure programs are being designed and

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delivered in the most effective manner.



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1 15.0 Topic: DSM Rental Accommodations

Reference: Exhibit B-1-1, Appendix I, s.2.4 Adequacy Pursuant to the DSM

Regulation, p.6 (pdf p.1247 of 1444); s.2.4.2 Rental

Accommodations, p.7 (pdf p.1248 of 1444)

The DSM Regulation states that a utility's DSM plan portfolio is adequate for long-term resource plan purposes only if it includes, among other things, "If the plan portfolio is introduced on or after June 1, 2009, a demand-side measure intended specifically to improve the energy efficiency of rental accommodations" [p.6, pdf p.1247 of 1444, underline added]

#### 2.4.2 Rental Accommodations

All programs in the Residential Energy Efficiency Program Area are available to rental properties.

Some of the programs included in the Commercial Energy Efficiency Program Area are also available for use by, and actively promoted to, owners of rental accommodations. These include the Space Heat Program, the Water Heating Program and the Commercial Energy Assessment Program.

15.1 Does FEI consider that all programs in the Residential Energy Efficiency Program Area being <u>available</u> to rental properties meets the criterion of being "<u>intended specifically</u>" to improve the energy efficiency of rental accommodations?

### Response:

The Companies believe that they have met all the requirements for adequacy. As indicated in the question Residential programs support demand side measures which are available to rental accommodations. Note also that a number of the Commercial and Low Income programs support demand side measures which are available to rental accommodations. Additionally the Companies provide support for demand side measures intended specifically to improve the energy efficiency of rental accommodations. Some of these include:

 Energy Specialists, through the Energy Specialist Program, are placed at BC Housing and the BC Non-Profit Housing Association. An Energy Specialist was also placed with the BC Apartment Owners and Managers Association (now a part of the BC Rental Housing Council), until that organization decided to terminate the position. These Energy Specialists are specifically tasked with finding and implementing energy efficiency initiatives within their organization's membership. Each of these three organizations is focused on rental accommodations and each serve the entire Province.

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- In 2012 under the Multi Unit Residential Building (MURB) Program the Companies, in partnership with the City of Vancouver, participated in a pilot program to directly install low flow showerheads in multifamily rental accommodations. In 2013 the FEU are participating in a similar initiative, known as "Tap by Tap" in the Capital Regional District. In addition to low flow showerheads, Tap by Tap will also provide participants with low flow kitchen and bathroom faucet aerators. This program's primary target is multifamily rental accommodations, though stratas have not been explicitly excluded. As indicated in Attachment I1, Section 3.4.6, page 26, the Companies intend to continue support for these measures throughout the plan period, though at this early stage the proportion of support dedicated specifically to rental accommodations has not yet been established.
- The Energy Savings Kit (ESK) program streams participants living in an apartment (generally renters in this low income program) through to an ESK that includes only the measures specifically suited to apartment units.
- The Energy Conservation Assistance Program (ECAP) accommodates applicants that are renters by requiring a landlord consent form to accompany the application so that FEI can improve the energy efficiency in the rental accommodation (where the renter is low income).
- Other examples include past programs such as:
  - Partnership with BC Housing in 2011 focused on behaviour-based energy education through the Tenant Engagement Pilot;
  - Partnership with BC Housing in 2012 focused on a needs assessment study for the development of a training program for building operators;

Given the above, the Companies are of the belief that they have met all the requirements for adequacy, and will continue to do so throughout the plan period.

15.2 Does FEI consider that some of the programs in the Commercial Energy Efficiency Program Area being "available for use by, and actively promoted to, owners of rental accommodations" meets the criterion of being "intended specifically" to improve the energy efficiency of rental accommodations?

#### Response:

Please refer to the response to BCSEA IR 1.15.1.



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- 1 16.0 Topic: **DSM** order requested
- 2 Exhibit B-1-1, Appendix J, Draft Form of Order, pdf p.1443-1444 Reference:
  - 2. With respect to Energy Efficiency and Conservation (EEC) expenditures, the Commission orders as follows:
    - a. Pursuant to section 44.2(a) of the Act, the Commission accepts the following EEC expenditure schedules for the FEU to be spent on the EEC program areas described in Appendix I of the

Application: Up to \$34.353 million for 2014, \$37.30 million for 2015, \$37.358 million for 2016, \$37.664 million for 2017, and \$38.982 million for 2018.

- b. The Commission approves the continuation of the EEC framework as previously approved by the Commission, with the following changes:
  - i. Approval of the administration by a neutral third party of EEC funds provided to projects with a third party thermal energy component.
  - ii. Approval of the incorporation of spillover effects and the attribution of the benefit of savings from the introduction of codes and standards on a program-by-program basis, for the purpose of reporting on cost effectiveness in the EEC Annual Report pursuant to section 43 of the Act.
  - iii. Approval for the FEU to transfer funds within a program area to a new program without prior Commission approval, provided that the new program is in accordance with the DSM Regulation, EEC principles, existing benefit/cost test requirements, and has not been previously rejected by the Commission.
- 16.1 Please confirm that the draft form of order regarding the 2014-2108 EEC expenditure schedule remains as stated in Appendix J. Alternatively, please update the form order requested.
- 10 Response:
- 11 Confirmed.

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# 17.0 Topic: Sharing of Gas and Electric Services

2 Reference: Exhibit B-1, p.13

"Further opportunities may emerge and will be evaluated depending on the circumstances and potential benefits to customers. Future integration opportunities are expected to be more complex and dependent on the Company's ability to overcome some challenges. These challenges include concerns raised by unions representing gas and electric employees around shifting of unionized work from one entity to another, and the need to transition to common IT platforms before more harmonization of business processes can occur. Differences in the nature of the gas and electric operations also pose challenges and limit the breadth of opportunities available. While the Company will continue its efforts to investigate productivity opportunities, future progress is expected to be considerably slower given the highlighted challenges, and may require an upfront investment in IT systems or other initiatives to achieve significant and sustainable savings." [underline added]

17.1 Please list the "Differences in the nature of the gas and electric operations [that] also pose challenges and limit the breadth of opportunities available."

Response:

With regards to the different field practices used in the electric and gas businesses, while both businesses provide an energy distribution service to customers, the differences in the form of energy (electricity versus natural gas) result in different operating practices and, in some cases, different skill sets, training and knowledge bases (i.e. construction, maintenance, safety, reliability, emergency response, government regulations, etc) required to be able to provide service. Another consideration is the differences in the types of infrastructure and equipment used in both businesses (i.e. gas transmission and distribution pipelines, gate and compressor stations versus electricity transmission lines, poles and wires and substations). Also, the electric business owns generation assets to produce electricity, unlike the gas business which instead sources gas supply from the marketplace. These differences limit the opportunities and benefits of sharing operating practices.



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1 18.0 Topic: Automated meter reading

2 Reference: Exhibit B-1

18.1 Has the Company considered implementing automated meter reading during the test period? If so, what were the results? If not, why not?

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### Response:

- 7 The Company did not specifically consider implementing automated meter reading during the 8 PBR period as the standard for all mass market customers. Over the past five years however 9 the Company looked at the business case for automated meter reading twice, once in 2008 and 10 again in 2010 and concluded that although technologies are available for automated meter 11 reading for gas, the business case does not result in a positive benefit for customers. 12 Additionally the business and customer benefits available in the electric industry related to 13 features like in-home monitoring and automated disconnect / reconnect are not as advanced for 14 gas utilities.
- In 2012, FEI initiated a market-based process to assess market availability related to continuing to outsource the meter reading function to a third party. An agreement was negotiated which resulted in not only an increase in service quality for customers but a significant cost savings. With this new pricing in place, the business case for automated meter reading was further

19 challenged.

FEI has historically used automated meter reading to support daily reading for industrial customers and to enable meter reading for hard to access locations where traditional manual meter reading is not possible. The company will continue this practice.



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1 19.0 Topic: Utility's own GHG emissions reductions

Reference: Exhibit B-1-1, Appendix C-2, Benchmarking Study of Scorecard

Design and Application - Canadian Natural Gas Distribution Utilities,

Table C2-5

Table C2-5: Governance Key Performance Indicators Among Selected Companies

Company	Governance KPIs
FEU	Regulatory performance (subjective)
1	SOX compliance, IT security policy compliance, service quality compliance, etc.
2	Number of company caused GHG releases, proper notifications releases to government environmental agency
3	Reduction of GHGs, ISO 14001, policy compliance rate with regard to meter reading, urgent interventions, etc.
4	Regulatory certainty
5	Customer energy efficiency programs, internal energy efficiencies, % of regulatory targets achieved

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19.1 Please confirm that two of the five Canadian natural gas distribution utilities surveyed reported including GHG reductions in Governance Key Performance Indicators. Alternatively, please explain.

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### Response:

As noted in the table above, two of the five utilities reported included GHG emissions reductions as part of their Scorecard. For instance, one of the utilities' scorecard included the company's annual GHG emission reductions achieved. The reductions were based on the company's recurring projects, carbon credits as well as the adoption of employee programs designed to reduce the GHG emissions (such as programs related to commute to work).

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19.2 Does FEI include GHG emissions or GHG emissions reductions in its Regulatory (or other) Key Performance Indicator? If so, please provide a reference to additional information. If not, why not?

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#### Response:

FEI does not presently include GHG emissions or GHG emissions reductions on its Scorecard.



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- As outlined in the response to BCUC IR 1.191.1, in determining the scorecard categories and measures to use, the Company seeks not only to select the appropriate success measures but also the optimal number of measures (i.e. how many). At this time, FEI believes the six
- 4 scorecard measures used best represent the overall priorities for Company.
- FEI reviews the appropriateness of its current measures on an annual basis and will make any necessary adjustments as required.

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19.3 Please explain whether and how FEI monitors and reports on its own (as distinct from customers' and suppliers') GHG emissions, e.g., from the operation of the utility's assets.

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# **Response:**

As required by provincial regulation for entities that emit over 10,000 tonnes  $CO_2$  equivalent annually, FEI monitors and reports on its annual GHG operational emissions through a variety of field measurement processes that capture the GHG data and which transpose the source data from Operations to a GHG Management System. The GHG Management Program has been externally verified by an accredited third party verifier, as required by regulation for entities that emit over 25,000 tonnes  $CO_2$  equivalent. The company is also required to report annual emissions federally, and this is conducted through the 'one-window reporting' system which captures data that is very similar to the provincial reporting requirements.

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19.4 Does FEI have a plan for (own source) GHG emissions reductions going forward? If so, please provide a copy. If not, why not?

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#### Response:

- While FEI does not have a written plan as requested, the management of GHG emissions is a priority and an operational consideration for FEI. The company has closely monitored its GHG emissions levels for many years.
- In the absence of mandated industry specific GHG reduction targets, and as aligned with required safety and reliability equipment selection criterion, the company in its ongoing equipment and asset selection considers GHG reduction operating capabilities. Further, the selection of operational procedures, and participation in industry and regulatory best



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management practice reviews around GHG emissions' management have been areas of focus for the company, in order to seek out opportunities for the ongoing management of the company's GHG profile.

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19.5 Is FEI a party to discussions with the government and/or GHG emitters regarding the B.C. GHG emissions reductions targets? If so, please describe the current state of such discussions and comment on the Company's expected role in such discussions during the test period.

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# Response:

FEI has participated in, and will continue to participate in, government and industry groups regarding the development of emissions reductions targets. The general focus of ongoing discussions has been related to current and proposed reporting protocols as the provincial and federal GHG reporting programs mature and develop.



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1	20.0	Topic:	Natural Gas for Transportation
-			

Reference: Exhibit B-1-3, July 16, 2013 Evidentiary Update, cover letter, pages 1 and 2

"2. As a result of Order G-88-13 and the resulting reduction in Natural Gas for Transportation (NGT) forecast volumes, FEI has reduced its 2014 forecast of delivery margin volumes for Rate Schedules 16 and 25 by 1,230,422 GJ. This impact is partly offset by an increase in the Rate Schedule 16 delivery rate, so that the total effect on the 2014 delivery margin is a \$3.4 million decrease compared to the Application. ..."

Table 1: Revised Delivery Rate Impacts

	2014	2015	2016	2017	2018	Total
Evidentiary Update July 16th, 2013	0.97%	1.16%	1.73%	0.84%	2.59%	7.28%
Original Filing June 10th, 2013	-1.64%	1.54%	1.89%	0.87%	2.51%	5.17%
Increase (Decrease)	2.61%	-0.38%	-0.16%	-0.03%	0.07%	2.11%

Table 2: Revised Revenue Deficiency / (Surplus), \$ millions

	2014	2015	2016	2017	2018	Total
Evidentiary Update July 16th, 2013	\$ 6.069	\$ 7.425	\$ 11.218	\$ 5.622	\$ 16.938	\$ 47.272
Original Filing June 10th, 2013	\$ (10.611)	\$ 9.962	\$ 12.390	\$ 5.810	\$ 16.751	\$ 34.302
Increase (Decrease)	\$ 16.680	\$ (2.537)	\$ (1.172)	\$ (0.188)	\$ 0.187	\$ 12.970

20.1 Please provide an expanded version of Table 1: Revised Delivery Rate Impacts, showing separately the effect Order G-75-13 (Generic Cost of Capital) and Order G-88-13 (Natural Gas for Transportation).

# Response:

The following table has been provided to reconcile the amounts in Table 1 with the impacts of the Generic Cost of Capital and Natural Gas for Transportation shown separately. The response to BCSEA IR 1.20.2 includes a brief discussion of the Natural Gas for Transportation impacts.

**Proposed Delivery Rate Change** 

	2014	2015	2016	2017	2018	Total
Original Filing June 10th, 2013	-1.64%	1.54%	1.89%	0.87%	2.51%	5.17%
G-75-13 (Generic Cost of Capital)	2.26%	0.01%	0.01%	0.01%	0.01%	2.30%
G-88-13 (Natural Gas for Transportation Margin and Volume)	0.51%	-0.17%	-0.22%	-0.19%	0.00%	-0.07%
All Other Natural Gas for Transportation Updates	-0.21%	0.03%	0.00%	0.02%	0.02%	-0.15%
Other	0.04%	<u>-0.25%</u>	<u>0.05%</u>	0.13%	0.05%	0.03%
Evidentiary Update July 16th, 2013	0.97%	1.16%	1.73%	0.84%	2.59%	7.28%



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Please provide an expanded version of Table 2: Revised Revenue Deficiency,

showing separately the effect Order G-75-13 (Generic Cost of Capital) and Order

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Response:

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9 The following table has been provided to reconcile the amounts in Table 2 with the impacts of 10 the Generic Cost of Capital and Natural Gas for Transportation shown separately. There are two 11 lines that show Natural Gas for Transportation consequences; one that highlights the changes 12

- to margin via volume and delivery rate changes pursuant to BCUC Order G-88-13, and another
- 13 that shows impacts of other NGT updates.
- 14 The Other NGT Updates row includes:
  - the effect from changes in the NGT related deferrals and the related earned return and tax expense corollaries;
- 17 the effect from changes in the overhead and marketing recovery from NGT;

G-88-13 (Natural Gas for Transportation).

- the effect from a reduction of debt allocation to the NGT Classes of service due to less station capital required; and
  - the effect of a Rate Schedule 25 volume revision.

Revenue Deficiency/(Surplus), \$ millions

	2014		2014 2		015 2016		2017		2018		Total	
Original Filing June 10th, 2013	\$	(10.611)	\$	9.962	\$	12.390	\$	5.810	\$	16.751	\$	34.302
G-75-13 (Generic Cost of Capital)	\$	14.222	\$	0.054	\$	0.059	\$	0.067	\$	0.058	\$	14.460
G-88-13 (Natural Gas for Transportation Margin and Volume)	\$	3.212	\$	(1.105)	\$	(1.396)	\$	(1.212)	\$	0.000	\$	(0.501)
All Other Natural Gas for Transportation Updates	\$	(1.318)	\$	0.184	\$	(0.024)	\$	0.102	\$	0.104	\$	(0.953)
Other	\$	0.564	\$	(1.670)	\$	0.189	\$	0.855	\$	0.025	\$	(0.037)
Evidentiary Update July 16th, 2013	\$	6.069	\$	7.425	\$	11.218	\$	5.622	\$	16.938	\$	47.272



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1	21.0	Natural Gas	for Transportation								
2		Reference: Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix p.9; <i>Clean Energy Act</i> , s.18(3)									
4		"4.1 RECEN	T BCUC DECISIONS AND IMPACTS ON FORECASTS								
5 6 7		additions and	The forecasts presented in Sections 4 and 5 related to GGRR expenditures, vehicladditions and gas demand additions have all been revised down in direct response some recent BCUC decisions impacting the NGT market.								
8 9 10		FEI's Rate S	Specifically, pursuant to Order G-88-13, the BCUC made a number of determinations or FEI's Rate Schedule 16 Amendment Application that have directly impacted forecasts or GGRR LNG expenditures and demand forecasts."								
11 12			, the following BCUC determinations are expected to adversely impact the for LNG in BC:								
13 14 15		\$6.50	tting of the delivery charge for LNG deliveries under Rate Schedule 16 at 0/GJ, which is 53% higher than what FEI requested in the Amendment cation of \$4.25/GJ;								
16 17 18		the	ily balancing of LNG deliveries out of Mt. Hayes and Tilbury as opposed to proposed weekly balancing requirement, which would have been nistratively and operationally efficient;								
19 20			moving the 'pilot' nomenclature, but not making the tariff permanent with an y date of 2020; and								
21 22			permitted firm storage capacity or ability to shift storage volumes between ayes and Tilbury facilities in order to optimize deliveries."								
23		The <i>Clean E</i>	nergy Act, s.3 states:								
24 25 26		Act ir	) The commission must not exercise a power under the <i>Utilities Commission</i> a way that would directly or indirectly prevent a public utility referred to in ection (2) from carrying out a prescribed undertaking."								
27 28 29 30 31		Orde Comp	d on the July 16, 2013 evidentiary update, have any or all of the aspects of r G-88-13 set out above had the effect of directly or indirectly preventing the pany from carrying out a prescribed undertaking regarding natural gas for portation? If so, please provide details. If not, please explain why this is not ase.								



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# 1 Response:

- 2 The decisions rendered in BCUC Order G-88-13 have all had an impact on and have limited
- 3 FEI's ability to achieve the maximum allowable expenditure limits as permitted under the Clean
- 4 Energy Act.
- 5 Specifically, as stated on page 9, line 34 of Appendix H of the Evidentiary Update (Exhibit B-1-
- 6 3), BC Ferries, which was contemplating adopting LNG as a marine transport fuel, informed FEI
- 7 that, given BCUC Order G-88-13 and Decision, LNG was no longer an economically viable fuel
- 8 option for its initial project. Recently, BC Ferries have announced that it has ordered three new
- 9 vessels capable of using LNG as a fuel source. However, these new ferry vessels will likely be
- dual-fuel, capable of also using diesel fuel. There still remains uncertainty as to how or whether
- 11 BC Ferries will commit to using LNG as a transport fuel. Also, there have been other fleet
- operators that have expressed concern over cost certainty with respect to rates and charges
- 2 operators that have expressed concern over containty with respect to lates and sharing
- that have affected market confidence. Some fleet operators have indicated plans to reduce the
- 14 number of vehicles that will be purchased under FEI's NGT Incentive Program.
- 15 In the view of FEI, all of these variables are limiting the Company's ability from carrying out the
- 16 prescribed undertakings as permitted under the legislative mandate under the Clean Energy
- 17 Act.



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22.0 Natural Gas for Transportation
-------------------------------------

2	Reference:	Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix H,
3		p.9

"The 53% increase in the delivery charge has resulted in a number of potential and prospective customers who were considering contracting under Rate Schedule 16 to either delay adoption of LNG, cancel adoption plans altogether or to significantly reduce vehicle additions from initial forecasts."

22.1 Is there an alternative source of LNG available to the potential and prospective customers, other than through Rate Schedule 16?

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# Response:

Presently there is no other source of LNG in B.C. other than through Rate Schedule 16. The closest supply of LNG that can be used for transportation that FEI is aware of is off of the Northwest Pipeline System from the Plymouth LNG facility, which is located in Benton County, Washington. However FEI is not aware of the quantity of LNG, if any, that is available to the commercial market.

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### 22.1.1 If so, at what price?

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# Response:

- FEI understands that the publicly available market price for LNG outside of BC is variable by region and depends on each facility.
- For instance, Plymouth LNG located in Benton County, WA can offer LNG to non-utility customers at a delivery price of between about \$0.90 and \$1.75 per dekatherm<sup>6</sup> depending on
- whether contracts are firm or interruptible.
- Intermountain Gas, located in Idaho, is also capable of providing LNG volumes to non-utility customers at a price of about \$1.40 per dekatherm. Like Plymouth LNG, Intermountain Gas' LNG facility has been in operation for a number of years and is therefore capable of providing

31 LNG to the market at a very competitive price.

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<sup>6</sup> 1 dekatherm = 1.055056 GJ



#### FortisBC Energy Inc. (FEI or the Company) Submission Date: Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 August 23, 2013 through 2018 (the Application) Response to B.C. Sustainable Energy Association and Sierra Club of British Columbia Page 54

1 2 3

22.1.2 If not, when does FEI expect that LNG other than through RS 16 will become available to potential NGT customers in B.C.?

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# Response:

It is not certain when any other supply of LNG in BC may become available to potential NGT customers. As stated in response to BCSEA IR 1.22.1, the closest source of LNG to the BC market is from the Plymouth LNG facility located in Benton County, WA. FEI is not aware of the available capacity from this facility.

