

November 3, 2011

Regulatory Affairs Correspondence  
Email: [gas.regulatory.affairs@fortisbc.com](mailto:gas.regulatory.affairs@fortisbc.com)British Columbia Utilities Commission  
Sixth Floor  
900 Howe Street  
Vancouver, B.C.  
V6Z 2N3Attention: Ms. Alanna Gillis, Acting Commission Secretary

Dear Ms. Gillis:

**Re: An Inquiry into FortisBC Energy Inc. Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives (the “Inquiry”)****Response to the British Columbia Utilities Commission (“BCUC” or the “Commission”) Information Request (“IR”) No. 1**

---

In accordance with Commission Order No. G-164-11 setting out the Regulatory Timetable for the Inquiry, the FEU respectfully submits the attached response to BCUC IR No. 1.

There were a number of IRs that called for legal analysis. The FEU have provided responses to these IRs but reserve the right to make further submissions on these points in Final Argument.

If there are any questions regarding the attached, please contact the undersigned.

Yours very truly,

**on behalf of the FORTISBC ENERGY UTILITIES*****Original signed:***

Diane Roy

Attachment

cc (e-mail only): Registered Parties



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 1

## Table of Contents

Abbreviations, Acronyms and Glossary of Terms.....	2
General.....	3
Drivers for New Initiatives .....	3
Legal Framework .....	9
Biomethane.....	16
Guidelines on Biomethane Upgrading.....	24
Natural Gas Vehicle Service .....	26
NGV Guidelines .....	30
Thermal Energy Services.....	32
Peak Demand .....	36
Retail Market Downstream of the Meter Guidelines and Placement of the Meter .....	37
Clarification of Activities under TES Inc. and FAES Inc. ....	39
Transfer of Assets and Contracts from TES Inc. to FEI.....	41
Use of Utility Resources by Thermal Energy Services Activities.....	43
Thermal Energy Service Business Models .....	46
Business Plan for the Thermal Energy System Activities .....	48
Regulatory Framework for Thermal Energy Services .....	52
Thermal Energy Services as a Separate Class of Service .....	58
Thermal Energy Services Guidelines .....	63
EEC and Conservation Incentives.....	68
Section 8 Guidelines .....	80
Key Principles .....	90
Cited A2 Exhibits.....	95



<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 2</p>

### Abbreviations, Acronyms and Glossary of Terms

<p>Biomethane Service, NGV Service, TES (including the application of EEC)</p>	<p>New Initiatives</p>
<p>Alternative Energy Services</p>	<p>AES (as TES was formerly known)</p>
<p>District Energy System</p>	<p>DES</p>
<p>Energy Efficiency &amp; Conservation</p>	<p>EEC</p>
<p>FortisBC Energy Utilities</p>	<p>FEU, FortisBC</p>
<p>FortisBC Energy Inc.</p>	<p>FEI</p>
<p>FortisBC Energy (Vancouver Island) Inc.</p>	<p>FEVI</p>
<p>FortisBC Energy (Whistler) Inc.</p>	<p>FEW</p>
<p>FortisBC Alternative Energy Services Inc.</p>	<p>FAES or FAES Inc.</p>
<p>Terasen Utilities</p>	<p>Terasen, TU (as FEU was formerly known)</p>
<p>Terasen Gas Inc.</p>	<p>TGI (as FEI was formerly known)</p>
<p>Terasen Gas (Vancouver Island) Inc.</p>	<p>TGVI</p>
<p>Terasen Gas (Whistler) Inc.</p>	<p>TGW</p>
<p>Terasen Energy Services Inc.</p>	<p>TES Inc. (as FAES Inc. was formerly known)</p>
<p>Natural Gas Vehicles</p>	<p>NGV</p>
<p>Non-Regulated Business</p>	<p>NRB</p>
<p>Performance Based Rates</p>	<p>PBR</p>
<p>Public Sector Energy Conservation Agreement</p>	<p>PSECA</p>
<p>Return on Equity</p>	<p>ROE</p>
<p>Thermal Energy Systems or Thermal Energy Services</p>	<p>TES</p>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 3

## General

### 1.0 Reference: Issue 1 Scope (b)

#### Exhibit B-2, Evidence of FEU, Cover Letter Footnote 1

In the 2010 Long Term Resource Plan (LTRP) proceeding, FEU responded to a question (2010 LTRP Exhibit B-3 BCOAPO IR 1.1) as follows:

"It is the Terasen Utilities' intention and it is approved in the NSA that alternative energy projects will be carried out under TGI's name whether the development is in TGI's service territory or TGI's or TGW's."

- 1.1 Is it still FEU's intention for FEI to carry out all New Initiatives regardless of traditional service territory?

#### Response:

The quote in the preamble to this IR refers to the FEU's TES activity only whereas the question here is asking about all New Initiatives. The FEU will continue carrying out TES activities under FEI, regardless of the service territory, as per the NSA in the FEVI 2010-2011 RRA proceeding. This was done in large part for administrative simplicity, so that the same TES related issues did not have to be canvassed in the context of both FEVI and FEI revenue requirement applications. It was possible to take this approach because TES systems are largely self-contained, although they may take natural gas service too.

Other New Initiatives include Biomethane, NGV, and EEC. In Order No. G-194-10, the Commission approved the Biomethane Service for FEI, within FEI's service territory (with the exception of Revelstoke). In Order No. G-128-11, the Commission approved NGV Service for FEI, within FEI's service territory. Should the FEU want to pursue Biomethane Service or NGV Service within the FEVI and or FEW service territories, then approval for such services will have to be obtained from the Commission through a regulatory process.

In Order No. G-36-09, followed by Order No. 140-09 and 141-09, EEC programs were approved for FEI and FEVI service territories. The FEU sought approval of expansion of EEC programs to customers of FEW and Fort Nelson in the concurrent 2012-2013 RRA proceeding.

The FEU note that they are applying to amalgamate and adopt postage stamp rates, which would make these issues moot if that application is approved.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 4

- 1.2 If so, please confirm that FEU and FEI are used interchangeably in the FEU Evidence, Exhibit B-2. If not, please clarify.

**Response:**

No. The FortisBC Energy Utilities ("FEU") is comprised of FortisBC Energy Inc. ("FEI"), FortisBC Energy (Vancouver Island) Inc. ("FEVI"), and FortisBC Energy (Whistler) Inc. ("FEW"). There may be instances where the FEU have inadvertently used the terms interchangeably, but for the most part, FEI is the legal entity that serves the Lower Mainland, Inland, Columbia, Revelstoke and Fort Nelson regions while the FEU represents all the regulated entities of FEI, FEVI, and FEW.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 5

## Drivers for New Initiatives

### 2.0 Reference: Issue 1 Scope (b)

#### Exhibit B-2, Evidence of FEU, Section 2.1, p. 14; Section 5.3.1, p. 88

#### Overview of Declining Throughput

In Section 2.1, FEU provided information relating to declining throughput levels in the last decade, declining use per customer, and declining capture rates.

- 2.1 Is declining throughput a characteristic of a mature distribution utility such as FEU? Is the trend of the total number of customers a better characteristic of a mature distribution utility?

#### **Response:**

The FEU agree that declining use rates and throughput levels is one of the characteristics of a mature utility. However, as stated on page 17 of the Evidence, the FEU's declining throughput levels are not necessarily related to its maturity phase, but rather due to, among other things, price volatility of natural gas, competitiveness of natural gas to electricity (and other alternative energy sources), changes in government regulations and building codes, efficiency improvements, the introduction of new energy forms and technology to replace natural gas in its traditional application (space and water heating) and consumer demand response to the perception of natural gas as an unclean fossil fuel since the addition of the Carbon Tax in BC. The FEU's energy demand or throughput levels are declining because the Companies are not adding sufficient numbers of new customers to offset the declining UPC of the existing stock. It is, therefore, the FEU's view that an established customer base and weaker customer growth rates (and customer additions) are better characteristics of a mature utility than throughput levels.

- 2.2 On page 88, FEU state that sustained decline in throughput is contributing to increased business risk. Have the FEU's business risks been thoroughly addressed in the 2009 Return on Equity/Capital Structure (ROE/CAP) proceeding?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 6

**Response:**

Yes. The FEU discussed the factors that have led to increased business risk in recent years in great detail in the 2009 ROE and Capital Structure Application proceeding. The Commission, in its Decision, accepted the FEU's characterization of its business risk and recognized that the FEU's business risk has increased.

The FEU believe that the key drivers brought up in the 2009 ROE and Capital Structure Application proceeding continue to contribute to declining throughput levels and therefore continue to put pressures on the FEU's core natural gas business.

New information regarding throughput levels is included in the response to BCUC IR 1.3.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 7

### 3.0 Reference: Issue 1 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 2.1, p. 14

#### Responses to Declining Throughput Level

The FEU evidence states that:

"The results from 2010 Residential New Home Survey ("RNHS") indicate that over the last four years the FEU has experienced a significant loss of hot water and space heating load in the new construction market along with declines in market share."

It goes on to state, in the same paragraph that:

"Three of the New Initiatives - in particular the Biomethane Service, CNG/LNG Service and Thermal Energy Services - can help offset or reduce the impact of lost throughput on the natural gas system, thereby benefiting existing and new customers in the long term."

3.1 Please provide the results and conclusions of the 2010 RNHS. Please also provide any existing evidence or data that project the past loss of load and market share into future estimates of loss of load and market share.

#### **Response:**

The 2010 Residential New Home Survey ("RNHS"), included in Attachment 3.1, surveyed new gas homes constructed from 2006 to 2010 in British Columbia to better understand new construction dwelling characteristics, space and domestic water heating fuels and equipment, and installation of gas and electric appliances. The RNHS provides a number of key findings pertaining to a variety of natural gas end uses including space heating and domestic water heating ("DWH"). Results pertaining to space heating and DWH indicate that natural gas penetration in the new construction market is declining for both end uses:

- Compared to the stock of older gas homes (constructed prior to 2006), new homes are less likely to use gas (either natural gas or piped propane) as their primary space heating fuel (73% of new homes versus 91% of older gas homes). This trend is most pronounced on Vancouver Island where only 31% of new homes used natural gas as the primary space heating fuel compared to 71% historically.
- The percentage of homes with a gas furnace has declined from 89% (homes built between 1950 and 1975) to 65% (homes built since 2005); the decline in penetration of gas furnaces in new construction is a long-run trend.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 8

- The decline in the number of newer homes with gas furnaces is accompanied by a dramatic growth of Air Source Heat Pumps ("ASHP"s). Fourteen percent of homes built after 2005 used an ASHP as their main space heating method compared to three percent in homes built prior to 2006. This growth is driven by the declining cost of ASHPs, and the perception that the customer is getting centralized air conditioning for "free".
- The use of natural gas for DWH in new gas homes is down significantly compared to homes constructed prior to 2006 (69% versus 91%). Reasons cited for the decline include the adoption of high-efficiency furnaces, which means that the hot water tank has to be vented separately. This represents an additional cost to the builder, and adds to the relative cost disadvantage of installing a gas DWH rather than an electric tank. In addition electric tanks with no venting requirements, provide flexibility in floor layout.
- The decline in gas DWH penetration has occurred across all dwelling types surveyed and primarily impacts traditional storage type heaters.

In the focus groups that preceded the RNHS, "Influencers" (builders, developers, architects and contractors) identified that the incremental cost of installing natural gas equipment, venting and furnace duct work was perceived as greater than the value they could achieve when selling the dwelling. This was particularly true in price sensitive multi-family dwellings, a substantial portion of the new housing market. They also cited the complication of coordinating with another utility and bringing an additional trade onto the job site.

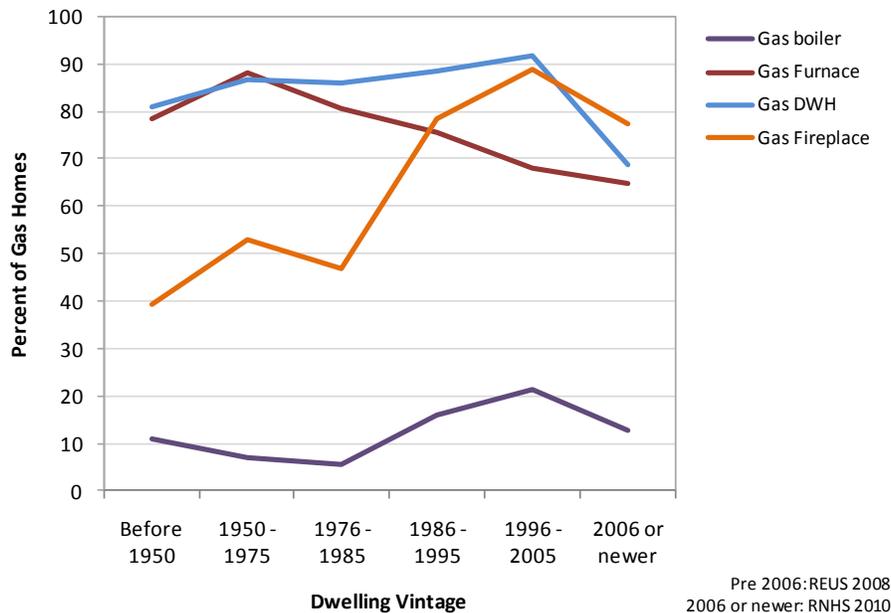
The FEU's short term demand forecast, prepared for the FEU's 2012-2013 Revenue Requirement Application, takes the most recent 3 years of residential use per customer trends into account, thereby capturing load declines due to declining use per customer in its short term demand projections. Otherwise, the FEU have limited existing evidence or data that project the past loss of load and market share into future estimates of loss of load and market share. Based on current market trends and without intervention of the New Initiatives, the FEU expect a continuing decline in market share and loss of load. Analyzing the potential impact of such trends as can be seen in the results of the RNHS over the longer term is an activity we expect to undertake in preparing the FEU's next Long Term Resource Plan.

The following two diagrams below, from the RNHS, show that gas space and water heating penetration have been in decline since 2006. Figure 1 below reveals a long-term gradual decline in the penetration of gas-forced air furnaces since the mid-1970s, and the recent drop in installations of gas boilers, gas DWH and gas fireplaces. Figure 2-11, in Section 2, on page 27 of the FEU's Evidence, reveals that the trend away from having a gas DWH is a recent development for single-family dwellings. Data for duplexes, triplexes and townhouse/row houses suggest that the decline began in homes constructed in the 1996-2005 period, and the trend has become more pronounced in homes built since that time. In addition it should be

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 9</p>

noted that even in homes with natural gas furnaces, the load will decline vis-à-vis existing homes due to the installation of high-efficient furnaces and higher levels of insulation.

**Figure 1: Gas End-Use Trends – Gas Space & Water Heating**



The FEU applied RNHS statistics against net customer additions to determine past DWH load loss while also determining load loss projections through 2013. In this example, the RNHS determined that 21 percent of new gas homes built from 2006 – 2010 had gas space heating but electric DWH<sup>1</sup>. Assuming that the average annual household DWH consumption is 17.2 GJ for the Lower Mainland, 16.0 GJ for the Interior, and 14.4 GJ for Vancouver Island<sup>2</sup>, the cumulative lost DWH load due to electric DWH from 2006 – 2010 across all regions was approximately 625,000 GJ. From this analysis, the FEU have determined that total lost DWH load from 2006 to 2013 will be approximately 1.37 million GJ, or \$5.33 million in lost revenue, as shown in Figure 2 below, assuming all else remains equal<sup>3</sup>.

<sup>1</sup> 2010 Residential New Home Survey, Sampson Research, p. 83.

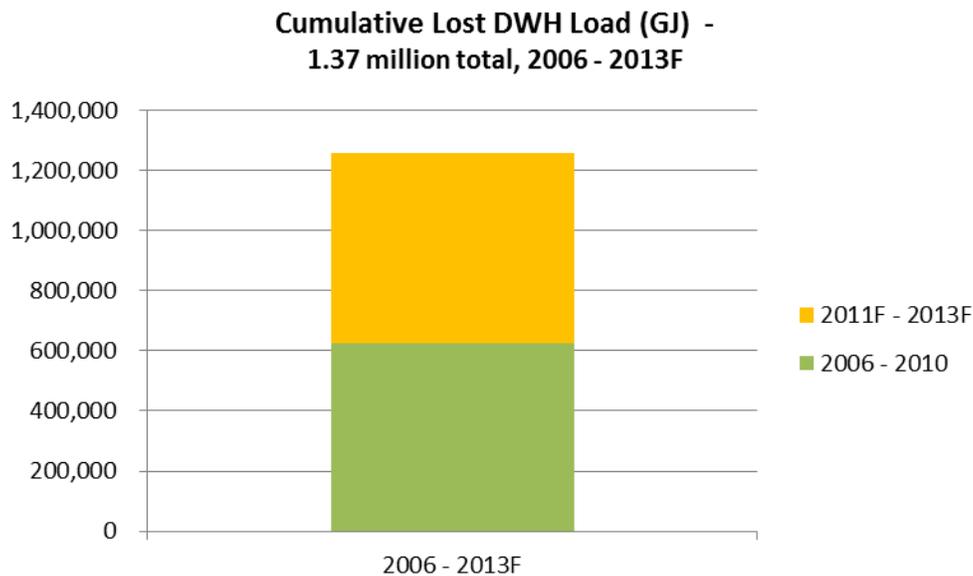
<sup>2</sup> Conditional Demand Analysis of Residential Energy Consumption - 2008 Residential End Use Study, InterVistas

<sup>2</sup> Consulting Inc., 2009. Conditional Demand Analysis of Residential Energy Consumption - 2008 Residential End Use Study, InterVistas Consulting Inc., 2009.

<sup>3</sup> Figure 2 assumes that annual DWH load is lost for each subsequent year in the time frame, which is a reasonable assumption given that the lifetime of a newly installed electric water heater is 10 to 15 years. Consequently, each year of lost DWH load compounds over a 10 – 15 year timeframe.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 10

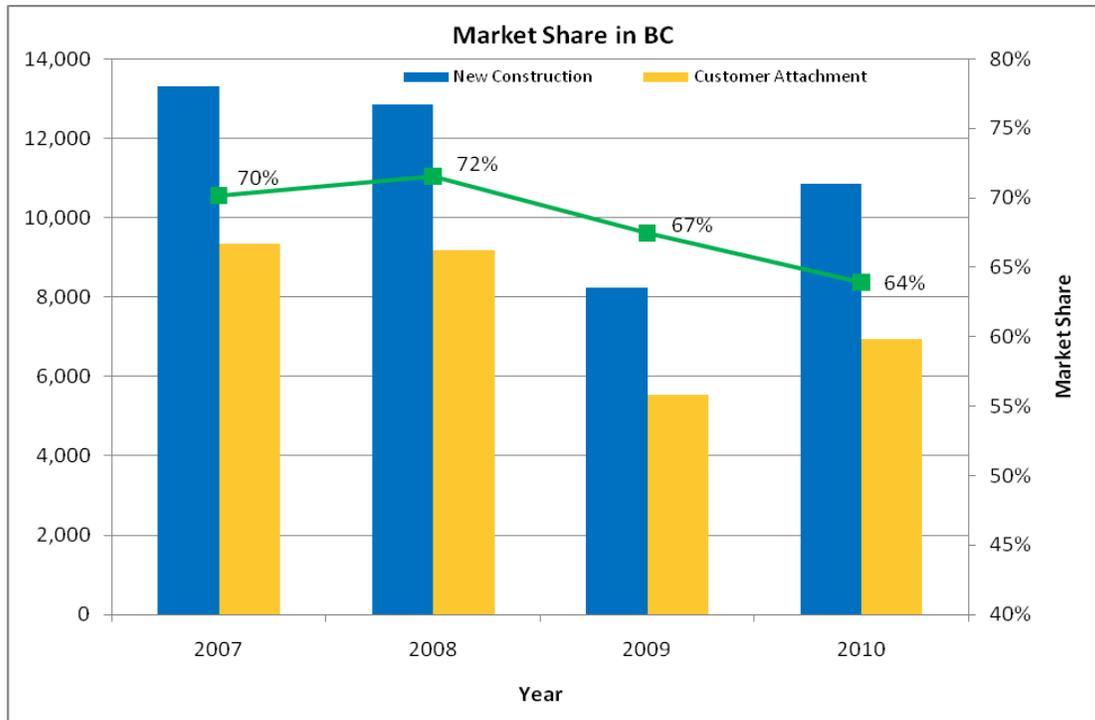
**Figure 2: Lost DWH Load 2006 – 2013F**



While the FEU have not projected past market share into future estimates of market share, the FEU have quantified the FEU's market share of residential new construction in BC over the past four years (2007 to 2010)<sup>4</sup>. This analysis reveals that as housing starts declined, the number of customers attached to the FEU's natural gas system also declined and when the housing starts increased in 2010, the number of attachments increased. However, the rate of attachment steadily declined from 2008 (72%) to 2010 (64%) despite the increase in construction activity. This downward trend suggests that customers are no longer attaching at the same rate relative to new construction being built and completed than in prior periods. Combined with a decline in the penetration of natural gas space heat and DWH load suggest that the FEU's loss of space heating and hot water load will continue in the new construction market.

<sup>4</sup> Residential market share is defined as the number of new natural gas customer attachments relative to the number of new construction dwellings built, completed and ready for service over a given year in B.C.

**Figure 3: FEU Natural Gas Market Share in B.C. 2007 - 2010**



In Figure 4 below<sup>5</sup>, the FEU have plotted five scenarios:

- a "Flat" scenario in which new load from customer additions offsets a decline of 0.9% in residential use per customer,
- three scenarios from the FEU's most recent Conservation Potential Review - CPR Achievable (Likely), CPR Achievable (Aggressive), and CPR (Economic Potential):
  - o Economic Potential: - The Economic Potential Forecast is the level of energy consumption that would occur if all equipment and building envelopes were upgraded to the level that is cost effective, from the FEU's perspective, when using lifecycle costing with the long-run avoided cost of new natural gas supply. All the energy-efficiency, behaviour, and alternative energy options included in the technology assessment that had a positive measure TRC, which is the conventional DSM screen, were incorporated into the Economic Potential.

<sup>5</sup> Figure 4 has been prepared for illustrative purposes only in order to show relative trends—a more extensive analysis of the details behind each scenario will not necessarily result in straight line demand forecasts as shown here.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 12

- Achievable Potential - The Achievable Potential is the proportion of the savings identified in the Economic Potential Forecast that could realistically be achieved within the study period. Achievable Potential recognizes that it is difficult to induce customers to purchase and install all the energy-efficiency/alternative energy or behaviour options that meet the criteria defined by the Economic Potential Forecast. The results are presented as a range, defined as **most likely** and **aggressive**.
- For comparison, the demand scenario illustrated in the 2010 Long Term Resource Plan ("2010 LTRP").

The CPR laid out several demand scenarios for the period 2010 to 2030.

The Flat scenario is unlikely as it assumes use per customer ("UPC") will decline at an annual rate of 0.9% offset by 8,500 net customer additions. These assumptions are unrealistic given FEU's declining capture rate of single family dwellings, a low capture rate of multi-family dwelling units, lower penetration rates for natural gas space and water heating in new homes, and equipment retrofit activity.

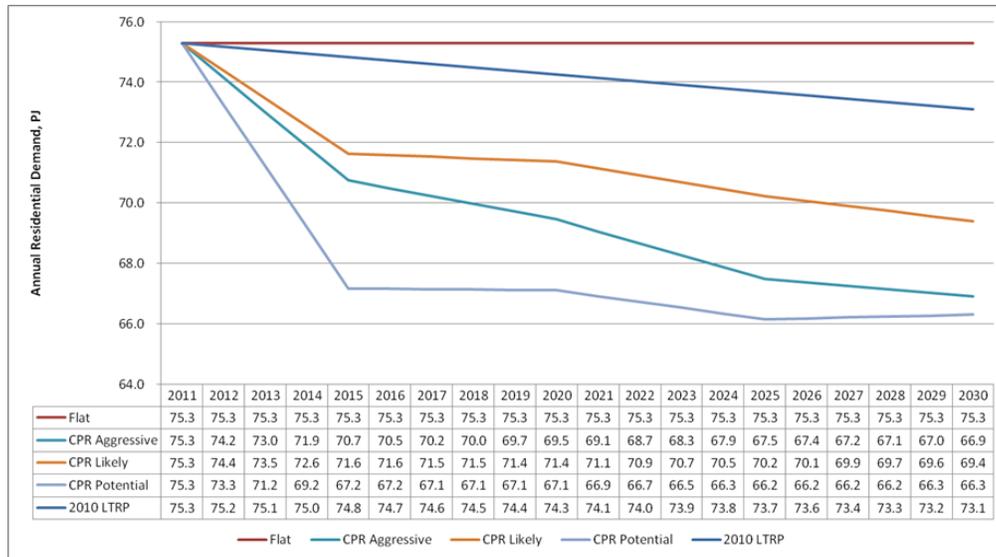
The 2010 LTRP was completed prior to the 2010 CPR and 2010 RNHS and therefore does not account for the findings of either study.

Of the CPR scenarios, the Achievable Potential (Likely) is the most realistic scenario. It recognizes the impact of energy efficiency measures, but also the difficulty of inducing customers to adopt those measures.

The CPR was completed prior to the availability of the 2010 RNHS results which highlighted a shift in residential demand for natural gas. The combined findings of the CPR and the RNHS have led us to revise our expectations for future natural gas demand over the long term. Future iterations of the Long Term Resource Plan will incorporate the findings of the CPR and RNHS in developing long term demand forecasts and identifying resource needs, and will also regularly re-evaluate these findings over time.

The implications of declining demand are an important consideration in the development of the FEU's new integrated energy initiatives. While the FEU will continue to ensure that natural gas is an attractive fuel for residential space and water heating, it is evident that we must seek other initiatives, such as NGV, to help offset the decline in demand in traditional markets.

**Figure 4: The FEU's Annual Residential Demand Scenarios 2011 – 2030**



3.2 Please provide any current evidence or studies that the FEU use to estimate the compensating increase in load and market share resulting from the three new initiatives identified above.

**Response:**

Evidence that the FEU use to provide an estimate of increasing load from its new CNG/LNG Service is included in Section 5.3.1 on page 88 of the Evidence. The 'Biogas Market Study,' Appendix D, Section 3, shows this new product offering appeals to a broad segment of consumers. For some, having the option to purchase renewable natural gas is important. As discussed in Section 2 of the Evidence, a growing number of customers demand greener alternatives. For customers with a strong affinity to environmental protection, offering alternatives like biogas may even influence their decision to use natural gas in the future.

It should be noted that an analysis of the benefits of these new initiatives needs to compare the introduction and growth of the new initiatives against a do nothing approach to the future, in which declining natural gas demand is a reasonable expectation, and not to the current state or recent past. Please also see the responses to BCUC IRs 1.3.1 and 1.131.2.1. With regard to the cost benefits for natural gas customers from integrated energy solutions, please read the response to BCUC IR 1.131.1 in conjunction with this response.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 14

Since the potential load addition presented above from these three New Initiatives (Biomethane, TES and CNG/LNG Service) have been determined with studies for which the results have been put forward in evidence, there is no need for further studies at this time. As these initiatives are new, there is insufficient data available to permit a statistically valid analysis of actual result, and thus it also does not make sense to conduct these studies yet. Over time, as more information becomes available, the FEU expect to be in a better position to further analyse the actual impact of these new initiatives on the total natural gas throughput and will incorporate such analysis into the FEU's Long Term Resource Plan.

Please also see the response to BCUC IR 1.131.2.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 15

#### 4.0 Reference: Issue 1 Scope (b)

##### Exhibit B-2, Evidence of FEU, Section 2.1, p. 14

##### Alternative Energy Sources

In the 2009 Application for ROE/CAP, Terasen Utilities put forward the position that 'alternative energy sources' further weaken TGI's competitive position (2009 CAP/ROE Application, Tab 1, p. 2).

- 4.1 Do the 'alternative energy sources' referred to by Terasen include markets in geothermal and other renewable energy sources? If not, please explain.

##### Response:

Yes. As discussed in the response to CEC IR 1.12.2 in the 2009 ROE and Capital Structure Application, the FEU referred to alternative energy sources in that proceeding to include all alternatives to natural gas that provide heat and thermal energy, including electricity, geothermal or geo-exchange, solar thermal, biomass, and waste heat recovery. There may be other technologies that evolve over time that the FEU would look to include on this list.

The FEU's TES includes the above mentioned energy sources in combination with natural gas service to provide a more comprehensive set of thermal energy service options to customers. There are some customers and potential customers that want these alternative energy sources, and by the FEU remaining involved in the provision of those services, the FEU can help to retain some natural gas load as part of the overall thermal energy offering that would otherwise be lost. For instance, in the Delta School District TES project, there will be the use of both geo-exchange systems and high efficiency natural gas boilers in addition to the existing use of air-source heat pumps.

- 4.2 If FEI successfully establishes itself in the 'alternative energy sources' market, would its competitiveness, and therefore business risk profile, improve?

##### Response:

This response addresses a variety of responses on the topic of business risk and cost of capital, including BCUC IR 1.9.3, 1.15.1, 1.20.1, 1.20.1.1, 1.21.1, 1.80.2, 1.97.1 and BCOAPO IR 1.1.1 and 1.1.2.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 16

The FEU refer to Biomethane Service, NGV Service, Thermal Energy Services ("TES") and also EEC, collectively, as the New Initiatives. Given that Biomethane and NGV involve the delivery of gas to end use customers, they are offered within the natural gas class of service. EEC is premised on recovery from the natural gas customers and is thus associated with the natural gas class of service as well. As TES may use different sources of energy and technologies to deliver the energy, including natural gas, electricity, geothermal, solar, biomass, etc., it is classified as a separate class of service within FEI. The FEU's New Initiatives provide a more comprehensive set of energy service options to customers and represent part of the Companies' response to challenges we face in the changing energy environment in which we operate (as discussed in Section 2 of the Evidence). This has implications for business risk.

This response addresses three issues:

1. Cost Recovery of New Initiatives
2. Role of New Initiatives in business risk profile changes
3. ROE and Capital Structure requirements for New Initiatives

Each class of service has its own risks and is segregated for ratemaking purposes; therefore, the business risk profile and ROE and capital structure requirements for each class of service must be addressed separately.

## **NATURAL GAS CLASS OF SERVICE**

Competitiveness and business risk of the core natural gas class of service can be financial or non-financial in nature, but ultimately they are factors that impact the use of natural gas and throughput levels over time. These include, among other things, commodity and market price volatility, competitiveness with other forms of energy, and perception of customers about how the use of natural gas contributes to climate change and GHG emissions, all of which contribute to the ability to attract customers and retain existing customer base, which affect throughput levels and system load factors.

### Cost Recovery of Biomethane, NGV, and EEC

Biomethane, NGV, and EEC are part of the natural gas class of service and as such these service offerings and initiatives will form part of the natural gas rate base and costs are recovered by natural gas class of service customers through rates.

EEC costs are recovered from all natural gas customers pursuant to a Commission-approved framework.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 17

Should FEI be unsuccessful in recovering costs or generating revenues for the Biomethane and NGV activities, then any shortfall due to prudently incurred costs is recovered from customers of natural gas class of service, but not customers of other classes of service (i.e. TES). In this respect, Biomethane and NGV are the same as any other utility investments for the natural gas class of service.

#### Role of Biomethane and NGV in Natural Gas Class of Service Business Risk Profile

The Commission approves ROE and capital structure of the natural gas class of service through a cost of capital application, and this cost of capital is equally applicable to capital invested in Biomethane and NGV assets, and EEC initiatives, all of which are part of the natural gas class of service.

As a result of the cost recovery framework discussed above, conceptually, should risk be added to the natural gas class of service by virtue of the type of projects undertaken, the natural gas class of service will require higher ROE and capital structure, which will be paid by natural gas customers. However, the level of Biomethane investment and investment in NGV-related assets is small in relation to the total natural gas rate base of over \$2.5 billion. NGV service is backed by long term contracts, and supply development for Biomethane will only occur if demand is borne out. As such, we do not expect that Biomethane and NGV add to business risk to the natural gas class of service and therefore will not require ROE and capital structure adjustments to reflect a higher risk profile for that reason.

Biomethane and NGV offerings promote natural gas as part of the integrated energy solution and make use of the existing natural gas infrastructure by way of adding load or offsetting the decline occurring from other end uses for natural gas. Therefore, to the extent that FEI is successful in establishing Biomethane and NGV offerings within the natural gas class of service and improve total throughput levels, these service offerings can help to mitigate or slow the extent of incremental business risk facing the natural gas business over time, which could have the effect of moderating potential increases in the utilities' cost of capital above where it stands today.

#### Role of Thermal Energy Services in Natural Gas Class of Service Business Risk Profile

TES is not expected to increase risk to the natural gas class of service given that TES class of service is segregated. No one project is material relative to FEI's overall natural gas rate base such that failure of a TES project would affect FEI corporate risk profile as a whole.

However, TES systems can use natural gas as an input, but the use of natural gas is not required. For energy users who have resolved to adopt a thermal energy solution, rather than take traditional natural gas or electricity service for heating and cooling, their choice will in practice be a thermal energy system backed by natural gas or a thermal energy system backed

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 18

by another fuel source such as electricity. Over time, FEI capturing new TES customers or retaining customers that would otherwise never take natural gas service or leave FEI completely can result in additional natural gas throughput on the system that would otherwise not have been there. This helps to maintain competitive natural gas rates for the benefit of natural gas customers. Similarly, overhead costs allocated to TES can also help offset a portion of the cost of service to natural gas customers, potentially improving competitiveness of the natural gas class of service from where it would otherwise have been in the absence of the contribution to overhead. As with the other New Initiatives, this may help to mitigate future increases in business risk.

## **THERMAL ENERGY SERVICE CLASS OF SERVICE**

The TES class of service, at this stage of development, is riskier than the natural gas class of service. The Commission has recognized this for other TES projects in the Province, which have higher approved ROEs than the benchmark utility ROE (FEI's ROE). Recent examples are Dockside Green with a ROE of plus 100 basis points from benchmark ROE and Corix UniverCity with a ROE of plus 50 basis points from benchmark ROE, with 60 percent debt and 40 percent equity capital structure for both projects.

### Cost Recovery of Thermal Energy Service

The TES class of service is separate from the natural gas class of service and as such TES will form a separate rate base and costs are recovered by TES class of service customers. As TES is a separate class of service for rate setting purposes, natural gas customers do not benefit from the revenues generated and costs that have been charged, allocated or assigned to TES are not recoverable from natural gas customers. Furthermore, as stated above, TES is not expected to increase risk to the natural gas class of service given that TES class of service is segregated for rate setting purposes.

TES debt requirements will be raised in conjunction with the overall FEI financing activities. Given the very small size of the TES investments and the structure of the projects, relative to natural gas investments, there will be no measurable impact on debt financing rates for the FEI as a whole. This approach results in TES projects debt component being financed at the FEI cost of debt as FEI is the proponent of the project, with such debt cost likely being lower than what would be achieved if the TES projects were financed outside of FEI.

Should FEI be unsuccessful in recovering costs or generating revenues for TES as a whole, then any shortfall is recovered from the shareholder, not customers of other classes of service (i.e. natural gas customers). Since the TES business is in its nascent stages, there are fewer potential customers to recover the TES cost of service from. This means that the shareholder

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 19

faces greater risk for investments in TES than for investments directed at the natural gas class of service.

### ROE and Capital Structure Requirements for Thermal Energy Service Class of Service

The ROE and capital structure for TES is dealt with on an individual project basis when TES agreements are filed with the Commission for approval as a rate. Should risk be added to this class of service then it will require higher ROE and/or capital structure, which will be paid by TES customers.

### **SUMMARY**

New Initiatives are part of a multifaceted approach by the FEU to mitigate the rate of growth in business risks inherent to the core natural gas business and competitive position in the long term, all else equal. Should FEI be successful in establishing its Biomethane and NGV services within the natural gas class of service and capturing new TES projects that use natural gas, these New Initiatives can help to moderate further increases in business risk. TES related business risks are captured in that class of service and recovered from TES customers only.

- 4.3 FEU state that the pursuit of the New Initiatives is a step toward trying to adapt to this changing energy environment for the benefit of their existing natural gas customers. Has FEU carried out a 'Customer Impact Study' on existing natural gas customers? If so, please provide a copy of the report.

### **Response:**

No, the FEU have not conducted a 'Customer Impact Study' to determine the effect on its natural gas customers. The market potential for TES has not yet been evaluated; however, the 'Conversion Model' and 'Residential New Construction Research' studies that were recently undertaken by the FEU suggest a growing shift toward alternative energy sources.

The following paragraphs outline two research projects that underscore how consumers are shifting to new thermal energy systems that don't rely on natural gas. By pursuing New Initiatives that counter the market trends described, the FEU expect to retain more natural gas load than would otherwise be the case if these consumers adopted new thermal energy systems that do not incorporate natural gas.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 20

The FEU commissioned the 'Conversion Model' study in 2008, included in Attachment 4.3, and the 'Residential New Construction Research' study in 2011 which is provided in Attachment 3.1 to the response to BCUC IR 1.3.1. Both studies bring to light the rising popularity of AES for space and domestic hot water ("DHW") heating. The dominant AES identified in the studies are geothermal and heat pumps.

The '**Conversion Model**' study undertaken in 2008 drew on residents in the Lower Mainland, Vancouver Island and BC Interior. The study revealed:

- Natural gas is seen as a mature product. Customer commitment to historically dominant energy sources (gas and electricity) is low, suggesting that the market is willing to experiment with new energy sources. This has translated into an increase in the use of geothermal and air source heat pumps.
- Geothermal heat pumps and heat pumps using an air source are attractive energy sources with strong commitment among users. Consumers perceive these options as environmentally friendly and sustainable.
- Air source heat pumps ("ASHP"s) already have a solid user base. ASHP's are attractive to many consumers and have the potential to gain significant market share.
- Electricity and geothermal heat pumps outperform natural gas in several ways. Consumers suggest that natural gas can be messy/smelly, and people are concerned about its safety and future affordability.

As referenced in Section 2.1.3.1, page 22 of the Evidence, the FEU have conducted an analysis of natural gas customers added to the system between 2006 and 2010. The resulting '**Residential New Construction Research**' study (covering Lower Mainland & Fraser Valley, Vancouver Island, and BC Interior and all dwelling types) revealed that the market share (i.e., the proportion of new homes captured by natural gas for space and water heating) is in a state of decline. The report's primary findings regarding space and domestic hot water heating are noted below.

### **Space Heating**

- Compared to the stock of older gas homes (i.e., those built prior to 2006), new homes are less likely to use gas (either natural gas or piped propane) as their primary heating fuel (73% of new homes versus 91% of older gas homes). New homes are more likely than older homes to use gas as a secondary space heating fuel (33% versus 11%).
- The declining share of natural gas as a main space heating fuel is attributed to (1) the decrease in proportion of gas homes equipped with a gas furnace (65% of new homes

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 21

versus 80% of homes built prior to 2006), and (2) the growing popularity of air source heat pumps (ASHPs) (18% of new gas homes versus 4% of older gas homes). These developments were confirmed in discussions held with builders and developers.

- Sixty-five percent (65%) of homes built since 2005 have a gas furnace, down significantly from the 89% of homes built between 1950 and 1975. The decline in penetration of gas furnaces in new construction is a long-run trend.
- ASHPs have surged in popularity during the past five years. The incidence of ASHPs is highest on Vancouver Island (38% of all new gas homes) and the Interior and Lower Mainland (13% each). New single detached dwellings are considerably more likely than new townhouses and row houses to have an ASHP installed (21% versus 3%).
- Geothermal (ground source) heating systems account for 4% of new gas homes compared to less than 1% of the stock of older gas homes.
- The four space heating methods preferred by homebuyers included geothermal (22% of those who prefer a different space heating system), hot water radiant / under floor heat (21%), air source heat pump (18%), and a central forced air furnace (15%). These results are consistent with focus group discussions, where the popularity of other heating methods (heat pumps, hot water under-floor heating) was clearly evident.

### **Domestic Water Heating**

- Use of natural gas for domestic water heating in new gas homes is down significantly compared to homes constructed prior to 2006 (69% versus 91%). Builders and developers attributed the decline to developments in gas furnaces (i.e., fewer installations, regulations requiring high efficiency units). From the builder's perspective, the cost of adding a B vent to accommodate a gas DWH, the loss of precious interior space to accommodate the vent, and the relative cost disadvantage of a gas DWH relative to an electric tank, makes gas water heaters considerable less desirable than electric models.
- The decline in gas DHW penetration has occurred across all dwelling types surveyed and primarily impacts traditional storage type heaters. In contrast, instantaneous (tankless) gas domestic water heaters are growing in popularity, installed in 7% of new gas homes, compared to 3% of homes built prior to 2006.

Also, with regard to appliances, the study noted:



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 22

- High efficiency clothes washers are now predominant in new homes, with penetration of 71% compared to 27% for older homes. The increased penetration of high efficiency clothes washers means less hot water demand.

Both the 'Conversion Model' and 'Residential New Construction Research' studies depict a trend towards TES, away from natural gas for space and DHW heating. Geothermal energy and ASHP's are emerging as viable, and in some cases are consumers preferred alternatives to traditional natural gas thermal systems. Without a response to this shift, new heating technologies will steadily erode the FEU's throughput and customer base. Although the FEU have not conducted a study that describes how customers will be affected by the Companies' pursuit of New Initiatives, the FEU believe it must adapt to the changing energy environment in order to retain throughput and a healthy customer base.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 23

## 5.0 Reference: Issue 1 Scope (b)

### Exhibit B-2, Evidence of FEU, Section 2.1, pp. 19, 20

#### Cost-Effectiveness of Renewable Thermal Energy Solutions

In the Evidence, FEU use results from a modelled demand scenario (first appeared in the 2010 LTRP application) to illustrate how renewable thermal energy solutions can cost-effectively improve energy efficiency and reduce GHG emissions. The results show that cumulative natural gas and electricity savings over the ten year period are approximately 1,880,000 GJ and 199 GWh respectively, and cumulative GHG emissions savings are approximately 100,304 tonnes of CO<sub>2</sub>e.

FEU state that by providing New Initiatives, they can keep natural gas as part of the solution of delivering integrated energy solutions to customers.

- 5.1 Please confirm that the scenarios and benefits modeled from those scenarios are illustrative and for discussion purposes and the assumptions have not been verified from the LTRP proceeding.

#### **Response:**

The FEU confirm that the scenarios & benefits modeled from those scenarios are for illustrative and discussion purposes only. The assumptions used in the model are theoretical energy use evaluation for a four-story one-hundred unit condominium building in the Lower Mainland. Thermal Energy Service usage and GHG emissions have been compared for a typical baseline energy delivered today (electricity for space heating, natural gas for water heating and make up air unit) against a geo-exchange system using natural gas as the back-up energy source.

- 5.2 In order to attain the figures on savings in the scenario illustrated, have FEU's anticipated market shares and incentive funding for thermal energy systems been factored in? If yes, what are the assumptions?

#### **Response:**

The FEU have not anticipated any market shares or incentive funding for thermal energy systems in the illustrated scenario. This scenario is set within the Lower Mainland, where a build-out of 185 such buildings over a 10 year period was assumed as a reasonable



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 24

expectation<sup>6</sup> to examine the impact of replacing conventional energy systems with geo-exchange in combination with conventional gas to improve energy efficiency and reduce GHG emissions.

---

<sup>6</sup> Extrapolating from 2008 and 2009 housing starts data, we have estimated that this build-out represents approximately 20% of the total new condominium / apartment building market over the next ten years.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 25

**6.0 Reference: Issue 1 Scope (b); Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 2.2, p. 38; Exhibit A2-3, Renewable Energy Guide for Local Governments in British Columbia, p. 20**

**Municipal Government Commitments**

FEU state that they believe by partnering with municipalities and regional districts, they can play a role in helping them meet the provincial energy objectives related to reducing GHG emissions and energy efficiency.

6.1 Please comment if this partnership as anticipated by FEU would normally involve incentives from EEC funds.

**Response:**

The term "partnering" in this case is a loose use of the word and does not necessarily involve any binding legal agreements or formal associations. In this context, it could be everything from working with and/or holding meetings with municipalities, to signing legally binding agreements to provide TES products. EEC incentives would be available to municipalities through any available EEC program, according to the program rules and criteria, as with any other customer.

The distinction for municipalities in BC is that the majority of municipalities have signed on to the Climate Action Charter to become carbon neutral by 2012. As such, they have different business drivers than other natural gas customers. Due to the signing of the Climate Action Charter, they may be more apt to seek out energy efficiency opportunities and incentives.

6.2 The document from Exhibit A2-3 describes local governments' response to climate change and their promotion of renewable energy at the community level. Pages 19 and 20 of the document discuss the respective advantages of a local government direct utility ownership and operation versus a wholly-owned energy utility subsidiary. Do FEU agree with the advantages cited in the document?

**Response:**

Exhibit A2-3 does not describe local government's response to climate change. The document is the Community Energy Association's suggestions and views on what local governments could or can do in response to climate change. The Community Energy Association does not speak

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 26

for all municipalities but rather provides guidance, consulting services and support to municipalities who may wish to pursue community energy.

The FEU do not entirely agree with the advantages as outlined on page 19 and 20 of the document. Page 19 and 20 describe two models for utility structure, but a further two models are described on pages 21 and 22. In reading the advantages as listed, one must take into consideration the disadvantages of both of the models as well as the advantages and disadvantages listed on pages 21 and 22 for Model 3 and 4. Further, while these pages demonstrate 4 possible models, there are many more derivations and models that are possible that in turn have their own advantages and disadvantages.

As listed the main advantages of a local government direct utility ownership are:

- Local government control over the project
- Lower cost and greater flexibility of capital
- Flexibility and synergies with other local government operations

The FEU believe that all these advantages can be achieved under the three other possible models. It is possible to have the local government retain control, have low capital costs and have synergies with operations under any model.

What Models 1-4 provide a local government (and other potential customers and competitors) with is high level information that can serve as a starting point in determining the business model for a district energy system. The FEU believe that this document therefore helps local government become aware of the various models and their structure, which can create a better working relationship between a local government and a utility provider of energy. As every municipality is different and has different business drivers, the end solution may be different. The FEU, in working with municipalities, strive to provide a solution that meets each municipality's specific needs. The solution may be one listed in Exhibit A2-3 or may be a different model altogether.

- 6.2.1 Based on FEI's meetings with stakeholders and sales staff reports, how important is it to a municipality to have the ability to determine its rates, priorities and tolerance for risk relative to being regulated? Is there relevant information that FortisBC can provide related to its experience with the Interior Municipal Utilities and the City of Nelson?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 27

**Response:**

How important it is for a municipality to have the ability to determine rates is dependent upon the specific municipality and its own goals and objectives regarding thermal energy delivery. It is not possible to provide a blanket statement that all municipalities either favour or do not favour specific issues regarding thermal energy delivery. In our work with municipalities where a DES is possible, some municipalities are concerned with rates and also the risk of being regulated, while others do not show any concern at all. In general, customers (including municipalities) are most concerned that the rate for delivered energy is similar to existing energy costs (all in). Additionally, the Community Energy Association of BC has a number of reports<sup>7</sup>, which discuss municipality options for ownership and risk tolerance.

---

<sup>7</sup> These can be found at <http://www.communityenergy.bc.ca/resources/cea-publications-0>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 28

**7.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 2.3.3, pp. 50-51**

**Competitive Position Against Electricity**

On page 49 FEI states that:

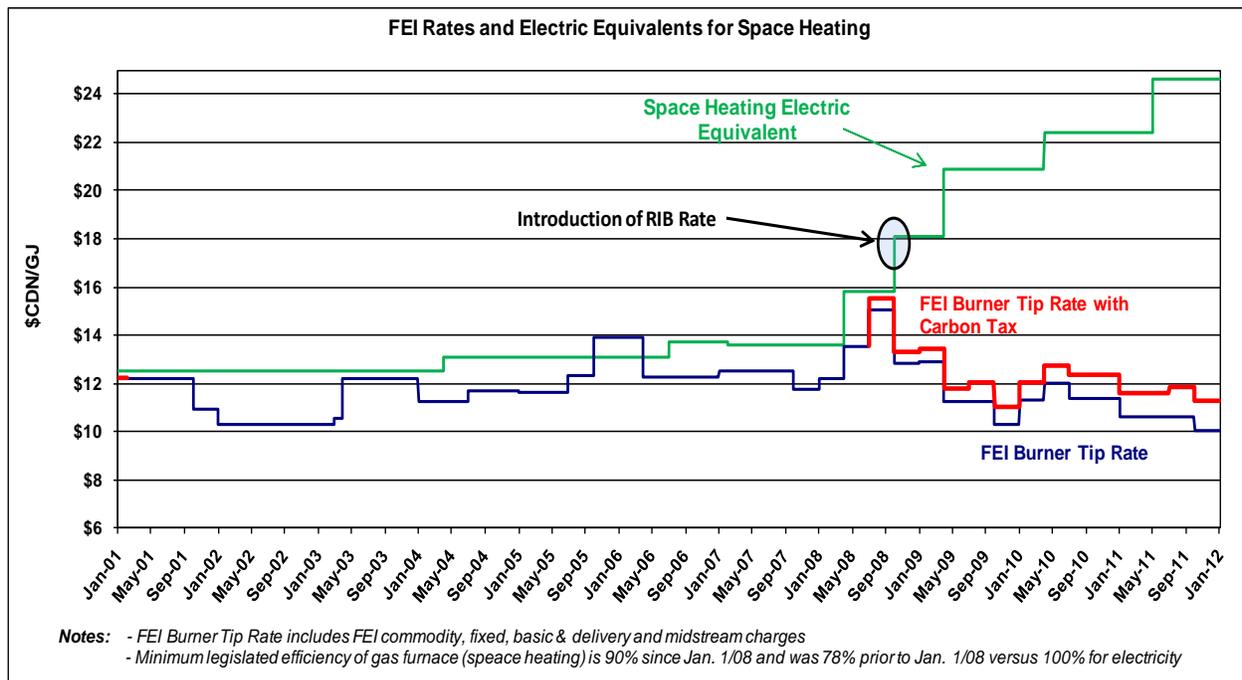
"Additionally, BC Hydro's relatively flat electricity rates have had a price advantage over natural gas for many years. One of the main reasons for this price advantage is the manner in which these products are priced in BC. Natural gas commodity pricing for consumers in BC is market-based whereas a large percentage of the costs making up electricity rates are the low embedded costs of BC Hydro's Heritage generation facilities."

FEI states on page 52 that "...BC's electricity grid is under cost increase pressures to meet the existing and projected load requirements, and thus any additional load requirements from non-traditional market segments from electricity could add to the problem." In the associated footnote FEI states that "BC Hydro's recent Revenue Requirement Application for 2012 to 2014 will be revised later this year and will see proposed rate increase to be reduced from 32 percent (initially estimated) to 16 percent over three years."