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# 23.0 Natural Gas for Transportation

2 Reference: Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix H, pp.9-10

"Specifically, BC Ferries has indicated to FEI that their plan to retrofit the Queen of Capilano ferry to LNG power in 2014 is no longer economically viable. In addition, a number of trucking fleet operators have indicated plans to reduce the number of LNG Class 8 tractors that they will apply for under FEI's NGT Vehicle Incentive Program."

23.1 What is the effect on forecast delivery margin volumes and revenue deficiency over the test period of a decision by BC Ferries not to retrofit the *Queen of Capilano* ferry to LNG power?

12 Response:

The Queen of Capilano was expected to consume approximately 100,000 GJ per year. At the delivery charge of \$4.12/GJ (revenue at existing rates) that was used in the original forecasts, this equates to forgone delivery margin of \$412 thousand per year, beginning in 2016 and continuing for the next 20 to 30 years. Assuming that the incremental O&M costs to produce LNG at Tilbury range from \$0.80 to \$1.07 per GJ for an average of \$0.94 per GJ $^7$ , the annual revenue surplus would have been approximately \$318 thousand ((\$4.12 - \$0.94) \* 100,000) over the same time frame.

23.2 To FEI's knowledge, what aspect of Order G-88-13 made BC Ferries' plan to retrofit the *Queen of Capilano* ferry to LNG power in 2014 to be no longer economically viable?

# Response:

FEI understands that a variety of factors have impacted BC Ferries' retrofit plans. The primary issues from the Rate Schedule 16 Decision (BCUC Order G-88-13) for BC Ferries are:

1) Delivery charge increase from \$4.25 to \$6.50 per GJ. This results in a fuel cost increase of \$225 thousand per year which extends the payback period for the Queen of Capilano project from approximately 7 to 8 years to over 12 years. BC Ferries has advised FEI that it will not proceed given these economics.

Pursuant to FEI's Application for Approval to Amend Rate Schedule 16 on a Permanent Basis filed with the Commission on September 24, 2012



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- 2) The tariff expiry of December 31, 2020 creates long term uncertainty of supply for BC Ferries since the customer's business case is evaluated over a term of 20 years.
- 3) No approved storage amount for the LNG merchant market creates further uncertainty regarding reliable supply of LNG from FEI's LNG facilities.

BC Ferries has indicated that BCUC Order G-88-13 has also negatively impacted the evaluation of their Spirit Class retrofit and new build programs for new vessels.

Although BC Ferries recently announced that it has ordered three new vessels capable of running on LNG, these vessels are dual-fuel, which are capable of running on both diesel and LNG. If the economics of LNG are not attractive to BC Ferries, they have the option of running on only diesel.

Is it FEI's understanding that BC Ferries was considering retrofitting other ferries

to LNG during the planning period? If so, what is FEI's understanding of the

#### Response:

23.3

Yes, BC Ferries also indicated it has plans to adopt LNG in its Spirit Class vessels and Intermediate Class New-Build vessels. FEI understands that BC Ferries will continue to conduct technical and economic analysis prior to reaching any decision on whether to adopt LNG. Please also refer to the response to BCSEA IR 1.23.2.

current status of such retrofit possibilities?

23.4 What, if anything, can and will FEI do to make LNG service more attractive to potential NGT customers under RS 16 given the circumstances of Order G-88-13?

#### Response:

FEI is presently evaluating its alternatives and business direction with respect to BCUC Order G-88-13 at this time. This evaluation includes a determination on whether FEI will file new evidence regarding the price of LNG in the future. In the interim, FEI will continue to sell LNG under the pilot Rate Schedule 16 until December 31, 2014, adhering to the daily sales limit.



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It is very difficult to build market confidence in a new fuel for transportation operations. The 53% increase in pricing under BCUC Order G-88-13 has setback FEI's market development efforts and created uncertainty with respect to how LNG will be priced in the future. There is little FEI can do on its own to counter this impact.

23.5 Is it FEI's understanding that the reduction in the number of LNG Class 8 tractors for which trucking fleet operators have indicated plans to apply for incentives under FEI's NGT Vehicle Incentive Program represents a reduction in the number of such vehicles that will be acquired by the fleet operators during the pertinent time period?

# Response:

- Yes, LNG fleets previously approved for vehicles incentive have indicated they will no longer be proceeding with their plans or have reduced the size of the initial commitment. FEI has also delayed the launch of its second round of incentive funding for LNG vehicles until the impacts of the Rate Schedule 16 Decision are fully evaluated. This has also increased uncertainty amongst fleets seeking to implement natural gas into their operations.
- FEI will continue offering LNG service from the pilot Rate Schedule 16 until this evaluation is completed; however, FEI is limited to a supply of only 1040 GJ/day (one tanker load). Each truck consumes between 3000 and 6000 GJ/yr so FEI is very limited in the number of vehicles it can service using the Pilot Rate Schedule 16.

23.6 Please provide an estimate of the effect on forecast delivery margin and revenue deficiency over the test period of the reduced number of LNG Class 8 tractors for which trucking fleet operators have indicated plans to apply for incentives under FEI's NGT Vehicle Incentive Program.

#### Response:

FEI's July 16, 2013 Evidentiary Update included two items specific to Class 8 tractors that impacted Rate Schedule 16 forecast delivery margin over the PBR period. Item 1 was a downward volume revision based on operator's plans to reduce the number of Class 8 tractors they intend to apply for under the incentive program and item 2 was the Rate Schedule 16



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- 1 Decision which directed FEI to increase the delivery rate to \$6.50 from the existing rate of
- 2 \$4.12.
- 3 The increase in the delivery rate had an offsetting impact to the decrease in volume. The
- 4 following table summarizes the cumulative impact to delivery margin which is forecast to be
- 5 \$967 thousand lower over the term of the PBR.

1		,	

Line	<u>Particulars</u>	Reference	<u>** 2014</u>	** 201 <u>5</u>	** <b>2016</b>	** 2017	** <b>2018</b>	<u>Total</u>
1	RS16 (GJ)	June 10 Application	1,341,319	437,030	408,977	368,418	-	2,555,744
2	RS16 Marine (GJ)	June 10 Application		150,000	100,000	100,000		350,000
3	RS16 Class 8 Tractor (GJ)	Line 1 - Line 2	1,341,319	287,030	308,977	268,418	-	2,205,744
4								
5	RS16 Class 8 Tractor (GJ)	- Line 3	(1,341,319)	(287,030)	(308,977)	(268,418)	-	(2,205,744)
6	RS16 Delivery Rate	Pre G-88-13	\$ 4.12	\$ 4.12	\$ 4.12	\$ 4.12	\$ 4.12	\$ 4.12
7	Original RS 16 Delivery Margin @ Existing Rates	Line 6 * Line 5	\$ (5,526,234)	\$ (1,182,564)	\$ (1,272,985)	\$ (1,105,882)	\$ -	\$ (9,087,665)
8								
9	RS16 (GJ)	July 16 Evidentiary Update	356,000	447,000	474,000	420,000	-	1,697,000
10	RS16 Marine (GJ)	July 16 Evidentiary Update		150,000				150,000
11	RS16 Class 8 Tractor (GJ)	Line 5 - Line 6	356,000	297,000	474,000	420,000	-	1,547,000
12								
13	RS16 Class 8 Tractor (GJ)	+ Line 11	356,000	297,000	474,000	420,000	-	1,547,000
14	RS16 Delivery Rate	G-88-13	\$ 6.50	\$ 6.50	\$ 6.50	\$ 6.50	\$ 6.50	\$ 6.50
15	RS 16 Delivery Margin @ G-88-13 Rate	Line 14 * Line 13	\$ 2,314,000	\$ 1,930,500	\$ 3,081,000	\$ 2,730,000	\$ -	\$ 10,055,500
16								
	Net RS16 Delivery Margin Impact in Rev Reqt from							
17	Changes to Class 8 Tractor Volumes	Line 7 + Line 15	\$ (3,212,234)	\$ 747,936	\$ 1,808,015	\$ 1,624,118	\$ -	\$ 967,835
18								
19	Add in Marine							
		- Line 2 x Line 6+ Line 10 x						
20	RS16 Marine Marine Impact in Rev Reqt	Line 11	-	357,000	(412,000)	(412,000)	-	(467,000)
21								
22	Net RS16 Delivery Margin Impact in Rev Reqt	Line 17 + Line 20	\$ (3,212,234)	\$ 1,104,936	\$ 1,396,015	\$ 1,212,118	\$ -	\$ 500,835
23		·	<u>, (-,,, -, -, -, -, -, -, -, -, -, -,</u>	. , . , ,	. ,,	<u>. ,,</u>		<u>,,</u>
23								

24 \*\* Each years volumes is incremental to the previous year, therefore the Total column shows the Cumulative effect from 2014 through 2018



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# 24.0 Natural Gas for Transportation

2	Refer	ence: Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix H, p.10
4	"Thes	e developments are likely to have a number of implications on the following:
5 6 7		- Reducing GGRR expenditures under Prescribed Undertaking 1, likely below the vehicle incentive limit of \$62 million by the end of the Prescribed Undertaking Period of March 31, 2017;
8 9		- Reducing GGRR expenditures for LNG fueling stations under Prescribed Undertaking 3, likely below the limit of \$26.25 million;
10 11 12		- Limiting the potential for furthering the Province of BC's clean energy initiatives of reducing greenhouse gas emissions and carbon intensity through the adoption of natural gas as a transportation fuel; and
13 14		- Limiting the effectiveness of the Provincial Government's clean energy initiatives (e.g. Clean Energy Act)."
15	24.1	Was evidence of the developments listed above before the Commission during

# Response:

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- The developments referred to are developments in response to the BCUC Rate Schedule 16 Decision. However, there was evidence through the course of the Rate Schedule 16 proceeding regarding the potential for such developments. FEI's Application for Amendments to Rate Schedule 16 (at page 26), presented the following limitations with the Rate Schedule 16 pilot tariff:
  - 1. Rate Schedule 16 is a pilot tariff with an end date of December 31, 2014.
- The existing approved supply cap will be exceeded in 2013;

the proceeding that led to Order G-88-13?

- 3. Rate Schedule 16 is an interruptible service. Rate Schedule 16 customers require firm service in order to provide reliable service to their own customers; and
  - Operationally, the service currently has a single point of failure for LNG supply. There
    are inherent operational risks associate with reliance on Tilbury as the lone source of
    gas supply.



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- 1 To address these limitations and achieve the projected market growth, FEI proposed
- 2 amendments to Rate Schedule 16, in FEI's Application for Amendments to Rate Schedule 16
- 3 (Section 6) filed September 24, 2012. As evidenced in this section, market growth directly
- 4 impacts expenditures on incentives, fueling stations, and the resultant GHG emission reduction
- 5 benefits.
- 6 Furthermore, FEI addressed the possibility of offering a higher LNG delivery rate and its impact
- 7 on market growth in its response to BCUC IR 2.9.1 of the FEI Application for Amendment to
- 8 Rate Schedule 16 LNG Sales and Dispensing Service.

"Offering a higher price than FEI has proposed could have untended consequences on the LNG market in terms of reduced competition and higher prices for LNG customers. For instance, if a potential competitor was willing to price at \$4, but knows that FEI must set price at \$5, it would have no incentive to offer a lower price to the market. FEI does not believe it would be beneficial to the market or consumers to reduce the incentive of suppliers to offer lower prices. Offering a higher price would also not be beneficial to FEI customers as assumed in the question. Higher prices for LNG would be expected to slow down the rate of market adoption of LNG for transportation and other end user markets. Slowing down the rate of market adoption is not in the interests of FEI's customers. While FEI Customers would potentially achieve benefits from higher margins on the sale of LNG, slowing down market adoption would lead to fewer LNG sales. Consequently, there is no assurance that charging more would lead to higher benefits for core customers."

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25.0	Natural	Gas for	<b>Trans</b>	portation

2	Reference:	Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix H
3		p.10

"Overall, the price increase and regulatory uncertainty with respect to rates and charges has affected market confidence in LNG supply, which is expected to limit the market potential of LNG adoption as a transportation fuel."

25.1 Please confirm that the "price increase" referred to in the quoted statement is the delivery charge for LNG deliveries under Rate Schedule 16 at \$6.50/GJ, compared to FEI's requested amount of \$4.25/GJ in the RS 16 Amendment Application.

# Response:

13 Confirmed.

25.2 What exactly is the "regulatory uncertainty with respect to rates and charges" that FEI refers to in the quoted statement?

#### Response:

- There have been a number of regulatory applications and decisions that have had cost implications on FEI's existing and prospective CNG and LNG customers. As a result, NGT fleets have experienced increases in their fueling cost. For example, in the past year Vedder LNG has been subject to the following incremental adjustments;
  - 1. LNG Tanker Charge increase from \$149 per trip to \$249 per trip (BCUC Order G-156-12), which represents an increase of 1 cent per Diesel Litre Equivalent (DLE).
  - 2. NGT Overhead and Marketing charge adjustment to \$0.52 per GJ (BCUC Order G-78-13). Vedder's initial fueling agreement contemplated a charge of \$0.28 per GJ, which represents an increase of 1 cent per DLE.
  - 3. Rate Schedule 16 delivery charge increase from \$4.25 to \$6.50 represents an increase of approximately 8.7 cents per DLE.

Overall, Vedder has experienced fuelling charge increases in excess of 10 cents per DLE. Cost certainty affects the customer's ability to bid on competitive contracts and accurately forecast its



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operational budget. Further, FEI understands that it appears to the trucking companies that regulatory decisions being made are not consistent leading to confusion in the marketplace and added risk profile of using LNG and CNG. Despite FEI's best efforts to keep customers informed and aware of these risks, unanticipated charges have significantly diminished the value proposition of CNG and LNG as a transportation fuel and have raised concerns of cost uncertainty to already negotiated rates and contracts.

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25.3 In FEI's view, is the limitation on the market potential for LNG adoption as a transportation fuel temporary or permanent?

What would need to be done and by whom to restore market confidence in LNG

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# Response:

It is too early to speculate on whether this limitation will be temporary or permanent. One future indication may be the level of interest FEI receives in response to its second round of LNG funding (pending launch). Incentive funding through the Greenhouse Gas Reduction Regulation (GGRR) is only available until 2017 (and decreasing every year) so there is a limited and closing window of opportunity for fleets to adopt with a reasonable payback period.

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Response:

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supply so as to revitalize the potential for LNG adoption as a transportation fuel?

FEI is presently assessing the value proposition of LNG as a transportation fuel but has no analysis to share at this time. For FEI to develop the LNG market in BC, FEI must be able to provide an LNG fueling service that offers an end-to-end solution in terms of supply from existing LNG facilities, supply from potentially new LNG facilities, and construction of LNG fueling station solutions to facilitate the growing demand for LNG. Tariffs need to be permanent, prices need to be stable and regulatory uncertainty needs to be removed in order for confidence to be restored in the marketplace.



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# 26.0 Natural Gas for Transportation

Reference: Exhibit B-1-3, July 16, 2013 Evidentiary Update, revised Appendix H, p.10

"Forecast vehicle and gas demand additions related to CNG have also been revised down in response to the recent BCUC decision on FEI's overhead and marketing (OH&M) charge. Per BCUC Order G-78-13 on May 14, 2013, the BCUC set the OH&M charge at \$0.52/GJ, which is 86% higher than the OH&M charge that was initially proposed by FEI of \$0.28/GJ. Although not to the same extent as LNG customers, some CNG customers have expressed concern with the decision to amend rates that were negotiated into existing contracts. The perception that rates can be changed on existing contracts communicates to market participants that there is uncertainty with costs. This uncertainty impacts potential customers' ability to adopt or increase the number of vehicles they already own."

26.1 Had FEI told CNG customers that OH&M charges in, or reflected in, existing contracts were subject to Commission approval?

1617 Response:

Yes, CNG customers were aware of OH&M charges which, along with any aspect of their fueling service agreement are subject to BCUC approval.

26.2 Is it FEI's understanding that the CNG customers' concern is with the size of the OH&M charge as approved, or with the timing of the change in the charge following contract execution?

Response:

The primary concern for customers is related to the timing of charge following contract execution. (The cost increase associated with the OH&M charge represents one cent per DLE). Customer agreements with BFI and Vedder had already undergone significant regulatory process (i.e. CPCN applications for both) which resulted in interim rate approvals. The potential for costs to change after contracts are executed is a major concern for potential customers as well.



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26.3 Now that the OH&M charge has been approved, do CNG customers have reason to be confident that CNG delivery costs will be certain over the term of the contract?

### Response:

Yes, FEI believes there is reasonable certainty with respect to delivery, fueling station and overhead costs for CNG customers. However the customer perception, accurate or not, may still be that since rates are subject to BCUC approval they could change again at any time in the future. The recent track record with early adopters supports and reinforces this perception. Early adopters such as Vedder and BFI have had additional costs added to the contracts that they had executed. While the agreements were subject to BCUC approval, the rate increases were not anticipated. This has been a negative experience for these early adopters who are intended to be reference accounts and advocates for NGT.

## 27.0 Topic: Natural Gas for Transportation

19 Reference: Exhibit B-1-1, Appendix H

27.1 Please provide a table showing any NGT GGRR or non-GGRR costs allocated to traditional gas distribution customers in the present PBR application.

### Response:

The table below shows the forecasted costs allocated to traditional gas distribution customers over the term of the PBR, which will be updated at each Annual Review. The offsetting delivery margin revenues are not included in this table. The Total on line 7 within the table represents the forecasted costs that make up part of the revenue requirement each year of the PBR term.



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(\$000	Os)									
Line	Particulars	Туре	Reference	2014	:	2015	2016	2017	2018	Total
1	NGT Incentive Amortization	GGRR	Schedule 49, Line 15, Column 7	\$ 2,420	\$ 3,	061	\$ 3,453	\$ 3,453	\$ 3,453	\$ 15,841
2	Fueling Station Variance Account (FSVA)	GGRR	Schedule 49, Line 16, Column 7							
	Amortization			82		99	139	90	108	517
3	Income Tax Expense on Recovery of deferrals	GGRR	Appendix H, Table H-15,							
			embedded in 1st line of table	1,050	1,	319	1,485	1,451	1,419	6,724
4	Earned Return related to the unamortized NGT	GGRR	Appendix H, Table H-15,							
	and FSVA deferrals		embedded in 1st line of table	1,409	1,	718	1,821	1,670	1,440	8,057
5	Subtotal		Appendix H, Table H-15,							
			embedded line 1 of table	4,961	6,	197	6,898	6,664	6,419	31,139
6	Surrey & Burnaby Operations Pumps <sup>1</sup>	Non-GGRR	Schedule 13, Line 23, Column 3	 55		54	54	54	53	270
7	Total			\$ 5,016	\$ 6,	251	\$ 6,952	\$ 6,718	\$ 6,472	\$ 31,409

Note 1: The Costs of the Surrey and Burnaby Pumps (Line 5) are based on FEI's usage of these pumps to fuel its Fleet. For the Surrey pump, a portion of the costs are left in the non-GGRR class of service which represent the publics use of that pump.

1	NGT Incentive Amortization	Pursuant to Order G-161-12, FEI accounts for NGT Incentives granted in a rate base deferral account. The deferral account is amotized over 10 years and this amortization is collected annually from non-bypass customers.
2	Fueling Station Variance Account (FSVA) Amortization	Pursuant to Order G-161-12, FEI accounts for Fueling Station Variances in a rate base deferral account. The fueling station variances are the differences between the cost of service of the GGRR fueling station and the recoveries of those costs. The deferral account is amotized over 3 years and this amortization is collected annually from non-bypass customers.
3	Income Tax Expense on Recovery of deferrals	The amortization of the deferral accounts and the equity portion of the earned return create a tax expense that is collected annually from non-bypass customers.
4	Earned Return related to the unamortized NGT and FSVA deferrals	The unamortized deferral account (from items 1 and 2 above) are rate base and consequently attract earned return. The earned return is collected annually from non-bypass customers.
6	Surrey & Burnaby Operations Pumps	FEI has a CNG pump on its Surrey and Burnaby premises. The Surrey pump serves both thegeneral public and FEI's CNG Vehicle Fleet, the Burnaby pump services solely FEI's CNG Vehicle Fleet. The annual cost to use these pumps is collected annually from non-bypass customers

27.1.1 Alternatively, please point to the location in the file material where they are identified.

# Response:

10 Please refer to the response to BCSEA IR 1.27.1.

27.2 Under what circumstances if any does FEI foresee recovering from traditional customers during the test period any NGT GGRR or non-GGRR costs that are not included in the present application?



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# 1 Response:

- 2 FEI does not foresee recovering any non-GGRR costs from traditional customers that are not
- 3 already included in this Application, provided that the Commission approves FEI's Non-GGRR
- 4 CNG and LNG classes of service as filed.
- 5 FEI expects costs related to NGT GGRR incentives to change through the PBR term. FEI has
- 6 proposed to reset the deferral balance annually throughout the PBR period and any differences
- 7 between actual and forecast balances of the NGT Incentive Account will have an impact on
- 8 amortization, earned return and taxes (refer to the response to BCSEA IR 1.27.1). This could
- 9 result in a decrease or increase to delivery rates, depending on whether the deferral balances
- are larger or smaller than forecast. A change from actual and forecast incentives granted will
- also have a corresponding change in volumes and delivery margin which will, in part, offset the
- 12 impact the incentives would have on delivery rates.
- 13 With reference to GGRR-related station costs, the cost of service for GGRR fueling station
- 14 investments are recovered first from NGT station customers through the take or pay rates
- 15 established for the fueling stations. GGRR recovery from traditional customers would be limited
- 16 to any shortfalls or stranded asset costs.



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# 28.0 Topic: Natural Gas for Transportation

Reference: B-1, section 2.2.1 NGT Overhead and Marketing Recovery (New), pp. 117-118; Exhibit B-1-1, section 5.2 Overhead and Marketing (OH&M) Charge, page 13.