- 7.1 Please provide an efficiency adjusted graph for the past 10 years, showing the comparative electricity versus natural gas cost for home heating assuming the minimum efficiency furnace allowed for new home construction at the time. Please also provide the assumptions used in the calculation of the comparative rates.

**Response:**

The figure below presents a comparable electric equivalent for space heating load relative to FEI's Residential Rate Schedule 1 natural gas burner tip rate for the past 10 years on a dollar per gigajoule unit basis.



Assumptions used in computing the electric equivalent include: the standard BC Hydro residential rate class electricity rate prior to October 1, 2008; the BC Hydro Step 2 Residential Inclining Block ("RIB") rate after October 1, 2008; a legislated minimum relative natural gas furnace efficiency of 78% prior to January 1, 2008; and a legislated minimum furnace efficiency of 90% after January 1, 2008<sup>8</sup>. These minimum natural gas furnace efficiencies were implemented by the provincial government of British Columbia and the federal government of Canada. The BC Hydro Step 2 RIB rate was used as it is assumed that for the majority of customers that use natural gas for space heating, the appropriate comparable electricity rate would be based on the Step 2 rate rather than the Step 1 rate.

The Step 2 rate is based on previously approved rates and the current Step 2 rate, which is an interim rate effective May 1, 2011, is equal to \$0.0962/kWh plus a rate rider of 2.5%. The current rate is subject to change either up or down pending a review of BC Hydro's Revenue Requirement Application by the British Columbia Utilities Commission.

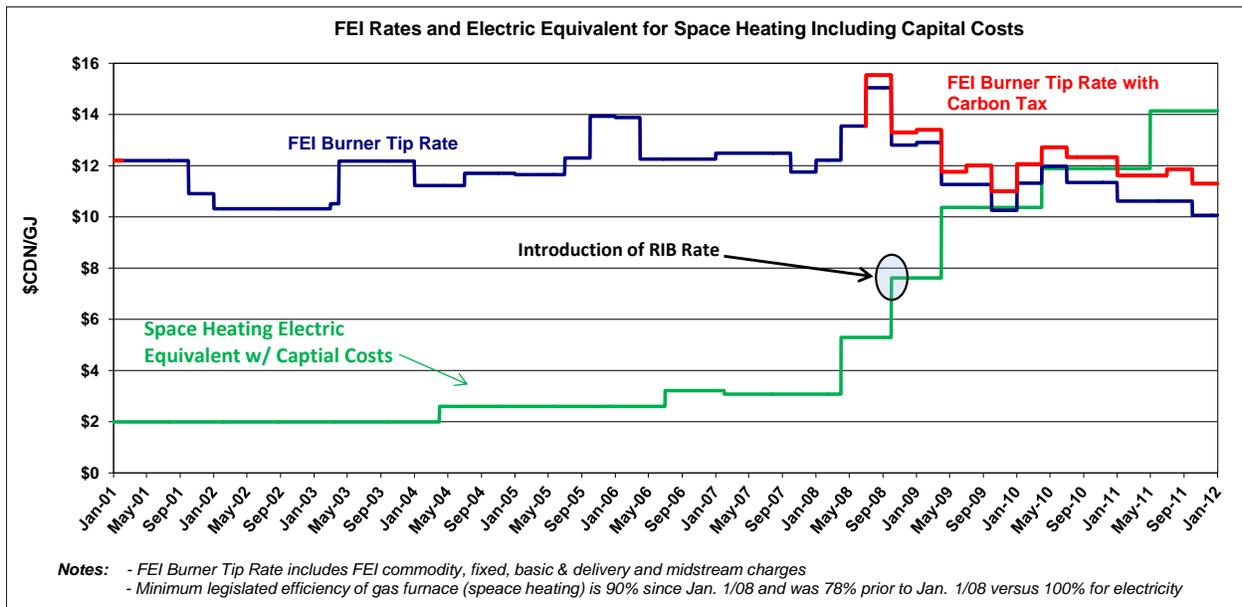
FEI burner tip rate includes charges for the fixed basic, delivery, commodity, and midstream charges for residential customers on a per unit basis. Additionally, the introduction of the Carbon Tax on July 1, 2008 is also included as a separate line on the graph to help illustrate the effect of the tax on the FEI burner tip rate since natural gas customers pay the Carbon Tax. At its introduction on July 1, 2008, the Carbon Tax was equal to about \$0.50/GJ and has increased by about \$0.25/GJ each July 1. It will continue to increase until it reaches about \$1.50/GJ on

<sup>8</sup> BC Ministry – Ministry of Energy, Mines, and Petroleum Information Bulletin 09-03 – requires 90% AFUE

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 30</p>

July 1, 2012. The decision to continue to increase the Carbon Tax or implement another carbon-related cost after 2012 will rest with the government in place at that time.

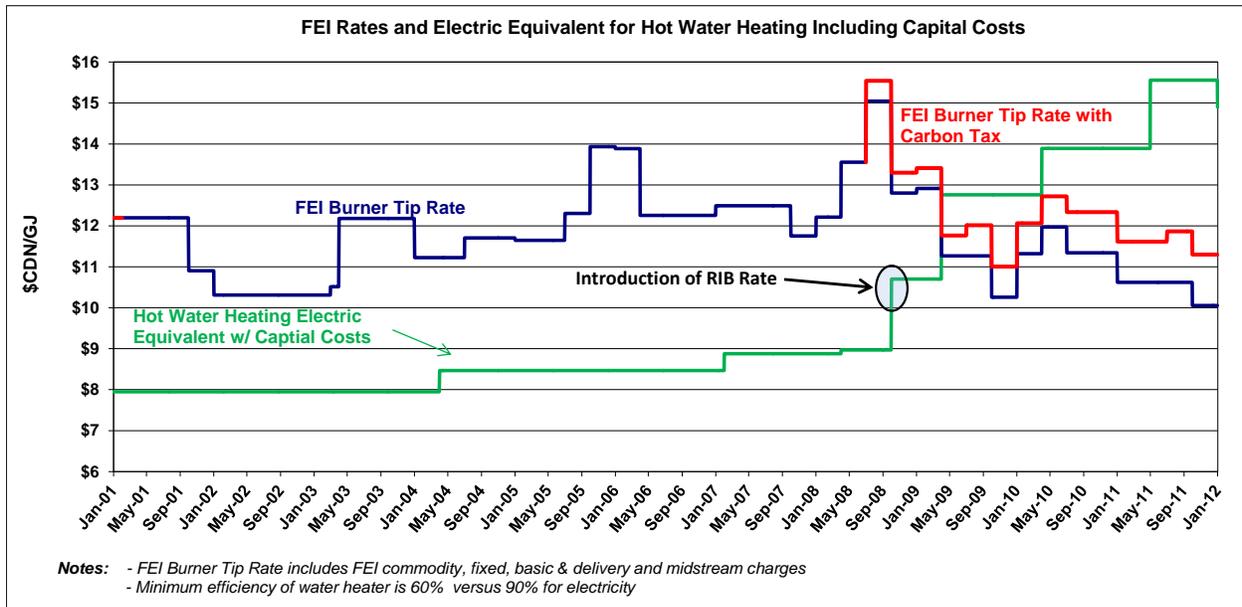
Also of particular note is that the figure is only presenting the burner tip rate relative to the electric equivalent on a variable cost basis and does not take into consideration the upfront capital costs of installing natural gas versus electricity for new or retrofit customers. The incremental capital cost difference related to installing natural gas equipment over electric equipment is about \$10.31/GJ for a space heating<sup>9</sup>. The difference between the electric equivalent and present burner tip rate is reduced significantly when the capital cost of installing a gas furnace is accounted for on top of the burner tip rate for a new or retrofit customer. The figure below graphically presents the electric equivalent for space heating when the incremental upfront capital costs associated with installing a natural gas furnace are included.



Additionally, the difference between electricity rates and natural gas rates is significantly reduced with respect to competing for hot water heating load for existing and new customers due to the relatively lower efficiency of a gas hot water heater which averages about 60% relative to about 90% for an electric hot water heater. The upfront capital cost differential for a natural gas hot water heater versus an electric hot water heater is about \$2.79/GJ<sup>10</sup>. The figure below graphically presents the electric equivalent including the incremental capital cost of installing a natural gas hot water heater.

<sup>9</sup> Terasen Gas Inc. 2010-2011 Revenue Requirements and Delivery Rates Application, dated June 15, 2009, page 64

<sup>10</sup> Terasen Gas Inc. and Terasen Gas Vancouver Island Price Risk Management Review Report, January 27, 2011, page 49.



Although the upfront capital cost is lower for a gas hot water heater than the cost of a gas space heating furnace, the relatively lower efficiency of a gas hot water heater adds to the competitive challenge for the Company in attracting new hot water heater customers. Furthermore, if existing natural gas hot water heating customers were to migrate to electricity usage, this would represent a significant loss in system throughput for FEI as FEI current residential and commercial water heating load represents an estimated 19% of total FEI annual residential and commercial load<sup>11</sup>. The result would be significant increases in FEI residential and commercial delivery rates as well as adverse impacts on BC Hydro's residential rates<sup>12</sup>.

7.2 In the future, won't the proposed BC Hydro rate increases bring an end to the "relatively flat electricity rates" that FEI refers to on page 49?

<sup>11</sup> Terasen Gas Inc. and Terasen Gas Vancouver Island Price Risk Management Review Report, January 27, 2011, page 33.

<sup>12</sup> Terasen Gas Inc. and Terasen Gas Vancouver Island Price Risk Management Review Report, January 27, 2011, page 34.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 32

**Response:**

As evidenced in the response to BCUC IR 1.7.1, electricity rates over the past few years have not been relatively flat when compared to rates prior to the introduction of the Residential Inclining Block ("RIB") rate effective October 1, 2008.

Although the FEU generally agree that current cost and deferral account pressures to BC Hydro's Heritage Assets will continue to result in upward pressure to future electricity rates, it is also worth mentioning that a recent government appointed panel that reviewed BC Hydro's future price forecasts determined that electricity rates should increase by only half of BC Hydro's projections<sup>13</sup>. In its 2012-2014 Revenue Requirement Application, BC Hydro originally projected electricity rates to increase by 9.73% each year for the next three years, for a total cumulative increase of 32.1%. However, after an extensive review the provincial government appointed panel determined that electricity rates should increase by about 8% in the first year and then by 3.9% per year for the second and third year, for a total cumulative increase of about 16.6% over three years. The table below summarizes the increases that were originally sought by BC Hydro in its Revenue Requirement Application and the recommendations put forth by the appointed panel.

	F2012	F2013	F2014	3 Year Cumulative
(Existing) Rate increase as filed in Revenue Requirements Application (smoothed over 3 years)	9.73%	9.73%	9.73%	32.1%
Option 1 - Rate increase after panel and BC Hydro identified initiatives (smoothed over 3 years)	5.9%	5.9%	5.9%	18.9%
Option 2 - Rate increase after initiatives (assuming 8% in F2012 as per interim rate increase and smoothed over F2013 and 2014)	8.0%	3.9%	3.9%	16.6%

As discussed in the response to BCUC IR 1.7.1, natural gas is currently competitive with electricity for space heating load on a variable cost basis and marginally competitive when accounting for the upfront capital cost of about \$10.31/GJ. However, uncertainty regarding future Carbon Tax levels, changes to natural gas prices and in turn the FEU commodity rates, and other unforeseeable changes to either the electric or gas market may potentially adversely impact the competitive position of gas relative to electric applications.

Furthermore, the ability of natural gas to compete with electricity is not based entirely on economic factors or differences. While differences in natural gas and electricity rates will drive consumer behavior with respect to energy use, so will public perception of natural gas relative to electricity in BC. The *Clean Energy Act* has electricity as its primary focus. The heavy

<sup>13</sup> Province of British Columbia - Review of BC Hydro, June 2011, page 21

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 33

emphasis in the *Clean Energy Act* on promoting the electricity sector as the clean and green energy source in B.C. may only serve to increase public perceptions that natural gas by comparison is not a desirable source of energy to be used. More specifically, several factors have increased the challenge for natural gas in the Province:

- Government policy and legislation intended to reduce GHG emissions (which means generally less consumption of fossil fuels),
- Growing public sentiment ("green") against the use of fossil fuels and in support of reducing GHG emissions,
- Public perception regarding fossil fuel-based energy prices and future carbon taxes. Although natural gas commodity prices are low currently (relative to recent historical values), significantly higher prices and price volatility are in recent memory. Public discussion of climate change and the need to implement carbon taxes or cap and trade regimes to reduce GHG emissions is a matter of daily public discourse. This is further compounded by the public perception that electricity supply in BC is an "all green solution". The FEU believe that perceptions are often as much an influence in public behaviour with respect to energy use as economic indicators.

The provincial GHG emissions reductions targets have the potential to adversely change public perception of natural gas over the long term. The targets will likely shift investment and consumption decisions of the consumer away from natural gas towards the consumption of electricity or other renewable energy alternatives (such as geo-exchange or solar). This focus on renewable energy may supersede historical decision criteria such as cost of product, ease of use, and reliability.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 34

## 8.0 Reference: Issue 1 Scope (b)

### Exhibit B-2, Evidence of FEU, Section 2.4, p. 53

#### Demand for New Initiatives

According to a study 'Community Energy Planning: Policies and Tools, April 14, 2011' prepared by the Fraser Basin Council (Exhibit A2-4, Slide 17 of 21), there are around 15 significant District Energy Systems operating in BC. BC Hydro's website also features a number of sustainable communities initiatives across B.C that involved BC Hydro (Exhibit A2-5).

A consultant report prepared for the Ontario Power Authority dated May 15, 2010 says that there are more than 6,000 DES in North America, mostly in older downtown cores and on medical, educational or military campuses. According to the report, there are currently about 120 DES in Canada with Ontario as the leader in district energy, with more than 40% of connected floor space in Canada although district energy is evolving rapidly in other parts of Canada. DES is growing by about one per cent per year in Canada (Exhibit A2-6).

- 8.1 Are the descriptions in the preamble a good reflection of the demand for TES and its current market structure? If not, please indicate how you would amend them?

#### **Response:**

The preamble may be a reasonable reflection of the current market structure and conditions for DES in Canada as a whole. The FEU do not believe that it is reflective of the conditions in British Columbia. While it is difficult to predict what the actual DES growth rate in BC will be, the FEU believe, the embracing of greener alternatives by municipalities and environmentally conscious consumers and the potential for long term cost benefits due to lower and/or more diverse fuel use, have resulted in substantial demand from customers and stakeholders for TES whether DES or discrete systems. The actual growth rate achieved in BC will depend to some degree on the implementation of the efficient public utility solutions as proposed by the FEU and as enabled in BC by the UCA.

While many existing or recently developed TES systems have been largely developed with the support of grant funding, the FEU's experience in the development of TES is demonstrating that the efficiencies of the regulated utility approach can provide long term viability without the use of grant funding and hence employing an ownership model that provides successful development of the market in ways that match the public interest. Whatever the market growth ends up being, the FEU are in a good position to offer greener alternatives in response to declining throughput levels, government energy objectives, environmental policy and legislation, the energy production and consumption environment in BC, and customer expectations and demand.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 35

8.2 On page 54 in the 2010 LTRP application, FEU states: "District energy systems can employ multiple energy sources and systems to balance the heating and cooling needs for a community with many end use needs. While geo-exchange and solar-thermal systems can be designed to serve single family homes, the Utilities are focusing our initiatives on larger multi-unit and district energy systems."

8.2.1 Is this focus still true? Please support your response with examples. If the focus is no longer true, please explain FEU's departure from its earlier plan.

**Response:**

Yes, the focus is still on larger multi-unit and district energy systems. Examples of such projects are the Kelowna District Energy System and the North Vancouver District Energy System as well as other projects that FEI has yet to announce publicly. FEI has also been pursuing larger customers that have multiple sites that require installation of smaller systems in each site. This approach enables FEI and the customer to approach the solution from a broader perspective to balance costs, risks and benefits across the sites by employing a common or "postage stamp" style rate across the customer's multiple sites. At this stage, this approach has been used for Delta School District and for strata developments with more than one building. The successful application of this model provides a foundation for further application of this approach across multiple customers.

8.2.2 Please provide a comparison of the typical payback period, risk profile, capital financing barriers, and the economies of scale for a) geo-exchange and solar-thermal systems serving single and multi-family homes and other discrete systems versus b) DES.

**Response:**

It is difficult to provide a comparison between discrete systems and DES because there are numerous factors that influence the payback period, risk profile, capital, and economies of scale



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 36

of these systems. These factors include, but are not limited to the nature of the energy source, the proximity of the energy source to the load, the geographical conditions of the service area, and the climatic conditions. Typically the larger the total load and number of customers on a system, the greater the economies of scale due to incremental cost benefits and load diversity factors.

It may be informative to provide some context around the current challenge for accessing the standalone TES - single family dwelling market at this time. The primary issue is one of risk and scale. If a single family home represents a single project with cost recovery certainty from that particular customer, then the risks to the homeowner necessarily increase because the investment decision requires management of the risk. For comparison, consider the natural gas service today. A single dwelling may connect, disconnect and reconnect numerous times over a period of 25 years. The postage stamp rate methodology enables sharing of the risks of utilization among all the customers of the utility in such a manner that the impact on average cost is not even calculable. This risk sharing makes the ease of access to the natural gas service simple and efficient, without the need for extensive contractual terms and payments from customers.

The DES systems, while not large relative to natural gas service, may provide enough scale to enable the risk sharing benefits of the postage stamp rate methodology to customers and investors to simplify the connection decision. As long as the single family home does not have access to similar risk sharing mechanisms for thermal energy service, that market will remain difficult to penetrate due to the requirement for extensive and onerous contractual terms necessary to manage the capital investment risk.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 37

## 9.0 Reference: Issue 2 Scope (a)

### Exhibit B-2, Evidence of FEU, Section 2.4.1, p. 54

#### Sales and Account Management Activities

On page 54, FEI states that:

"It is in the interests of natural gas customers of the FEU that we are able to offer a suite of New Initiatives. By being able to do so, the FEU is able to provide customers with the best possible thermal energy solution as opposed to simply advocating only for natural gas. If the FEU are seen as only providing natural gas, the customer may not engage the FEU at all which will result in no gas going into a development, therefore affecting throughput levels on the natural gas system (as discussed in Section 2.1). If the customer engages the FEU, the FEU can develop a solution that may include natural gas but also other thermal energy options. This ensures that natural gas remains a viable solution."

- 9.1 Are there benefits to utility ratepayers to having the utility provide the New Initiatives as an integrated energy provider, and if so what are they? Are there benefits to parties other than ratepayers arising from utility provision of New Initiatives, and if so who are those parties and what are the benefits?

#### **Response:**

Yes, as noted in the quote from page 54, there are a variety of benefits associated with an experienced energy provider like the FEU pursuing New Initiatives, including benefits to natural gas customers, benefits to the thermal energy utility customers of pursuing TES initiatives, benefits to other third party developers, policy benefits, and benefits to the shareholder. All of these points are discussed in the Evidence, but will be highlighted here to be responsive.

#### **Experienced Provider**

The FEU have been operating in a regulated regime in British Columbia for more than 50 years and through the years the Companies have collectively gained expertise in regulatory compliance for our core business of natural gas distribution, and more recently, for our emerging business of New Initiatives, all of which go before the British Columbia Utilities Commission. Given the FEU's history in providing energy service in the Province, the FEU is in a good position to offer New Initiatives in response to declining throughput levels, government energy objectives, environmental policy and legislation, the energy production and consumption environment in BC, and customer expectations and demand of greener alternatives, all of which were outlined in Section 2 of the Evidence.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 38

## **Natural Gas Customers**

There are benefits to natural gas customers.

First, the New Initiatives promote energy choices for customers, and there is value in making that choice available.

Second, as outlined in Section 2 of the Submission, declining throughput levels can lead to higher delivery rates for customers, all else equal. If the FEU were not involved in the New Initiatives, there would be less opportunity to ensure that natural gas and its infrastructure is also used in these developments. A growing number of customers demand greener alternatives. Existing and new customers that wish to adopt lower carbon energy sources to meet their thermal energy requirements benefit from the option of having a well-established utility meeting their energy needs. The FEU's involvement in New Initiatives also helps our customers reduce GHG emissions, which for many of our customers (such as municipalities) is a compliance requirement.

Third, the FEU's pursuit of New Initiatives may mitigate the extent of the growth of the Companies' business risks from declining load in the natural gas class of service, assisting the FEU to remain financially healthy and able to serve the public good in the provision of thermal energy solutions to BC consumers in the long run.

## **Thermal Energy Service Customers**

Consumers that want to pursue alternative means of obtaining TES benefit from having access to the FEU as a provider of TES, offering cost of service based rates that are approved through a transparent BCUC process.

## **GHG Emissions Reduction**

Government policies require utilities to be at the forefront of providing innovative solutions in order to encourage GHG emissions reduction targets and energy efficiency. The FEU are advancing government policies by being involved in New Initiatives.

## **Development Benefits for Other Stakeholders**

The FEU's involvement in New Initiatives presents opportunities for ESCOs and other market participants in the provision of these services in BC.

## **Shareholder**

The shareholder benefits from the opportunity to make a utility investment and earn a fair return.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 39

- 9.2 Are there risks or disadvantages to ratepayers to having the utility provide New Initiatives as an integrated energy provider? If so what are those disadvantages? Are there specific risks that ratepayers will face as a result of the utility providing New Initiatives? If so please describe those risks. If not, please describe the measures that FEI is taking or will take to eliminate such risks to natural gas distribution customer ratepayers as cost overruns, equipment failure or underperformance, insufficient customer response to New Initiatives offerings, stranded assets, or cross-subsidization of New Initiatives costs by distribution ratepayers, absorption of increased utility risk as reflected in its ROE, and any other such risks.

**Response:**

Although the quoted passage was most focused on TES, the question references all four New Initiatives. This response deals with each New Initiative separately. Further, the different classes of services result in two separate classifications of ratepayers, natural gas and TES. Within the discussion of each of the New Initiatives, we have addressed the risks and disadvantages for applicable classes of service. This response should be read in conjunction with the response to BCUC IR 1.9.1.

**EEC**

EEC initiatives fall under the natural gas class of service and therefore only natural gas customers would be responsible for the recovery of the EEC costs. EEC incentives are provided to the customer who implements the energy efficiency measure that qualifies for an incentive under the terms and conditions of a program. These activities help customers save money and at the same time support the province's energy policy goals. There is a cost to providing EEC programs that is ultimately reflected in natural gas delivery rates; however, the regulatory framework makes it clear that there is an expectation the FEU will engage in such activities.

To the extent that EEC programs are successful in achieving the energy efficiency and conservation objectives, load will be reduced on the FEU system. This will create upward pressure on delivery rates and represents a risk with respect to the rates charges for delivery of the remaining load. This risk, and the risk of declining loads, is being mitigated through the addition of new loads from NGV markets for example. The new load also provides GHG



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 40

emissions reductions as it results from fuel switching from higher carbon transportation fuels such as diesel and gasoline to lower carbon natural gas.

Issues relating to equipment failure or underperformance do not really apply in the context of EEC, and the Commission reviews EEC budgets and performance.

### **Biomethane Service**

The Biomethane Service is a natural extension to the natural gas class of service and is therefore offered within the natural gas class of service. Biomethane Service is included in the natural gas rate base and some costs are recovered by natural gas class of service customers while others are directly borne by Biomethane customers through rates.

The majority of the costs are recovered from Biomethane customers that elect to enroll into the program and therefore should bear the cost of energy they choose. The FEU do not believe there is significant risk or disadvantage to natural gas ratepayers to having FEI provide Biomethane Service. In fact, Biomethane Service promotes natural gas as part of the integrated energy solution and makes use of the existing natural gas infrastructure, which all else equal, protects natural gas ratepayers from potential increased rates from declining throughput levels. FEI described its approach to risk mitigation in respect of Biomethane Service in sections 9.2.7, 9.3.6, and 11 of the Biomethane Application.

With respect to issues relating to equipment failure or underperformance, the risk depends on the level of investment in the project by FEI. FEI has proposed two ownership models. One in which FEI invests in the upgrading equipment to purify biogas to bio-methane. The other is where the project proponent invests in the upgrading equipment. The latter case has small risk of proponent equipment failure and underperformance that could see a reduction of the amount of biogas that would be delivered to the program. Under the model where FEI invests in the upgrading equipment, there is some risk to rate payers that O&M costs will exceed those budgeted for the projects. These risks are mitigated through contractual arrangements and regulatory approval and oversight.

With respect to insufficient customer response, the Biomethane program has been designed so that new supply projects are paced and only brought on if it can be demonstrated that the overall program has sufficient demand for the Biomethane. The Commission decision has established a Biomethane supply cap that will be reviewed against customer demand as new projects are advanced for BCUC approval. So long as the price to the customer is reasonable and there are ancillary benefits (lower carbon energy source) customers will sign on to the program and there will be little risk to other customers.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 41

## **NGV Service**

NGV Service is a natural extension to the natural gas class of service and is therefore offered within the natural gas class of service. NGV Service is included in the natural gas rate base.

With respect to insufficient customer response, there is no risk as FEI only invests in the project if the NGV customer backs the project with a take or pay contract that ensures recovery of the investment and eliminates stranded asset risk.

There is a risk to natural gas customers any time the utility invests in natural gas projects that there will be overruns or stranded costs, but in the case of NGV fueling service- related investments the risk is limited. Costs are recovered by natural gas class of service customers and customers that require the fueling station services through rates. The General Terms and Conditions for NGV Service include buyout provisions, which protects natural gas customers against such risks. Furthermore, each NGV customer will be subject to the Main Extension ("MX") Test in the normal course to ensure that any required system upgrades to bring natural gas to the CNG/LNG fueling facility are economic for the system or are recovered from the NGV customer through a Contribution in Aid of Construction. For these reasons, the FEU do not believe there is significant risk or disadvantage to natural gas ratepayers to having FEI provide NGV Service. In fact, NGV Service promotes natural gas as part of the integrated energy solution and makes use of the existing natural gas infrastructure by way of adding load, which all else equal, protects natural gas ratepayers from potential increased rates from declining throughput levels.

With respect to issues relating to equipment failure or underperformance, FEI is responsible for maintaining NGV fueling assets in good operating condition. Operating and maintenance budgets are established at the outset of the project and are built into the rates. The O&M rate is escalated at CPI; therefore if the actual costs incurred are higher than the budgeted and escalated amounts there is a risk to ratepayers of under recovery. FEI believes this risk is minimal as there is sufficient operating experience with NGV fueling assets to provide representative guidelines for O&M expenditures.

## **Thermal Energy Services**

TES is a different class of service. As such, none of the risks outlined in the question (cost overruns, equipment failure or underperformance, insufficient customer response to New Initiatives offerings, stranded assets, or cross-subsidization of New Initiatives costs by distribution ratepayers, absorption of increased utility risk as reflected in its ROE) result in higher risk or disadvantage to natural gas ratepayers. The measures that FEI are taking to eliminate this risk were part of the 2010-2011 RRA NSA. TES costs are to be tracked in a deferral account to be recovered from TES customers in the future.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 42

With respect to how issues might affect the TES customers, similar to both NGV and Biomethane, individual applications for TES will address aspects of cost overruns, equipment failure or underperformance, etc. Those applications will be reviewed by the Commission after filing.

- 9.3 If the FEU maintain New Initiatives such as Biomethane, NGV and TES within an integrated energy utility, to what extent might any added risks cause a required increase in the company's capital structure and ROE? Should the natural gas distribution customers pay for any higher return awarded?

**Response:**

Please see the response to BCUC IR 1.4.2.

- 9.4 Can the risks to ratepayers be reduced by adopting corporate or accounting separation between related companies or divisions of a company that provide New Initiatives and regulated natural gas delivery? If not, why not? If different corporate or divisional accounting structures should be adopted depending on the type of New Initiatives, please explain which structures would be appropriate for which types of activity?

**Response:**

There are already separate accounting structures for natural gas class of service and TES class of service.

As a matter of principle, since Biomethane, NGV, and EEC initiatives are part of the natural gas service, they should be included in the natural gas class of service. Treatment of costs and revenues associated with these service offerings are addressed in the FEU RRA proceeding. This is similar to how BC Hydro's electric generation and distribution and DSM all fall within the same class of service: electricity.

EEC is not a service. By design it provides efficiency and conservation benefits to natural gas customers, and is based on funding from all natural gas customers. Therefore, it is included

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 43

within the natural gas class of service, and it is difficult to see how it could be separated, and how it could be beneficial to do so.

Further, the FEU believe that although separating the Biomethane Service and NGV Service could reduce the stranding risk to core natural gas customers (notwithstanding the fact that for NGV Service, stranded risk is already primarily borne by the NGV customer, not by all natural gas customers), since that risk is shifted to the shareholder it could also have the effect of increasing the cost of those services for customers due to the need for a higher ROE in these lines of business. It would also add administrative burden (e.g. in terms of cost allocations and time tracking) that would not otherwise need to exist with the existing rate structures. Since our pursuit of these initiatives is to mitigate rate impacts on all natural gas customers due to declining throughput levels, as described in Section 2 of the Evidence, it is counterproductive and undesirable to adopt segregation of costs and revenues for each of the Biomethane, NGV and EEC initiatives that fall within the same class of service. This is with exception to some of the costs directly charged to Biomethane and NGV customers who enroll in such service offerings. Whereas, it is appropriate to segregate cost between classes of service, all natural gas customers should obtain the benefits of, and accordingly bear costs associated with, the development of Biomethane, NGV and EEC initiatives.

As per the 2010-2011 RRA NSA, the FEU are direct charging time into the TES business and allocating an amount of overhead based on an analysis of how much time is spent on TES. There is an AES Deferral Account set up to capture revenues and non-allocated costs from TES projects and activities, providing separation between TES customers and natural gas customers.

Operating separate corporate entities is a possibility, but it would be limited to the distinct classes of services, not for offerings within a class of service. However, this is not being considered by the FEU because operating a single utility is more efficient and delivers greater benefits to customers overall. For further information on the FEU's current and preferred utility structure, please refer to the response to BCUC IR 1.24.1.

- 9.5 Should guidelines issued by the Commission for New Initiatives address the allocation of risk between ratepayers versus shareholders? If not, what is the appropriate forum for addressing risk allocation?

**Response:**

The general principles of allocation of risk as between shareholder and customers are well established as they form the core of the regulatory compact that is established in the *UCA* and



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 44

as discussed in the case law. This is a purely legal issue with broad implications and it is difficult to see how it would be possible to develop a more specific guideline than to recognize that customers are at risk for prudently incurred costs, and the shareholder is at risk for imprudently incurred costs.

In terms of the facts specific to allocation of risk, there are appropriate regulatory mechanisms for the allocation of risk between ratepayers and shareholders in rate application proceedings before the Commission. The mechanisms in place are CPCN applications, Return on Capital applications, Rate Design applications, as well as RRA applications and other individual rate applications. The Commission should determine financing and capital structure matters for TES on an individual project basis when projects are brought forward.

The guidelines should allow for the segregation of classes of service for rate setting purposes, as contemplated by the *UCA*, but existing regulatory mechanisms are sufficient to address the specific shareholder and customer risk allocation within each class of service.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 45

**10.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-1, Tab 5; Order G-141-09, 2010/11 Negotiated Settlement,  
pp. 7-9;**

**Exhibit B-2, Evidence of FEU, Section 2**

**Drivers for New Initiatives**

With respect specifically to NGV:

- 10.1 What efficiencies of scope or scale will accrue to existing ratepayers if FEU undertakes NGV projects, compared to the identified projects being undertaken by other NGV-equivalent project providers? Please quantify the efficiencies identified.

**Response:**

At present there are no "NGV-equivalent project providers" that the FEU are aware of who are actively developing NGV projects in BC. This is the key point: the market is not being serviced by other providers at present, so there is no basis to compare relative efficiency among providers. There are more attractive geographical markets (e.g. US market) available to third parties who may have an interest in providing fueling services, which can be expected to hamper market interest in BC among third party providers.

As the market emerges as a result of the FEU's market development initiatives it can be expected that additional participants may be attracted to the market. In the event that others participate in the market and have the resources and experience to do so, their NGV fueling station projects could be expected to provide some similar benefits to existing customers as the FEU projects assuming a similar level of project activity by both parties. These benefits include added throughput on the FEU system, environmental benefits of conversion, and macroeconomic benefits of increased use of BC technology and BC natural gas resulting in savings and potential growth for BC employers.

The features that will continue to attract customers to the FEU offering, which underscore the continued value of providing the service include:

- the regulated nature of the offering with the transparency that comes with Commission oversight.
- the cost of service model, and
- the ability to respond quickly with local employees in the event of issues arising.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 46

- 10.2 What efficiencies of scope or scale will accrue to the customers served by the FEU NGV projects, compared to the identified projects being undertaken by other NGV-equivalent project providers? Please quantify the efficiencies and cost savings identified.

**Response:**

As discussed in the response to BCUC IR 1.10.1, the FEU are not aware of any "NGV – equivalent project providers" actively developing NGV fueling station projects in BC.

To the extent that the FEU are successful in developing projects, it will be able to negotiate more favourable purchase agreements with key suppliers of station equipment based on aggregate purchasing power. For example, a party purchasing 10 compressor packages per year can be expected to negotiate more favourable terms than a party purchasing for only one project.

In addition, a party executing on 10 projects per year will become more efficient at project management and execution and can be expected to avoid more contingency expenses than a less experienced party might incur.

In each case, such cost reduction potential would be passed on to the NGV customer in the form of lower rates. It is difficult to quantify the magnitude of such savings accurately, however, studies focused on quantifying this "experience curve" effect suggest that the savings can be substantial.

The concept of an experience curve was identified by the Boston Consulting Group in the 60's<sup>14</sup>.

*"Costs characteristically decline by 20-30% in real terms each time accumulated experience doubles. ... The decline is fast if growth is fast and slow if growth is slow."*

The existence of an experience curve has been demonstrated in industries ranging from semi-conductors to aircraft manufacturing to construction of nuclear reactors covering the range from high volume production to small volume custom EPC projects.

---

<sup>14</sup> <http://www.economist.com/node/14298944>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 47

**11.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-1, Tab 5; Order G-141-09, 2010/11 Negotiated Settlement,  
pp. 7-9**

**Exhibit B-2, Evidence of FEU, Section 2**

**Drivers for New Initiatives**

With respect specifically to biomethane:

- 11.1 What efficiencies of scope or scale will accrue to existing ratepayers if FEU undertakes biomethane projects, compared to the identified projects being undertaken by other biomethane-equivalent project providers? Please quantify the efficiencies identified.

**Response:**

For clarity, the FEU are only proposing to invest in interconnection and upgrading facilities, and not biogas production facilities.

The greatest readily identified efficiency is that the projects actually occur if the FEU take a leadership role in encouraging their development. Prior to the Biomethane Application, there were no such projects in British Columbia. Subsequent to the Biomethane Application, there is one functioning project, one project very near to completion, two more that are at MOU level, and several more in active negotiation.

The FEU believe that one of the reasons that we have been able to develop this momentum is because our customers and project partners enjoy the benefits of our efficiencies of scope and scale. The FEU have the technical, financial, and legal capacity to lead the development of this market in a cost effective manner. Without our involvement, there is no evidence to suggest this market would be developing at all in British Columbia.

In the event that project partners can undertake to install the upgrading facility and operate it themselves safely and reliably, the FEU is amenable to that approach. The FEU believe, however, that it would be contrary to the interests of our customers to adopt a higher cost solution for customers simply due to, for instance, an ideological preference for having a third party, and not the FEU, undertake the upgrading.

Please also refer to the response to BCUC IR 1.10.2.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 48

11.2 What efficiencies of scope or scale will accrue to the customers served by the FEU biomethane projects, compared to the identified projects being undertaken by other biomethane-equivalent project providers? Please quantify the efficiencies and cost savings identified.

**Response:**

Please see the response to BCUC IR 1.11.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 49

**12.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-1, Tab 5; Order G-141-09, 2010/11 Negotiated Settlement,  
pp. 7-9**

**Exhibit B-2, Evidence of FEU, Section 2**

**Drivers for New Initiatives**

- 12.1 Please confirm that each TES, NGV or biomethane project typically will have unique characteristics that require the service contract for these projects to be negotiated on a "one off" basis, that the rate charged to the customer(s) of the project are likely to be unique to the project and that the Commission will need to review and approve each service contract and rate individually. If not, please explain.

**Response:**

There are GT&C's in place, but service contracts and rates for NGV and TES, and supply contracts for Biomethane, are currently negotiated and subject to approval individually.

Over time, as these service offerings are more established in the marketplace, the regulatory approval process for TES, Biomethane supply contracts and NGV fueling station contracts should become more standardized.

- 12.2 Please explain how FEU anticipate they will apply for and obtain Commission approval of changes to the rate for one of these projects: for example, in the event that service contract provisions or other events require a change to the rate.

**Response:**

Any change to GT&C and rate schedules will go through a regulatory process of seeking approval from the Commission, consistent with other rate change requirements. The FEU expect that the process initiated by the Commission will be commensurate with the scope of the issues and nature of any change required.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 50

- 12.3 Please identify and if possible quantify any efficiencies of scale or scope related to Commission review and approval of these projects that result from being a projects developed by FEU, rather than by some other service provider.

**Response:**

Regulated projects require the same Commission approvals regardless of the regulated provider. Thus, the efficiencies for New Initiatives related to Commission review and approval come from the established processes and capabilities that the Companies have in place to process regulatory filings.

The FEU have been operating in a regulated regime in British Columbia for more than 50 years and through the years the Companies have collectively gained expertise in regulatory compliance for our core business of natural gas distribution and more recently, for our emerging business of New Initiatives, all of which go before the British Columbia Utilities Commission.

The FEU have resources in place to deal with regulatory matters, both from a financial capability perspective and also human resources. Our team currently consists of twenty employees with ample knowledge in regulatory approaches in the energy and utility industry, which is further strengthened with the broad expertise of our internal and external legal representatives. We have the proper resources in place to undertake all regulatory processes, such as conducting workshops and procedural conferences, responding to information requests, managing written submissions and oral hearings, and participating in negotiated settlements.

Over the years, we have built strong working relationships with the Commission Staff as well as intervenors and other stakeholders who have interest in our business activities and operations. We have participated in numerous public hearings and negotiated settlements, and to a great extent, we have been successful in establishing agreements that benefit our customers and shareholder. We manage communication and consultation with the Commission staff and stakeholders related to statutes, legislation, regulations, energy policy matters, regulatory guidelines, principles and protocols.

Our service offerings (natural gas, including Biomethane and NGV, as well as TES) are approved offerings with the utility under a general rate schedule basis, each with approved General Terms and Conditions. Over time, as these service offerings are more established in the marketplace, the regulatory approval process can hopefully be more streamlined for the benefit of customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 51

### 13.0 Reference: Issue 1 Scope (a) (b)

**Exhibit B-1, Tab 5, pp. 2,3,4; Order G-141-09, 2010/11 Negotiated Settlement, pp. 7-9; Exhibit B-2, Evidence of the FEU, Section 2**

#### **Efficiencies Resulting from Utility Provision of New Initiatives**

- 13.1 Please present any evidence that FEU has to address whether identified scope and scale scenarios are, or are not, likely to be affected by increased transaction costs such as overhead and similar costs that result from the involvement of a large public utility.

#### **Response:**

The FEU assume that the question is referring to the "scope and scale" discussions that it has been asked to provide in the responses to BCUC IRs 1.10.1, 1.10.2, 1.11.1, 1.11.2, and 1.12.3. The FEU understand the question to be asking whether the efficiencies discussed in these questions are impacted by increased transaction costs (such as overhead) that result from the fact that the New Initiatives are being carried out under a single regulated utility.

The mechanisms and transaction costs for implementing new initiatives will be similar. In the short term, there is unlikely to be an increase in items such as overhead resulting from the involvement of a large public utility. The amount of overhead required to support Biomethane upgrading and NGV customers, for instance is quite modest, and a large utility already has embedded overhead that can withstand a certain amount of additional work prior to an increase of costs being required.

For non-overhead items, each new offering will require tariffs or rate schedules which must be approved by the Commission (similar to natural gas offerings) and these costs benefit from the efficiencies of the larger utility (see also the response to BCUC IR 1.12.3). Once approved, FEI sets up the new offering in the billing system in the same manner as creating any new natural gas rate.

Once set up in the billing system, the transaction costs per customer are not any different for a New Initiative customer group or a natural gas customer group. The size of the customer group does not impact the transaction costs, rather, set up of a more complex rate may impact the set up cost, but once set up; each transaction would be the same cost.

See also the responses to BCUC IRs 1.10.1, 1.10.2, 1.11.1 and 1.11.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 52

- 13.2 Please explain how customer billing will be handled, and discuss whether FEU's new billing system will be capable of handling a multiplicity of customers and customer groups, each with a unique rate.

**Response:**

It is confirmed that the FEU's new billing system which will be in place January, 2012 will be capable of handling multiple customer groups, each with a unique rate. Depending upon the size of the customer group and the complexity of the rate, a decision would be made whether to bill the customer group manually or through the new billing system. If the decision was made to bill the customer group through the billing system, additional configuration of SAP may be required to support this process depending on the nature of the new rate structure.

- 13.3 What is FEU's set-up charge to establish billing for a group of customers with a unique rate? What will be the incremental and fully allocated annual costs of billing a group with one customer, and a group with 20 customers?

**Response:**

Any set-up charges to establish billing for a group of customers with a unique rate may be based on the costs incurred to establish that rate, not necessarily the number of customers on that rate. Without the details of how that new rate would be built into the system, it is difficult to estimate an actual set-up charge at this time. However, similar to what is currently in Rate Schedule 36, a new set-up rate could be established once the details of the rate and the associated costs were known.

In response to the second question, the fully allocated annual costs of a billing group would depend upon the activities required to respond to that customer or customer group. Those costs will only be known once a customer group is established.

- 13.4 Please discuss the tradeoffs between size of the utility and efficiency for handling a number of small projects and the ongoing administration of these small customer groups. That is, can a large utility organization like FEI with many departments and employees efficiently handle very small projects? Do the broad range of resources available within a large utility organization compensate for



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 53

any inefficiencies that result from using a large organization to manage a small activity?

**Response:**

The ability to handle projects, both small and large, is a function of the quality of project management resources and standards, not the size of the organization relative to the size of the project. The FEU have experience in handling all sizes of projects effectively and efficiently.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 54

**14.0 Reference: Issue 1 Scope (a) (b), Issue 2 Scope (a)**

**Exhibit B-1, Tab 5, pp. 2,3,4; Order G-141-09, 2010/11 Negotiated Settlement, pp. 7-9**

**Exhibit B-2, Evidence of the FEU, Section 2**

**Efficiencies Resulting from Utility Provision of New Initiatives**

14.1 Please identify the possible forms that each of the following types of projects may take, and discuss whether each would qualify as an extension of a public utility plant or system as the terms are used in section 45 of the *UCA*:

- district energy systems
- geo-exchange projects
- solar-thermal projects
- NGV projects
- biomethane projects

**Response:**

For descriptions of the possible forms that these projects may take, see the following:

- (a) district energy systems, section 6.1.2 of the Evidence;
- (b) geo-exchange projects, section 6.1.3.1 of the Evidence;
- (c) solar-thermal projects, section 6.1.3.3 of the Evidence;
- (d) NGV projects, section 5.1;
- (e) Biomethane projects, section 3 of Appendix D.

When NGV and Biomethane projects are owned and operated by FEI, and interconnected with FEI's existing natural gas distribution system, they are "extensions" of its existing natural gas distribution system as that word is used in section 45(1) of the *UCA*.

As described in section 6.1.4 of the Evidence, TES systems almost always rely on a conventional energy source to provide backup and during peak demand, and the FEU have been approaching such systems on the basis that they are an "extension" of existing facilities owned by the utility rather than a separate system.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 55

- 14.2 Please confirm that the Commission may, under section 45(5) of the *UCA*, require FEU to obtain a Certificate of Public Convenience and Necessity (CPCN) for any of the foregoing projects that are extensions of a public utility plant or system.

**Response:**

Confirmed. These facilities are, in this respect, similar to any extension of a natural gas system or electric system. The Commission has traditionally imposed a CPCN threshold, as it is permitted to do, because requiring such approvals for every extension performed by larger utilities on an ongoing basis is unworkable, not cost effective, and contrary to the best interests of customers.

- 14.3 Where a TES, NGV or biomethane project is not an extension of a public utility plant or system, does FEU require a CPCN before beginning its construction or operation?

**Response:**

Yes, subject to obtaining an exemption.

- 14.4 If there are any TES, NGV or biomethane projects that FEU may undertake that neither require a CPCN nor are extensions for which the Commission could require a CPCN, please identify them and explain the basis for FEU's position on the matter.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 56

**Response:**

The FEU believe that all of these projects are extensions for the reasons articulated in the response to BCUC IR 1.14.1, but that the Commission can require a CPCN for any project. The Commission currently requires, for instance, a CPCN for all extensions over \$5 million.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 57

## Legal Framework

### 15.0 Reference: Issue (1) Scope (a)

#### Exhibit B-2, Evidence of the FEU, section 3.2, p. 63

#### Just and Reasonable Rates

On page 63, FEI states that:

"The question of which specific customers groups pay for a class of service (and how costs are allocated among different classes of service) is a matter of rate design ...."

- 15.1 If FEI were to have unrecovered costs or inadequate revenue from any of its New Initiatives classes of service, would the utility expect other classes of customers to subsidize that class of customer so that FEI could meet its fair return, or, does FEI expect the utility to be responsible for any net revenue shortfall if it were to occur?

#### **Response:**

For clarity, there are only two "classes of service" within FEI: natural gas and TES. "Classes of customer" refers to classes such as commercial, residential, industrial etc.

Within a class of service, all customers of the class of service are responsible for the prudently incurred cost of service through payment of rates, regardless of what class of customer they belong to. For instance, residential customers benefit if commercial customer throughput increases, and pay more in delivery rates all other things equal if commercial load declines.

The EEC initiative, Biomethane Service and NGV Service are part of the natural gas class of service, just as residential and commercial service are part of the natural gas class of service. Based on accepted regulatory practice and the requirements of the *Act*, the benefits of natural gas throughput from these initiatives accrue to natural gas customers as a whole, and in principle all natural gas customers will be better off or worse off over time depending on the amount of throughput contributed by those initiatives.

The TES class of service stands separately. The costs of TES are intended to be recovered only from TES customers, and the revenues are intended to accrue to TES customers. For the near future, there will be relatively few customers from whom shared TES costs can be recovered. The shareholder will be at risk for the balance in the AES deferral account in the event that no customers materialize or there is otherwise insufficient revenues to recover the full balance in the TES deferral account over time.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 58

- 15.2 If there was such a shortfall would it be reasonable within the context of *UCA* s. 59(5) and 60(1)(c)(iii) to charge other classes of customers for the shortfall? Please explain.

**Response:**

Please refer to the response to BCUC IR 1.15.1.

- 15.3 To ensure adequate separation and transparency between customer classes would FEI agree that each new line of business within the New Initiatives should be a separate division of the utility with separate rate schedules? If not, why not? How would FEU's preferred utility structure ensure adequate separation, transparency and cost/revenue segregation?

**Response:**

The FEU do not agree that each of the New Initiatives should constitute a separate division of the utility. Within the utility and among the New Initiatives, only TES is a distinct class of service that requires segregation from the natural gas class of service for ratemaking purposes. EEC, Biomethane and NGV are rightly included within the natural gas class of service, therefore, no segregation is required for those initiatives.

Both NGV and Biomethane make use of the natural gas delivery system and have the same rates for certain components of their bills (such as, for example, delivery charges) as the corresponding natural gas rate classes. While other bill components are unique to the particular new initiative service or to specific customers, such as the biomethane commodity cost in Rate Schedule 1B or the NGV compression rate applicable to a particular NGV customer, the overall costs and benefits of these services are interlinked with natural gas service. EEC is an efficiency and conservation initiative targeted primarily towards demand- side management for natural gas customers.

TES is a separate class of service, therefore, its customers and the associated revenues and costs are separated from the natural gas class of service for the purpose of setting rates. To do so, establishing a divisional structure is not necessary to maintain adequate separation between the costs and revenues of TES initiatives relative to those for established natural gas service.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 59

Any requirements to establish separate cost and revenue tracking for particular components of the New Initiatives can be readily accomplished using the FEU's financial accounting and customer billing systems. Separate tracking of costs and specific charging of amounts to particular customers or customer classes are routinely done in utility rates. The FEU discuss how it ensures that TES costs and revenues are segregated in the responses to BCUC IRs 1.9.2, 1.17.1, 1.17.2, 1.92.1, and 1.100.2.

- 15.4 Are there regulatory structures that the Commission should consider to encourage cost effectiveness and efficiency in FEU's New Initiatives? For example, are there regulatory structures from FEU's experiences with PBR that could lead to greater efficiency and effectiveness through incentives and/or quality of service measure?

**Response:**

PBR remains an option for the natural gas revenue requirement as a whole and is not impeded by the presence of the New Initiatives. Please see the responses to BCUC IRs 1.134.4.1 to 1.134.4.3 for more detailed discussion of establishing PBR mechanisms for either or both of the natural gas class of service and the TES classes of service generally.

The FEU expect that, over time, regulatory structures specific to one or more of the New Initiatives could conceivably be developed to encourage greater efficiency and effectiveness. However, the FEU's New Initiatives are all in the early stages of development and as such the FEU do not believe they have reached an adequate level of maturity to warrant the establishment of initiative-specific PBR or incentive regulation schemes. PBR mechanisms are generally developed based on a well-understood starting point (often referred to as "the base year") from which incentives and service quality metrics can be designed and measured over time. These conditions do not exist for the FEU's New Initiatives presently.

The FEU believe, however, that the adoption of efficient processes such as those contemplated in the guidelines proposed by the FEU can ensure that the traditional types of regulation being used in the near term can proceed more cost effectively for the benefit of customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 60

**16.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of the FEU, Section 3.2, p. 63**

**Just and Reasonable Rates and Rate Design**

Page 63 of the FEU Evidence states:

"A cornerstone of just and reasonable rates is the recovery of prudently incurred costs. A prior finding that expenditures are in the public interest (or public interest and necessity) generally means that the decision to undertake the expenditure was prudent, although the execution of the project is still subject to review for prudence. Provided the execution was prudent, the expenditure is a legitimate utility cost of service and is recoverable from customers."

16.1 How does the above statement relate to the Thermal Energy Services Deferral Account?

**Response:**

The statement above is talking about the effect of an expenditure schedule approval. The TES Deferral Account isn't covered by an expenditure schedule, so it isn't directly applicable.