"Pursuant to Order G-78-13 and with reference to Appendix H, Section 5.2, FEI has forecast a recovery of overhead and marketing (OH&M) costs from the NGT Classes of Service. The charge represents a recovery from the NGT Classes of Service for overhead and marketing costs incurred by the Natural Gas for Distribution Class of Service. The OH&M rate of \$0.52 per 1 GJ is multiplied by forecast CNG and LNG sales volumes and credited to the Natural Gas for Distribution Class of Service. FEI notes that the total OH&M recovery in 2014 is forecast at \$490 thousand at the currently approved rate. If the rate remains at \$0.52 then the OH&M recovery is projected to grow to \$1.3 million by 2018 for a total of \$5 million over the PBR Period. As discussed in Appendix H, these recoveries exceed the amount of actual O&M costs embedded in the Natural Gas for Distribution Class of Service, and at the current rate represents a cross subsidization from the NGT class of service to the Natural Gas for Distribution Class of Service. FEI will revisit the appropriateness of the \$0.52 rate in future filings." [B-1, section 2.2.1, pp. 117-118]

28.1 Please describe in more detail the forecast OH&M costs shown in Table H-9.

# Response:

FEI filed its BFI CNG Fueling Station CPCN Compliance Filing in accordance with BCUC Order G-150-12 on November 16, 2012 and has included an excerpt of that filing within this response (refer to Attachment 28.1). Included in Attachment 28.1 are estimates of FEI's staffing resources and training costs related to the development of CNG and LNG fueling station and which total to the Forecast OH&M (Overhead and Marketing) charge from Table H-9. FEI views these as the estimated internal marketing and overhead costs that are directly related to development of CNG and LNG stations.

- Table 1 from the excerpt presents the title and percent time each position spends developing the CNG and LNG station market. Table 2 from the excerpt applies the percentage of time from Table 1 to the loaded labour cost of each position to summarize the total labour costs supporting the development of the CNG and LNG stations market. And Table 3 from the excerpt adds to Table 2 the forecast Customer Education costs to come to a total OH&M cost that supports the development of the CNG and LNG stations market.
- The OH&M charges are relatively constant throughout the PBR period because FEI does not believe additional resources will be required to support the market development through the prescribed undertaking period which ends March 31, 2017. OH&M costs have not been forecast



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1 for 2018, based on the market being sufficiently developed so as to require little additional 2 support from FEI. 3 The OH&M Recovery from Table H-9 of Exhibit B-1-3 is the total dollars FEI expects to collect 4 from the CNG and LNG stations through the \$0.52 per GJ OH&M charge (BCUC Order G-78-5 13) applied to each GJ sold (minimum and excess volume) from all CNG and LNG stations. 6 The net of the two amounts [Total Deficiency (Surplus) Collected] is part of FEI's Revenue 7 Requirement and is recovered from or returned through rates. 8 9 10 11 12 28.2 Why is the amount of OH&M forecast to remain fairly constant during the test 13 period, except for the final year, when there are forecast to be no OH&M costs? 14 15 Response: 16 Please refer to the response to BCSEA IR 1.28.1. 17 18 19 20 28.3 Is there any reason, apart from the Commission's orders on this matter, why FEI 21 should over-recover these costs from the NGT customers? 22 23 Response: 24 No. 25



#### FortisBC Energy Inc. (FEI or the Company)

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29.0	Topic:	<b>Natural</b>	Gas for	<b>Transportation</b>
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Reference: Exhibit B-1, Tab C, section 2.2.3, page 118; Exhibit B-1-1, Appendix H, Schedules 1 through 18

"In the 2012-2013 RRA, FEI had forecast both fuelling station revenue and incremental delivery margin revenue as part of Other Revenue. Starting in 2013, FEI will be accounting for all NGT Fuelling stations in separate classes of service from Natural Gas for Distribution Class of Service. Therefore, all fuelling station revenue is forecast in the NGT Class of Service and not to the account of Natural Gas for Distribution Class of Service customers. Any delivery margin revenues driven by NGT volumes are included in the revenue forecasts in Section C1.4.6. Please refer to Appendix H for a discussion on the NGT classes of service."

29.1 Please detail the forecast "delivery margin revenues driven by NGT volumes" or indicate where they are detailed in the application.

Response:

- The "delivery margin revenues driven by NGT volumes" are shown in Appendix H, Tables H-12, H-13 and H-14 in Exhibit B-1-3, for Rate Schedules 6P, 25 and 16 respectively.
  - 29.2 Please confirm that no NGT costs or revenues are now included in "Other Revenue" of the Natural Gas for Distribution Class of Service; otherwise please explain.

#### Response:

Not confirmed. There is a small amount of NGT cost included in "Other Revenue" representing the cost to FEI's fleet for the use of the Surrey and Burnaby Operations CNG pumps forecast at \$55 thousand in each of 2013 and 2014.

29.3 Please confirm that all NGT costs are now accounted for in schedules 1 through 18 of Appendix H; otherwise please explain and detail what NGT costs are not covered in those schedules.



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# 1 Response:

- FEI assumes that "NGT Costs" is defined as "CNG and LNG Station Costs". If so, then FEI can confirm this statement with the exception of:
  - OH&M costs and recoveries discussed in the response to BCSEA IR 1.28.1 which are not direct station costs; and
  - The FSVA amortization costs discussed in the response to BCSEA IR 1.27.1 which is a timing difference between when the CNG and LNG Station costs are incurred and subsequently recovered (please refer to Appendix H, section 6.1.1 of Exhibit B-1-3 for further discussion).

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1 30.0 Topic: Miscellaneous

2 Reference: B-1, Tab C, Table C2-1, page 117

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Table C2-1: 2013 and 2014 Other Revenue Components

Connection Charge USF Returned Cheque Charges Other Recoveries FEVI Wheeling Charge SCP Third Party Revenue UGT Overhead and Marketing Recovery	Ap	proved 2013	ojected 2013	Forecas 2014	
Late Payment Charge	\$	2,333	\$ 2,134	\$	2,114
Connection Charge		2,685	2,622		2,636
NSF Returned Cheque Charges		79	79		79
Other Recoveries		126	284		284
FEVI Wheeling Charge		3,464	3,464		3,365
SCP Third Party Revenue		14,827	14,773		14,773
NGT Overhead and Marketing Recovery		-	-		490
Burnaby & Surrey Operations Pump Charges		-	(55)		(55
Biomethane Other Revenue		(29)	(97)		(70
CNG & LNG Service Revenues		1,304	-		
otal Other Operating Revenue	\$	24,789	\$ 23,204	\$	23,616

30.1 Please explain why the revenue figures for "Burnaby & Surrey Operations Pump Charges" and "Biomethane Other Revenue" are negative.

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## Response:

### Burnaby & Surrey Operations Pump Charges

- 9 Pursuant to BCUC Order G-201-12 regarding the AES Inquiry Report recommending that FEI
- treat CNG Station services as a separate class of service, FEI has included the Surrey and Burnaby CNG pumps in the Non-GGRR CNG Class of Service. These pumps are used by
- 12 FEI's fleet, and so the appropriate portion of the cost of service for each pump is charged to
- Other Revenue in FEI in the Natural Gas for Distribution class of service, with a corresponding
- 14 credit or revenue in the Non-GGRR CNG Class of Service.

### Biomethane Other Revenue

The Biomethane Other Revenue is the sum effect of the forecast incremental Income Tax and Earned Return calculations associated with the Commission approved Biomethane upgraders for Salmon Arm Landfill and Kelowna Landfill projects. The cost of service impact from the biomethane upgraders are transferred to the non-Rate Base Biomethane Variance Account. In the initial years of service, the income tax provision for the Capital Cost Allowance exceeds the accounting depreciation expense, which results in a reduction in taxable income and consequently in income tax expense. The value of the reduction in the income tax is greater than the allowed incremental earned return. To transfer the value of the net reduced income tax / earned return, the Biomethane Other Revenue is charged \$97 thousand (shown as a negative value in 2013) and the BVA non-Rate Base deferral account is credited \$97 thousand. In the



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future years, starting in 2015 for these two projects, the income tax timing difference coupled with the ongoing earned return will reverse, at which point Biomethane Other Revenue will be credited and the BVA account will be charged. Through a separate rate mechanism, the cost of the upgraders and biomethane charged to the Biomethane Variance Account is recovered through the Biomethane Energy Recovery Charge from customers choosing to purchase biomethane gas.

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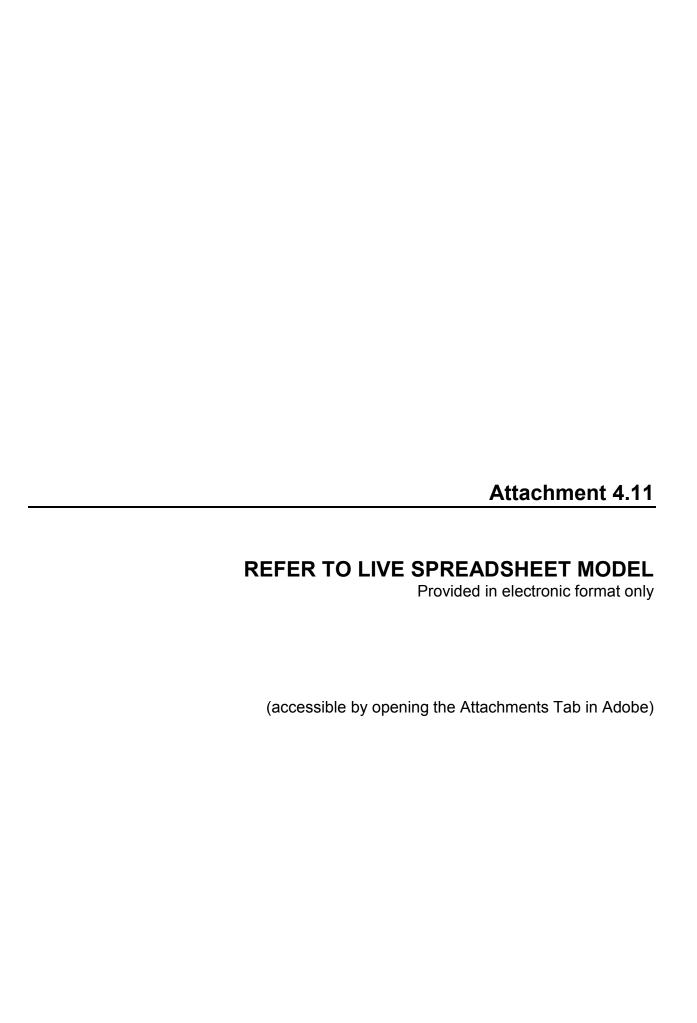
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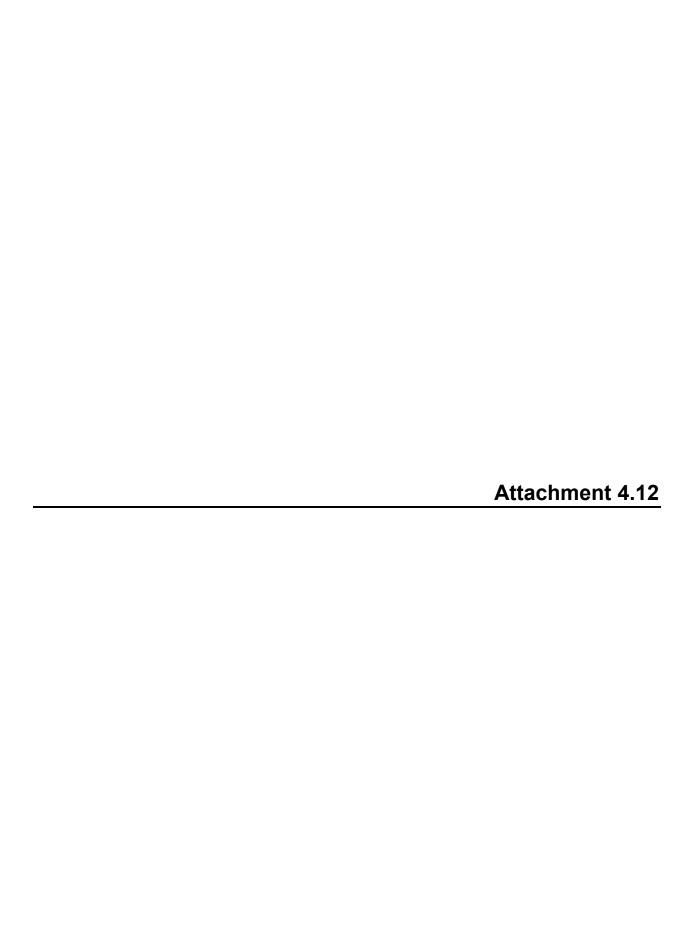
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Attachment 1.1
REFER TO LIVE SPREADSHEET MODEL Provided in electronic format only
FILED CONFIDENTIALLY
(accessible by opening the Attachments Tab in Adobe)





## **Furnace Early Replacement Program**

## Preliminary Evaluation Year 1 Pilot (Full Data)

Prepared for: Fortis BC

**Beth Ringdahl** 





May, 2013



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## 1. Introduction

### 1.1 Background

British Columbia relies heavily on natural gas for space heating, and over 90% of FortisBC (FEU) customers use this fuel for their heating. However there is a range of efficiency in the heating equipment used, and studies have indicated that BC has a lower penetration of efficient equipment than other jurisdictions in Canada.

In order to address this, FEU proposed an early replacement program to the British Columbia Utilities Commission (BCUC) as part of their 2011 Revenue Requirements Application. This was envisioned as a \$10 million per year program for 2012 and 2013. The commission reviewed the program and determined that more information was required before they could approve the request. However they did provide funding of \$4 million for program development and two pilot programs, one in 2012 and one in 2013.

A program plan was developed in the spring / summer of 2012 and the first pilot program was in field for September and October 2012.

The purpose of this report is to provide a preliminary evaluation of the results of the pilot. Data was collected from both the participant homeowners and the contractors as part of the application process. This information will provide greater clarity on a number of questions, such as the mix of furnaces and boilers in the program, the mix of standard and mid-efficiency furnaces, actual AFUE of installed furnaces and actual equipment costs as examples.

The report will summarize the major findings from both the Customer Application forms and the Contractor Application forms, and then will use this data to update the benefit / cost analysis.



## 2. Pilot Program

The pilot program was launched in early September 2012, and was launched on the basis that incentives would be provided to the first 2,000 applicants. However feedback from contractors soon indicated that this approach entailed too much risk for a customer who is induced to participate because of the program, only to find once the furnace was installed that the incentive was no longer available. Based on this feedback, the program parameters were changed to hold the program open for the months of September and October and to accept all valid applications during this period.

This approach was successful and the program was over-subscribed with 3,010 participants eligible for the rebate. The analysis contained in the report reflects 3,299 customer application forms and 2,328 contractor applications. This dataset contained all program applications including those that were declined due to ineligibility. It should be noted that not all contractors complete their application forms or receive their rebate so the number of contractor forms is less than the number of customer forms.



### 3. Customer Information

The customer application form was completed by the homeowner, but with assistance from the contractor and sent directly to FEU for processing. The form consists of 6 parts:

- 1. Customer Information
- 2. Property Details
- 3. New Heating System information
- 4. Old Heating System information (to be completed by contractor)
- 5. Optional Information (primarily sources of program information)
- 6. Declaration that the customer qualified for the program.

### 3.1 Replaced Equipment

This section contained the contact information for the customer and for the contractor who installed the equipment, along with the BCSA gas contractor license number and the installation permit number.

One of the evaluation questions was to determine if some contractors or manufacturers were better able to target older equipment. The next exhibit shows the average age of the replaced furnace for the top twenty contractors, each of whom sold more than 30 furnaces. The data shows that the average age of each contractors equipment ranged from a low of 10 years to a high of almost 50 years. However meetings with the individual companies would be required to determine if this age difference resulted from strategy or just happenstance.

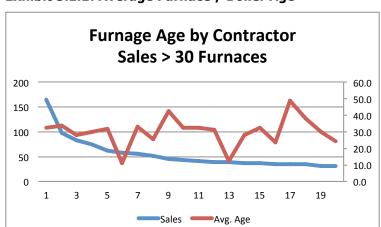


Exhibit 3.1.1: Average Furnace / Boiler Age

The next exhibit shows average age by manufacturer. Again the intent was to see if there was any significant difference in their ability to target older furnaces. The chart shows that the average furnace age by vendor ranged from 25 years to almost 50 years. Again, without discussions with the manufacturers, there are no conclusions that certain manufacturers better targeted older equipment. One vendor did appear to be trying to target older equipment, but this did not result in an average age that was different from the average.



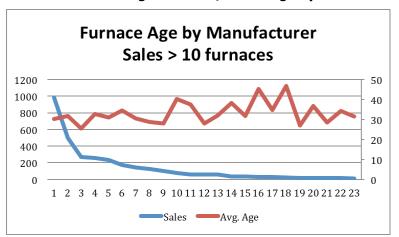


Exhibit 3.1.3: Average Furnace / Boiler Age by Manufacturer

#### 3.2 Property Details

This section contains information on the dwelling detachment, age of the home, and information on the furnace.

Exhibit 3.2.1 shows that about 90% of the program participants live in Single Family Dwellings. Participation by detachment reflects fairly well to the population of detachments from the 2008 REUS which was 83% SFD, 8% townhouse, 5% Duplex and 1% Mobile homes.

**Exhibit 3.2.1: Detachment** 

Detachment	Count	Share
Single Family	2697	90%
Duples	82	3%
Townhouse	153	5%
Mobile Home	37	1%
Other	14	0%

### 3.3 Program Affects

Applicants were asked how long they would keep the furnace if this program were not available. Over 84% of respondents said that they didn't know or did not respond. Of the 16% who responded to the question, the average time they expected to keep the furnace was 3.6 years. The most common responses were 1 year (21%), 2 years (23%), 5 years (24%) and 10 years (6%). People not knowing how long they would keep the furnace supports the idea that the program was encouraging early replacement.

Applicants were also asked what they would have done if the rebate program was not available. Exhibit 3.3.1 summarizes the responses, and shows that 80% would have waited for the furnace to fail.



**Exhibit 3.3.1: Action** 

Action if No Program	Share
Waited for my furnace / boiler to stop working	80%
Repaired my existing furnace / boiler	17%
Used another heating appliance such as a fireplace	2%

The last question in this section related to the efficiency of the furnace or boiler the participant would have purchased had the program not been available. Exhibit 3.3.2 summarizes the results and shows that over 40% of respondents were induced to purchase a more efficient furnace as a result of the program.

Exhibit 3.3.2: Program Induced Increase in Efficiency<sup>1</sup>

Efficiency Impact of Program	Furnace	Boiler
Less expensive, base model	41%	42%
Same model that I purchased	58%	58%

Further examination of the data shows that the people who chose a more efficient furnace increased the AFUE by 4.1 points than if they had purchased an AFUE 92 (code) furnace while those who chose a more efficient boiler increased their AFUE by 5.4 points. The benefit of this additional savings will exist for the life of the equipment, assumed to be 18 years.

Exhibit 3.3.3 shows that over 80% of the furnaces included in the pilot were standard efficiency while the remainder were mid-efficiency units. For boilers, over 87% were standard efficiency units.

**Exhibit 3.3.3: Furnace Efficiency** 

	Mid-Eff.	Standard
Furnace	19%	81%
Boiler	13%	87%

One of the program requirements was that the existing furnace be operating, and only about 1.3% (44 respondents) said their furnace was not operating.

### 3.4 New Heating System information

The program was open to both furnaces and boilers. However boilers accounted for slightly less than 3% of the units in the program.

Over 50 manufacturers had equipment sold during the pilot program. However the top 5 brands accounted for 67% of the sales, and the top 10 brands accounted for 86% of sales, so there is a clear domination in the market by a few brands.

The minimum efficiency set in the program for furnaces was AFUE 95. However over 70% of the equipment in the survey exceeded that level, and the overall average AFUE of furnaces in the program was 96.1.

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<sup>&</sup>lt;sup>1</sup> Table does not sum to 100% due to rounding.



Exhibit 3.4.1: AFUE - Furnaces

Furnace AFUE	Share
AFUE 95	28%
AFUE 95 <96	4%
AFUE 96 <97	43%
AFUE 97 <98	21%
AFUE 98	4%
Average AFUE	96.1

The minimum requirement for boilers was that they be condensing units. Exhibit 3.4.2 shows that the minimum requirement was exceed by over 90% of the units.

**Exhibit 3.4.2: AFUE - Boilers** 

Boiler AFUE	Share
AFUE 90 <95	9%
AFUE 95 <96	37%
AFUE 96 <97	51%
AFUE 97 <98	2%
AFUE 98	1%
Average AFUE	95.4

The application form also collected data on the total cost of both the equipment and the installation. Exhibit 3.4.3 shows the range of costs reported, and shows that while the "mode" or most frequent price was between \$4,000 and \$5,000, there were a number of installations where the installed cost exceeded \$10,000.

In the furnace price data there are some "outliers" which were considered to be installed prices that were less than \$1,200 (5 instances) or greater than \$10,000 (129 instances or about 4%). These were eliminated from the average cost calculations.

**Exhibit 3.4.3: Furnace Prices** 

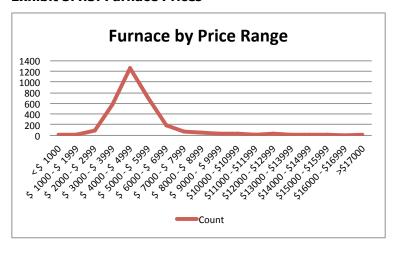
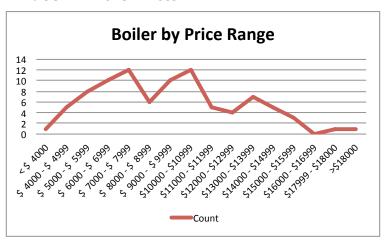


Exhibit 3.4.4 shows similar data for the boilers. In this case, while there is still a "tail" of higher priced installations, it is not as pronounced as for the furnaces.