Rather, as described in the following passage from the 2012-2013 RRA, Exhibit B-1, Appendix G, page 13 the balance in the account consists of the following:

*"The Thermal Energy Services Deferral account was approved by Commission Order No. G-141-09 to capture and record revenues and costs related to geo-exchange, solar-thermal and district energy systems. FEI is proposing to continue segregating all costs and recoveries in this manner and is seeking approval for the continuation of the Thermal Energy Service Deferral*

*Account in this Application. The recovery from Thermal Energy Services customers of the balance in this deferral account will be considered in FEI's future applications regarding individual contracts for approval by the BCUC. Consistent with the terms of the NSA, there are three components of costs charged to this deferral account, which are discussed in the following sections and include:*

- *Direct costs;*
- *Sales and marketing O&M and business development costs; and*
- *An overhead allocation from FEI.*

*All costs associated with Thermal Energy Services are included in the deferral account."*



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 61

The Commission's approval of the overhead allocation in the 2010-2011 RRA NSA was a determination that the funds allocated to the deferral account were prudent. The same will be true for the \$500 thousand to be allocated in each of 2012 and 2013, which is subject to Commission review in the current RRA. Other direct charges to the deferral account, which are not reviewed in the natural gas RRA, are presumed to be prudent but are subject to future consideration by the Commission when it comes time to recover the balance in the deferral account.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 62

**17.0 Reference: Issue 1 Scope (a)**

**FEU 2012/13 RRA Exhibit B-17 IR 2.79.2; Exhibit A2-15 FortisAlberta Inter-Affiliate Code of Conduct ; Exhibit A2-14 Alberta EUB ATCO Decision 2003-040**

**Cost Allocation policy**

According to FEU's response to IR2 79.2 of the 2012/13 RRA:

"No formal communication was made to marketing or accounting personnel regarding regulated and non-regulated activity with regard to FEI's thermal energy services, nor was one necessary. The thermal energy activities of the FEU are being provided within the regulated public utility (FEI) as another distinct class of service and are regulated activities. Any time spent by FEU's employees would only be an allocation between two regulated classes of services. The FEU's employee timesheet completion practices have been put in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility."

The response to IR2 29.4 of the same proceeding goes on to state:

"There is no documented policy within the FEU that governs cost allocation between classes of service (such as thermal energy services) within the regulated public utility, nor does the FEU believe one is needed. The cost allocation methodology for thermal energy activities that already exists is similar to the transfer pricing methodology except that the transfer pricing methodology applies to services provided by a regulated utility to a non-regulated affiliated company; thermal energy activities are regulated activities. The Thermal Energy Services Deferral Account and overhead cost allocation methodology described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU's employee timesheet completion practices are in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. Timesheet completion practices did not have to change to accommodate thermal energy services within the FEU for direct charges."

- 17.1 Given the responses in FEU 2012/13 RRA Exhibit B-17 IR 2.79 shown above, how can FEU assure that the expenditures for the Thermal Energy Services Deferral Account are incurred in a prudent manner and are transparent?

**Response:**

The response to BCUC IR 2.79.2 of the 2012-2013 RRA was responding to a question which asked about regulated versus non-regulated costs. As stated in that response, since TES

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 63

activities are a class of regulated service, not a non-regulated service, there is no need to track costs *between non-regulated and regulated service* when tracking TES activities. However, FEI does track costs for TES activities. FEI can provide the assurance that the expenditures for Thermal Services Deferral Account are incurred in a prudent and transparent manner through the use of appropriate cost tracking tools, facilitating control and review of these costs.

The two primary methods concern: (1) how employees track time in relation to these projects; and (2) how development costs are tracked and overseen. In each case, as described below, the FEU has developed procedures that are communicated to all relevant employees, which ensure that costs associated with TES activities are tracked appropriately.

- **Tracking Labour Costs:** TES is a regulated class of service within FEI. If an FEU employee works on a TES project, s/he will code his or her time on timesheets in relation to the effort for this class of service. There are relatively few employees that code time to TES via timesheets; most of the work is done by a group of 12 employees that work full time on TES. All FEI employees are well versed in time tracking, and timesheets are audited for compliance. Proper time tracking is important in every aspect of the business, not just with respect to TES. Please see the FEU's responses to BCUC IRs 2.79.1 and 2.79.4 in the FEU 2012-2013 RRA, which describe the directions and policies for employees and oversight related to tracking time and effort on the TES class of service. Please also see the responses to Corix IR 2.4.4 and 2.4.3(b) from 2012-2013 RRA.
- **Tracking Other Development Costs:** With respect to TES development costs, as per BCUC Order No. G-141-09 approving the FEI 2010-2011 RRA, these costs are tracked as general business development and recorded in the Thermal Energy Services Deferral Account prior to creation of a project specific internal order. A TES project is typically identified and assigned an internal order ("IO") number once an internal preliminary assessment has indicated that the project could be viable and customers wish to have project specific development proceed in order to confirm and/or refine preliminary findings and advance the project further. Please see the responses to Corix IR 2.4.1 and 2.4.2 from 2012-2013 RRA.

Copies of the referenced IRs from the FEU 2012-2013 RRA are provided in Attachment 17.1

- 17.2 What approach or methodology would be the most appropriate to use to track and allocate costs between different business areas within an integrated business utility? Please give specific attention in the response to the following:



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 64

- To protect the interests of one class of service from potential cross subsidization arising from costs of other distinct classes of service;
- To benefit customers by enabling the regulated entity and its distinct classes of services to pursue practices that create cost efficiencies within the utilities operation;
- To allow for the development of a competitive market in TES and foster fair competition for all participants in that market;
- To protect the confidentiality of certain types of information.

**Response:**

The FEU believe that the current methodology for tracking and allocating costs is appropriate at present. As discussed in the responses to BCUC IRs 1.100.2 and 1.137.2, over time and as the business develops, the FEU believe it would be appropriate to incorporate more elements of the Uniform System of Accounts.

The FEU address each of the four areas raised in the question below:

**1. Cross Subsidization**

The UCA requires that in setting of rates for a distinct class of service it is to be based on a self-contained unit and rates are set without regard to the rate levels of other units (see Section 60 c (ii) and (iii) of the UCA). FEU has structured TES as a class of service (see the response to BCUC IR 1.24.1) and the current Thermal Energy Service Deferral Account reflects that structure. It is assigned an appropriate overhead allocation based on activities generated by this class of service coupled with the proper allocation of employees' time.

The FEU believe that the established utility accounting practices being employed by the FEU provide the proper foundation for appropriately separating costs between the natural gas class of service and the Thermal Energy class of service. A set of accounts must be established for each class of service so that costs can be tracked and accounted for independently of each other. The set of accounts for the natural gas class of service has been in employed for many years and is based primarily on the BCUC Uniform System of Accounts for Gas Utilities. With the commencement of the TES class of service in 2010 a subset of those accounts is being established for that class of service. The Thermal Energy Services Deferral Account ("TESDA") is being used as a sort of clearing account to manage all the activities in the TES class of service during the start-up phase of this class of service. Details of the operation of the TESDA have been described in the response to BCUC IR 1.100.2. The response to BCUC IR 1.100.2 sets out the main categories of activity in the TESDA as being: Direct Costs (the direct capital



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 65

and operating costs of TES projects), Sales, Marketing and Business Development Costs and Overheads Costs (i.e. an allocation of costs for certain functions performed on behalf of TES). Revenues received from TES systems in operation will also be recorded in appropriate detail (such as by TES system and customer type) in the TESDA.

Proper documentation of employees' time is the basis of segregating costs between classes of service and the same set of rules that apply to the completion of timesheets for individuals working in the natural gas class of service also affect employees in TES. Each individual must take responsibility for the accuracy of their timesheet. For established employees this process is well understood while new employees receive orientation training on proper timesheet preparation. There are system checks through the process as managers must ensure employees are coding their time correctly against appropriate accounts (referred to as internal orders). Internal Audit conducts a review of timesheet completion practices on a regular basis.

## 2. Cost Efficiencies

Efficiencies are always being pursued by a regulated utility as the revenue requirement and return on rate base are set on the basis of a future test year. There is no guarantee that the projected revenues and costs will occur as forecast so there is no assurance that the approved return on rate base will be achieved.

The potential for having ratemaking constructs such as PBR plans that provide incentives to pursue efficiencies in one or both classes of service have been discussed in the responses to BCUC IRs 1.15.4 and the 1.134 series. Having two classes of service within one utility does not create impediments to establishing PBR plans in either or both of the classes of service.

## 3. Competition

The Commission's role in the TES market does not extend to concerns about whether a competitive market exists or not and its regulation of FEI's TES should not take that into account. In its oversight of FEI or other utilities with multiple classes of service the Commission must be concerned about the equitable treatment of customers in all classes of service and not make decisions that would unfairly affect the TES class of service within FEI because of concerns about protecting other market participants from competition from the FEU.

Nevertheless there is competition in the TES marketplace that occurs between utilities (Corix, FEU and others), ESCOs and developers in the development stages of a thermal energy service project. Each market participant may have a different concept to satisfy the customer's requirements and the customer selects the proposal that best meets the particular project objectives. Many of the ESCOs have a role in FEI's business model as well in providing design/build services, operating and maintenance services, equipment replacement and emergency response.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 66

#### 4. Confidentiality of Information

TES has access to customers' consumption information from the natural gas class of service, however, it is the customer's usage characteristics that are important when designing a thermal energy system. FEI must get this information from the customer directly in the same way as FEI's competitors. Proprietary information on the nature of the service resides with the customer. FEI abides by all legal requirements to maintain customer information confidential.

- 17.3 Would the FortisAlberta Inc. Inter-Affiliate Code of Conduct (Exhibit A2-15, [www.auc.ab.ca/rule-development/rule-0xx-inter-affiliate-code-of-conduct/Pages/default.aspx](http://www.auc.ab.ca/rule-development/rule-0xx-inter-affiliate-code-of-conduct/Pages/default.aspx)) developed following the EUB ATCO Decision 2003-040 (Exhibit A2-14), be applicable to the FEU, either as exists or in some modified form, to assist FEU in establishing a code of conduct between the different classes of service within an integrated utility?

#### **Response:**

According to the Alberta Utilities Commission:

*"The overall purpose of an inter-affiliate code of conduct is to address the possibility that interactions between regulated and unregulated affiliated companies could be conducted in a manner that results in rates for a regulated utility being too high or the unregulated affiliate having an unfair competitive advantage in the market in which it operates."<sup>15</sup>*

The purpose of this code of conduct is not applicable to classes of public utility service, but rather between affiliated companies that provide regulated service and unregulated services. Accordingly, this is not applicable to the FEU where different classes of public utility service are under consideration.

FEI has an existing Code of Conduct ("CoC") and Transfer Pricing Policy ("TPP") pertaining to the use of utility resources by affiliated non-regulated businesses ("NRB"s). The FEI-NRB CoC and TPP were developed in response to the Retail Markets Downstream of the Utility Meter ("RMDM") Guidelines and were approved by BCUC Letter L-64-97. The RMDM Guidelines addressed similar matters in British Columbia to those being addressed for Alberta utilities by the Alberta Inter-affiliate Code of Conduct requirements. Since the RMDM Guidelines are also

<sup>15</sup> <http://www.auc.ab.ca/rule-development/rule-0xx-inter-affiliate-code-of-conduct/Pages/default.aspx> - webpage reproduced in Exhibit A2-15



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 67

dealing with the utility-NRB relationship and sharing of resources they are also not applicable in deriving cost allocations between two regulated classes of service.

17.4 Please provide a copy of the Communications plan filed as Attachment 29.1 in response to BCUC IR 2 of the RRA in Exhibit B-17.

**Response:**

Please see Attachment 17.4.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 68

**18.0 Reference: Issue 2 Scope (a) (b)**

**Exhibit B-2, Evidence of the FEU, Section 3.3, p.64; Section 6.4.1.1,  
p.115 Table 6-1**

**Class of Service and TES Business Models**

The FEU Evidence states:

"The definition of "public utility" set out in section 1 of the *UCA* is as follows:

"public utility" means a person, or the person's lessee, trustee, receiver or liquidator, who owns or operates in British Columbia, equipment or facilities for...

...but does not include

(c) a municipality or regional district in respect of services provided by the municipality or regional district within its own boundaries"

- 18.1 Under the TES business models, summarized in Evidence from FEU, Section 6.4.1.1, Table 6-1, p. 115, would there be any instance where the exclusion in Section 1 (c) would not apply to Business Model 1?

**Response:**

The exclusion in section 1(c) of the definition of public utility only applies to business model 1 when a municipality itself owns or operates the TES within its own boundaries. If FEI owns or operates the equipment or facilities at issue, then the exclusion in (c) does not apply and the services are regulated.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 69

**19.0 Reference: Issue 1 Scope (b); Issue 2 Scope (a)**

**Exhibit B-2, Evidence of the FEU, Appendix F-4 2012-2013 FEU RRA Excerpts; Appendix G-1, p.2, Section 2.4 Thermal Energy Services, Table G-1; Appendix F-2 2010 Long Term Resource Plan Excerpts; Section 3.1.1.2, p. 57**

**District Energy Systems**

The FEU evidence states:

"Project

Quesnel District Energy System, Quesnel, B.C.

Description:

FEI is developing a combined power and district heating project in the City. The project will use waste heat from the nearby pulp and paper mill to heat up to 22 buildings and generate about 1.7 megawatts of electricity. Natural gas will also continue to be an important part of the City's energy mix."

- 19.1 In the case of the above cited project, what would be the implications to the utility if that project was at some future time owned and operated by the City of Quesnel?

**Response:**

If this project was at some future time owned and operated by the City of Quesnel, according to the *UCA*, a district energy project within the boundaries of a municipality or regional district would not be defined as a public utility and therefore not regulated by the BCUC. However, municipal systems typically have some form of oversight either directly or indirectly from the municipal council. This oversight varies from municipality to municipality and hence the independence of the oversight body and/or the level of scrutiny varies. Smaller towns often find the complexity, administrative burden and risks of establishing a municipal utility enough to dissuade them from pursuing this model.

Any sale of the Quesnel system by FEI to the City of Quesnel would have to be approved by the Commission under section 52 of the *UCA*. The Commission's review of the disposition would ensure that the public interest is maintained.

Regulation of a district energy system ("DES") is both appropriate and necessary. DES projects are generally complex and costly to operate and maintain. Once installed, the owner or operator has a measure of monopoly power over its customers as it is generally very costly to switch to another energy provider. As a result, customers of these systems have a strong

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 70

interest in having recourse to a regulator that can ensure fair, just and reasonable rates for service that is satisfactory and safe.

19.1.1 How would the utility assign TES direct and overhead costs to the project?

**Response:**

The FEU note that this question is a sub-question of BCUC IR 1.19.1, which refers to the Quesnel DES at some point in the future becoming owned and operated by the City of Quesnel. In that context, the TES direct costs and overheads costs for the Quesnel DES would have been accounted for in the specific plant accounts when the DES or portion of the DES came into service. These asset costs, along with any accumulated depreciation, would be readily identifiable at the time the change of ownership was to occur. Therefore, there will be no uncertainty in the rate base value of the DES at the time the hypothetical ownership change was to take place.

The practice with respect to capital projects is as follows:

Direct costs for the project are all gathered and held in a project specific internal order number for direct assignment to the project. Consistent with typical utility project practice, overhead costs will be a reasonable and defensible mark-up on direct capital and O&M costs (similar to private sector overhead & profit margins) and would be used to help draw down the general business development expense held in the TESDA.

Direct costs for the project are all gathered and held in a project specific internal order number for direct assignment to the project. These costs, along with assigned overheads, are transferred to the appropriate plant account when the project goes into service.

Consistent with typical utility project practice, overhead costs will be a reasonable and defensible mark-up on direct capital and O&M costs (similar to private sector overhead & profit margins) and would be used to help draw down the general business development expense held in the TESDA. The capital portion of the overheads is transferred into the same plant account(s) as the direct costs when the project goes into service.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 71

### 19.1.2 How would these costs be recovered?

**Response:**

TES customer rates will be set to recover over time the costs of production, generation and distribution of the thermal energy within the Quesnel project, including an allowance for overheads. The treatment of the electricity generation and any related revenues from electricity sales would be addressed in the application.

If an application for this project is made to the Commission, according to the 2010-2011 NSA (Order No. G-141-09, Appendix A, page 9) revenue received from customers for all TES projects, based on contracts approved by the Commission are to be recorded in the Thermal Energy Service Deferral Account. The risk of non-recovery of amounts in the Thermal Energy Service Deferral Account is not to be borne by natural gas ratepayers. Any debit balance in the Thermal Energy Service Deferral Account will not be recovered through natural gas rates and any credit balance is to be applied to reduce natural gas rates.

The rates for the Quesnel project would be developed by applying the cost of service methodology described in the FEI tariff GT&C Section 12A – Alternative Energy Extensions. The application to the Commission will demonstrate how the costs of the Quesnel DES, including an allowance for overheads, are being recovered by the proposed rates.

### 19.1.3 What are the risks to consider when evaluating the change of ownership at various points in time, 1) Before construction, 2) During construction and before in-service, 3) After completion and prior to in-service, 3) After in-service and prior to project payback, 4) After in-service and after project payback?

**Response:**

A change in ownership taking place at various points in time would involve the City of Quesnel buying the system from FEI. It would be expected that the transaction would be made at fair market value unless there was some contractual obligation that specified a different basis for the sale.

1. Before construction – FEI at risk for full compensation for labour, materials and other expenditures made in evaluating, analysis and design of the project. However, compensation for these costs would be sought in the change of ownership transaction

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 72

2. During Construction and before in service – FEI at risk if project is not within cost estimate. Expenditures up to this point are at risk if there was to be a change in owner. Again compensation for the expenditures incurred would be sought in the change of ownership transaction. There must be coordination of the construction activity so there is a seamless transition from one owner to another.
3. After completion and prior to in-service – FEI at risk project is not within cost estimate. Compensation includes at a minimum all design and construction costs incurred to date.
4. After in-service and prior to project payback and after in-service and after project payback – Utility ratemaking or the determination of revenue requirement is not based on the concept of payback but on cost of service. FEI is at risk that the sale price would not recover the net book value of the assets and any accumulated deferral amounts resulting from annual revenues being less than the annual cost of service.

19.2 What are the reasons or under what circumstances would a municipality not opt for Business Model 3?

**Response:**

In the Evidence, page 115, Business Model #3 outlines the following:

*“Utility/ESCO installs equipment; customer owns, operates and maintains the equipment for the purpose of providing thermal energy to itself only.”*

Business Model #3 is the model currently employed for most conventional energy systems and can also be employed for alternative energy systems. The end user owns its own thermal energy generating equipment (such as a furnace in a house or a boiler in a commercial facility) and uses this equipment to serve their own thermal energy needs. They purchase fuel such as natural gas, propane or electricity to convert to thermal energy with their thermal energy generating equipment. This process of self-providing for one’s own thermal energy needs is not public utility service.

Because it will involve serving multiple customers in certain areas of Quesnel, the Quesnel District Energy System will fall under Business Model #1 if the system is privately owned and/or operated (i.e. by a utility or ESCO). If the City of Quesnel was to own and operate the Quesnel District Energy System then the physical system would still be the same but it would be exempt from BCUC regulation because of the exclusion clause for municipal utilities in the UCA



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 73

definition of public utility. The municipality itself would provide the regulatory oversight of the system.

There are various reasons why a municipality may not want to own and operate a utility. They may not have the expertise in designing, building, operating and maintaining an energy utility and prefer to have another party with the requisite expertise and resources do so. The municipality may not be able to take on more debt to finance the utility and/or may have other priorities for its financial resources such as building roads, recreational facilities or other infrastructure.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 74

**20.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 3.2.2 pp. 78-79**

**Benefits to Project Proponents**

FEU say that the primary benefit of retaining flexibility is that it addresses concerns expressed by potential project proponents as they had both financial and technical concerns. On the financial side, it is typically easier to obtain financing when an experienced and reputable partner like FEI is involved in the upgrading process. The City of Kelowna and the project developer for the Annacis Island project are cited as examples.

20.1 Will the thermal energy system service and other New Initiatives increase the cost of capital to the utility because of higher risk?

**Response:**

No. Please see the response to BCUC IR 1.4.2.

20.1.1 If so, would this expose the natural gas ratepayers to some of that risk and incur higher natural gas rates?

**Response:**

The FEU do not believe that natural gas ratepayers will be exposed to incremental risk or experience higher rates as a result of the TES projects noted above. Please see the response to BCUC IR 1.4.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 75

**21.0 Reference: Issue 2 Scope (a); Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 3.3, p. 64 and Section 3.2, p. 62; Exhibit A2-8 Con Edison 2010 Annual Report**

**Public Utility in the UCA**

FEU state that the *UCA* dictates what services are regulated through the definition of "public utility" in section 1 of the Act.

In B.C. we have a utility (PNG Ltd.) that has separate utilities within it, separate divisions within the utility as well as separate classes of service.

The separate utilities are Pacific Northern Gas Ltd. which has a western division and a wholly owned subsidiary Pacific Northern Gas (N.E.) Ltd.

The separate classes of service are PNG-West delivering gas in west central B.C. and delivering propane in the community of Granisle.

The separate divisions are PNG-West, Fort St. John/Dawson Creek and Tumbler Ridge making up three divisions. Each division is examined separately for delivery charge, rate base and capital structure and return on equity.

Appendix F-6 of the Evidence made reference to the Consolidated Edison Company of New York Inc. (CECONY), a subsidiary of Con Edison, and which has operations in regulated electric, gas and steam delivery businesses. Competitive energy opportunities are carried out through another subsidiary. CECONY provides, in addition to electric and gas services, a steam service which is a district energy system with around 1,760 customers. Electric, gas and steam are considered separate classes of service with its own rate base and authorized ROE.

21.1 In FEU's view, do the characterizations of PNG in the preamble reflect FEU's current views of divisions and classes of service available in B.C.? If not how do FEU's view of the situation differ? Please discuss the merits of these organizational structures to promote fair and reasonable rates to various classes of customers.

**Response:**

The FEU do not address what constitutes a "division" of a utility but does explain "class of service" in reference to the *UCA* in the Evidence, section 3.4, "Classes of Service", page 69. The FEU state that section 60 of the *UCA* expressly contemplates that a utility such as FEI may provide more than one class of service, such as natural gas service and TES within the same regulated entity. The FEU also state that:



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 76

*"Not only does the Act contemplate this scenario, but it dictates the manner in which rates are to be set so that the customers of one class of service do not cross subsidize customers of another class of service."*

TES is described as a class of service within a utility in the Evidence, pages 119 – 124. The TES class of service is segregated for ratemaking purposes only, and comprises systems such as geothermal, solar and district energy.

As indicated in the preamble to this question, the references to Pacific Northern Gas divisions include the corporate entities PNG-West Ltd. and PNG (N.E.) Ltd. with PNG (NE), including Fort St. John / Dawson Creek and Tumbler Ridge. Each division of PNG has its own unique attributes and issues with respect to physical systems, customer growth, usage characteristics, gas supply options and economic drivers as well as separation on a geographical basis.

PNG's largest business segment from the perspective of throughput, customers, geographic area and physical assets is the PNG-West system, which stretches nearly 600 kilometers through the Bulkley-Nechako region of the province, from Summit Lake to Prince Rupert and Kitimat. PNG's wholly owned subsidiary, PNG (NE) delivers natural gas in the Peace River area of the province, including the communities of Fort St. John, Dawson Creek, Taylor, Rolla and Pouce Coupe. PNG (NE) also serves Tumbler Ridge (the smallest natural gas business segment of PNG), which is also located in the Northeast portion of the province in the foothills of the Rocky Mountains.

Each of the divisions meets the definition of public utility as defined in the *UCA* and separate rates are determined for each division and for each customer rate class within that division. PNG has chosen to maintain these divisions, which are largely a function of how the regulated entities developed historically (PNG (NE) was formerly a separate utility called Centra Fort St. John) and apply for the rates of each separately, although amalgamation of the divisions (in various configurations) could have been pursued. Similarly, various rate constructs could be pursued within an amalgamated regulatory entity such as having postage stamp rates throughout PNG, or divisional rates or other approaches.

The FEU are made up of three legal entities which include FEI, FEVI and FEW. FEI's service areas include the Lower Mainland, Inland, Columbia and Fort Nelson. Even though the Fort Nelson service area is part of the same legal entity (i.e. FEI) as the Lower Mainland, Inland and Columbia service areas it has rates set separately and a separate rate base from the other three FEI service areas. This is the result of its geographic location and the historical development of rates that has led the Commission to approve an independent rate setting approach for Fort Nelson.

The FEU believe that the matter of just and reasonable rates is independent of the corporate or divisional structure. The Commission must set rates based on the applications it receives from the regulated entities it oversees. Sections 59 – 61 are the main sections of the *UCA* setting out

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 77

the legal framework for assessment of just and reasonable rates. The Commission has the same ability to set just and reasonable rates whether multiple classes of service are within one regulated entity or whether different classes of service are organized as separate regulated entities. The FEU believe however that the single utility model allows for more opportunities to find efficiencies to the benefit of customers in all classes of service and rate classes.

- 21.2 On page 63 FEU state: "The principle of just and reasonable rates comes into play with all of the New Initiatives, which require investments that must be recovered from, and allocated appropriately among, FEU customers".

In Exhibit A2-8, the Con Edison annual report indicates that rates for electricity, gas and steam services are established separately under different rate plans, with separate rate base and separately authorized ROE. Is this regulatory model suitable for FEI's traditional gas distribution, biomethane services, CNG refueling stations and TES initiatives?

**Response:**

Please see the response to BCUC IR 1.21.3.

- 21.3 In FEI's view, is clear separation of classes of service within a utility such as CECONY a desirable way to provide transparency and deter cross-subsidization among its customers? Please discuss the merits of these organizational structures to promote fair and reasonable rates to various classes of customers.

**Response:**

The FEU have included TES as a regulated class of service within the regulated utility. Sections 21 and 60 of the *UCA* contemplate the regulation of multiple "classes of service" that are distinct for ratemaking purposes but within the same regulated utility business structure.

In accordance with section 60 (1) (c) of the *UCA*, the FEU intend to fairly allocate costs among classes of service in a transparent manner. As TES will be a regulated class of service, the sharing of corporate overheads and common costs among the classes of service is the approach used. The cost allocation process proposed in FEU's 2012-2013 RRA outlines three



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 78

main categories of costs that are allocated to the TES class of service. These include the following:

1. direct project costs
2. sales, marketing, business development and O&M costs
3. overhead allocation that is currently set at \$.5 million

The benefits of the single utility with multiple classes of service involve cost, staffing and administrative efficiencies. There is a sharing of overhead which will reduce the overhead to natural gas customers.

The CECONY example, cited in the question, appears to be similar in structure to the FEU's intended approach of having multiple classes of service with rates for each established independently within one utility. There is no advantage from a transparency perspective or for avoiding cross-subsidization to separating TES and natural gas into separate regulatory entities or corporate entities. Either of these approaches would only add costs and inefficiencies and that is why the FEU are not employing those approaches. The management information and financial accounting systems within FEI can readily provide the necessary cost separation and tracking between the two classes of service.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 79

**22.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of the FEU, Section 3.3.7, pp. 64-67**

**Ownership of Upgrading Facilities**

- 22.1 Please discuss whether Catalyst is a public utility because it upgrades the biomethane from the Abbotsford project before selling the gas to FEI.

**Response:**

For the reasons described in the response to BCUC IR 1.139.1, Catalyst is a public utility by virtue of the fact that it owns and operates equipment that upgrades biogas to biomethane and sells it to FEI, as this activity meets the definition of "public utility" in the *Act*. Catalyst is in a similar position to an Independent Power Producer that provides electricity solely to BC Hydro. IPPs are exempted from regulation as a public utility under Part 3 of the *Act* by regulation. The agreement that Catalyst signed with FEI (the customer, in this case) has been filed with the Commission by FEI as it is an energy supply contract from FEI's perspective.

- 22.2 Noting the reference in Section 3.3.2 to "production, generation", please discuss whether a party such as Catalyst would be a public utility as producer of the biogas, even if FEU upgraded the biogas.

**Response:**

In the FEU's view, this would not be a regulated activity because raw biogas is not "electricity, natural gas, steam or any other agent for the production of light, heat..." until it has been through the upgrading process and converted into Biomethane, which is suitable for injection into the natural gas distribution system. An analogy to the digester would be, for example, the non-regulated provision of wood waste to an IPP that turns it into electricity for sale to BC Hydro.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 80

### 23.0 Reference: Issue 3 Scope (a)

#### **Exhibit B-2, Evidence of FEU, Section 3.4, p. 69; Exhibit A2-7 Con Edison Steam Long Range Plan 2010-2030**

#### **Single Utility Having Different Classes of Service**

Subsequent to the OIC directive in Ontario that authorized Enbridge to engage in certain activities related to conservation, demand management, and renewable energy (TGI 2010-2011 RRA Exhibit B-12-2 Revised BCUC IR 2.11.6) OEB rendered a decision on whether certain costs that Enbridge wishes to recover in rates from the Green Energy Initiatives are properly part of the regulated operations of Enbridge (Exhibit A2-19, OEB Decision EB-2009-0172). The OEB concluded that there is no compelling reason to conclude that the costs of renewable energy projects should be allowed in the rate base of a gas utility. In its reasoning, the OEB decision says:

"[w]hen assets are allowed in rate base it is generally because those assets are related to the monopoly franchise. Enbridge does not have a monopoly franchise for the production of renewable energy. Its franchise is related to the distribution of natural gas. To the extent that the Green Energy Initiatives involve activities for the production of renewable energy, they occur within a competitive market."

"Permitting a well financed public utility to include its costs of participation in this market into its rate base, thereby transferring risk to the ratepayer, is unfair to other market participants."

- 23.1 If FEI enters into new businesses that do not have monopolistic characteristics (such as refueling stations for CNG and commodity supply like biomethane) or there are already competitors (like geothermal or DES), should the cost of these activities be allowed into FEI's rate base? If so, why?

#### **Response:**

Yes they must be included in rate base as they are part of the asset base required to serve customers.

At law, the question of whether or not an asset should be allowed into a public utility's rate base does not turn on whether the business (or service area) in which the asset is employed has "monopolistic characteristics". On the contrary, there are two general tests used to make this determination:

- (1) the "used and useful" test, which says that plant currently providing or capable of providing utility service to the consuming public is allowed into rate base; and



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 81

(2) the "prudent investment" test says that only plant prudently purchased or constructed to provide utility service is allowed into rate base.

So long as the asset at issue is used for a regulated service and meets these tests, then it must be included in rate base. Excluding an asset properly in rate base means that the utility is prevented from earning its allowed return on every dollar prudently invested in utility services. The effect of this is to prevent the utility from earning its allowed return on its total utility investment.

As set out in the Evidence, all of the New Initiatives are regulated services, and therefore assets employed to provide the New Initiatives that meet these tests must be included in rate base.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 82

**24.0 Reference: Issue 2 Scope (a); Issue 3 Scope (b)**

**Exhibit B-2, Evidence of the FEU, Section 3.4, p. 69**

**Classes of Service**

The FEU evidence states on page 69:

"...the UCA expressly contemplates a single utility having different classes of service. This is evident from a review of Section 60 of the Act:

*60(1) In setting a rate under this Act...*

*(c) If the public utility provides more than one class of service, the Commission must*

*(i) segregate the various kinds of service into distinct classes of service;*

*(ii) in setting a rate to be charged for the particular service provided, consider each distinct class of service as a self contained unit, and*

*(iii) set a rate a rate for each unit that it considers to be just and reasonable for that unit, without regard for the rates fixed for any other unit."*

The import of this provision is that the Act expressly contemplates a public utility such as FEI providing, for example, both natural gas service and thermal energy services within the same regulated utility."

Also on page 69 the evidence says that:

"In terms of the New Initiatives, Biomethane Service, NGV Service, and EEC programs are all part of the natural gas class of service, while TES Service is a different class of service within FEI." [emphasis added]

"In terms of the New Initiatives, Biomethane Service, NGV Service, and EEC programs are all part of the natural gas class of service, while TES Service is a different class of service within FEI." [emphasis added]

24.1 How would FEU design/recommend a preferred utility structure to ensure adequate separation, transparency and cost/revenue segregation is maintained for each of the new lines of business within the New Initiatives (excluding EEC funding)?

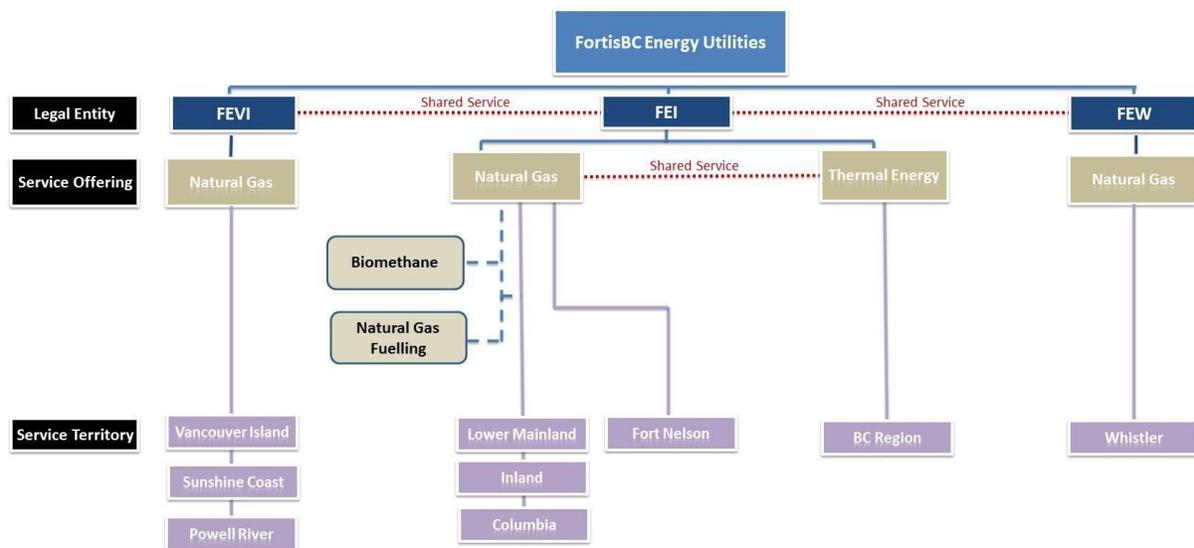
An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 83

**Response:**

This response addresses BCUC IRs 1.24.1, 1.24.3, and 1.24.4, which, in summary, ask the FEU to identify available utility structures to carry out the New Initiatives and the FEU's preferred approach. In this response, the FEU set out two general approaches to structuring the provision of the New Initiatives, a preferred approach and an alternative approach, and discusses why its preferred approach is in the best interests of ratepayers. At the outset, the FEU note that the design of the utility corporate structure is the prerogative of management. The determination will be made based on what works best to meet the needs of customers, the shareholder and the most efficient allocation of resources.

**The FEU's Preferred Approach**

The FEU's current and preferred corporate / utility structure is as follows:



As the chart indicates, the FEU currently consists of three distinct corporate entities. These include FEI, FEVI, and FEW. The corporate services and common costs for these legal entities are delivered on a shared basis through a shared service agreement in place between FEI and FEVI and also FEI and FEW to allocate overhead costs between the legal entities. FEI provides natural gas, Biomethane, and NGV in Lower Mainland, Inland, Columbia service areas, and natural gas in the Fort Nelson service area. FEI can carry out TES activities throughout BC. FEVI and FEW offer only natural gas classes of service within their respective service territories.

The key feature of the current and preferred model for the purposes of this Inquiry is that FEI offers two classes of service: natural gas and Thermal Energy Service. The natural gas class of service includes Biomethane Service and NGV Service. Given that Biomethane Service and



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 84

NGV Service are natural extensions to the natural gas class of service, they are offered within the natural gas class of service. Although Thermal Energy Service will often use natural gas for backup and peak demand, it may also use different sources of energy and technologies to deliver thermal energy, including natural gas, electricity, geo-exchange, solar, biomass, etc., and therefore is classified as a separate distinct class of service.

The FEU believe that this structure is an adequate and transparent model and readily allows for proper cost allocation and revenue segregation to be maintained within the regulated utility model, serving in the best interests of ratepayers and the shareholder. The FEU discuss how the specific objectives regarding segregation of the classes of service within FEI are met in the response to BCUC IRs 1.9.2, 1.9.4, 1.17.1, 1.17.2, 1.92.1, and 100.2. As these responses make clear, the FEU already have in place adequate cost tracking and accounting mechanism that ensure that no cross-subsidization occurs.

This structure is also consistent with the previously approved Commission orders and decisions, particularly Order No. G-141-09.

### **Advantages of the Preferred Approach**

The FEU describe the advantages to the preferred approach in section 6.4.2.2 of the Evidence. To summarize that Evidence, under this model FEI shares resources between natural gas and TES through cost allocation under shared services or similar arrangements (similar to that of the three utilities, FEVI, FEW and FEI)<sup>16</sup>. Such cost allocation and shared services approach allows FEI to maintain the benefits of economies of scale by having a single management and support structure while avoiding duplication of work and allowing customers to benefit from the efficiencies realized, and also allows FEI to offset the impact of lost throughput on the natural gas systems.

Another advantage of the preferred approach is that TES customers can benefit from the ability of FEI to obtain more favorable debt financing terms than a stand-alone TES entity could obtain. All TES customers benefit from this, and there is no material impact to natural gas ratepayers.

Please note that the FEU have applied to amalgamate FEI, FEVI and FEW, which will result in one entity with two classes of service, each covering the whole province<sup>17</sup>. The FEU wish to emphasize that the applied for amalgamation is consistent with the preferred corporate structure described above, as the essential feature of this model, which confers the benefits that commend its adoption, is having the two distinct classes of service offered by the same utility, a feature which will be maintained through the amalgamation.

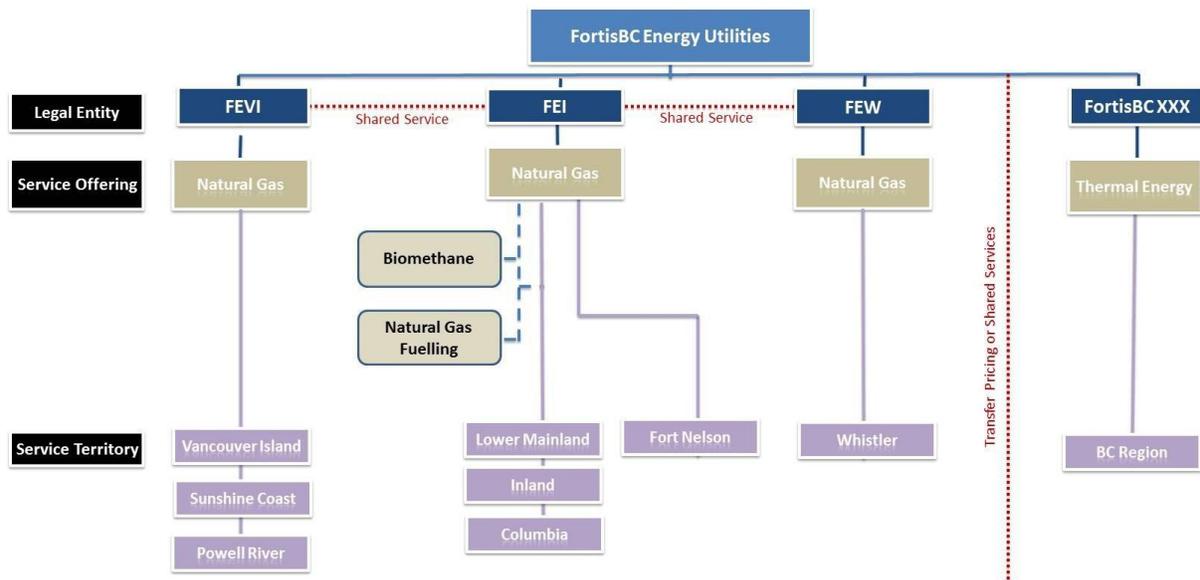
<sup>16</sup> The cost allocation methodology is described in 2012-2013 RRA proceeding, Appendix G.

<sup>17</sup> With the exception of the Pacific Northern Gas service territory for the natural gas class of service

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 85

## Alternative Approach

The following is an alternative approach to the provision of the New Initiatives for discussion purposes, and as requested in BCUC IR 1.24.3 (which seeks a discussion of available corporate structures). The FEU have chosen the following alternative for discussion on the basis that, in the FEU's view, it reflects many of the comments and questions that the FEU have heard over the years regarding alternative approaches to providing the New Initiatives.



Please note that this structure is a modified version of the structure presented by the Commission in BCUC IR 1.91.3.

This alternative structure would currently require the FEU to have four legal entities instead of three. In addition to FEI, FEVI, and FEW, there will be a separate regulated legal entity that only offers the TES service.

Under this alternative structure, FEI would offer only the natural gas service. The natural gas service would include Biomethane Service and NGV Service. Given that Biomethane Service and NGV Service are natural extensions to the natural gas class of service, they would be offered by the natural gas utilities. FEI would provide natural gas, Biomethane, and NGV services to Lower Mainland, Inland, Columbia, and natural gas to Fort Nelson. FEVI and FEW would continue to offer only natural gas within their respective service territories. As mentioned above, the FEU are applying to amalgamate FEI, FEVI and FEW in the near future.

The fourth legal entity would offer TES. TES would use different sources of energy and technologies to deliver the energy, including natural gas, electricity, geothermal, solar, biomass, etc. The TES-focused legal entity would be able to carry out TES activities throughout BC.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 86

The services of FEI, FEVI, and FEW would continue to be delivered on a shared basis. There would be a shared service agreement in place between FEI and FEVI and also FEI and FEW to allocate overhead costs between the legal entities. The costs of resources and services of the new legal entity offering TES, however, would not be established by an Inter Affiliate Code of Conduct (similar to that suggested by the Commission in BCUC IR 1.91.3) but costs of resources shared between utilities that are regulated would come under a "shared services" model, which is similar to the Transfer Pricing Policy that applies to sharing of resources or services between a utility and non-utility companies.

Unlike the current and preferred model presented above, the FEU believe that this alternative structure does not serve the best interest of ratepayers and shareholder.

### ***Why the Alternative Approach Should Not Be Adopted***

In the FEU's view, there is no advantage to the alternative approach described above. There are additional costs and administration that occur under a separate legal entity that are not present when the service is provided under the FEI entity structure. These costs include corporate filings, accounting and financial reporting costs and general administration costs to maintain the separate entity. Ultimately, these costs must be recovered from customers of the TES legal entity. In fact in the Gateway Lakeview Estates Decision (Order No. C-22-06, Appendix, page 2), the Commission suggested that there be less small utilities as this would reduce regulatory administration.

*"Certainly, it is likely to be less efficient and more costly from the Commission's perspective to regulate a number of small utilities, rather than one larger utility serving the same customers."*

A second disadvantage of this structure is that the debt financing costs for TES customers are likely to be higher under this model in contrast to the preferred model, where TES debt requirements would be raised in conjunction with the overall FEI financing activities with no material impact on natural gas customers.

- 24.2 In the future event that FEU TES projects are developed in regional areas in BC, how do FEU intend to structure TES service areas within FEU to accommodate different geographic areas and different projects?

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 87

**Response:**

As mentioned in the response to BCUC IR 1.1.1 and 1.24.1, FEI will carry out the TES activities throughout BC regardless of service territory. The FEU does not expect that the utility structure demonstrated in the response to BCUC IR 1.24.1 will significantly change in the future but notes that the FEU will be applying to amalgamate FEI, FEVI and FEW in the near future. The outcome of the amalgamation request will not significantly impact the preferred utility structure demonstrated in the response to BCUC IR 1.24.1. The TES service will remain a class of service offered within one regulated entity serving all regions of BC and there will be an allocation of costs between natural gas and TES classes of service within the amalgamated legal entity.

Geography is less likely to be a key influence on the nature of the TES projects than commercial requirements and choice of technologies. What will remain consistent with all TES projects is that they deliver thermal energy to the customer. The proper rate treatment of TES projects within the TES class of service is only a matter of rate design (i.e. classifying customers (projects) with reference to appropriate distinctions for the thermal energy service received).

- 24.3 What corporate structures are available to FEU for the new initiatives (exclusive of EEC Funding) and what are the implications of each of the corporate structures in terms of financing, ownership, risk, and service area considerations?

**Response:**

Please see the response to BCUC IR 1.24.1.

- 24.3.1 Please provide a recommendation on the optimal corporate structure for FEU to provide "different class of service" for all utility entities including FEI, FEVI and FEW within an integrated utility. Give specific attention to the following:
- Legal entity and ownership;
  - Organizational Structure: provide organizational charts where appropriate;
  - Multiple service/project offerings within each line of business given that FEI has four service areas. Please include FEVI and FEW.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 88

**Response:**

Please see the response to BCUC IR 1.24.1.

24.4 Please provide the service areas for FEI.

**Response:**

FEI's current service areas include Lower Mainland, Inland, Columbia, and Fort Nelson. FEI will also carry out TES activities throughout British Columbia.

24.5 For FEI, please confirm there are two rate bases: 1) Lower Mainland, Inland, and Columbia and 2) Fort Nelson.

**Response:**

Confirmed. FEI currently keeps separate rate bases and sets delivery rates separately for natural gas service as follows:

- 1) Lower Mainland, Inland, Columbia, and
- 2) Fort Nelson.

The Fort Nelson Service Area has been kept as a separate regulatory entity within one legal entity (i.e. FEI) based on a prior Commission order dating back to 1992. Although both rate bases support natural gas service, the demonstrated ability of FEI to track the Fort Nelson rate base and costs within the same legal entity as the three larger FEI service areas (Lower Mainland, Inland and Columbia) supports the concept that cost allocations and transparency can be maintained for multiple entities within a single legal entity. This capability is directly transferable to maintaining transparency between two regulated classes of service such as natural gas and TES.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 89

## 25.0 Reference: Issue 2 Scope (b)

**Exhibit B-2, Evidence of FEU, Section 4. 0, pp. 70, 75; Section 5.3.4, p. 94**

### **Flexibility**

With respect to NGV, FEI formerly took the position that the regulated business was sold to a wholly-owned non-regulated subsidiary "..... in order to have greater flexibility to grow the NGV market and own and operate natural gas fuelling stations across North America." (BCUC Order G-143-99; CNG/LNG Decision dated July 19, 2011 page 7 of 34). In the current proceeding, "FortisBC Holdings Ltd. is interested in owning and operating NGV fueling stations only through its regulated utility subsidiaries" (page 94).

With respect to AES, FEI is of the view that "Terasen Energy Services alternative energy services activities have never been actively regulated by the BCUC and TES has been, in effect treated as a NRB. The FEU submit that some of these activities should be subject to regulation. (2010 LTRP Exhibit B-10 BCUC IR #2 Question 6.1)

On page 70 in the FEU Evidence, FEU state that it is in the public interest to allow FEU to have the flexibility to own and operate biogas upgrading equipment where commercial circumstances dictate. [emphasis added]

- 25.1 Are commercial circumstances the primary criterion for entering or leaving the New Initiatives market? Are there any other rationales and if so what are they?

### **Response:**

The FEU in addressing commercial circumstances were referring to the decision, in the context of a particular Biomethane project, as to whether an upgrading facility should be owned by the Companies or the project partner. The drivers for the New Initiatives market, which is a different issue entirely, are discussed in Section 2 of the Evidence. The FEU are experiencing declining natural gas throughput levels that impact delivery rates. There are also policy drivers and customer demand drivers that support the pursuit of New Initiatives.

There are also environmental considerations supported by the provincial *Clean Energy Act* and the GHG emissions reduction targets. The energy and policy environment in BC is challenging the role of natural gas in the energy mix, especially relative to electricity, which is widely viewed in BC as clean, renewable and GHG emissions neutral, and the FEU's response is to develop New Initiatives, which complement government's environmental policy direction, customers' demand for greener solutions, and address declining throughput levels.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 90

25.2 Corix Multi-Utility Services (formerly Terasen Multi-Utility Services) operate Lonsdale DES for the City of North Vancouver; Terasen Energy Services operate the geo-exchange system at Waterstone Pier as well as other developments; the NGV businesses were sold to the wholly owned NRB subsidiary known as 4Pro Systems Inc.

25.2.1 Assuming that FEI has become a fully Integrated Energy Services provider, could FEI decide to spin off the regulated New Initiatives to an NRB? If so, please list the market conditions that could lead to FEI's decision to do so.

**Response:**

No, FEI could not decide to spin off regulated TES or Biomethane upgrading to an NRB. The TES or upgrading services would remain regulated in the hands of the other entity. Legally speaking, it would be possible to spin off regulated NGV fueling services to an NRB (provided that NRB was "not otherwise a public utility", in which case it would be regulated still).

Any spinoff or disposition of new initiatives assets would also be subject to review by the Commission based on the facts and circumstances that are leading to the proposed disposition. The Commission's role is to protect the public interest should the FEU seek to dispose of any of its New Initiatives assets either to a non-regulated business or to another regulated utility.

The FEU are not currently contemplating doing so and cannot identify any such conditions.

25.2.2 In the spinoff to an NRB, what costs/benefits should accrue to the ratepayer and/or utility shareholder?

**Response:**

It is not possible to address this question in the abstract.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 91

Note that the Lonsdale and Waterstone Pier examples are not "spin-offs" or sale of assets to NRB. Corix provides operating services for Lonsdale Energy Corp, a municipal owned utility, but does not own the assets. FAES (formerly TES) developed, owns and operates the loop-field component of the geo-exchange system at Waterstone Pier. Please see the response to BCUC IR 1.25.2.1.

- 25.3 In jurisdictions where TES are not regulated activities, are TES service providers guaranteed allowed returns on equity on these activities?

**Response:**

No, but a TES provider can structure contracts with customers to avoid variable cost risk and contract only with creditworthy customers. This approach would give the provider a very good prospect of a return.

Public utility regulation does not provide a "guaranteed" return but a provision for a return on equity that a utility can achieve if all the assumptions made in the development of the revenue requirement formula prove correct over the forecast year. It is termed in the case law an "opportunity" to earn a fair return, and it is explicitly not a guarantee.

The FEU understand that in Ontario and Quebec TES activities are not regulated. The FEU expect that the TES service providers in those jurisdictions would establish rate structures and incorporate terms and conditions in their contracts with customers that would allow them to earn reasonably stable although not guaranteed returns on investment.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 92

## Biomethane

### 26.0 Reference: Issue 3 Scope (a)

#### Exhibit B-2, Evidence of the FEU, Section 4, pp. 72, 74, 80

#### Ownership Model for Biomethane Upgrading Assets

On page 72 FEI states: "The Commission established a two-year test period to confirm the customer demand for the service. During that time, the total production of Biomethane for all projects is limited to 250,000 GJ per year during the test period, and the Commission set a maximum price for the acquisition of Biomethane supply of \$15.28 per GJ. These provisions allowed for an initial Biomethane supply to be developed, while ensuring that the supply obtained during the trial period would not outpace demand and would be cost effective for customers.