For the boilers, prices less than \$5,000 were dropped as likely being erroneous (7 instances), and prices in excess of \$15,000 (4 instances) were also dropped.

**Exhibit 3.4.4: Boiler Prices** 



Review of a sample of application forms revealed that the higher cost applications typically included other work such as renovations, installing an electrostatic filter, adding a water heater or adding a heat pump<sup>2</sup>.

The applications indicated that 363 of the installations were done as part of a larger renovation. One concern was that the installation done as part of renovations might skew the pricing due to the issues such as adding additional ductwork. Nine per cent the houses with furnaces and renovations had prices greater than \$10,000, while only about 4% of houses without renovations exceeded that amount. An analysis of the data showed that the average cost for houses that did renovations was \$5,914 while the cost of all houses without renovations was \$5,171.

For boilers, the situation is the opposite; houses with renovations had lower average prices than houses without renovations. Because of this conflicting information, renovations were not excluded from the pricing estimates.

Exhibit 3.4.5: Cost Greater than \$10,000

	Renovation	No Renovation
Furnace	9%	4%
Boiler	14%	45%

**Exhibit 3.4.6: Average Prices** 

	Renovation		No R	enovation
Furnace	\$	5,914	\$	5,171
Boiler	\$	7,441	\$	9,448

A review of a sample of invoices indicated that contractors were not consistent in including HST with the installed price data. Review of 99 invoices and application forms indicated that about 70% did include this. For calculating the benefit cost

<sup>&</sup>lt;sup>2</sup> Forms for the 2013 program have clarified the price that should be reported.



tests, taxes are not included as this is an economic test. Therefore the prices were netted down by about 8.5% (12% HST X 70%)<sup>3</sup>.

Exhibit 3.4.7 summarizes the average costs before and after the removal of the "outliers", and after adjustment for HST. For the purposes of the revised benefit / cost analysis, the data without the outliers will be used<sup>4</sup>.

Exhibit 3.4.7: Installed prices

	Furnace	Boiler
All Data	\$ 5,087	
<b>Exclude Outliers</b>	\$ 4,770	\$ 9,523
Exclude HST	\$ 4,365	\$ 8,713

#### 3.5 Sources of Information

The application form also asked the applicant about where they first heard about the program. Exhibit 3.5.1 summarizes the responses. The table summaries both the "Single Mention", where only one source was cited, and "Total Mentions" which includes multiple mentions. As can be seen, the contractor was the largest source of awareness, followed by the FortisBC website.

**Exhibit 3.5.1: Source of Program Awareness** 

	Single Mention	Total Mentions
Contractor	2142	2215
FortisBC Website	305	333
Word of Mouth	218	233
Newspaper	164	184
Bill Insert	123	150
Retailer	104	119
Radio	25	33
Online Ad	16	19
Unknown	115	115

<sup>&</sup>lt;sup>3</sup> The 2013 program forms have been clarified to exclude taxes from the reported costs.

<sup>&</sup>lt;sup>4</sup> Attendees at the January 10, 2013 Program Design Workshop confirmed that these installed prices were representative of market conditions.



### 4. Contractor Information

The contractor application form was completed by the contractor and must be submitted before their incentive can be paid. Contractors tend to submit their forms later than do the customers, and as of March 20, 2013, 2,328 applications had been processed in the database. This section is based on those submissions.

#### 4.1 Contractor Sales

The customer application forms show that 504 contractors took part in the program. Exhibit 4.1.1 shows the number of furnaces sold by each contractor, and shows that a smaller number of contractors sold a large number of furnaces. The top ten contractors sold 737 furnaces, or 22% of the total, while 177 contractors sold only one furnace each or about 5% of the total.

**Exhibit 4.1.1: Sales per Contractor** 

#### 4.2 Contractor information

This section contains the contact information for the contractor as well as information on the technical training he has received. Exhibit 4.2.1 summarizes the training.

	Share
TECA Quality First	
<ul> <li>Forced Air</li> </ul>	75%
-Hydronic	8%
HRAI	
- Air System Design	21%
- Hydronic Design	2%
ASTTBC	
<ul> <li>Technologist</li> </ul>	2%
ITA	
<ul> <li>Central Heating</li> </ul>	38%
- Red Seal	30%

**Exhibit 4.2.1: Contractor Training** 



The data also shows that 73%<sup>5</sup> of the installations were done by contractors who are part of the FortisBC Contractor program. Of the 18% that are not part of the program, fully 97% requested a contact from Fortis. The FBC program currently has 484 contractor companies registered out of about 2,600 in B.C, so the program was quite concentrated to program members.

**Exhibit 4.2.2: FBC Contractor Program** 

	<b>FBC Contractor</b>	<b>Want Information</b>
Yes	73%	3.5%
No	18%	97%
No response	9%	

### 4.3 Heating System Details

The next section of the application details information on the Heating system itself.

The contractor forms in this analysis indicate that 98% of the units were furnaces while the balance of 2% were boilers. This compares fairly well with the split shown in the customer applications (the population).

Exhibit 4.3.1 shows the shares of furnace blower motor types. The data indicates that the market has eliminated most of the PSC motors, which have significantly higher electricity consumption than X-13 or ECM motors.

**Exhibit 4.3.1: Furnace Blower Motors** 

Туре	Share
ECM	86.5%
X-13	3.7%
PSC	9.7%

The program accepts furnaces in need of repairs. The contractors were asked to provide an estimate of the cost to repair. Exhibit 4.3.2 shows that 70% of the furnaces did not require a repair, while 22% required a repair of less than \$1000. The average cost of repair for those furnaces requiring less than \$1,000 is \$ 435. If we assume that any furnace which required a repair of more than \$1,000 is a free rider, then about 8% of respondents fall into that category<sup>6</sup>.

**Exhibit 4.3.2: Furnace Repair Cost** 

	Share
No Repairs	70.0%
Repair <\$1,000	22.0%
Share with > \$1,000	8.0%
Avg. Cost of Repair	\$ 434.74

<sup>&</sup>lt;sup>5</sup> In the preliminary evaluation of the pilot program, based on contractor applications received by mid December, 86% of the installations were completed by FBC contractors. This indicates that FBC contractors participated earlier than the general contractor population, and may reflect that they learned of the program earlier.

<sup>&</sup>lt;sup>6</sup> Participants at the January 10, 2013 Program Design Workshop agreed with the concept of excluding furnaces in need of more than \$1,000 in repairs as free riders.



Contractors were also asked to estimate the incremental cost between the installed heating system and a base code system. For furnaces the incremental cost was \$977 while for boilers it was \$2,840.

**Exhibit 4.3.4: Cost Increment over Base** 

	Incremental Cost		
Furnace	\$	977	
Boiler	\$	2,840	

Finally, contractors were asked how they determined the correct size for the new furnace. Over 74% reported doing a heat loss calculation, which is considered the best approach (up from 65% in the 2002 Furnace Evaluation). However 10% said that they replaced "like for like". If this means that they replaced the existing furnace with one of the same input BTU rating, then they are oversizing the equipment. If they replaced the furnace with the same output BTU rating, then they will have installed the correct sized equipment only if the existing furnace was correctly sized<sup>7</sup>.

**Exhibit 4.3.5: Furnace Sizing** 

	Share
Heat Loss Calculation	74%
Replaced Like for Like	10%
Constrained by duct work	17%
Research on line / manufacturer	8%

The next section reviews the data collected from the contractors on the condition of the furnace, relative to their estimate of its remaining life. The purpose of these questions was to determine if a visual inspection would support the estimates of remaining furnace life.

Exhibit 4.3.6 shows the data in tabular form while the following charts show the data in graphic form. It should be noted that the number of data points (Count) varies by year and by question. Data is shown for years 1-10, but beyond 5 years the data is sparse and results should be viewed with caution. Count numbers shown are approximate as the actual count varies by question.

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<sup>&</sup>lt;sup>7</sup> This question has been clarified in the 2013 program application form.



**Exhibit 4.3.6: Remaining Life vs. Furnace Condition** 

Remaining Life (Yrs)	1	2	3	4	5	6	7	8	9	10
Approximate Count	315	418	238	86	538	22	17	33	3	133
Ventilation										
- Flakes / Corrosion	50%	53%	34%	43%	47%	50%	24%	21%	0%	39%
- Rust	44%	46%	50%	38%	44%	52%	25%	42%	0%	34%
- Cracks / Pinholes	9%	8%	3%	6%	5%	5%	0%	3%	0%	6%
Burner										
- Flakes / Corrosion	70%	57%	50%	39%	48%	37%	41%	41%	33%	25%
- Rust	75%	54%	49%	52%	51%	48%	52%	44%	33%	25%
- Cracks / Pinholes	9%	9%	8%	3%	6%	5%	5%	0%	3%	0%
Heat Exchanger										
- Flakes / Corrosion	52%	48%	35%	37%	40%	48%	29%	24%	0%	33%
- Rust	54%	55%	53%	60%	54%	78%	41%	42%	0%	39%
- Cracks / Pinholes	4%	4%	1%	1%	2%	5%	6%	0%	25%	6%

Exhibit 4.3.7 shows the data concerning the furnace vent, in terms of corrosion, rust and cracks. The "X" axis represents the estimate of remaining life for the furnace. The Exhibit shows that cracks and pinholes in the vents are not a significant issue and do not appear to vary significantly with the estimate of remaining life. The Exhibit shows that units with a shorter remaining life do have a higher incidence of rust and corrosion, which is highlighted by the black trend line. It should be noted that the number of data points between year 6 and year 9 is too small for valid generalization.

Exhibit 4.3.7: Remaining Life vs. Vent Condition

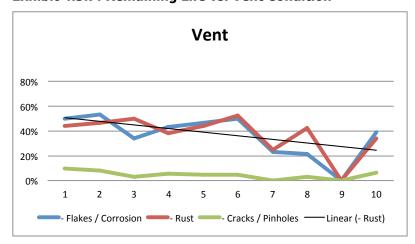


Exhibit 4.3.8 shows the relationship between remaining life and the condition of the burner. Again the data shows that cracks and pinholes are not a significant issue and occur at a low and relatively constant level across the estimates of remaining life. However the incidence of flakes / corrosion and rust are over twice as high in equipment with a one year estimate of remaining life and a 10 year estimate. This supports the contractors' estimate of remaining life in that furnaces with higher levels of corrosion and rust also had shorter remaining life.



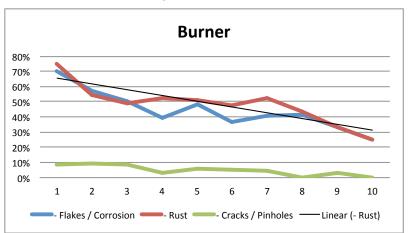


Exhibit 4.3.8: Remaining Life vs. Burner Condition

Exhibit 4.3.9 shows the relationship between the heat exchanger and estimated remaining life and again shows that cracks and pinholes are not significant. Data for flakes / corrosion and rust are less clear with a relatively flat curve from year 1-5 and then a drop to year 10.

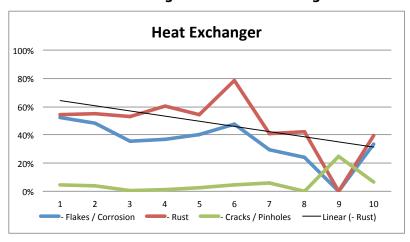


Exhibit 4.3.9: Remaining Life vs. Heat Exchanger Condition

## 4.4 Product Stewardship

One of the objectives of the program was to ensure that the old furnaces were disposed of in a responsible manner, which generally means dismantling the old unit and recycling as much of the product as possible. Contractors were asked how they disposed of the old equipment, and 95% reported that the equipment had been recycled. Only about 3% of respondents reported that the old equipment had been taken to a transfer station or a dump. About 0.3% of respondents noted that the old furnace had been left with the owner, given away or given to charity.



## 5. Data Analysis

This section provides more analysis based on the data from the Customer and Contractor application forms and inputs for the cost effectiveness tests.

### 5.1 Age Profile of Pilot Furnaces

Exhibit 5.1.1 compares the age profile of the furnaces that participated in the pilot program to the population of furnaces in B.C.. To aid in the comparison, both the population and the program furnaces have been shown as a percentage of the total number of furnaces<sup>8</sup>. For example, the Population line shows the largest share of furnaces in the population (6%) occur in year 4, while the largest share of furnaces in the program occur in year 20.

As standard efficiency furnaces have been off the market for about 20 years, the chart shows that we are addressing a significant share of the "newer" standard efficiency furnaces. This is approximately the same age profile as the program targeted, as per the program plan.

Replaced Furnace vs Population

12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
1 6 11 16 21 26 31 36 41 46

— Share-Pgm — Share-Pop
— 5 per. Mov. Avg. (Share-Pop)

Exhibit 5.1.1: Furnace Age

#### 5.2 Period of Advancement

One of the biggest uncertainties in any early replacement programs is to determine how much the program advanced the time the furnace would normally have been replaced<sup>9</sup>. Two approaches are considered in this evaluation.

1. Base the estimate on the customer's estimate of when they would have replaced the furnace had there not been a program. This is likely the weakest estimate however, as less than half of respondents provided a number while the balance said that they didn't know. Coupled with this concern is also the question of whether a homeowner has the experience

<sup>&</sup>lt;sup>8</sup> The raw data is shown as the lighter lines while the smoothed data (5 year moving average) is shown as the heavier line. Experience has shown that age estimates tend to be in 5-year increments.

<sup>&</sup>lt;sup>9</sup> As noted earlier, boilers are less than 3% of the total heating systems replaced, so the same remaining life is used for both types of equipment.



- to assess the life of a furnace. However the average of the estimates provided, 3.6 years, is quite close to the estimate from the Contractors.
- 2. Base the estimate on the contractor's estimate of the remaining life of the furnace. This was thought to provide a better estimate of the life, as contractors will have more experience with furnaces although it is not known how valid their experience in predicting remaining life is. Based on the survey, contractors estimated an average life of 4.3 years.

Figure 5.1.1 shows that the age profile of replaced furnaces matches the age profile of the older installed units quite well. The program plan included analysis that indicated if the program could address a random cross section of equipment ages for mid and standard furnaces, then the period of advancement should average 9 years. Hence both the customer and contractor estimates of remaining life may underestimate the actual impact of the program. More work on the period of advancement will be done prior to the final evaluation of the pilot in early 2014.

#### **5.3** Furnace Costs

As noted in the previous section, the average cost of a furnace was \$4,365 and the average cost of a boiler was \$8,960. The contractors also indicated that the incremental cost of the installed equipment relative to the base code requirement was \$930 for furnaces and \$3125 for boilers, which yields a price for a base furnace of \$3,435 and a code boiler of \$5,835. This data will be used to develop the economic cost of the furnace for each of the three cases.

The economic cost of the furnace or boiler is not the direct cost paid by the homeowner, but rather is the direct cost less the NPV of the cost of the furnace that he would have installed in the future. The following table summarizes these costs.

**Exhibit 5.3.1: Furnace / Boiler Costs** 

				Economic Cost			
	[	Direct	3.6	yr Adv.	4.3	yr Adv.	
Program Furnace	\$	4,365	\$	1,418	\$	1,597	
- Code Furnace	\$	3,388					
Program Boiler	\$	8,713	\$	2,995	\$	3,315	
- Code Boiler	\$	5,873					

### 5.4 Energy Saving

In the analysis energy savings were estimated in two steps. In the first step, the energy savings are the difference between the old furnace and the new furnace, which lasts for the period of the advancement. Savings for the second step are the difference between the furnace that was installed, and the furnace the customer said they would have installed had there not been a program and had they waited until the furnace failed. For the pilot program savings for the second step will be based on 41% of the respondents who said that they installed a more efficient furnace as a result of the program. The Billing Analysis, scheduled for the first Quarter of 2014 will provide a refined estimate of the savings.



**Exhibit 5.4.1: Estimated Energy Savings** 

	Furnace	Boiler
Period 1 savings (Standard)	24.0 GJ	11.1 GJ
Period 1 savings (Mid)	11.9 GJ	
Period 2 savings	1.7 GJ	7.4 GJ

Exhibit 5.4.2 shows the actual per furnace or boiler savings based on an advancement of 4.3 years. The Net Present Value (NPV) is the value of the savings over the life of the appliance while the Equivalent Annual Savings is an "average" of the savings over the lifetime.

Exhibit 5.4.2: Savings Based on 4.3 Year Advancement

	Furnace - Std (GJ)	Furnace - Mid (GJ)	Boiler (GJ)
NPV of Savings	94.9	52.1	83.3
Equivalent Annual Savings	10.0	5.5	8.8

In addition to the reduction in natural gas usage, there are also savings resulting from the more efficient ECM and X-13 furnace blower motors. As shown in Exhibit 4.3.1, 87% of participants installed an ECM motor while 4% installed an X-13 motor. These motors require less electricity than the PCM motors found in the code furnace, and should be included as part of the benefit from the program<sup>10</sup>. Exhibit 5.4.3 shows the weighted average energy savings.

**Exhibit 5.4.3: ECM Impact** 

ECM Impact		Savings*	Weighted	
	Share	kWh	GJ	Share (GJ)
ECM share	86.50%	487	1.75	1.51
X-13 share	3.70%	302	1.09	0.04
		Tota	l	1.55

As noted above, 59% of participants said that they would have purchased the same level of furnace regardless, and hence would obtain the additional savings during Period 1 only. The remaining 41% will obtain savings during Period 1 and Period 2. Based on electricity savings of 1.55 GJ for the first 4.3 years, and 41% of this (0.64 GJ) for the balance of the 18-year furnace life, this yields an Equivalent Annual Savings of 1 GJ per year of electricity (278 kWh).

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 $<sup>^{10}</sup>$  Note: more efficient blower motors use less electricity, and hence generate less heat than PCM motors. As the motor is located directly in the air path, reduced heat from the motor must be replaced by consuming more natural gas to provide the same heat to the dwelling. This additional natural gas is included in the savings estimate as 83% of the furnaces in the 2005 - 07 evaluation included ECM motors.



#### 5.5 Furnace AFUE

The program plan was based on the assumption that the new furnace would be AFUE 95. However analysis of the application forms indicated that the average AFUE of furnaces installed under the program was AFUE 96.1, which will provide additional savings.

## 5.5.1 PILOT PROGRAM IMPACT BASED ON CONTRACTOR ESTIMATE OF REMAINING LIFE

This section summarized the results of the program, based on the contractor estimate of an advancement of 4.3 years.

Exhibit 5.5.1 summarizes the impact of the program on the participant<sup>11</sup>. It shows that standard efficiency furnace participants have a positive benefit from program participation, mid efficiency furnace have a small negative benefit while boiler customers have a larger negative benefit. When all customers are considered, there is a positive net benefit. However it should be noted that this comparison is based only on cost and energy savings, and does not include other benefits such as increased customer comfort, a major factor in the decision to participate according to contractors.

**Exhibit 5.5.1: Customer impact** 

	Fui	rnace - Std	Fur	nace - Mid	Boiler	Pro	gram Avg
Direct Cost	\$	4,365	\$	4,365	\$ 8,713		
Economic Cost	\$	1,597	\$	1,597	\$ 3,315		
Incentive	\$	800	\$	800	\$ 800		
Bill Savings (NPV)	\$	1,090.95	\$	599.21	\$ 957.67		
Customer Impact	\$	294.32	\$	(197.42)	\$ (1,557.04)	\$	155.18

Exhibit 5.5.2 summarizes the results of the Benefit Cost tests for the individual furnace technologies, and for the overall program portfolio. Again the portfolio passes the MTRC.

Exhibit 5.5.2: Benefit Cost Results<sup>12</sup>

	Furnace – Std	Furnace – Mid	Boiler	Portfolio
MTRC	1.6	1.0	0.6	1.4
TRC	0.9	0.6	0.3	0.7
UTC	1.1	0.6	1.0	0.9
PCT	1.6	1.2	0.6	1.5
RIM	0.5	0.3	0.4	0.4

### 5.6 Program Natural Gas & GHG Impacts

The previous section showed the results for the pilot program based on the contractor estimate of remaining life. Additional analysis to be done prior to the full evaluation in 2014 may indicate a longer remaining life, which will increase

<sup>&</sup>lt;sup>11</sup> Analysis is based on an average nominal price of natural gas over 18 years of \$11.50.

<sup>&</sup>lt;sup>12</sup> Benefit / cost results provide by Fortis BC, based on inputs from this evaluation.

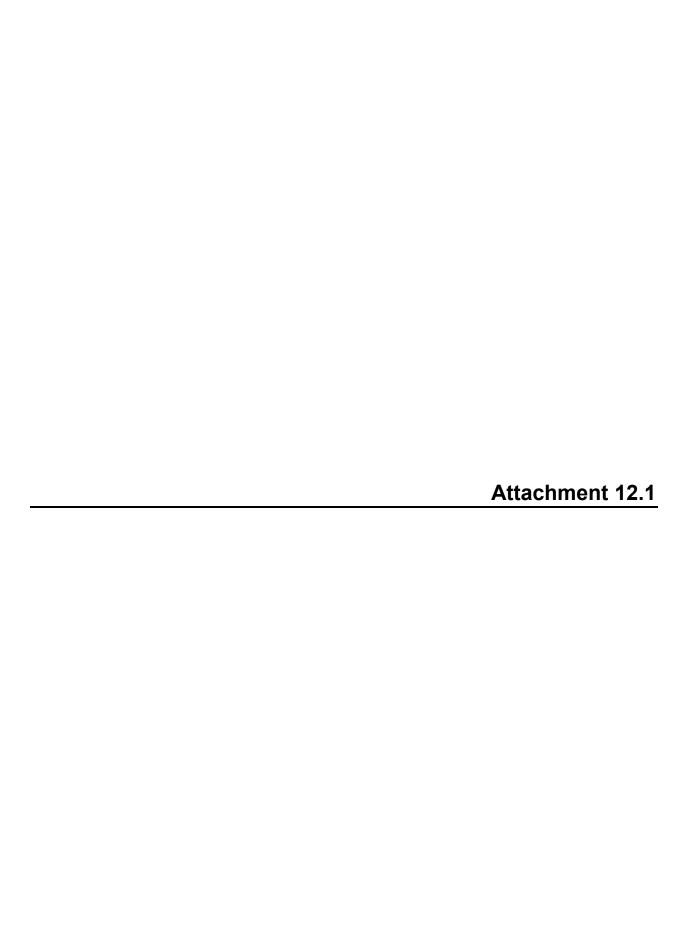


the natural gas savings and GHG impacts.