On page 74 FEI states: "The uptake and interest in Phase 1 of the program will be key to encouraging continued development of additional supply sources allowing for expansion of the program to other customer groups. FEI will continue with customer education activities to ensure customers are sufficiently educated and encourage them to act on enrolling in the program."

On page 80 FEI states: "Within 4 weeks of the launch of Phase 1, FEI had 200 customers signed up for the program."

26.1 For similar programs to acquire a premium priced, environmentally desirable supply of energy on a voluntary basis by customers, is it not customary for the utility to sign up customers before committing to the premium priced supply to ensure that non participating customers do not end up paying for a service they had not chosen?

#### Response:

FEI is not aware of any other utility programs that have signed up customers prior to the launch of a retail green pricing program. FEI performed primary and secondary market research to identify the potential demand for the program as filed in the Biomethane Application and this evidence was accepted by the Commission as justification to proceed with the Biomethane program. Page 34 of the Biomethane Decision states "*The Commission Panel finds that the research presented by FEI supports the position that there is likely to be sufficient demand to justify moving forward with the Biomethane program*". As of October 12, 2011, FEI had over 1000 residential customers enrolled in the program. FEI may consider a pre-sale of Biomethane to large purchasers in the future as another means to balance supply with demand.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 93

26.2 Will FEI first obtain signups sufficient to meet the supply from the first two projects before contracting additional supply?

**Response:**

FEI is committed to develop supply projects in order to meet the demand from its customers. As supply projects take time to develop (upwards of 2 years), there is a balance that must take place while the program starts to gain traction. FEI believes that supply should be developed before all of the existing supply is absorbed.

FEI believes its phased approach will help mitigate the risk of over or under supply. Phase one is targeted at residential customers to begin to test the market with the limited availability of supply while reaching the greatest number of customers with more consistent use rates, making supply/demand easier to manage. Phase two is expected to launch in early 2012 to commercial customers once supplier reliability has been proven and is able to meet the higher use rates of this customer group. Additionally, the ability to sell excess supply in bulk sales to on-system or off-system customers will allow FEI to manage any build up in Biomethane deliveries to large transport customers such as Central Heat or to utilities in the US that have green energy requirements in their electricity portfolios. Early sign-up may form one of the risk mitigation tools for the launch to the commercial market or for bulk sales, but the Company feels the risk mitigation measures and market demand as identified in the Biomethane Application provide sufficient backup to proceed with developing new supply projects. FEI will utilize these risk mitigation measures, market research and test market results to validate demand to ensure it does not overcommit to additional supply should there not be expected demand from its customers.

26.3 Does FEI intend to resell biomethane supply to other larger entities like Central Heat?

**Response:**

Should there be availability of supply outside of the residential Rate Schedule 1B and/or commercial offerings (Rate Schedules 2B and 3B), FEI intends to sell Biomethane supply to other large entities. This measure will be reviewed regularly during the program.

Please also refer to the response to BCUC IR 1.26.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 94

**27.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of the FEU, Section 4, p.74**

**Actual Performance of Biomethane Supply Projects**

27.1 For the Catalyst project, please compare the evidence filed in the Biomethane proceeding with the actual results to date, for each of the following:

- In-service date (date of first delivery of on-spec biomethane)
- Average biogas delivery rate
- Cost of the interconnection facilities
- Cost of the connecting pipeline

Please explain any significant differences.

**Response:**

The type of information that this question is seeking has been presented in the FEU 2012- 2013 Revenue Requirements and Natural Gas Rates Application and will again be presented when FEI files its Biomethane Report in 2012 as per Commission Order No. G-194-10 and Reasons for Decision, dated December 14, 2010. While the FEU have provided the information requested, we question the relevance and benefit of the information in the context of the overall objective of this Inquiry.

FEI began receiving biogas from Catalyst on September, 2010. The commencement date in the Contract was July 7, 2010.

The average biogas purchase price is as stipulated in the contract.

The direct capital costs for the interconnection facilities are the following:

	\$000's	
	Application	
	Costs	Actual Costs
Cost of Connecting Pipeline	\$ 227.9	\$ 68.8
Other Interconnection Facilities Cost	<u>359.8</u>	<u>433.6</u>
Total Interconnection Costs	<u>\$ 587.7</u>	<u>\$ 502.4</u>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 95

The actual overall interconnection costs for the Catalyst project were more than 14% less than the initial approved amount, although the allocation of costs across certain cost categories differs from the original estimate as seen from the table above. FEI's initial assumptions of how costs would arise across certain categories were made during the preliminary design phase. As the project progressed and FEI developed a better understanding of the actual costs and the allocations, FEI re-allocated the costs to match more closely with standard practice used for more established projects like regulator station design and construction. Going forward, FEI will incorporate these learnings into the CSRD and future projects to allocate the expected costs into the appropriate categories. FEI will continue to use best cost management practices from existing projects into future projects and ensure that costs are more closely aligned with initial estimates across all categories.

- 27.2 Please repeat the previous question for the Salmon Arm Project, and include the estimated and actual cost of the biomethane upgrading facilities.

**Response:**

The type of information that this question is seeking has been presented in the FEU 2012 - 2013 Revenue Requirements and Natural Gas Rates Application and will again be presented when FEI files its Biomethane Report in 2012 as per Commission Order No. G-194-10 and Reasons for Decision for Decision, dated December 14, 2010. While the FEU have provided the information requested, we question the relevance and benefit of the information in the context of the overall objective of this inquiry.

The Salmon Arm project is not yet in service and the capital expenditures are being recorded in Work in Progress Attracting AFUDC. FEI is now anticipating the project will be in service in March 2012. In the Application it was anticipated the land fill gas ("LFG") would start to be delivered to FEI in the winter of 2010 (Biomethane Application Volume 1, Page 93, Section 9.2.7.6).

The contracted purchase price for all raw Biomethane is as stipulated in the contract.

The direct capital costs (excluding overhead and AFUDC) for the interconnection facilities, upgrader and contribution in aid of construction for the upgrader as filed in the Biomethane Application and in the response to 2012 – 2013 RRA BCUC IR 1.188.1 for the projected 2011 costs are as follows:



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 96

	\$000's	
	Application Costs	Projected Costs
Cost of Connecting Pipeline	\$ 45.1	\$ 34.0
Other Interconnection Facilities Cost	<u>637.5</u>	<u>649.0</u>
Total Interconnection Costs	\$ 682.6	\$ 683.0
Upgrader	1,621.8	1,934.0
CIAC	(515.6)	(566.0)

The increase in the upgrader plant costs, as mentioned in the Biomethane Report (included in 2012 2013 Revenue Requirements and Rates Application, Volume 2, Appendix J, Pages 4 and 5), resulted from required changes to the upgrading plant due to actual higher levels of nitrogen present in the landfill gas.

"Xebec recommended a design change to a different version of their Pressure Swing Adsorption technology that could reliably manage higher levels of nitrogen while still meeting final biomethane specifications. The design change will increase the cost of the upgrading plant by approximately \$300,000 from the original approved amount of \$1,621,800 and result in a delivery delay."

The incremental contribution for the Salmon Arm project is \$515,000, however, there is a transfer from the Lions Gate Project of \$50,000 to this project that FEI has already received for a total CIAC of \$566,000.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 97

**28.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4, pp.70-73, 75**

**Biomethane Upgrading and Interconnection Assets**

- 28.1 FEU propose that the issue of ownership of the upgrading assets for converting raw biogas to biomethane be addressed in the AES Inquiry. FEU also proposes that FEI own and control the interconnection facilities, which it defines as metering, monitoring and odourizing equipment. Does FEU propose that the Commission also address the ownership of these interconnection facilities in the AES Inquiry? Why or why not?

**Response:**

The FEU do not propose that the Commission address the ownership of *interconnection facilities* in the AES Inquiry. In the Biomethane Application, FEI stated that it will own and operate the interconnection facilities at all times. This is a part of our core business and FEI must retain ownership and control over interconnection in order to ensure safety and reliability of the natural gas distribution system.

These assets are relatively low cost items, and FEI's ownership of them provides very significant benefits. Further, these assets look like and function like the hundreds of pressure control stations that exist in the FEI distribution system. FEI, therefore, has more design, construction and operating experience than any other entity within its service territory. It is very clear that there are safety, operational and economic benefits to the public when FEI owns and operates the interconnection equipment.

The FEU have no difficulty with upgrading equipment being owned and operated by competent providers, but very strongly believe that is not in the interests of customers for the FEU to assume the significant risks to the existing system assets associated with relinquishing control to third parties over the quality of the Biomethane injected in to the system.

- 28.2 If ownership of the interconnection facilities is under review in this Inquiry, please provide a full justification for FEU's position that it should own the interconnection facilities.

**Response:**

Please see the response to BCUC IR 1.28.1

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 98

- 28.3 Please confirm that a pipeline of greater or lesser length is also required to connect a biogas upgrading facility to the existing FEU transmission and distribution system.

**Response:**

It is assumed that this question refers specifically to the amount of piping required between the interconnect facilities and the existing distribution or transmission system.

There will always be some pipe required to connect to the existing distribution or transmission system. However, the length of the piping will vary according to the specific project location. In some cases, it is conceivable that an upgrading plant could be connected to an existing service line on the same property, which would mean that there is no additional piping required.

- 28.4 What was the length, size and estimated and actual costs of the pipeline connections for the Salmon Arm and Abbotsford projects.

**Response:**

The FEU question the relevance of this question for this proceeding and have provided this cost information previously in Appendix J, of the Biomethane Report for the 2012-2013 Revenue Requirements Application. However, the FEU will provide the length and type of pipe details here.

The following are the details related to length and size of the pipeline connections for the Salmon Arm and Catalyst, Abbotsford projects.

**1 Salmon Arm**

**Initial Estimates:**

Length: 1610 meters  
Size: 114mm DP/PE Gas Main

**Actual:**

Length: 676.2 meters  
Size: 114 mm PE

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 99

## 2 Catalyst, Abbotsford

### Initial Estimate:

Length: 580 meters  
Size: 114mm DP/PE Gas Main and abandonment of the existing 580 meters of 60mm DP/PE main.

### Actual

Length: 580 meters  
Size: 114mm PE

28.5 What are the length, size and estimated costs of the pipeline connections for the Kelowna and Annacis Island projects?

### Response:

The FEU respectfully submit that the question is not relevant in the context of this proceeding, but has provided some information anyway.

Neither of these projects has reached the point of a final agreement. When these project agreements have been finalized, the FEU will submit the contractual agreement to the BCUC for approval. Regardless, some preliminary work has been done in order to develop early cost estimates. However, because the agreements have not been finalized, and FEI has not yet completed detailed engineering, these cost estimates provided should be considered preliminary.

### Kelowna

It is likely that the pipeline connections for this project will be done in two steps due to the anticipated change in flow over the life of the project (increasing over time). The final length of pipeline could vary by as much as 1000 m based on the final location of the upgrading and interconnection equipment on the property. For the purpose of answering this IR, the worst case is assumed.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 100

Phase one:

The initial pipeline will connect to an existing main near the south end of the landfill property. The estimated pipeline would be 2000 m of 166 mm DP/PE piping. The estimated cost would be approximately \$200,000.

Phase two:

An additional 2000 m of 166 mm DP/PE piping will be added to connect the increased flow to a more populated area. However, this may not be required as the load in the area of the landfill may increase as residential development continues. The estimated cost of that main in the future should be reasonably close to the first phase plus typical inflationary costs over time.

**Annacis Island**

The preliminary plan for this project is to connect directly to an existing main located in the road right of way directly in front of the project property. The preliminary plan would consist of replacing a small section of 60 mm main (< 50m) with 114 mm main and installing less than 200 m of 114 mm main from the interconnect skid to the existing main in the street for an estimated total cost of \$93,500.

28.6 Please describe how the cost of the interconnecting pipeline is factored into the cost to FEU ratepayers of a biomethane project.

**Response**

The cost of the interconnection facilities is being recovered from all natural gas customers of the utility and is factored into the company's O&M and capital expenditures. In Section 10 of the Biomethane Application, FEI proposed this cost allocation treatment which was accepted in Commission Order No. G-194-10. The reason for this approved proposal was that the interconnection facilities are an asset required in order to make Biomethane available to all customers, and since all customers benefit from having that option, it is fair and reasonable to allocate the costs of the interconnection facilities to them.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 101

- 28.7 Please confirm that, where the FEU do not own the upgrading facilities, it would be fully feasible for the interconnection metering, monitoring and odourizing to be installed where the biomethane is delivered to the FEU System, with all upstream facilities to be owned by others.

**Response:**

The FEU confirm that the described scenario is not only possible, but is in fact the case at our first project at Catalyst Power in Abbotsford. The project partner delivers upgraded Biomethane to FEI's interconnection facilities, which include gas quality monitoring, pressure regulation and odorizing, prior to the Biomethane being delivered to FEI distribution system. Additionally, as discussed in the response to BCUC IR 1.28.1, FEI must retain the ownership and control of interconnecting facilities under all circumstances.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 102

**29.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 3.3.8, p. 67 and Section 4.3.2,  
pp.76-77 Ownership of Upgrading Facilities**

29.1 Based in the analysis in Section 3.3.8, please comment on whether the upgrading of biogas to biomethane is included in the definition of petroleum industry and would consequently be exempt from regulation on that basis.

**Response:**

The definition of "petroleum industry" refers to activities that involve either "petroleum" or "petroleum products". FEI explained the chemical nature of Biomethane at p. 8 of the Biomethane Application, which is included in Appendix D of the Evidence. The definition of "petroleum products" in the *UCA* is as follows:

*"petroleum products" includes gasoline, naphtha, benzene, kerosene, lubricating oils, stove oil, fuel oil, furnace oil, paraffin, aviation fuels, butane, propane and other liquefied petroleum gas and all derivatives of petroleum and all products obtained from petroleum, whether or not blended with or added to other things;*

Biogas and Biomethane are neither petroleum nor petroleum products. As a result, biogas upgrading is not excluded from the application of the *Act* by virtue of the petroleum industry exclusion found in item (d) of the definition of "public utility" in the *Act*. Please see the response to BCUC IR 1.22.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 103

**30.0 Reference: Issue (1) Scope (a); Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.3.3, p. 78**

**Ownership of Upgrading Facilities**

On page 78, FEI states that:

"A second benefit from a flexible ownership structure is that owning and operating upgrading equipment gives FEI greater ability to respond to customer concerns and demands through an already existing distribution service system. FEI has an existing business and service infrastructure in place that can respond quickly to customer concerns and issues in the field."

- 30.1 Please elaborate on the types of customer concerns that could occur and that would be resolved more easily because of FEI's existing business and service infrastructure?

**Response:**

Issues relating to gas supply that enters the FEI distribution system for delivery to customers do not usually involve the end use customer. Supply issues are resolved beforehand by FEI and its various counterparties that the Company contracts with for supply, transportation and storage of gas.

However, issues relating to problems concerning lack of gas delivery or potential leakages at an upgrading facility would be managed by personnel employed or contracted by FEI who are very familiar with the FEI network as well as the upgrading plant. For example, if a customer noticed an odor in the area of an upgrading plant, customers will have confidence that FEI will have clear procedures and processes from existing operating procedures to investigate. On the other hand, an independent operator may not enjoy that same level of customer confidence. Furthermore, customers who may be impacted by the operation of an upgrading plant (those in close proximity) may not know who to contact if there are concerns, and therefore may contact FEI directly. In this case, FEI would need to carry out the extra step of contacting the owner/operator of the upgrade plant, adding time and complication to the resolution of an issue.

- 30.2 Are similar customer concerns and demands created by FEI's other natural gas supply contracts? If so, please describe how they are resolved?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 104

**Response:**

No, the customer concerns to which the FEU referred in relation to the injection of Biomethane into our distribution system will tend to arise where Biomethane projects are in close proximity to our customers, as opposed to the relatively distant and unseen wells, gathering systems and upgrading processes for the existing natural gas market. Please see the response to BCUC IR 1.30.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 105

**31.0 Reference: Issue 1 Scope (a); Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.3.3, pp. 78-79**

**Justification for FEU Owning Upgrading facilities**

- 31.1 FEU state that potential developers find it easier to obtain financing when an experienced operator like FEU is involved in the upgrading process. Please provide any documentation that FEU have of this issue and its relative significance, and in the response distinguish the involvement of FEU as an experienced upgrader of biogas from the value of FEU as purchaser of the biomethane under a long term firm contract.

**Response:**

The FEU do not have any specific documentation to illustrate that potential developers find it easier to obtain financing when an experienced operator like the FEU is involved. Potential developers have expressed this view in discussions with the FEU. Project developers would like to secure financing for their investments such as digesters from financiers when they lack sufficient internal financial resources. The financier's decision is dependent on the viability of the projects and the participation of the FEU, which have a reputation of success in the provision of natural gas service gives, the financiers confidence that the project will succeed. In the absence of such a partnership, the developers advised that they will find it difficult to secure financing.

The FEU have a flexible approach to owning and operating the upgrading facilities. The FEU will own and operate the upgrading facilities but will consider buying Biomethane where a competent supplier is available. As stated in the response to BCUC IR 1.22.3 in the Biomethane Application proceeding, the FEU has outlined specific criteria for making a determination about whether or not a project partner may own and operate the upgrading facilities.

Please see the response to BCUC IR 1.37.1 for a discussion of why the FEU's approach is in the public interest.

- 31.2 FEU also state that some developers may not have enough capital to put in both the raw biogas generator and the upgrader. Please reconcile this concern with the statement on page 79 that the "investment in the upgrading facilities is small compared to the cost of the biogas collection facilities."

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 106

**Response:**

The word "small" was meant in a relative sense. Whereas biogas generation and collection facilities in a given project may cost \$5 million to install, the associated upgrader may be another \$1.5 - \$2 million. The latter numbers are still material to the operator when borrowing capital for a start-up operation.

- 31.3 FEU also represent that developers have concerns about lack of relevant technical experience. Please outline the processes that are involved in typical biogas generators and collection systems, and the technical expertise needed to design and operate them efficiently and properly.

**Response:**

The FEU wish to clarify that the concerns described were regarding lack of relevant technical experience with upgrading processes, and not with owning and operating generators and collection systems, as suggested in this question.

The FEU cannot comment on the process involved in typical biogas generators and collection systems and the technical expertise needed to design and operate them efficiently and properly as it does not have the expertise in this area. The FEU laid out the supply side business model in detail in the Biomethane Application and identified that project partners and not the FEU will own, control and maintain the assets associated with anaerobic digestion or collection of biogas.

- 31.4 Please repeat your response to the previous question for biogas upgrading facilities, addressing both the purification and compression components.

**Response:**

As described in the Biomethane Application (Section 2.3), (also included in Appendix D to the Evidence), raw biogas consists of several gases (contaminants) in addition to methane (for example CO<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>). The raw biogas can be upgraded (purified) by removing the contaminants leaving behind methane (referred to as biomethane) that is injected into FEI's

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 107

distribution system. In section, 2.5 of the Biomethane Application (included in Appendix D to the Evidence), FEI described the two biogas upgrading processes, Water Wash and Pressure Swing Absorption which we will use, including at Salmon Arm and Catalyst in Abbotsford. In each case, compression of the gas stream is integral to the upgrading processes. Each of these processes shows the basic steps in removing contaminants in a step by step fashion. Further, as discussed in Section 2.5, FEI intends to rely on the expertise of the upgrading plant manufacturers to design and build the facilities.

From an operational perspective, as stated in the response to BCUC IR 1.2.2 of the Biomethane Application (included in Appendix D to the Evidence), FEI has expertise in many areas that are closely linked to biogas upgrading. This expertise along with the support of upgrading equipment suppliers, as contractors, will provide sufficient assurance that FEI can successfully manage upgrading of biogas.

- 31.5 Please discuss the benefits of having the same party responsible for both the biogas generation/collection facilities and the upgrading facilities. Please address this issue as it relates to both the design and construction phase, and the ongoing operations phase.

**Response:**

The construction, design and ongoing operations of these facilities must be done harmoniously, and there is a requirement to manage the interface between biogas generation and upgrading facilities from design through operation. However, there is unlikely to be any operational advantages associated with having a single owner/operator as the scope and responsibility between parties can be delineated in a contract early in any project arrangement. It would similarly be necessary to delineate responsibilities contractually if the FEU only owned the interconnection facilities, so there is unlikely to be any material transactional cost difference there either.

- 31.6 Please identify the location, nature and size of all gas upgrading and purification equipment currently owned and operated by FEU.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 108

**Response:**

FEI currently has only one project in Salmon Arm, BC where we are involved in gas upgrading and purification. The project partner is the Columbia Shuswap Regional District ("CSR D"). The CSR D will design, install and operate a landfill gas ("LFG") collection system on the landfill site with a physical address of 4290 20 Ave S, Salmon Arm, BC. FEI is purchasing raw Biogas and FEI will design, install and operate an upgrading plant and receive LFG on the landfill site. FEI will also install connection to the existing distribution system located in the municipal right-of-way and connect to the upgrading facility through a metering, monitoring and odourizing station. The gas and interconnection to the existing distribution system will be located in the municipal road right- of- way. All other interconnection facilities and monitoring equipment will be located at the CSR P project site, downstream of the Biogas upgrading equipment.

The contract length is 15 years and volumes are 20,000- 40,000 GJ per year.

- 31.7 Please identify for 2008 and 2010 the staff and other resources that provided FEU with the technical experience and expertise related to biogas collection, upgrading and monitoring, identifying positions, engineering degrees held, relevant training courses completed, etc.

**Response:**

FEI's business development department has primarily been responsible for leading the technical expertise development related to biogas upgrading and monitoring and integrating the technical expertise acquired from technology suppliers within the company's operations for ongoing management. FEI plans to build up its biogas specific experience over time. Therefore, the Company is intentionally proceeding with a small circle of people to begin with in order to minimize costs.

The relevant education, training and experience of the business development team who have worked on our biogas initiative include:

- Bachelor of Science in Agriculture with a Major in Resource Management, combined with a Masters of Business Administration,
- Bachelor of Business Administration,
- Bachelor of Arts and an MBA in Strategic Management,



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 109

- Professional engineer with a degree in Engineering Physics, Mechanical and MBA in Management of Technology.

Relevant background and training include, but not limited to:

- past experience in the design and testing of fuel cell systems – including testing of natural gas to hydrogen fuel processing,
- tours of functioning biogas facilities which examined a range of digester types, biogas collection and upgrading systems,
- attendance at multiple biogas and bioenergy workshops and conferences,
- in-house biogas supplier training, and
- participation in biogas feasibility studies.

FEI's expertise in natural gas distribution systems are similar in function and purpose to biogas upgrading processes and technology (i.e. moving methane from point A to point B using pressurization and piping) and also our skills and experience in natural gas quality monitoring and gas processing (i.e. liquefaction and gasification) are all relevant to biomethane. FEI has also acquired technical expertise in areas such as safety, operation and maintenance of upgrading facilities from our association with biogas upgrade equipment suppliers Xebec (upgrade provider for Salmon Arm) and Flotech (upgrade supplier for Catalyst). Raw biogas collection is not one of the activities we intend to undertake.

- 31.8 Please provide the annual cost of this expertise (in terms of salary, benefits, overhead and other charges) for 2008 and 2010.

**Response:**

As discussed in the response to Biomethane Application BCUC IR 1.59.1, "all of the costs to develop the Program have been expensed by FEI as part of its marketing activities and budgets" (See also the responses to Biomethane Application BCUC IRs 1.19.1, 1.19.2, 1.57.1 and 1.63.2). There has not been specific tracking of employee time of these team members related to technical experience or expertise with respect to biogas upgrading and monitoring. Note: FEI has not proposed to engage in biogas collection.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 110

The staff costs provided in the response to Biomethane Application BCUC IR 1.59.1 identified that there have been approximately two people working part time, the equivalent of one full time person, in this project over the past couple of years. At the start of the process this was more dedicated to the supply model and then over the last year resources have been brought in to look at the market and prepare the Biomethane Application. In addition, there was some support from other departments who were consulted on the business model – approximately 7 days of effort. It is difficult to estimate the total cost including overhead but a very rough estimate would be \$250,000 up to the point of submitting the Biomethane Application in June 2010. Costs have been appropriately included in the utility's total cost of service as agreed to in the Negotiated Settlement Agreement for the TGI 2010-2011 Revenue Requirement and Rates Application. This treatment is also consistent with the historical treatment of business development O&M costs for FEI.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 111

### 32.0 Reference: Issue 1 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 4.3.3, pp. 78-79

#### Justification for FEU Owning Upgrading facilities

- 32.1 FEU state several areas where they believe that benefits will result from FEU ownership of the upgrading facilities, but do not identify a requirement to own these facilities based on the needs and convenience of the public. Why do FEU need to own the upgrading facilities? For example, is there a real risk that sufficient biomethane will not be available in British Columbia? Will the rates charged other ratepayers be lower if FEU own the upgrading facilities?

#### Response:

Please see the response to BCUC IR 1.37.1.

- 32.2 FEU state that it is important that the upgrading process is controlled by an entity that can ensure that the biomethane produced meets specifications. Do FEU balance their biomethane purchases and deliveries on an hourly, daily, monthly, annual or some other basis?

#### Response:

The FEU employ a combination of daily, monthly and annual monitoring and balancing mechanisms. The Biomethane supply purchased from Biomethane providers is accounted for on a daily basis and the amounts owing for Biomethane purchases are reconciled and paid monthly. The annual forecast is updated monthly to double check the projected available supply with demand to ensure there is enough supply to meet the demand. The Biogas program manager manages the supply and demand on an ongoing basis and can take action to cap enrolments in the event of a permanent shortfall of supply.