The following exhibit summarizes the natural gas and GHG impacts of the 2012 Furnace Early Replacement Pilot program based on the estimate of 3031 furnaces and an 8% free rider rate.

**Exhibit 5.6.1: Energy and GHG Impacts** 

4.3 Year Advancement	Natural Gas		GHG	
(GJ)	Total	NPV	Total	NPV
Standard Efficiency Furnaces	277,826	208,700	13,891	10,435
Mid Efficiency Furnaces	38,319	26,889	1,916	1,344
Boilers	10,788	6,038	539	302
Total	326,934	241,626	16,347	12,081





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# **Background And Objectives**

### **BACKGROUND**

A number of Energy Efficiency (EE) programs have been developed to encourage residential and commercial users to reduce their energy consumption. One such program is LiveSmart BC, a joint retrofit incentive initiative between FortisBC, Terasen Gas (Terasen), BC Hydro and the Ministry of Energy.

The success of these programs depends on both contractor and homeowner participation. New programs are being developed to educate and provide information to contractors and building trades. Stakeholders such as Terasen and LiveSmart BC partners are interested in understanding how to:

- Disseminate program information to those in the building industry;
- Assist or train contractors and trades to promote energy efficiency programs to homeowners; and,
- Use views and feedback from industry professionals for program development.

# Methodology

## **METHODOLOGY**

Study partners had a large number of information needs, so a qualitative phase was added to supplement the planned quantitative survey. This report summarizes findings from the qualitative in-depth interviews.

- 15 telephone interviews were conducted in December 2010 and January 2011 with contractors involved in the home building or renovation field. Contractors represented the following industries: insulation, glass, plumbing, and heating (both natural gas and electric).
- Interviewees were scheduled by a professionally trained recruiter using a screening questionnaire.
   Interviewees were paid a cash incentive for their involvement in this study.
- Interviews were between 30 minutes and 75 minutes in duration.
- All interviews were conducted by Anne Jacox of Cue Research.

# Summary Of Findings (1)

The following observations surfaced from the qualitative phase. While they are not meant to serve as conclusive findings about all contractors, they provide a number of insights that can inform the future quantitative study.

## Contractors' Involvement in Energy Efficiency (EE) Inventive Programs

- As they stand, current EE Incentive programs are not compelling enough for contractors to become fully engaged. Participants suggest that programs need to offer a greater value proposition for contractors to get involved.
- A key barrier to contractors' participation in EE Incentive programs appears to be their feeling that the rewards do not compensate sufficiently for the time and energy invested both the added un-billable time with the customer, and extra time completing paperwork. Strategies that reduce the time required will be very important to gain contractors' full involvement. This could amount to simplified paperwork, or simplified programs that are easier for contractors to learn about and communicate to consumers
- A second key barrier to contractors' full involvement is their reluctance to promote programs that are constantly changing or may end abruptly. Several mentioned the unexpected withdrawal of federal government rebate programs that gave customers a large discount on a new furnace. Other programs offer much lower incentives and contractors fear the parameters might change without their knowledge. Because of this, contractors tend to avoid giving their input altogether, often advising customers to learn more from the program website directly. Given the importance of contractors' influence in consumers' decision making, creating more stable, enduring programs, and developing more effective methods for contractors to communicate these program offerings to consumers is recommended.

# Summary Of Findings (2)

## **Customers' Involvement In EE Incentive Programs**

- Some contractors feel that current programs do not offer enough value to customers due to the cost of home inspection, time required for pre- and post-inspections, and paperwork required.
- They feel that EE Incentive programs can be of significant value to the customer, if the programs offer enough of a financial incentive.
- Contractors suggest that good EE Incentive programs should specify a deadline that motivates action. Some suggest that significant rebates toward new appliances would be the most soughtafter reward for an EE Incentive program.

## **Communications**

- To learn about EE Incentive programs, contractors recommend either emails that are specific to these programs or a forum where they could meet face-to-face and ask questions (e.g., BC Safety Authority meetings).
- The easier these programs are to communicate, the more likely they are to gain contractors' involvement in promoting them. Time (in educating customers) is money to contractors. Materials that expedite the communications process are desirable, such as brochures. Websites seem to be an expectation, and serve as an important tool for addressing consumers questions.
- Most contractors do have an advertising budget, although word of mouth is very strong in their industries.

## **Training And Upgrading**

 While some would like opportunities to upgrade their skills, they seem opposed to training sessions that focus on marketing and sales of products or programs. Training programs that offer genuine and relevant skills would be of interest to some of the contractors.







## Awareness Of EE Incentive Programs

## **Contractors**

- Contractors become aware of EE incentive programs through a variety of sources:
  - Manufacturers
  - Suppliers
  - Customers
  - Other contractors
  - Brochures, newsletters
  - Their marketing consultant
- Many of the contractors involved in this study were vague about specific EE incentive programs that are available. Although they stated they are aware of EE programs, many feel they are not up to date on the availability of current offerings.

## **Customers**

- Contractors are sometimes the source of information for the customer in creating awareness of EE incentive programs.
- Contractors sometimes offer the customer a brochure (if they have it available), but are more likely to direct the customer to the appropriate website in order to learn about the incentive program requirements themselves.

## Value Of EE Incentive Programs

- While many of the interview participants feel that EE incentive programs are no longer of value, discussions indicate they can be of value if they meet one or more of the following criteria:
  - They provide enough of an incentive to motivate the customer to action, i.e., purchase a new product rather than repair an existing product.
  - The program has a specific time frame (i.e., closing date) as this further motivates the consumer to make a decision, and, they know the program will not be unexpectedly halted.
  - The incentive is of enough value (i.e., creates good business for the contractor and saves the customer money).

# **Barriers To Contractor Participation**

- Number of incentive programs / changes to incentive programs some contractors indicated that EE incentive programs are rapidly changing, hence, it is difficult to keep abreast of what is currently being offered. Many also feel that the low savings or rebate results in them being less interested in keeping current with these programs.
- Lack of value to contractor many of the smaller incentive programs are not worth the contractors' efforts in filling out the required paperwork. This takes time away from the work they are getting paid for, hence, it is often not worthwhile for them.
- Lack of value to customer some customers feel the incentives are too low, or are simply not
  interested in finding out all of the details due to the perceived low value.
- Administrative requirements current incentive programs are more complicated and require more paperwork than the original ones that had larger incentives.
- **Time commitment** due to the amount of paperwork and the need to go through the paperwork with the clients, contractors find incentive programs add time to each call, and this is time that they are not making any money on.
- Awareness of current programs being offered because there are more and more incentive programs, and they keep changing, contractors are often not comfortable in being the source of information for the customer. They do not want the responsibility of ensuring the information they are providing to the customer is up-to-date, hence, they will direct the customer to a website rather than becoming involved.
- Not relevant to their business many contractors feel that these programs are not relevant to their business, for example, insulation contractors generally feel that once the customer is ready for their service, they have already assessed available programs and included them in the work they request.

# Perceived Barriers To Customer Participation

- Lack of interest/value some incentive programs are of low value to the customer, hence, consumers are unwilling to find out all of the program information.
- **Higher cost of equipment** programs that require new appliances, such as a high efficiency furnace, are often not desirable due to the high cost of this product, the high cost of gas, and the feeling that the furnace will cost more in repairs once the warranty expires.
- **HST** a number of contractors indicated that sales in general have fallen as customers are reluctant to purchase a high cost appliance (e.g., high efficiency furnace) when there is question as to whether there will be a referendum on HST.
- Additional costs other incentive programs have a cost associated with them to the customer, e.g., having an inspection of the home requires additional funds.
- Confusion most customers are confused about the incentive program requirements and need assistance from the contractor in order to fulfill program requirements.
- **Amount of work required** some feel there is just too much work required in order to find out about the program and gather and submit the necessary paperwork.
- Skepticism some are skeptical of these programs feeling that utility costs are high and these programs are not going to reduce the high cost of their daily living. One contractor stated that consumers are increasingly complaining about the high cost of their utility bills and wondering why these companies cannot reflect incentives in the monthly cost of their bills, rather than requiring them to do additional work to get rebates.



#### **Preferred Means Of Communications**

- Most of the contractors who participated in this study suggested that brochures that come in the mail are the preferred means of getting information to them. However, their awareness in regard to specific programs, or details of the programs, suggests that they might not read this information closely.
- Some indicate that the best means of communicating with them is in a forum where they could meet face to face, have the information explained, and have the opportunity to ask questions. One respondent stated that a representative of a utility company attending one of their industry safety meetings might be an appropriate venue. He also suggested that most contractors would show up if a free lunch was included.
- Some feel that email is the best means of communicating program information; particularly if the email is specific to incentive programs and brief enough to highlight the key information. The email might also include attachments that could be printed for distribution to customers.
- Any information that is viewed as an asset to their business (e.g., something that will aid in generating new business or making a profit) will be welcomed by contractors. Manufacturers are felt to be a valued source of information as they provide sessions to familiarize contractors with their products, provide trouble-shooting support, and offer promotions (e.g., cash back) that the contractor can use to give the customer a discount, give the customer a free product such as a thermostat, or simply use the cash to enhance their profit on the job.

### Desirable Support Materials

- The following were suggested by some contractors as desirable support materials (materials they could have available for their customers):
  - Website address; and,
  - Brochures with pictures and bullet form information (concise, limited).
- One contractor suggested that a website to direct customers to is best, as the frequency of changes to programs is too rapid for him to become aware of, and he does not want to be responsible for providing inaccurate information to the customer.
- Some contractors indicated they would provide brochures to customers if they had them available.
- It should be noted that contractors really want the customer to assume responsibility for these incentive programs, as they do not want to add un-billable time to each project in order to educate the customers. However, they strive for customer satisfaction, hence, would like to be able to quickly give the customer information that might enhance their image as a service provider.

## Contractors' Advertising

- Most have an advertising budget and the size of that budget varies considerably.
- Many use the Yellow Pages and a website to promote their business. Some will also take advantage
  of opportunities they are presented with, such as a deal on flyer distribution to neighbourhoods.
- Most are not really sure what the impact of their advertising is having, so will try different methodologies (that are low cost), or stick to what they have been doing.
- Word-of-mouth tends to be strong in this industry.

#### **Co-op Advertising:**

• Most contractors would be interested in any type of co-op advertising they felt would enhance their business. Brochures that are linked to utility companies (by having the utility company and contractor logo on them) are felt to be appealing as the utility endorsement would lend credibility to the contractor and provide an information piece that could be left with the customer.



## Training And Upgrading

- Attitudes toward training and upgrading vary substantially. Some are very interested in any training that will benefit their skills, aid in making recommendations to their customers, and keep them abreast of new technologies or techniques relevant to their field. Hands-on training is of particular value to these individuals. In other words, if the training will add value to the product they offer, and in turn, increase sales, they are interested.
- There are concerns that training offered through utility companies might be related to marketing and sales of products or programs. There is no interest in this type of training.
- Some recognize the need for on-going training and upgrading, stating that the technology is continually changing. As one interviewee stated, "plumbers used to be able to handle any heating problems, but heating is increasingly becoming an area of specialization." However, their time is limited as training means time in which they are not making money. Manufacturer training sessions are valued as it is specific to the products they are dealing with.
- Most indicate that they do not want these sessions to be longer than half a day (they are really looking for information sessions, rather than training sessions).
- Interest in training and upgrading varies according to:
  - The age of the contractor (e.g., how close to retirement he is, whether he is looking for new business).
  - The number of employees in the business.
  - How specialized the business is (e.g., some feel that they have such an exclusive product that new training would not benefit them).
  - The type of customer they have (e.g., if the customer has no concerns regarding the cost of a project, or if the customer has a lot of concerns about minimizing the cost of a project).

#### Certification

- Very few indicated they would be interested in additional certification, as this would not benefit their business or their customers.
- One interviewee indicated he would be interested in additional certification as any added credentials increase the credibility of the company to his customers, hence, an asset to business sales.

#### **Information Needs**

- Most contractors are more than satisfied with the amount of information they receive from industry
  association newsletters and magazines that are specifically tailored to the needs of their profession.
  In fact, many have difficulty keeping up with the printed materials they currently receive.
- Contractors are more likely to gain new technology information and other insights from the following sources:
  - Manufacturers;
  - Trade publications;
  - People they work with; and,
  - Other trades workers.



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#### Foreword (1)

#### **BACKGROUND**

A number of Energy Efficiency (EE) programs have been developed to encourage residential and commercial users to reduce their energy consumption. One such program is LiveSmart BC, a joint retrofit incentive initiative between FortisBC - Electric, Terasen Gas (Terasen), BC Hydro, and the provincial Ministry of Energy and Mines. In order to assist with further development of EE programs and to strengthen contractor involvement, the LiveSmart BC partners commissioned TNS to conduct a two-part study among BC contracting companies.

#### **OBJECTIVES**

The success of EE programs depends on both contractor and homeowner participation. New programs are being developed to educate and provide information to contractors and building trades who LiveSmart BC partners recognize as having a key role in influencing the consumers' choice of building materials and appliances. As new energy efficiency programs are developed, the LiveSmart BC partners are interested in:

- Quantifying awareness of and participation in existing energy efficiency programs;
- Understanding how contractors prefer to be communicated with and how they disseminate information to residential customers;
- Determining the importance of incentives for residential customers and contractors to boost program participation;
- Gauging interest in training programs to promote energy efficiency programs to homeowners and preferred formats; and,
- Using views and feedback from industry professionals to guide information dissemination and program development.

Study results will be used to inform the development of a trade relations strategy.

#### Foreword (2)

#### **METHODOLOGY**

LiveSmart BC partners had a large number of information needs, so a qualitative phase was added to supplement the planned quantitative research. A separate report summarizing the findings of 16 in-depth qualitative interviews with contractors was prepared. This report summarizes findings from the quantitative phase, with reference to key findings from the qualitative phase.

Quantitative research was conducted by telephone between February 18 – March 14, 2011 (note: research was conducted before Terasen Gas was rebranded as FortisBC). A total of 200 representatives of companies providing residential contracting services across BC participated in the study. The sample was comprised of contracting companies providing residential Heating, Ventilation, and Air Conditioning (HVAC) services (electric and natural gas), window installation, and insulation. To qualify to participate, all respondents had to have an influence over residential customers' choice of heating options or appliances. Participants included contractors, business owners, and salespeople.

For a more complete description of the research methodology, please refer to the Appendix to the Methodology section.

#### Foreword (3)

#### THE STUDY FINDINGS

Results of the research are presented under the following main headings:

- Executive Summary
- General Summary
- Appendix to the Methodology
- Appendix
  - Questionnaire

#### **NOTE OF CAUTION**

Data derived from sample populations are subject to variance. In order not to imply an unwarranted degree of precision, all percentage figures in the General Summary have been rounded to whole numbers; therefore, percentages may not total 100.

Further, it should be noted that percentages derived from "actual" bases of less than 100 respondents should be interpreted with caution, while percentages derived from "actual" bases of less than 50 should be interpreted with extreme caution.

March 2011



### Executive Summary (1)

The following findings emerged from a quantitative telephone survey conducted with 200 BC-based contracting companies.

#### **Knowledge Of Energy Efficiency ("EE") Programs**

- Awareness of energy efficiency programs is high, with 90% of contractors claiming to have general awareness of programs.
- Participation rates varies by utility / program. Just over half (53%) claim to have participated in LiveSmart BC, while 37% of respondents within FortisBC Electric's service territory claim to have experience with their rebate programs (note: research was conducted before Terasen Gas was rebranded as FortisBC). In terms of individual initiatives, respondents are most familiar with Terasen's Efficient Water Heater Upgrade Program. The most recognizable BC Hydro program is the Energy Star Appliance Rebate while FortisBC Electric's top program is the Air Source Heat Pump Rebate / Loan program.

#### **Communicating With Contractors**

- Contractors learn about energy efficiency programs from a wide range of sources. Manufacturers are a primary information source as are utility companies' websites and general emails / Internet searches. Emails / Internet emerged as the preferred communications method.
- When asked specifically about the viability of utilities using email to inform contractors about energy efficiency programs, contractors are resoundingly in favour of this approach.
- In terms of utility company's communications with contractors, roughly one-third of respondents do not recall receiving any residential energy efficiency program updates from Terasen, BC Hydro, or LiveSmart, while recall levels are even lower for FortisBC - Electric (which operated regionally at the time of this study).
- About one-half of contractors took issue with the quality of current information they receive about EE programs.
  Reasons given relate to: 1) frustrations in getting factual information, 2) problems with access to, and frequency of, current information including program changes and options and, 3) lack of proactive and advance communication from EE program partners.
- When presented with statements about EE programs, over 90% of contractors were in strong agreement that: 1) customers expect them to know all the program requirements and 2) that contractors see the potential for EE programs to build their business.

#### Executive Summary (2)

 Over 75% of contractors agreed that 1) the best communication tool for consumers is utility company websites and the LiveSmart BC site, and 2) that EE programs change too often. From this, we can see that contractors do struggle with a lack of knowledge about EE programs but retain a desire to promote and build their businesses through effective promotion of EE programs.

#### **Communicating With Residential Customers**

- Most contractors prefer face-to-face methods to promote EE programs. This may be because this is how business is done traditionally in this industry. We note that 40% of respondents have operated their businesses for 30 years or longer. After this, contractors use newspaper (15%), telephone (15%), and their own brochures (17%) for promotion.
- Over two-thirds (69%) say they are interested in co-op advertising with the utility partners.

#### **Incentives**

 The research shows in the minds of contractors, adequate incentives are crucial to driving participation for both residential customers and contractors.

#### **Barriers To Participation**

According to the contractors, the biggest barrier to residential customers' adoption of EE programs is the expense
of the products, but many do not follow-through due to: 1) too much paperwork (19%), 2) need for more
information (13%), and 3) inadequate rebates.

#### **Training And Upgrading**

- Results show the majority of contracting companies are interested in utility company / government funded training opportunities. Cost, presumably relating to covering lost wages, is the primary concern raised by respondents.
- Course content also arose as a factor. From the qualitative research, it appears this concern relates to training programs that focus on marketing and sales of products or EE programs. Contracting companies want training programs that offer genuine and relevant skills.

#### **Opportunities**

There are three opportunities we recommend the LiveSmart BC partners address in the development of a trade relations strategy:

- 1. **Effective EE Program Promotion Requires Current Information.** Contractors recognize that effective promotion of EE programs can bring new business to them. Although 90% say they are aware of the LiveSmart BC program elements, many clearly lack details and have difficulty keeping pace with program developments and changes. Their preference is for proactive communication via email or alerts with links to new information posted on partner websites.
- **2. Cooperative Advertising** is an area of opportunity for promoting the residential EE programs jointly with contractors. Close to 70% were supportive of co-op advertising, likely because it relieves them of assembling all the facts and incentive details into their own advertising materials. As well, a co-op advertising program would be an excellent bridge to establishing a deeper relationship with contractors.
- **3. Education and Training** is potentially a large commitment on the part of both the contractors and the LiveSmart BC partners, yet EE program training is embraced by 90% of the contractors, even though some details of cost and lost wages will need to be worked out. The desire for training is driven by the change in program elements, plus the need to fully understand the benefits of the EE products. Contractors know that factual information can help sell these programs to customers. They need to see the value of their customers' investment in EE products versus cost. While in-person training is preferred, regularly scheduled webinars or 'You Tube' tutorials, would likely be cost effective for both parties.





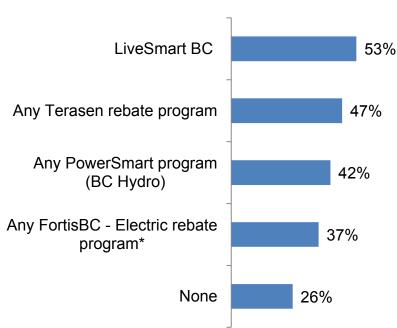
# Awareness And Participation In Residential Energy Efficiency Programs – All Respondents

- 90% of contracting company representatives indicated awareness of BC government and utility companies' energy efficiency programs aimed at residential customers.
- In terms of actual program participation, respondents were most likely to have recent experience with LiveSmart BC, followed by Terasen's rebate programs, and BC Hydro's PowerSmart programs.

### Awareness Levels Of Residential **Energy Efficiency Programs** 39% Very aware Somewhat aware 51% Not very aware 9% Not at all aware 2%

Base: Total Respondents (n=200)

# Energy Efficiency Programs Participated In Over The Past 2 Years



Base: Total Respondents (n=200) with the exception of \*FortisBC – Electric which reflects respondents in service territory only (n=52)

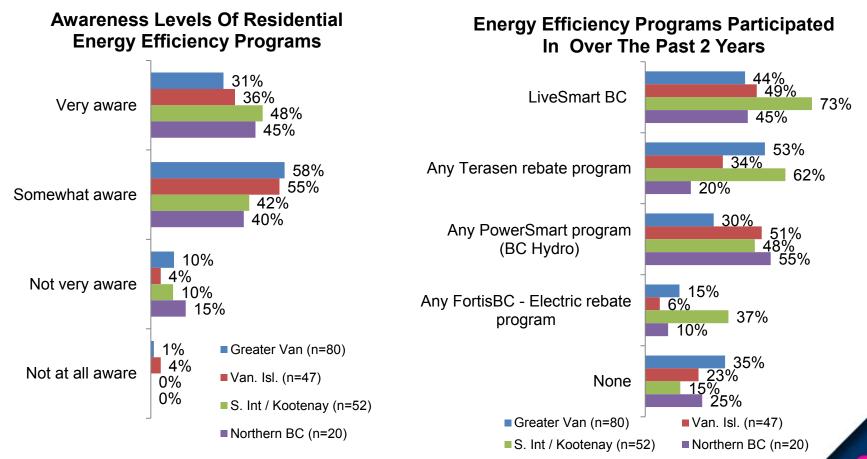
Q2A: How aware would you say you are with the residential energy efficiency programs currently offered by BC's utility companies and the provincial government?

Q2B: I am going to read you a list of residential energy efficiency programs, could you please tell me which ones you have participated in over the past 2 years?



# Awareness And Participation In Residential Energy Efficiency Programs – By Region

 While awareness levels are relatively consistent across the province, program participation varies considerably by region. Contracting companies in the Southern Interior / Kootenays report substantially higher participation in LiveSmart BC and Terasen's programs



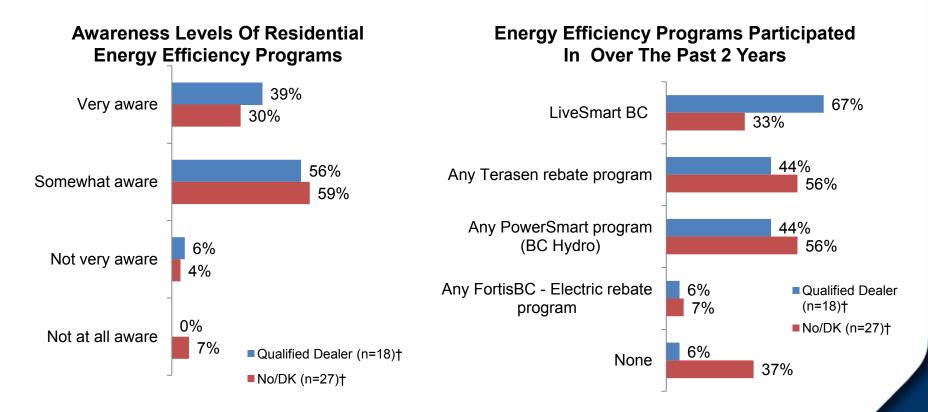
Q2A: How aware would you say you are with the residential energy efficiency programs currently offered by BC's utility companies and the provincial government?

Q2B: I am going to read you a list of residential energy efficiency programs, could you please tell me which ones you have participated in over the past 2 years?



# Awareness And Participation In Residential Energy Efficiency Programs – Qualified Dealers

Terasen Gas' Qualified Dealer program operates on Vancouver Island only. While awareness of EE programs is high among both those in the Qualified Dealer program and those who are not, program participation does vary considerably. Qualified Dealers are much more likely to participate in the LiveSmart BC initiative, while more than one-third of those not enrolled in the Qualified Dealer program report participating in no EE programs.



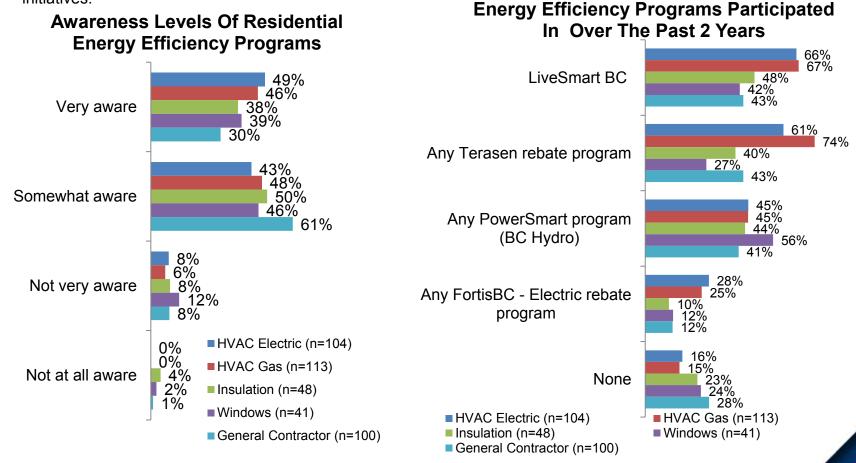
Q2A: How aware would you say you are with the residential energy efficiency programs currently offered by BC's utility companies and the provincial government?

Q2B: I am going to read you a list of residential energy efficiency programs, could you please tell me which ones you have participated in over the past 2 years?



# Awareness And Participation In Residential Energy Efficiency Programs – By Contractor Type

While awareness of residential EE programs is relatively constant across all types of contracting companies, program participation does vary. HVAC companies, particularly those working with natural gas, are more likely to participate in LiveSmart BC and Terasen programs while window installers report higher than average participation in BC Hydro initiatives.



companies and the provincial government?

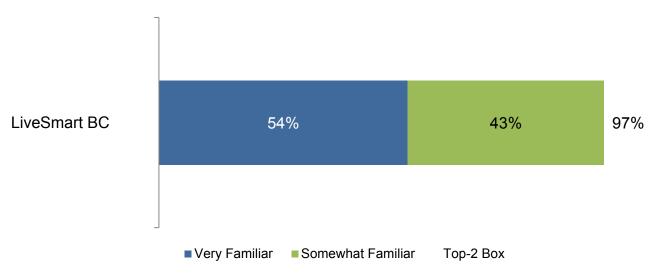
Q2B: I am going to read you a list of residential energy efficiency programs, could you please tell me which ones you have participated in over the past 2 years?

Q2A: How aware would you say you are with the residential energy efficiency programs currently offered by BC's utility

# Familiarity With Specific LiveSmart BC Programs

 Almost all respondents who have recent experience with LiveSmart BC claimed to be familiar with the program elements.





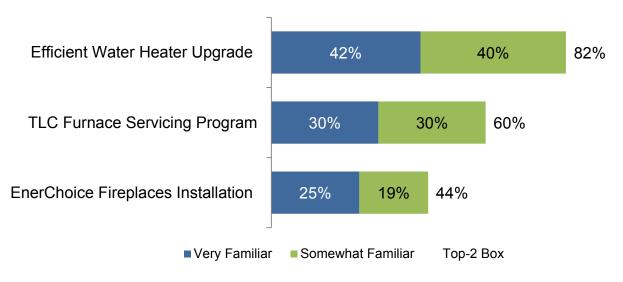
Base: Total Respondents Reporting Recent Participation in LiveSmart BC Programs (n=106)



# Familiarity With Specific Terasen Gas Programs

 Among respondents who have recent experience with Terasen Gas programs, the Efficient Water Heater upgrade program is most recognized.





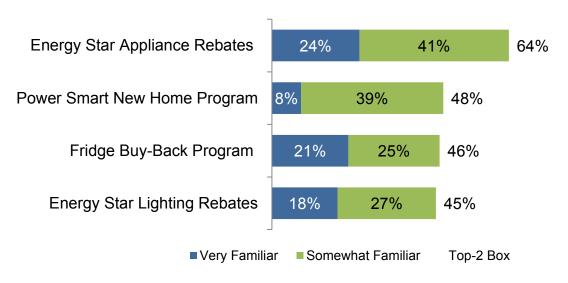
Base: Total Respondents Reporting Recent Participation in Terasen Gas Programs (n=94)



# Familiarity With Specific BC Hydro Programs

 Among respondents who have recent experience with Power Smart (BC Hydro) programs, the Energy Star appliance rebate program is most recognized.

# Familiarity With BC Hydro's Energy Efficiency Programs (Top-2 Box)



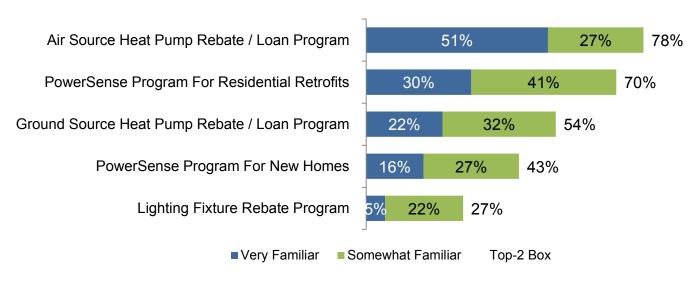
Base: Total Respondents Reporting Recent Participation in BC Hydro Programs (n=84)



# Familiarity With Specific FortisBC - Electric Programs

- Only a small number of respondents fell within FortisBC Electric's service area during the survey, thus the number of respondents participating in a FortisBC - Electric program is low (n=37 respondents).
- Among respondents who have recent experience with FortisBC Electric's programs, the Air Source Heat Pump rebate program is most recognized, with just over half being 'very familiar' with the initiative. Awareness of the PowerSense retrofit program is also high, although respondents are more likely to be 'somewhat familiar' with it.

# Familiarity With FortisBC – Electric's Energy Efficiency Programs (Top-2 Box)



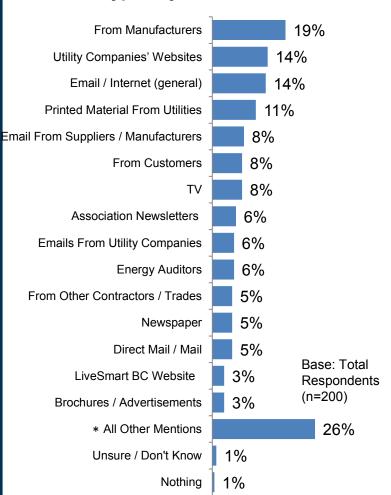
Base: Total Respondents Reporting Recent Participation in FortisBC - Electric Programs (n=37)





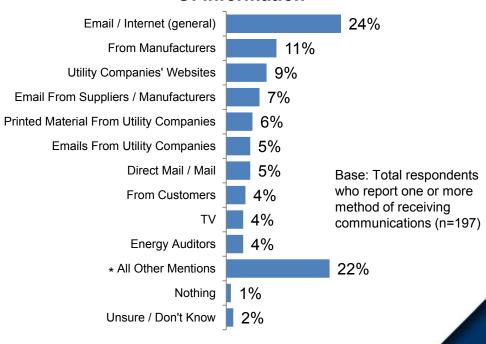
# Residential Energy Efficiency Programs Information Sources

#### How Energy Efficiency Programs Are Typically Learned About



Contractors obtain information on residential energy efficiency programs from a wide variety of sources. Manufacturers and utility companies' website are mentioned most frequently as information sources. When asked for the preferred method of communication, results show a strong preference for receiving updates by email or via the Internet (note: data reflects those who named these communications vehicles, but did specify a particular source).

### Most Preferred Way To Receive This Type Of Information



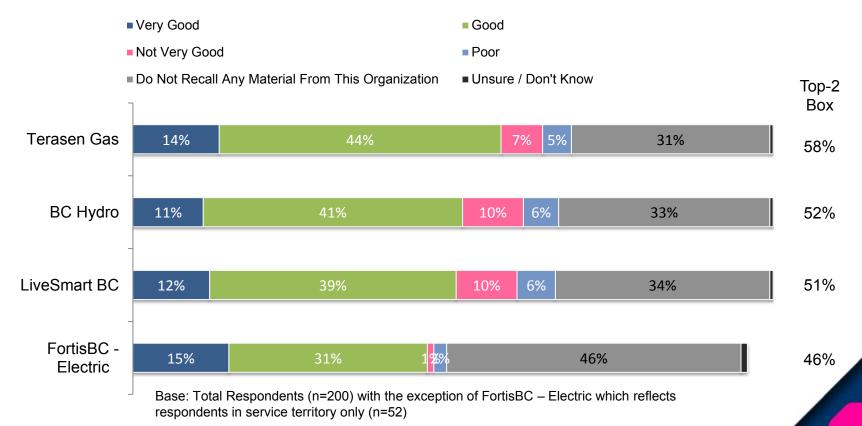
Q4: How do you typically learn about residential energy efficiency programs that involve incentives / rebates for consumers? Q5A: What is your most preferred way to receive this type of information?



<sup>\* &#</sup>x27;Other mentions' include Trade Publications, Wholesalers/Distributors, emails from LiveSmart BC, and radio

# Rating Of Current Communications Material

- All respondents were asked to assess the communications material they receive about residential energy efficiency programs from BC utilities and the provincial government. Note that approximately one-third of respondents could not recall receiving any material from Terasen, BC Hydro, or LiveSmart BC and close to half of those in FortisBC Electric's service territory had no recollection of the company's material.
- Terasen's communications material received a strong endorsement (58% provided a Very Good / Good rating). Just
  over half of respondents awarded a Very Good / Good rating for materials received from BC Hydro and LiveSmart BC.



Q5B: We're interested in your impressions of current communications material you receive about residential energy efficiency programs. How would you rate the material you receive from...?

#### Verbatim Comments On Communications Material

Those who voiced dissatisfaction with a company's communications were asked to provide their reasons.

#### Terasen Gas:

"Because they don't provide the customer with all the options available. It's almost directing them to one solution."

"They do not inform the contractor ahead of time."

"Because of the frequency and the way we're updated is not frequent enough. We're the ones selling - they should be coming to us."

#### BC Hydro:

"They don't proactively send anything out to say, 'hey we have something new cooking'."

"You have to hunt for it, basically on the Internet, you have to research it rather than them providing it."

"The information on there (the website) is not very accurate and not very well written or clear."

"We don't seem to get the mail outs that we used to. When it concerns BC Hydro these days you hear about it secondhand."

#### LiveSmart BC:

"Because they keep changing unit qualifications."

"There are options out there that they're not telling people. It would be nicer to give customers options who can't afford a full window package."

"The only way we get info from LiveSmart is to go only from sheets or from what the energy assessment people tell us."

"I don't get the proper information on how to apply for a rebate. I haven't received anything from them regarding rebates this year."

"They have to do some work. They don't provide enough material, we always have to search for it."

#### FortisBC - Electric:

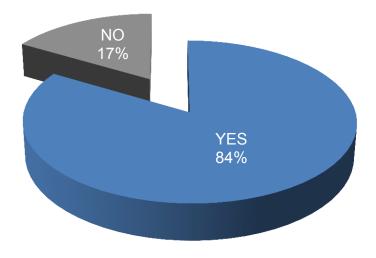
"I usually have to contact them and than I don't get good answers, or my contact doesn't know."

"Because they keep changing the rules. I think they've changed it four times now."

"I think it's biased because it doesn't give all the true options for energy efficiency ."

# The Viability Of Using Email To Communicate With Contractors

- As earlier results show, contracting companies rely heavily on information received by email to learn about new products and services.
- Respondents clearly see email from utility companies and the provincial government as a viable way to receive information about residential energy efficiency programs.



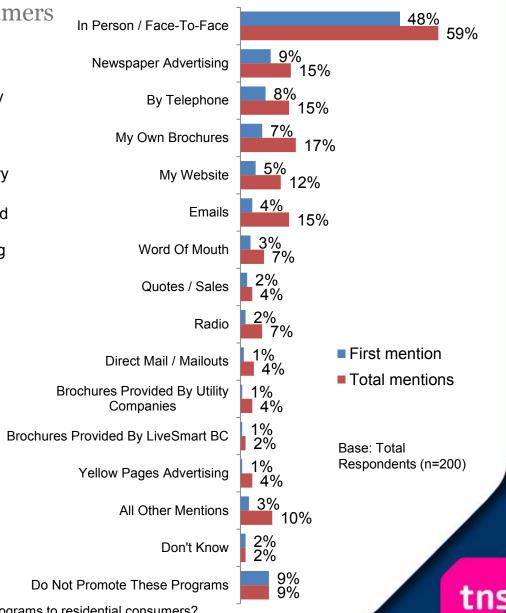
Base: Total Respondents (n=200)



#### Methods Used To Promote

**Energy Efficiency Programs To Consumers** 

- Results show contracting companies rely heavily on face-to-face interactions to promote residential energy efficiency programs (mentioned first by almost half of respondents).
- Newspaper advertising, telephone solicitation, and company brochures are moderately popular secondary avenues to reach residential customers.
- There were few mentions of using brochures produced by utility companies / LiveSmart BC, suggesting that these means are not a cost effective way of conveying information to residential customers.

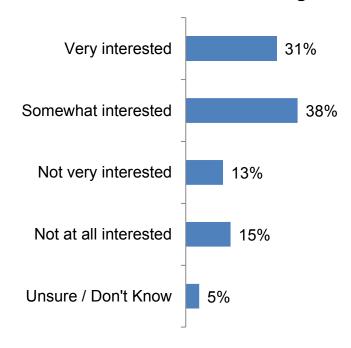


Q6A/B: Which methods do you use to promote energy efficiency programs to residential consumers?

# Interest In Participating In Co-op Advertising

- Despite heavy reliance on in-person interactions to promote residential energy efficiency programs, more than twothirds of contracting companies express interest in co-op advertising in conjunction with utility companies.
- Interest levels are noticeably higher in the Southern Interior / Kootenays (87% are interested).

# Interest Levels For Participating In Co-op Advertising



Base: Total Respondents (n=200)

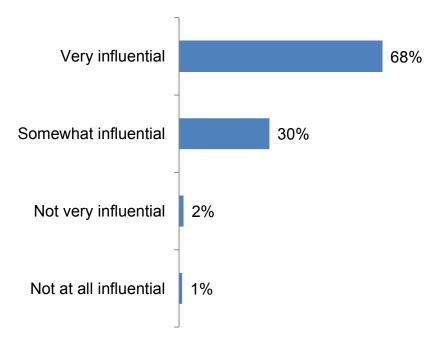
Q6C: How interested would you be in participating in co-op advertising – that is advertising that is cost-shared with utility companies to promote residential energy efficiency programs?



## Importance Of Incentives / Rebates For Consumers

Contracting companies were asked to assess how influential rebates / incentives are for encouraging residential
participation in energy efficiency programs. Results show that almost all respondents believe rebates / incentives are an
influential force driving participation (over two-thirds felt they were very influential).

## Influential Rating For Incentives / Rebates For Residential Consumers



Base: Total Respondents (n=200)

Q7: How influential do you think rebates / incentives are for residential consumers to encourage participation in energy efficiency programs?

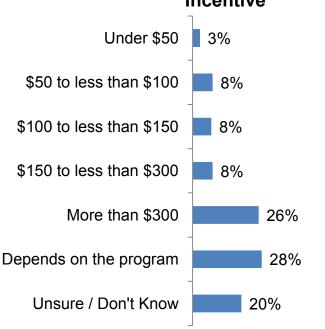
### Importance Of Cash Incentives For Contractors

- Similar to the importance of incentives to drive energy efficiency program participation among consumers, 87% of respondents believe incentives are important to contractors' participation as well.
- Those feeling incentives are important were questioned about the appropriate amount of a cash incentive. Opinion was split with approximately one-quarter feeling the incentive should be program specific, while roughly the same number believe incentives of \$300 or more are warranted.

### Importance Of Cash Incentives To **Contractors** Very important 49% Somewhat important 38% Not very important 7% Not at all important 6% Unsure / Don't Know 1%

Base: Total Respondents (n=200)

# Appropriate Dollar Amount For An Incentive



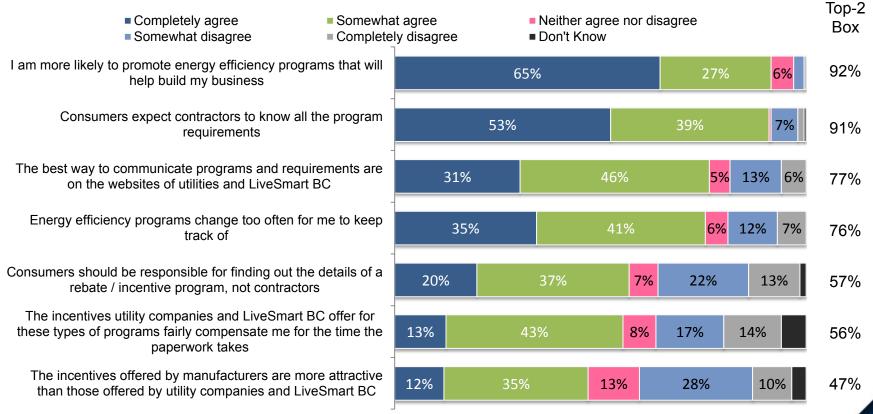
Base: Total respondents who say cash incentives are very important / somewhat important (n=174)

Q8A: And, how important would you say cash incentives, which are paid directly to contractors, are to encourage contractor participation in utility / provincial government energy efficiency programs aimed at the residential market?

Q8B: Could you please tell me what you feel is an appropriate dollar amount for a contractor's incentive from a utility company or LiveSmart BC for a residential program?

## Opinions On Residential Efficiency Programs

Contractors clearly see the potential of energy efficiency programs to build residential business. They also recognize consumers expect them to be the source of up-to-date program information. However, contractors find it challenging to keep up with changing requirements, leaving many to believe the onus to research current program requirements should fall to the consumer. Opinion on current incentives offered by utilities are mixed; some respondents believe manufacturers incentives are more attractive than those offered by utility companies.



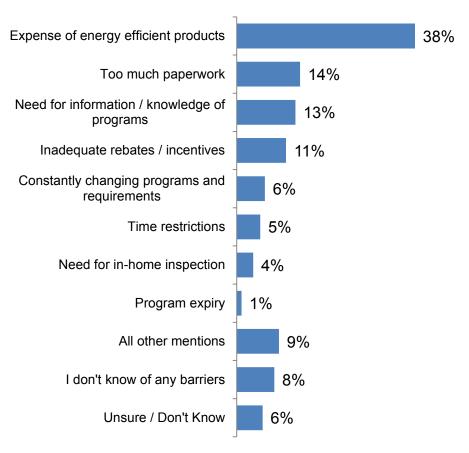
Base: Total Respondents (n=200)

Q9: I'm going to read you some statements about energy efficiency programs. We're interested to know how much you agree or disagree with each statement.

## Perceived Barriers Impacting Consumer Participation

- Contractors were most likely to cite the expense of energy efficient products as a barrier to consumer participation.
- Paperwork, need for knowledge of program elements, and inadequate incentives were secondary barriers.

### **Barriers For Participation**



Base: Total Respondents (n=200)

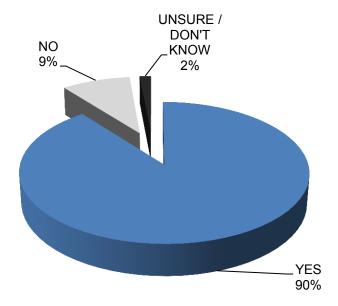
Q10: Now, based on what you may know or have heard your residential customers say, what are the barriers to their participation in energy efficiency programs?



### Company Support For Employee Training

### In Energy Efficiency Technologies

- Respondents indicate very strong interest in utility company / government training related to energy efficiency, new technologies and skills development.
- The 9% of respondents who did not support this type of training were most likely to cite lack of time as their primary reason.



Base: Total Respondents (n=200)

## **Factors Influencing Training Participation**

- All respondents indicating support for participation in employee training programs were asked what factors would be important in the decision to send employees.
- Although participants were told such training would be utility or government-funded, respondents mentioned cost often as a factor. It is assumed that respondents are referring to covering employee wages when they are training rather than working. Study partners may wish to offer a wage subsidy to boost participation rates.
- Another common concern was course location / travel time. Not surprisingly, respondents outside of Greater Vancouver were most likely to voice this concern. Should study partners offer in-person training, it is suggested that sessions are held in various locations around the province or an allowance for travel costs provided.
- Course content was also raised as a factor. In the qualitative study, respondents stressed the importance of learning practical information and hands-on skill development rather than sales or marketing-focused sessions designed to sell them on energy efficiency products. Respondents want training that will improve employees' skill set, but also allow them to build business.

#### **Factors Considered Important**



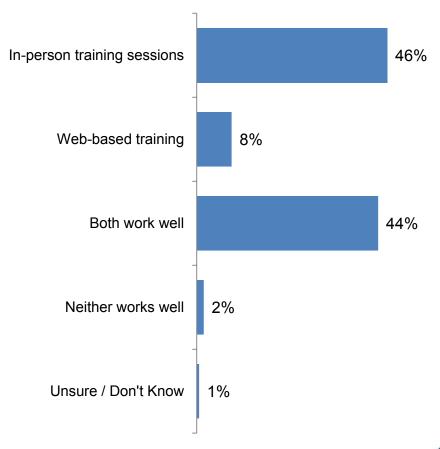
Base: Total respondents who think their company would support employees participating in utility or government-funded training (n=179)

Q14A: What factors would be important for your company when deciding whether to send employees on a training program?

### **Preferred Training Format**

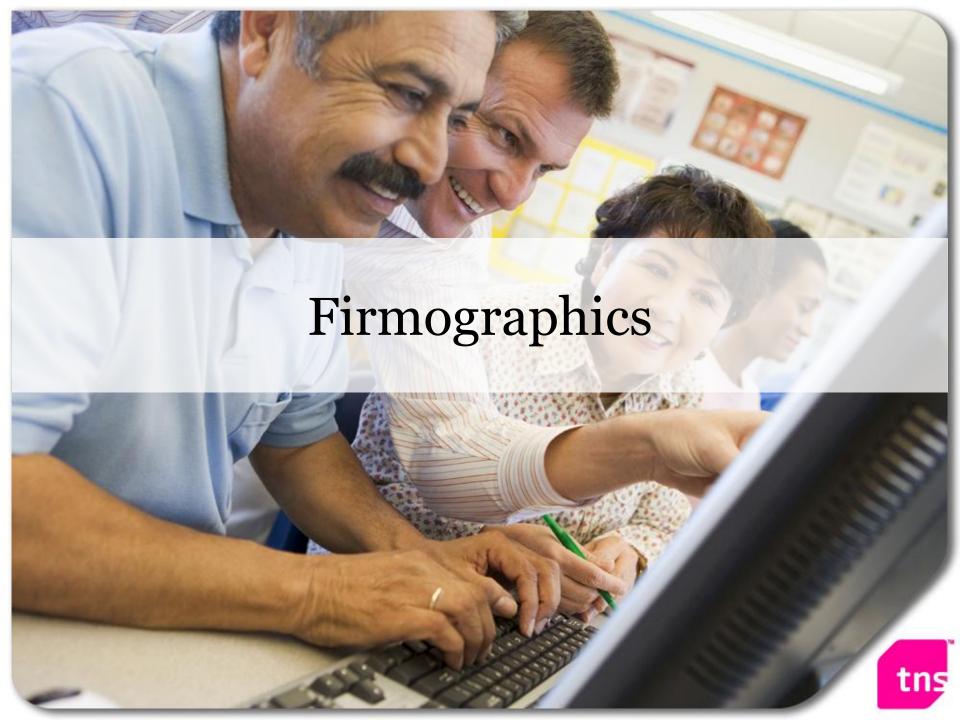
- Respondents seem most interested in face-to-face training. Presumably this is linked to the desire to learn hands-on and practical skills.
- While offering training via the Internet only was of limited interest, respondents appear open to a combination of in-person and web-based training. This result suggests the training format should be determined by the type of training being offered – hands-on training should be in-person, but information-based training could be successfully delivered via the Internet.

### **Best Training Format**



Base: Total respondents who think their company would support employees participating in utility or government funded training (n=179)

Q14B: What training format is best for contractors to learn about energy efficiency programs?



# Firmographics (1)

	Total
Base: Total Respondents	(200) %
Number of Employees	
Less than 10	63%
10 to 24	18%
25 to 50	9%
More than 50	11%
Number of Locations	
Single location	81%
Multiple locations	20%
Location in BC	
Greater Vancouver	40%
Southern Interior / Kootenays	26%
Vancouver Island	24%
Northern BC	10%
Not Stated	1%
Registered with BC Safety Authority	
Yes	84%
No	9%
Unsure / Don't Know	8%

# Firmographics (2)

	Total
Base: Total Respondents	(200) %
Association Membership	
Thermal Environment Comfort Association	11%
Home Builders Association	7%
Heating, Refrigeration, And Air Conditioning Institute	5%
Better Business Bureau (BBB)	5%
Heating, Ventilating, And Air Conditioning (HVAC)	5%
Chamber Of Commerce	4%
Construction Association	4%
Window And Door Manufacturers Association	3%
Independent Contractors And Businesses Association	3%
British Columbia Insulation Contractors Association	2%
Mechanical Contractors Association	2%
Plumbing And Gas Fitters Association	2%
American Society Of Heating, Refrigerating And Air-Conditioning Engineers (ASHRAE)	2%
Electrical Industry Association	2%
Hearth, Patio And Barbecue Association (HPBA)	2%
All Other Mentions	33%
Refused	1%
None Of These	27%
Unsure / Don't Know	9%

# Firmographics (3)

	Total
Base: Total Respondents	(200) %
Number of Years as a Contractor	
Less than 1 year	3%
1 year to less than 5 years	14%
5 to less than 10 years	13%
10 to less than 15 years	13%
15 to less than 20 years	13%
More than 20 years	40%
Unsure / Don't Know	3%
Not applicable	3%
Base: Total respondents who are from are from Vancouver Island	(47) %
Incidence of being a Member of the Qualified Dealer Program	
Yes	38%
No	57%
Don't Know	4%

# Firmographics (4)

	Total
Base: Total Respondents	(200) %
Type of Contracting Services	
Heating, Ventilation And Air Conditioning (Natural Gas)	57%
Heating, Ventilation And Air Conditioning (Electric)	52%
Sub-Contracting	28%
Insulation	24%
General Contracting	22%
Window Installation	21%
Electrical Contracting	4%
Plumbing	2%
All Other Mentions	4%
Type of Contracting Service Provided	
Commercial and residential	72%
Residential only	28%
Unsure / Don't Know	1%
Role in the Company	
Owner	40%
Salesperson	8%
Administration	6%
Manager/Assistant Manager	2%
Contractor	1%
All Other Mentions	1%



## Appendix To The Methodology (1)

#### **DATA COLLECTION**

A total of 200 telephone surveys were completed between February 18 and March 14, 2011 among representatives of contracting companies involved in influencing residential customers choice of heating options and appliance purchases. The results of this report are unweighted.

#### **INTERVIEWING**

Prior to the start of interviewing, a briefing session was held. In this session, the project director provided interviewers with the background and objectives of this study, as well as other important interviewing instructions. The purpose of the briefing is to increase interviewers' knowledge of the topic under study and to minimize any potential interviewing error.

All telephone interviews were conducted by trained, experienced interviewers working from TNS Canadian Facts' call centre facility in London, Ontario. Interviews were conducted using the TNS FACTS Network (Fully Automated Computer Telephone Surveys). Up to five calls were made to each sample listing in an attempt to obtain a completed interview, thus increasing the possibility of contacting busy individuals. All calls were placed between 9am and 5pm PST on weekdays. Validation consisted of call centre supervisors monitoring 10% of the interviews "live," either partially or completely. The data were edited and processed using TNS' in-house computer facilities.

The results of the last call attempts made are detailed in the record of call following.

## Appendix To The Methodology (2)

**Exhibit: Record of Call** 

	Number	Percent
Total Sample -	(2,841)	(100) %
Not in Service	146	5
Non-Business	0	*
Sample in Frame	2,581	91
Net Sample in Frame** -	(2,581)	(100) %
Completed Interviews	200	8
Disqualified	11	*
Refusals	348	13
Respondent Never Available	127	5
Language Barrier	37	1
Appointment for Callback	266	10
No Reply	451	17
Engaged	2	*

<sup>\*</sup> Equals less than one-half of one percent.

<sup>\*\*</sup> Sample in frame is the total number of usable telephone numbers. It is calculated by subtracting the not in service, residential and FAX/Modem numbers from the total sample.

## Appendix To The Methodology (3)

#### **DATA PROCESSING**

The resultant data were edited, coded and processed by TNS. No weights were applied.

#### SURVEY MARGIN OF ERROR

The reader is cautioned that the survey results are subject to margins of error. The overall sampling error for 200 total interviews at the 95% confidence level is approximately  $\pm$  6.9%. For example, if 50% of all respondents surveyed stated that they are aware of a particular energy efficiency program, then we can be sure, 19 times out of 20, that if the entire contractor population had been interviewed, the proportion aware of this program would lie between 43.1% and 56.9%.



the sixth sense of business™



#### Thermal Environmental Comfort Association (TECA)

BC Toll Free Phone: 1-888-577-3818 Fax: 1-888-577-3137 E-mail: training@teca.ca Mail: PO Box 73105, Evergreen RO, Surrey, BC, V3R OJ2 Website: www.teca.ca

August 7, 2013

Gina Lego Program Manager, Efficiency Partners Energy Efficiency & Conservation FortisBC 16705 Fraser Highway | Surrey BC V4N 0E8

**RE: Incentive and Rebate Funding Stability** 

#### SITUATIONAL ANALYSIS

For the last several years incentive and rebate funding has been targeted and effective in its encouragement of energy efficient equipment adoption for the HVAC industry in meeting demand side management objectives. The challenge though for both homeowner and contractor has been the instability of the program funding, changing delivery agents, relatively short program length and the difficult market created from these factors. The unintended result has been customers "holding out" for the next rebate offering - creating spikes and depressions in installations of equipment.

#### **INDUSTRY ASSOCIATION REQUEST & SUPPORT**

TECA is the industry association in BC representing more than 300 contractors within the HVAC sector. We respectfully request the BCUC to approve a stabilized funding stream proposed by Fortis BC to sustain incentive programming.

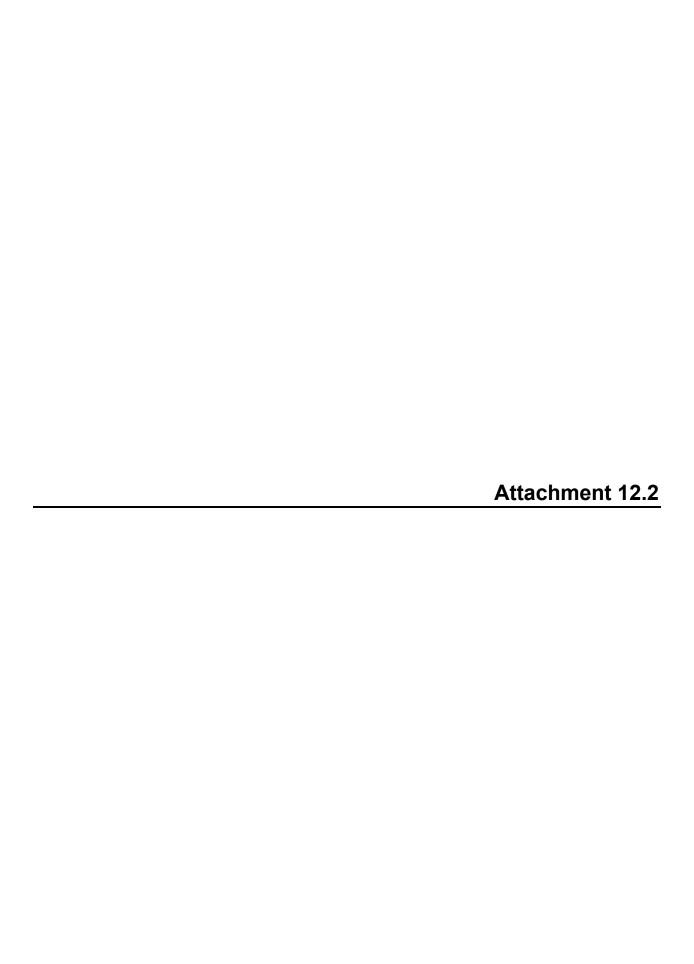
We support the plan to offer a more continuous rebate offering as it will create a more level market where customers have an assurance of the programs' reliability and access.

As the industry association representing contractors we believe that stable incentive programs will further encourage and support the adoption of energy efficient systems, while preventing frustration and confusion within the market – both with contractors and more importantly, customers.

We trust that this letter clarifies and upholds the articulated need for consistent programming and funding. Thank you for your consideration.

Best Regards -

Kim Savage Executive Director

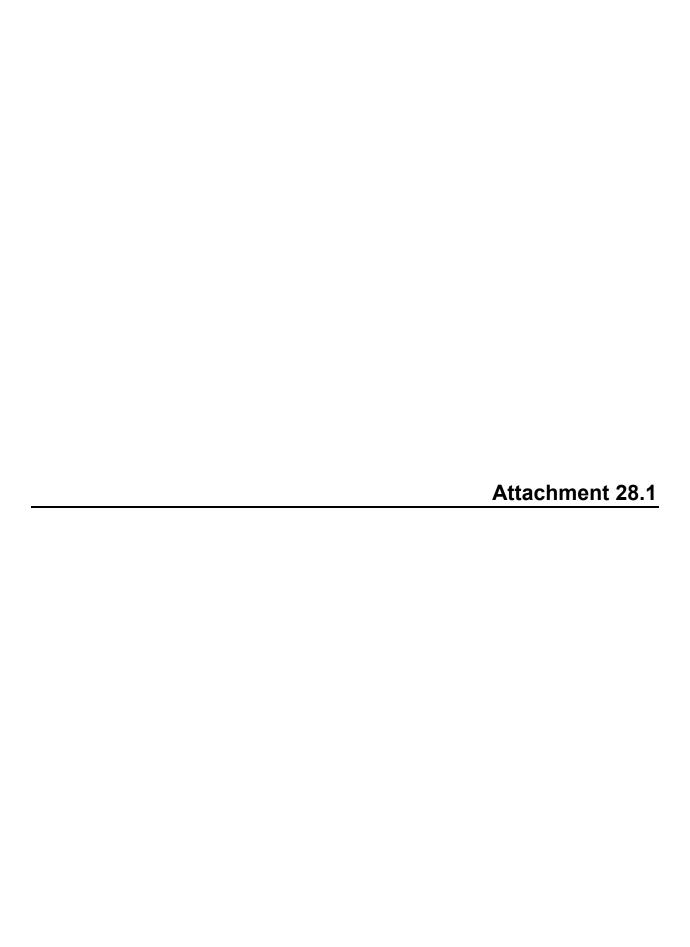


	Utility/Efficiency						
State	Program Administrator	Portfolio/Planning Cycle	Current Cycle Years	Next Cycle Years	Notes	Resource	Link
Giate		Syons			Alliant Energy implements a 5-year energy efficiency plan to lowa regulators (the next plan beginning 2013, is due by December 1, 2012). Alliant is required to submit annual reports before May 1 which assess, among other programmatic items, cost-effectiveness (Final order <a href="https://efs.iowa.gov/efiling/groups/external/documents/docket/016067.pdf">https://efs.iowa.gov/efiling/groups/external/documents/docket/016067.pdf</a> ,		http://www.state.ia.us/go vernment/com/util/energ y/energy efficiency/ee pl
lowa	Alliant	5 years	2013-2017	2018-2022	Docket # EEP-08-1, pdf page 38 numbers 1,2, and 3).  MidAmerican Energy also follows a similar 5-year energy-efficiency plan according to	EEP-2008-0001 Energy Efficiency Plan	ans reports.html
lowa	MidAmerican  MidAmerican Energy	5 years	2013-2017	2018-2022	this order <a href="https://efs.iowa.gov/efiling/groups/external/documents/docket/004253.pdf&gt;from">https://efs.iowa.gov/efiling/groups/external/documents/docket/004253.pdf&gt;from the Iowa Utilities Board (pdf pages 7-8).</a>	EEP-2008-0002 Energy Efficiency Plan MidAmericanEnergy Company South Dakota Energy EfficiencyPlan2013-2017	http://www.state.ia.us/go vernment/com/util/energ y/energy efficiency/ee pl ans reports.html http://puc.sd.gov/commis sion/dockets/gas&electric /2012/6F12-
South Dakota	Company	5 years	2013-2017	2018-2022?		Executive Summary	005/exhibit1revised.pdf
West Virginia	Monongahela Power	Ever	2012 2016	2017.2024	"The Companies represented that the Plan was designed to achieve energy and demand reduction targets of approximately 67,437,000 megawatt-hours (MWh) of net energy savings and 13.8 megawatts (MW) of system peak demand savings in a five-year period between 2012 through 2016."	Petition for approval of Phase I Plan for Energy and Demand Reduction Efforts and related cost recovery	http://www.psc.state.wv. us/scripts/WebDocket/Vie wDocument.cfm?CaseActi vityID=336129
West Virginia	Company	5 years	2012 - 2016	2017-2021	Required to file annual progress reports starting in 2013	mechanisms.	<u>vityID=336129</u>
	Potomac Edison				"The Companies represented that the Plan was designed to achieve energy and demand reduction targets of approximately 67,437,000 megawatt-hours (MWh) of net energy savings and 13.8 megawatts (MW) of system peak demand savings in a five-year period between 2012 through 2016."		
West Virginia	Company	5 years	2012 - 2016	2017-2021	Required to file annual progress reports starting in 2013		"
					Duties of electric distribution companies  (1) (i) By July 1, 2009, each electric distribution company shall develop and file an energy efficiency and conservation plan with the commission for approval to meet the requirements of subsection (a) and the requirements for reduction in consumption under subsections (c) and (d). The plan shall be implemented upon approval by the commission.  (ii) A new plan shall be filed with the commission every five years or as otherwise required by the commission. The plan shall set forth the manner in which the company will meet the required reductions in		http://www.legis.state.pa. us/wU01/LI/LI/US/HTM/2
Pennsylvania	IOUS	4 years	2009-2013	2014-2018	consumption under subsections (c) and (d).	Act of Oct. 15, 2008, P.L. 1592, No. 129	
Wisconsin	Focus on Energy	4 years	2011-2014	2015-2018	Focus on Energy is subject to a quadrennial planning docket. The current docket covers calendar years 2011 through 2014 and will be up for renewal in 2015.  On November 21, 2008 Black Hills filed an Application for Approval of its Electric DSM Plan for calendar years 2009, 2010, 2011. The 2011 – 2012 Annual DSM Status Report for the third and final years of the	Focus on Energy	https://www.dora.state.c
Colorado	Black Hills	3 years	July 2012- June 2015	July 2015-June 2018	for the third and final year of the Electric DSM Plan for period from July 1, 2011 through June 30, 2012	BHE CO DSM Annaul Status Report	g?p fil=G 141481&p sess ion id=
Illinois	ComEd	3 years	2011-2013	2014-2016	Triennial - file in 2010 and 2013. Current cycle is 2011-2013 and next cycle is 2014-2016.	Illinois Energy Efficiency Stakeholder Advisory Group	http://ilsag.org/administra
Illinois	Ameren	3 years	2011-2013	2014-2016	Triennial - file in 2010 and 2013. Current cycle is 2011-2013 and next cycle is 2014-2016.	Illinois Energy Efficiency Stakeholder Advisory Group Administrative Portfolio Plans	http://ilsag.org/administra tive portfolio plans

Indiana	IOUs	On July 1, 2010, the utilities must submit their first DSM plans to the Commission t address progress with respect to their annual DSM savings goals. Subsequent DSM plansmust be filed with the Commission on July 1, 2013, 2016, and 2019, with annual Supplemental updates in the interim periods.		Indiana Utility Regulatory Commission	http://www.in.gov/iurc/25 71.htm		
Indiana	IPL	3 years	2011-2013	2014-2016	IURC's Generic Order in Cause No. 42693, requires the jurisdictional electric utilities to submit a series of three discrete three year DSM plans. The next set of three year DSM plans for achievement of the IURC targets for the period from 2014 to 2016 will be filed in 2012.	2011 IPL IRP	http://www.in.gov/iurc/fil es/IPL 2011 IRP 12-12- 11.pdf
			April, 2011 - March,	April, 2014 - March,	According to aceee: Entergy is the only utility offering a portfolio of energy efficiency		http://www.entergy- neworleans.com/content/ docs/Year 1 Energy Sma
Louisiana	Entergy New Orleans	3 years	2014	2017?	programs to customers in the City of New Orleans.	Energy Smart: Year 1 Annual Report  Triennial Plan For Fiscal Years 2014-	rt_Annual_Report.pdf  http://www.efficiencymai ne.com/docs/reports/TriPl
Maine	Efficiency Maine	3 years	2011-2013	2014-2016	Triennial plan filed in 2012 for the fiscal years 2014-2016	2016	an2-11-26-2012.pdf
					Portfolio cycle is triennial. It is currently in the 2012-2014 cycle. The Companies filed		
Mandand	IOUs	2 4025	2012 2014	2015-2017	their Plans for the 2012-2014 period with the Commission on or about September 1, 2011	Manyand BCC Order No. 94560	http://webapp.psc.state. md.us/Intranet/home.cfm
Maryland	IOUs	3 years	2012-2014	2015-2017	2011	Maryland PSC - Order No. 84569	ma.us/intranet/nome.crm
Maryland	PEPCO	3 years	2012-2014	2015-2017	Potamac Electric Power Company (Pepco) currently operates its EmPOWER Maryland programs in a three-year cycle, currently slated to conclude December 31, 2014.		
Massachusetts	IOUs	3 years	2013-2015	2016-2018	Triennial. Filed EE plan in 2012 for 2013-2015 cycle. Updates to the plan are provided annually.	Massachusetts Joint Statewide Three-Year Electric Energy Efficiency Plan	http://www.ma- eeac.org/docs/7.3.12/Gas %20and%20Electric%20PA s%20July%202%20Plan%2 07-2-12.pdf
					The portfolio cycle period is triennial. The most recent Triennial Plan for the 2013-2015 period was filed in June 2012. The DSM portfolio will next be up for renewal for the period	Xcel Energy - 2013-2015 Minnesota Electric and Natural Gas Conservation	http://www.xcelenergy.co m/staticfiles/xe/Regulator y/Regulatory%20PDFs/MN- DSM/MN-DSM-2013-2015-
Minnesota	Xcel	3 years	2013-2015	2016-2018	2016-2018 and the next Triennial Plan will likely be filed in mid-2015.	Improvement Program	CIP-Triennial-Plan.pdf http://www.mncee.org/in
Minnesota	CenterPoint Energy	3 years	2013-2015	2016-2018	Conservation Improvement Program Triennial Plans available on MN Center for Energy and Environment	MN Center for Energy and Environment	novation- Exchange/Resource- Center/Data-and- Reference/Minnesota- Energy-Dockets/
Minnesota	IPL	3 years	2013-2015	2016-2018	Conservation Improvement Program Triennial Plans available on MN Center for Energy and Environment	MN Center for Energy and Environment	http://www.mncee.org/In novation- Exchange/Resource- Center/Data-and- Reference/Minnesota- Energy-Dockets/
Minnesota	MN Energy Resources	3 years	2013-2015	2016-2018	Conservation Improvement Program Triennial Plans available on MN Center for Energy and Environment	MN Center for Energy and Environment	http://www.mncee.org/In novation- Exchange/Resource- Center/Data-and- Reference/Minnesota- Energy-Dockets/
Minnesota	Minnesota Power	3 years	2011-2013	2014-2016	Conservation Improvement Program Triennial Plans available on MN Center for Energy and Environment	MN Center for Energy and Environment	http://www.mincee.org/in novation- Exchange/Resource- Center/Data-and- Reference/Minnesota- Energy-Dockets/

			1	1	T	T	http://www.mncee.org/In
Minnesota	Otter Tail	3 years	2011-2013	2014-2016	Conservation Improvement Program Triennial Plans available on MN Center for Energy and Environment	MN Center for Energy and Environment	nttp://www.mncee.org/in novation- Exchange/Resource- Center/Data-and- Reference/Minnesota- Energy-Dockets/
Missouri	Ameren	3 years	2013-2015	2016-2018	portfolio cycle to begin January 1, 2012 and extend through December 31, 2014 (see page 1). However, Ameren made 2012 a bridge funding year as it discussed rate recovery mechanisms with the Commission to avoid company losses due to efficiency spending. In 2012, Ameren filed a three-year efficiency plan for 2013-2015. Therefore, the current efficiency cycle is slated to conclude December 31, 2015. Here is a link to Ameren Missouri's 2013-2015 Energy Efficiency Plan.	Ameren 2013-2015 Energy Efficiency Plan	https://www.efis.psc.mo. gov/mpsc/commoncompo nents/viewdocument.asp? DocId=935658690
Nevada	NV Energy (two IOUs: Nevada Power Company & Sierra Nevada Power under this brand)	3 years	2013-2015	2016-2018	The 2013-2015 Demand Side Plan is included in the Nevada Power Company's Integrated Resouce Plan for 2013-2032. The Demand Side Plan begins on pg. 78/319	NV Energy: The 2013-2015 Demand Side Plan	https://www.nvenergy.co m/company/rates/filings/I RP/NPC_IRP/images/vol_7 .pdf
New York	IOUs	3 years	2012-2015	2016-?	Triennial. In October of 2011, the Commission authorized the next phase of Energy Efficiency Portfolio Standard from 2012 through 2015. Directly related to NYSERDA's programs, in October 2011, the PSC authorized the next phase of the System Benefits Charge (SBC) funded programs from 2012 through 2016. The EEPS, which runs through 2015, focuses on energy efficiency resource acquisition.	NYSERDA: Toward a Clean Energy Future: A Three-Year Strategic Outlook 2012–2015	
Ohio	AEP Ohio	3 years	2012-2014	2015-2017	AEP Ohio is subject to a triennial planning cycle for its DSM programs, which are referred to as Energy Efficiency/Peak Demand Reduction (EE/PDR) programs. It is currently in the 2012-2014 program cycle. The current EE/PDR programs will be up for renewal in 2015.	AEP Ohio - ENERGY EFFICIENCY/ PEAK DEMAND REDUCTION (EE/PDR)ACTION PLAN 2012-2014	http://dis.puc.state.oh.us/ TiffToPDf/A1001001A11K2 9B35118F61446.pdf
Ohio	Duke	3 years	2011-2013	2013-2015	Program cycles are roughly triennial. On December 29, 2009 Duke Energy Ohio filed an updated portfolio plan for approval, which was approved by the commission on December 15, 2010 for implementation through April 15, 2013.	Ohio PUC	_
Ohio	Ohio Edison	3 years	2013-2015	?	Typically, Ohio Energy operates its energy efficiency and demand response programs in a three-year cycle. On March 23, 2011 the Public Utilities Commission of Ohio (PUCO) approved the utility's plan for 2010-2012. On November 15, 2012, Ohio Edison requested to extend their existing efficiency and DR programs for 2013-2015. On December 12, 2012 PUCO approved the programs through the end of 2013. It is not clear why PUCO did not grant an extension through the end of 2015.  National Grid (NGrid) Rhode Island's current three-year efficiency cycle concludes	Ohio PUC	_ http://www.ripuc.org/eve
Rhode Island	National Grid	3 years	2012-2014	2015-2017	December 31, 2014. Updates to the plan are provided annually.	RI PUC	ntsactions/docket/4284pa ge.html
Vermont	IOUs	3 years	2012-2014	2015-2017	See page 21 for energy efficiency program cycle	Vermont Department of Public Service	nt.gov/sites/psd/files/Pub s Plans Reports/Biennial Reports/2010%20Biennial %20- %20Publication%20Draft.p
Virginia	Dominion	3 years 3 years	2012-2014	2015-2017	See page 21 for energy efficiency program cycle  Current cycle is 2012-2014	vermont Department of Public Service	https://www.dom.com/ab out/pdf/irp/addendum- 1.pdf

					A representative with Fiorida Fower and Light explained that the Fiorida Fubilit Service		
					(FPS) reviews its DSM goals every 5 years (or more frequently if the commission decides		
					so), at which time the commission sets goals for the subsequent 10-year period. For		
					example, in 2004 FPS set goals for the 2005-2014 period. In 2009, FPS then re-set the		
					goals for the 2010-2019 period. Upon development of each new plan every five years,		
					FPL		
					re-assesses cost effectiveness of all measures & programs included in its DSM plan to		
					be filed to ensure the plan is cost effective. My contact at FPL noted that FPS has		http://www.psc.state.fl.us
					recently requested an annual assessment of cost effectiveness based on current		/library/FILINGS/11/01989-
Florida	FPL	10 years	2010-2019	2020-2029	planning assumptions.	DSM Plan of FPL for 2010-2019	11/01989-11.pdf





#### 3.1.2 STAFF RESOURCES ALLOCATED

For 2012 and 2013, FEI has identified six (6) employee positions which are directly involved in the development of CNG and LNG fueling stations.<sup>4</sup> These employees spend a portion of their time on the fueling station components of FEI's NGT initiatives. They also spend a significant portion of their time on other NGT activities and other business development initiatives.

Since FEI does not code timesheets related to CNG and LNG projects, FEI has developed a percentage estimate of the time spent on fueling stations relative to other activities and responsibilities held by each position. To develop this estimate, FEI has:

- Identified the employees associated with fueling station development;
- Determined which employee's time is recovered in the fueling station project capital; <sup>5</sup>
- Surveyed each employee for their time spent on fueling station development in 2012;
- Verified this estimate with each employee's manager.

The six positions associated with fueling station development are listed below, with related job descriptions provided in Appendix B.

- 1) Senior Manager, Business Development (BD);
- Business Development (BD) Manager;
- 3) Business Development (BD) Specialist;
- Manager, NGT Solutions (formerly Commercial and Industrial Sales Manager);
- 5) NGT Account Manager; and
- 6) Manager, New Product Development (NPD) (formerly Energy Products and Services Manager).

Table 1 below summarizes a time allocation estimate by percentage of fueling station activities compared to other activities for each employee.

<sup>&</sup>lt;sup>4</sup> FEI's previous forecast of \$569,396 in 2012 and \$601,119 in 2013 reflected overall NGT development activities and totaled four full-time equivalent positions.

Two other positions (Project Manager and New Product Development Specialist) are involved in fueling station construction activities however their proportionate time is allocated to the capital expenditures for each NGT project.



Table 1: Fueling Station Activities Represent 2.15 Full-Time Equivalents

	Fueling Station	
	Time	Other
Title	Allocation	activites
Senior Manager, BD	15%	85%
BD Manager	50%	50%
BD Specialist	15%	85%
Manager, NGT Solutions	50%	50%
NGT Account Manager	25%	75%
Manager, NPD	60%	40%
Total FTE:	2.15	3.85

In total, the time allocation toward CNG and LNG fueling station development is 2.15 full time equivalents ("FTE") for 2012. FEI has assumed this same allocation of 2.15 FTE over the period from 2013 through 2017.

This allocation is more accurate than FEI's previous estimate which formed the \$0.20 per GJ overhead and marketing charge. The previous estimate was a forecast based on the expected time required to develop fueling stations. At the time this estimate was conducted FEI had only developed one CNG fueling station. The allocation presented in this Application reflects actual activities in 2012 which contributed to the development of FEI's three fueling station customers.

The fueling station activities included in the 2.15 FTE were described in the previous section 3.1.1. The activities included in the remaining 3.85 FTE are shown in the figure below, which breaks down the time allocation of all six employees.



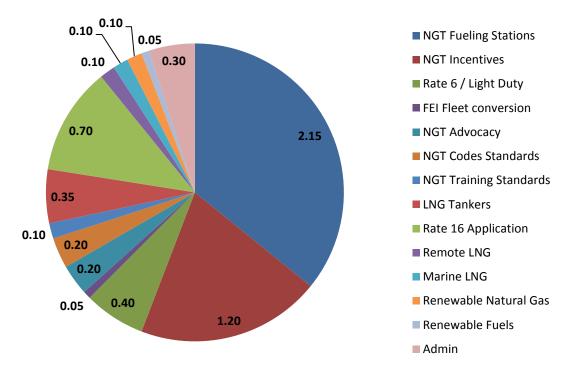


Figure 1: Total activity breakdown of six employees<sup>6</sup>

This figure illustrates that fueling station activities are only a portion of the work undertaken by these employees. For example, the Senior Manager, Business Development spends approximately 15 percent of his time on NGT fueling station activities, but 85 percent on other business development activities, FEI's Renewable Natural Gas program, and other long term low carbon / LNG opportunities (i.e. remote communities) among other tasks.

Over time, FEI expects this allocation will change, however it is difficult to estimate whether the 2.15 FTE will decrease or increase. Since the Commission has approved GT&Cs 12B, FEI expects future CNG/LNG rate applications will be generally more efficient and require less time. As well, FEI's NGT business model and strategic direction is already well defined. Therefore FEI anticipates that Business Development positions will spend less time on fueling station development in the future.

In contrast, FEI may require greater staff resources from the New Product Development and NGT Sales groups to build and install more fueling stations to meet customer demand. Activities such as customer negotiations, site feasibility, and fueling station construction may increase in the future.

Other NGT activities – NGT incentives, Rate Schedule 6 sales, FEI's own fleet conversion, NGT industry advocacy, NGT codes & standards, NGT training standards – relate to overall development of the NGT industry in BC and Canada.<sup>7</sup> FEI's believes that these costs are most

<sup>&</sup>lt;sup>6</sup> A description of each activity category is provided in Appendix C.

<sup>&</sup>lt;sup>7</sup> These activities sum to 2.15 FTE.



appropriately allocated to non-bypass natural gas customers as their purpose is to increase the adoption of NGT and throughput on the natural gas system.

#### 3.1.2.1 Value of Staff Resources

The value of these staff resources is based on budgeted salary amounts (fully loaded) for 2012 and 2013, escalated at a labour inflation rate of 3 percent per year until 2017. The table below shows the percentage allocated related to NGT fueling stations and the proportionate cost figure (in \$) for 2012 through 2017.

Table 2: Forecast staff resource cost related to fueling station activities 2012-2017

	Fueling Station Time						
Title	Allocation	2012	2013	2014	2015	2016	2017
Senior Manager, BD	15%	24,848	25,151	25,906	26,683	27,483	28,308
BD Manager	50%	59,000	59,373	61,154	62,988	64,878	66,824
BD Specialist	15%	15,450	15,660	16,130	16,614	17,112	17,625
Manager, NGT Solutions	50%	71,750	75,110	77,363	79,684	82,075	84,537
NGT Account Manager	25%	25,500	25,750	26,523	27,318	28,138	28,982
Manager, NPD	60%	81,000	81,540	83,986	86,506	89,101	91,774
Total		277,548	282,584	291,061	299,793	308,787	318,051
Total FTE:	2.15						

Time allocations for fueling stations may fluctuate on a yearly basis over the 2012 through 2017 period, but for the purposes of developing an overhead charge FEI has assumed this to be constant over this time period and reflective of an average activity level. Please see section 3.2 for the cost methodology and calculation of the overhead and marketing charge that results from these salary forecasts.

#### 3.1.3 ACTIVITIES UNDERTAKEN TO DEVELOP THE NGT MARKET GENERALLY

In the Revised Rates Application, FEI stated that the amounts of \$569,396 for 2012 and \$601,119 for 2013 include, but are not limited to, the following NGT activities:

- a. NGT development and advocacy within British Columbia;
- b. Natural gas delivery service support (Rate Schedules 6, 16, 23, 25);
- c. Development of marine market applications;
- d. Development of Rate Schedule 16 amendments application; and
- e. Consultation and advice on the Province's recently enacted *Greenhouse Gas Reduction (Clean Energy) Regulation* (the "GGRR").

In this Compliance Filing, FEI has divided these activities into the following categories:

- 1. NGT fueling stations;
- 2. NGT incentives;



- Rate Schedule 6 (light duty vehicles);
- 4. FEI fleet conversion;
- 5. NGT industry advocacy;
- 6. NGT codes & standards; and
- 7. NGT training standards.

Consultation leading up to the GGRR is included under the NGT industry advocacy category for the purposes of developing staff resource allocations. Other LNG activities such as LNG marine projects, FEI's LNG tanker offering and the Rate Schedule 16 Amendments Application are not limited to CNG/LNG fueling station customers. These activities may benefit a host of other potential customers (e.g. LNG for remote communities, mines) throughout the Province, some of which have greater market potential than NGT fueling station projects.<sup>8</sup>

Other third party service providers should also benefit from FEI's NGT development activities. If FEI is successful in receiving Commission approvals for increased access under the Rate Schedule 16 Amendments Application, other parties may have increased access to LNG for their customers elsewhere. Other parties should benefit from the GGRR including equipment manufacturers such as Westport Innovations and IMW Industries, and other third party service providers such as Clean Energy Fuels.

### 3.1.4 ACTIVITIES WITH OTHER VENDORS IN THE MARKETPLACE TO ASSIST THEM IN THEIR MARKETING EFFORTS

In the Revised Rates Application at Page 8, FEI forecast customer education costs of \$61 thousand in 2012 and \$75 thousand in 2013. These amounts reflect costs to develop NGT sales material and a promotional video for FEI's external website. In general, FEI attracts fueling station customers through direct sales channels and does not strategically pursue marketing opportunities with other vendors. Marketing collaboration with other vendors such as Westport Innovations is limited and FEI has not forecast customer education costs for these activities.

In this Compliance Filing, FEI has updated the customer education cost for 2012 to reflect actual costs, which is approximately \$70 thousand. This includes sales material, promotional video updates, and FEI's participation at GLOBE 2012 and Truxpo 2012 events (where NGT services including fueling station initiatives were featured). Also included in the \$70 thousand total is \$40 thousand provided to the Canadian Natural Gas Vehicle Alliance ("CNGVA") to support the development of codes and standards and safety training in B.C. and across Canada. FEI has allocated the full \$70 thousand across FEI's CNG and LNG fueling station customers.

Please refer to FEI's Application for Amendments to Rate Schedule 16.

<sup>&</sup>lt;sup>9</sup> Actual cost as of November 2012. No further costs are expected in December of 2012.



FEI's forecast customer education costs (and staff resource costs from Table 2 above) over the years 2012 through 2017 are summarized in the table below.

Table 3: Forecast overhead and marketing costs related to fueling station activities 2012-2017

Item	2012	2013	2014	2015	2016	2017	TOTAL
Staff resource cost	277,548	282,584	291,061	299,793	308,787	318,051	1,777,823
Customer Education	70,000	75,000	80,000	90,000	70,000	60,000	445,000
Total fueling station overhead costs	\$ 347,548	\$ 357,584	\$ 371,061	\$ 389,793	\$ 378,787	\$ 378,051	\$ 2,222,823

This forecast does not include vehicle and fueling station branding costs. The BFI Decision directed FEI to recover branding costs for vehicle decals and station signage from BFI through their fueling charge. FEI agrees it is reasonable to include the signage cost of the fueling station in each customer's capital expenditure and recover it through the fueling charge. The treatment of vehicle decal costs is slightly different, as some vehicle customers will not choose FEI to provide fueling station service but may receive vehicle incentives under FEI's NGT Incentive Program. For future CNG/LNG customers, FEI will recover branding costs related to vehicles under the GGRR expenditure allowance for *Administration, marketing, training and education* when vehicle incentives are provided by FEI under the GGRR.

### 3.1.5 OVERHEAD INCLUDED IN VARIOUS RATE SCHEDULES APPLICABLE TO CNG/LNG FUELING STATION SERVICE

In the Revised Rates Application, FEI included overhead amounts of \$569,396 for 2012 and \$601,119 for 2013. These amounts are in support of NGT activities detailed in section 3.1.3 and are marketing efforts which FEI allocates to rate classes based on customer counts. Of the overhead amounts for 2012 and 2013, Table 4 shows the amount included in various FEI Rate Schedules that offer CNG/LNG service.

**Table 4: Overhead Allocation to Rate Schedules** 

Rate Schedule	CNG/LNG	2012		2013	
RATE 6	CNG offered	\$	230	\$	243
RATE 3/23	CNG offered	\$	70,150	\$	74,058
RATE 5/25	CNG offered	\$	31,954	\$	33,735
RATE 16	LNG offered	\$	572	\$	604
Total		\$	102,335	\$	108,036

### 3.1.6 INCREASED THROUGHPUT WILL BENEFIT CORE CUSTOMERS, AND QUANTIFICATION OF BENEFITS TO NGT CUSTOMERS

In the Reconsideration Decision, the BCUC agreed that, to the extent fueling stations increase throughput, all things being equal, there may be a benefit to all ratepayers. In FEI's Application for Rate Treatment of GGRR Expenditures proceeding FEI further quantified delivery margin benefit from its existing NGT customers and forecast the delivery margin

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<sup>&</sup>lt;sup>10</sup> BCUC Order No. G-150-12, at page 5

<sup>&</sup>lt;sup>11</sup> BCUC IR 1.5.1.