Biomethane purchases and deliveries will be trued up at the end of the year and any shortfall in Biomethane supply to meet demand will need to be accounted for with the purchase of carbon offsets in order to maintain the GHG integrity of the program.

The actual Biomethane molecules are received into the FEI gas distribution system at the Biomethane receipt points and are physically consumed by customers downstream of those receipt points. The notional delivery of Biomethane (biomethane that is sold to customers) that

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 112

displaces natural gas supply is balanced at the end of the year through the Biomethane Variance Account.

The FEU believe that reliability of supply will be enhanced if we own the upgrading assets and use our expertise to operate them. Based on current experience, the FEU believe that frequent interruptions in flow due to gas quality would result in higher service-related costs (such as call-outs of field operations staff) necessary to ensure biomethane quality is sufficient. Because the FEU also operate the natural gas distribution system we have the greatest motivation to operate the upgrading equipment to ensure a consistent flow and avoid delivery interruptions from an upgrading plant that might otherwise increase operating costs.

- 32.3 While biomethane makes up only a very small portion of FEU's gas supply and FEU balances biomethane receipts and deliveries on a monthly or less frequent basis, what difference does it make to FEU customers if biomethane deliveries are shut in because the gas is off-spec? What problems would these shut-ins cause?

**Response:**

From the perspective of the FEU customers that purchase natural gas, there is no risk of a shortfall in supply or a disruption in service in the event of a shut-in due to Biomethane that does not meet the specifications. The customers would be served with natural gas, and the Companies may have to buy offsets to meet the customer's commitment to a GHG neutral product that they have purchased. However, the expectation of these customers is that they are getting a renewable energy product, and not carbon offsets. The market research conducted indicates that customers see a distinction between these products, and that there is much greater support for a Biomethane product, not offsets

Particularly in the early years of the program, when there are a limited number of supply projects expected, disruptions to supply will create difficulty in balancing supply and demand. This is one of the primary reasons why it is important for the FEU to own and operate the upgrading equipment. The FEU believe that controlling the upgrading process will provide improved control over the quality of the Biomethane produced and increase reliability of supply and therefore benefit customers and ensure the success of the Biomethane program.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 113

**33.0 Reference: Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.3.6, p. 80**

**Existing Utilities versus Separate Regulated Entity**

The FEU evidence states that:

"In circumstances where FortisBC is to own and operate upgrading equipment, the upgrading plant should be held by the existing utilities rather than in a separate regulated entity created for that purpose and owned within the FortisBC group of companies."

- 33.1 In this circumstance, how will FEU ensure that the delivered and upgraded total cost of market quality biomethane gas is below the maximum price?

**Response:**

In situations where the FEU own and operate the upgrader equipment, the price of raw biogas is controlled by the contract. The final price of Biomethane will include the cost of service related to installing, operating and maintaining the upgrading equipment. Therefore, the final price of Biomethane may vary according to actual costs of the upgrading equipment. In order to reduce the risk of reaching the maximum total cost of Biomethane, FEI will build contingencies into budgetary pricing as well as the final calculated cost of Biomethane.

Under circumstances where FEI buys the pipeline ready Biomethane from the supplier, the maximum price to be paid will be controlled by the contract terms and conditions and FEI will work diligently to ensure that the price is below the maximum price as approved by the Commission. Any contract would be submitted and require approval by the Commission.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 114

**34.0 Reference: Issue 1 Scope (a); Issue 3 Scope (d)**

**Exhibit B-2, Evidence of the FEU, Section 4.3.4, p. 80**

**Risk of Stranded Assets**

On page 80, FEI states that:

"In addition, it is unlikely that stranded assets will result from discontinuance of Biogas supply. FEU's long-term raw Biogas supply contracts with the partners guarantee long-term supply of Biogas and a reasonable period over which to recover the equipment costs. In the event of discontinuance of raw biogas under FEI's contracts with partners, FEI's contracts will ensure that it has the right to enter the site and physically recover its facilities after a specified period of non-performance. The recovered equipment can then be used for other projects. The contracts can provide FEI with a termination payment to help offset the estimated value of the stranded assets and moving costs."

34.1 Are these upgrading facilities skid mounted and easily portable?

**Response:**

Currently, FEI has only one project in CSR D where it owns the upgrading equipment. In this project, FEI is confident that the design of the upgrade plant will allow for redeployment and minimize the risk of stranded assets. The equipment is mounted on several skids for easier transportation by truck on British Columbia highways and roads. This was intentionally incorporated into the design to ensure that equipment could be disassembled and moved easily in the unlikely event that this is required.

34.2 Are the contaminants similar between sites such as Salmon Arm and Catalyst?

**Response:**

In general, the contaminants are considered similar. The largest proportion of gas which must be removed in the upgrading process is CO<sub>2</sub>. There are also other common contaminants such as H<sub>2</sub>S.

However, the proportion of the contaminants between Salmon Arm and Catalyst are different. For example, because Salmon Arm is a landfill, there are additional contaminants such as N<sub>2</sub>,

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 115

O<sub>2</sub>, siloxanes and VOCs which must be removed and therefore the upgrade equipment is engineered and built to remove these additional gases.

All of the interconnect equipment is engineered to be the same and it would cover a large range of flows, therefore, FEI considers the interconnect equipment fully interchangeable.

In regard to upgrading equipment, it would be relatively easy to relocate equipment which strips more contaminants to a site that has less contaminant (such as moving from a landfill to an anaerobic digester) assuming that the flows are relatively similar. FEI recognizes that there is a cost to relocating upgrading equipment, but a significant portion of the asset value is retained.

34.3 Will FEI be accountable for any stranded costs that may occur? Why?

**Response:**

FEI has outlined throughout the Biomethane Application, but particularly in Section 11, the steps FEI has taken to mitigate the potential risk of stranded costs. The FEU do not foresee any stranded risk at this point in time as we have well over 1000 customers subscribed for the Renewable Natural Gas program and envision that this market will continue to develop overtime. In the unlikely event that facilities are stranded and cannot be redeployed, the prudently incurred stranded costs should be borne by customers consistent with regulatory principles.

34.4 How reliable is the volumetric supply of landfill gas over time and do the impurities change?

**Response:**

While landfill projects are largely similar to each other in relation to other types of projects such as sewage treatment plants and anaerobic digesters, each landfill has its own subtle impurity uniqueness' due to physical design, management practices and, most importantly, types of waste disposed of within. This would imply that the impurities may change over the life of the landfill. However, as a landfill grows, more wells are added over time. Gas from well-to-well can vary but due to the increased volume, there is a bit of an averaging effect which can help to keep the gas composition more stable. FEI recognizes that if landfill gas changes over time it

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 116

may add to the challenge of purifying gas. FEI will therefore work with landfill operators to actively manage the collection system to minimize the variation in gas composition wherever possible.

Volumetric supply tends to follow a curve upwards over time, with supply maximizing at the time that a landfill is filled and closed and then tapering off over multiple decades.

- 34.5 Would FEU ever contract out the operation of its biomethane upgrading facilities? If so, under what circumstances?

**Response:**

Yes. The FEU may contract out certain operations and maintenance functions according to the availability of skilled staff in a particular service area responsible for any upgrade equipment. Over time, the FEU expect to build expertise and knowledge across the company in the operation of these plants as the number of these plants increases.

In fact, the FEU intend to contract out the operations of its Biomethane upgrading facilities for the Salmon Arm project for the first year of operation to the equipment manufacturer. The FEU do have existing competence and strong skills for upgrade plant operation and maintenance within the organization. However, for the initial year, the FEU intends to outsource (contract out) the operation and maintenance of the equipment to the manufacturer. This will allow sufficient time to familiarize our internal staff with the operation of the new equipment.

This is a similar approach that the FEU have taken in the past with more complex equipment such as compressor stations. Ultimately, the FEU's existing expertise will allow for an efficient transition from manufacturer maintenance to full FEU management and control.

Regardless of who is responsible for operations, the FEU will adhere to manufacturer's recommended operating and maintenance procedures to ensure safe and reliable operation.

Please also refer to the response to BCUC IR 1.31.7.

- 34.6 Will FEI require all biomethane contracts to have termination payments to help offset stranded assets and moving costs? Please explain.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 117

**Response:**

Yes, whenever possible FEI would require all Biomethane contracts to have termination payments to help offset stranded assets and moving costs. In fact, both of the existing approved contracts (CSR and Catalyst) have a provision for termination payments to help offset stranded asset costs in the unlikely event of a premature termination of the project.

In some cases, it may not be possible to structure the contract to include a direct cash payment. In these cases, FEI will add other contract clauses to discourage contract partners from terminating the contract.

Further, in all cases, FEI will retain the right to enter the site and physically recover its facilities after a specified period of non-performance. The majority of these facilities, including metering, gas sampling and analyzing, and propane and odorant injection equipment could then be used in other projects.

- 34.7 What is the appropriate portion that the termination payment should cover when compared against the estimated value of the stranded assets and moving costs? Please elaborate.

**Response:**

It's very difficult to state unequivocally the proportion that termination payment should cover when compared against the estimated value of the stranded costs. This is part of contract negotiations with individual project developers. In fact, project developers may also have significant risk in being unable to utilize capital invested in a given project. Therefore, they have an incentive to avoid a project move, even *without* a termination payment as a dis-incentive. For example, in the case of the Salmon Arm Landfill, the CSR has invested a significant amount of capital in a non-mandatory capture and collection system in order to partner with FEU. Therefore, CSR already has a vested interest in the long-term success of the project in order to get the best possible use of their investment.

That said, the FEU will typically seek to recover all costs that cannot be reasonably applied to an alternate location. For example, buried pipe costs will not be transferrable to a new project but the cost of interconnection equipment (mounted on a skid) can be moved to a new location.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 118

### 35.0 Reference: Issue 2 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 4.3.2, p. 77 and Table 4-1

#### Upgrading Assets as Regulated Services

On page 77 the FEU state that:

"By analogy, Independent Power Producers ("IPPs") that generate and sell electricity only to BC Hydro meet the definition of public utility, and require exemption orders from the Lieutenant Governor in Council to remove them from Commission regulation under Part 3 of the *UCA*."

- 35.1 When new developments have occurred such as gas competition in 1985 and IPP sales to electric utilities, the *UCA* has been amended to facilitate those new initiatives. Should this Inquiry consider appropriate changes to the *UCA* to deregulate certain thermal and biomethane services? Why?

#### **Response:**

FEI believes that there are compelling reasons for regulation of Biomethane Service and Thermal Energy Services.

#### **Biomethane Service**

The provision of Biomethane to customers as is being done by FEI currently is akin to the provision of natural gas or electricity to the public. It should be regulated.

The rationale for regulation of biogas upgrading assets was provided in the response to BCUC IR 1.1.1 in the Biomethane Application proceeding, which is found at Appendix D, Tab 4, of the Evidence. When owned by the FEU, these facilities are closely integrated with the remainder of the system. The FEU's ownership of upgrading facilities is akin to BC Hydro's ownership and operation of generation assets.

The FEU believe that there may be a sound rationale for providing an exemption for third-party owners of upgrading facilities, similar to IPPs that sell to BC Hydro being exempt from the operation of Part 3 of the *UCA* by regulation despite being "public utilities". The rationale for an exemption for third-party upgraders is not based on the existence of a competitive market (only a small number of Biomethane supply projects are operating or are under active development at this point in time, and it will be some time before the Biomethane market is sufficiently developed into a competitive market). Rather, the rationale is that the sole purchaser of the Biomethane, the FEU, is a sophisticated commercial party that is itself subject to regulation. The supply contract is subject to review and acceptance by the Commission regardless of

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 119

whether the third-party upgrader is subject to, or exempt from, regulation under Part 3. This mirrors the situation with IPPs.

### **Thermal Energy Service**

The FEU believe that the reasons for regulating thermal energy service are similar to those that exist for other energy forms such as natural gas or electricity. Electricity and natural gas utilities do not have monopoly power over a consumer's choice of an energy source for thermal energy needs before the equipment is installed. Thermal Energy Service is really another option in the array of possibilities for meeting consumers' thermal energy demands. Once a TES system is installed and operating, however, the TES provider has a similar degree of monopoly power over its customer as a gas or electric utility has over its customers. Customers can change their heating systems if they wish to do so but there is generally a significant financial barrier associated with making such a switch. TES systems are long-lived assets and opportunities may exist for thermal energy sellers to extract inordinate (i.e. "monopoly") rents from buyers that are effectively captive.

On the basis of these reasons, the FEU do not believe that the *Act* should be amended to deregulate these services.

See also section 6.4.1 of the Evidence.

- 35.2 Would it not be appropriate to consider exemptions for upgrading assets similar to the IPP exemption? Please explain your rationale.

#### **Response:**

Please refer to the responses to BCUC IR 1.22.1 and 1.35.1.

- 35.3 Has FEI considered if any amendments to *UCA* s. 71 would be necessary or desirable to support the development of biomethane gas supply? Should there be separate "Rules" for biomethane supply? If so, please explain the preferred changes.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 120

**Response:**

The FEU consider that section 71, as written, is sufficient to support the development of Biomethane supply. As described on page 84 of the Evidence, the FEU believe that Biomethane contracts should be reviewed through a streamlined process; Section 71 already confers discretion to the Commission to employ such a process. Refer to the response to BCUC IR 1.35.1 for further discussion regarding potential amendments to the *UCA*.

With respect to the question of separate rules for Biomethane supply, FEI proposed guiding principles for the development of Biomethane supply in section 8.4.1 of its Biomethane Application (also included in Appendix D of the Evidence). The Biomethane Decision set out parameters for the pilot. FEI submits that the post-implementation review directed in the Biomethane Decision is an appropriate time to revisit this issue.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 121

**36.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, section 4.3.3, p. 79**

**Benefits Derived from Ownership**

On page 79, the FEU state that:

"Fourth, FEI can take advantage of existing resources by absorbing some of the additional work associated with a biogas plant without requiring additional staff, which will tend to improve the cost effectiveness of supply once a base level of resources is established. For example, in Salmon Arm, FEI intends to use existing staff to manage routine activities such as regular operating inspections, whereas a developer would need to hire staff specifically for this activity."

- 36.1 Does FEI intend to charge only the incremental cost of its existing resources, or will there be a fully loaded cost allocation?

**Response:**

FEI intends to charge only the incremental cost of its existing resources in the biogas commodity rate. It would be inappropriate to allocate a fully loaded cost allocation to that rate as Biomethane customers continue to pay delivery rates in which those costs are already embedded.

- 36.2 Will the costing methods of FEI undercut the costs of other potential service operators and potentially deter the development of a competitive market?

**Response:**

The Commission's ability to account for competitive considerations is limited to the impact competition has on customers.

In terms of the "costing method" employed, the amount recovered from customers in respect of Biomethane upgrading reflects the cost of service associated with that facility. FEI believes that the ability of the FEU to charge marginal costs is an immediate benefit to customers if it turns out that the service can be provided for less than another provider, whereas the potential impact that flowing through cost savings might have on possible competitors is speculative at this time. There is only one operating plant in British Columbia. Even from a long term perspective, customers' interest in competition will depend on the extent to which competition can drive down



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 122

costs. The FEU believe that its continued involvement in providing a cost of service based upgrading provides an important option in the development of a market in British Columbia and is in the long term interests of customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 123

### **37.0 Reference: Issue 2 Scope (a)**

#### **Exhibit B-2, Evidence of FEU, Section 4.3.6, p. 81**

#### **Flexibility to Own and Operate Upgrading Equipment**

On page 81, the FEU evidence states that:

"It is in the public interest that FEI owns and operates biogas upgrading equipment where commercial circumstances warrant; demonstrating flexibility in this regard will best ensure that Biomethane projects are brought forward and not unnecessarily hindered by financial and technical obstacles. "

- 37.1 Please expand on why, for future projects, it is in the public interest that FEI own and operate biogas upgrading equipment "where commercial circumstances warrant".

#### **Response:**

The FEU have discussed the financial and technical obstacles that could arise if biogas upgrading equipment is not owned and operated by the FEU in the Biomethane Application and specifically in BCUC IR's 1.2.2, 1.22.2 and 1.23.1 in that regulatory process. These reasons are reiterated below.

The FEU believe that owning and operating biogas upgrading plants is the best way to ensure that Biomethane is produced reliably. The FEU have a strong background in equipment operation and maintenance similar to biogas upgrading so it is a natural extension of the utility. The FEU believe it is appropriate, however, for there to be a flexible business model to allow for the various scenarios that may arise with each project partner. These scenarios are discussed below.

#### **Importance of FEI owning upgrading equipment**

The FEU have taken the approach of considering the needs of potential partners when discussing projects. In some circumstances, project partners have expressed a desire for the FEU to own the upgrading equipment for their own business reasons. Two primary reasons for the FEU involvement have surfaced.

The first reason is financial. Developers have indicated that it is typically easier to obtain financing when experienced, reputable and reliable partners like the FEU are involved in the upgrading. Further, partners may not have access to enough capital to put both a raw biogas generating facility (such as a digester) and an upgrading plant in place. In the case of a partner like a municipality, the need to ask for less capital from taxpayers is seen as attractive.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 124

The second reason is related to expertise. Developers have indicated that a partner with experience in gas processing and gas technology is attractive.

As discussed in Section 8.2 of the Biomethane Application, FEI believes that controlling the upgrading process will provide improved control over the quality of the Biomethane produced and increase reliability of supply and therefore benefit customers and ensure the success of the biogas program.

This is important for several reasons.

1. FEI is the face of the Biomethane program to the customer. By owning upgrading equipment, FEI has the ability to better respond to customer concerns and demand. The feedback path is more direct and therefore more effective in getting positive results more quickly.
2. FEI is motivated to provide the best quality gas possible. In some cases, an independent operator may choose to reduce operating costs associated with upgrading by sacrificing maintenance which could result in lower quality gas or reduced reliability. Or, an independent operator may choose to operate so as to meet only the minimum required gas specification. FEI can take advantage of existing resources by absorbing some of the additional work associated with a biogas plant without requiring additional staff. This approach to resource maximization tends to improve cost effectiveness of supply.
3. FEI's service organization is in place. FEI customers will benefit from an existing business and service infrastructure that can respond quickly to customer concerns and issues in the field. A potentially quicker response time will improve the total amount of production time over the year and result in higher customer satisfaction. This is important as these production facilities are potentially located closer to the population centers as compared to traditional natural gas production areas.
4. FEI believes that two ownership models increases flexibility in developing projects which vary from site to site. Limiting consideration to only one model could restrict supply development and potentially expose FEI to the risk of increased supply costs and therefore a higher price for the customer.

In light of the importance of securing a reliable supply of quality Biomethane, FEI believes that it is important for FEI to retain control over upgrading facilities unless it can be assured that another party is capable of delivering the reliable supply on a cost effective basis.

### **FEI expertise and competence**

FEI recognizes that at the time of the original Biomethane Application filing there were no operating biogas upgrading plants in the province and therefore no operators with specific

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 125

experience in upgrading. FEI can, however, fill this role because it has expertise in many areas closely linked to biogas upgrading processes and technology. FEI also has experience in operating the Tilbury LNG plant which is a complex natural gas processing plant.

The biogas upgrading process is described in more detail in the Biomethane Application (Section 2.5), however, a brief, high level description is helpful to draw comparisons to the natural gas industry. Raw biogas is composed primarily of flammable methane, carbon dioxide and other contaminant gases. The upgrading process is a straightforward process. Raw biogas is flowed through a series of vessels at a moderate pressure (slightly higher than FEI distribution pressure) which are used to remove contaminants from raw biogas. Many of the components that make up an upgrading plant are the same as those FEI uses in its system every day. Specifically, FEI has a long history of expertise in the following areas:

1. Flammable gas safety and management. Raw biogas and biomethane would be managed in the same way as natural gas. FEI already has the expertise and equipment required to ensure safe operation and maintenance of biogas upgrade equipment.
2. Gas composition and quality monitoring. FEI regularly monitors gas composition at multiple supply points across the existing system to ensure accurate billing and measurement for customers.
3. Leak management. FEI already has a service organization trained to respond to leak concerns from customers, to find leaks and to fix leaks when required.
4. Component Familiarity. Pressure vessels and ancillary equipment operation such as compressors, valves, regulators, control systems and safety systems are the same as used for natural gas. Biogas upgrading equipment will be designed and built using essentially the same basic components that FEI uses across its system in regulating stations, pressure let down stations, compressor stations and even at homes and businesses. The equipment used on a biogas upgrading plant will be designed for the same life, safety, durability and performance as used on FEI system.
5. Gas processing. FEI has proven to be a competent and safe operator of the Tilbury LNG plant. The plant includes components which remove contaminants and operate at process conditions well outside of typical distribution system conditions.

The operation and maintenance of an upgrading plant is therefore complementary to existing FEI assets. This is demonstrated in the design, operation and maintenance of existing facilities and assets across the province.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 126

In terms of technical reliability of the upgrading equipment owned by FEI, FEI plans to rely upon the expertise of equipment manufacturers to provide appropriate design redundancy to ensure reliability requirements set out in the individual contracts.

Technical redundancy of upgrade equipment alone will not ensure reliability of supply. Rather, a properly supported operating and maintenance plan and policies along with links to customer service will ultimately provide the best reliability of supply. FEI's discussion of reliability in the context of the ownership of upgrading also addresses the relative advantages of FEI owning and operating facilities as opposed to a partner. These concerns relate to the ability and willingness of the potential partner to operate the facilities in a manner that meets FEI's requirements so that FEI does not have to disrupt the flow of Biomethane on to the FEI system.

- 37.2 Please identify the financial and technical obstacles that could arise if biogas upgrading equipment is not owned and operated by FEI.

**Response:**

Please see the response to BCUC IR 1.37.1.

- 37.3 Please identify any elements associated with FEI owning and operating biogas upgrading equipment that might run counter to the public interest. How could such elements be managed in a situation where FEI owns and operates biogas upgrading equipment?

**Response:**

FEI does not believe there are any elements associated with it owning and operating biogas upgrading equipment that might run counter to public interest. See the response to BCUC IR 1.37.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 127

FEU's evidence goes on to say that:

"Although the interconnection and monitoring facilities owned by FEI ensures that the Biomethane injected into the system is safe and of the necessary quality to protect the integrity of FEI's distribution system, the upgrading process determines how much safe and to-specification Biomethane reaches the point of interconnection."

- 37.4 In its supply contracts with natural gas suppliers does FEI have clauses and penalties that ensure that the quantity purchased by FEI is delivered to FEI in the quantity and at the time specified?

**Response:**

Yes, gas supply contracts with suppliers generally contain provisions for compensation for non-performance of quantity and timing of gas delivery.

- 37.5 If, as FEU state, the interconnection and monitoring facilities owned by FEI ensure that the biomethane injected into the system is safe and of the necessary quality, could FEI ensure that the quantity and timing of delivery of bio-methane to its system be ensured through contractual measures? If not, why not?

**Response:**

In regards to the potential for contractual measures to ensure delivery of Biomethane to the system, it must be pointed out that no contract, nor paperwork of any kind, can absolutely guarantee that any physical event will actually occur. A contract between FEI and a project partner can only define that partner's guarantee of physical delivery and spell out what penalties apply in the event of default. The best way to ensure the highest likelihood of actual physical delivery of Biomethane to our system is to ensure that the projects are owned and operated in such a manner as to ensure the safe, reliable and economic delivery of Biomethane to our system, which FEI believes requires us to be available as a potential owner of the upgrading equipment. It is also worth noting that the potential safety concerns of Biomethane being directly injected into our distribution system, where it is then delivered directly to customers, are higher than in settings where gas is injected into upstream transmission assets and tested several more times before being delivered to customers.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 128

Also on page 81 FEU state that:

"In cases where FortisBC is to be involved in upgrading, the upgrading facilities should be held in the FEU, thus avoiding the need to establish and maintain other small utilities for that purpose."

- 37.6 Please elaborate on the corporate structure that FEU wish to avoid if they were to establish and maintain other small utilities for upgrading biogas. Are other corporate structures possible that would entail neither holding the upgrading facilities in FEU nor establishing and maintaining multiple small utilities?

**Response:**

Another possible corporate structure would be to have an entity to hold all upgrading assets from multiple upgrading facilities. We believe that this is inefficient as well. Please see the response to BCUC IR 1.24.1 for further discussion on this point.

The intention of the FEU's referenced statement was that we believe that, if the assets must be owned by a regulated entity, and exist for the service of our customers, it is most appropriate to hold them within the corporate structure we currently have in place. In other words, the assets would not be aligned with the customers which they exist to serve. The model being proposed by the Companies is consistent with the electric model in place for BC Hydro and FortisBC Inc., whereby each utility holds generation and distribution in the same entity.

This also provides regulatory and financial efficiency and is therefore in the best interests of our customers and stakeholders. Transactional costs associated with maintaining separate corporate structures, regulating them, and developing a separate cost of capital for the entity, all get passed along to customers. Costs would include increased overhead, administration and regulatory review costs, among others.

Efficiencies can also be gained by taking advantage of skills and competencies that already exist within the utility if the assets are owned and operated by the FEU.

Finally, the capital investment may be such that it is not worth setting up a new company to hold the assets, and therefore the project may not get developed.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 129

- 37.7 If one accepts that upgrading facilities, for example, are public utilities under the *UCA*, are there any factors that dictate that upgrading facilities must form part of the same public utility as those of the natural gas distribution utility?

**Response:**

The FEU believe that the greatest factors dictating that upgrading facilities must form part of the same public utility as those of the natural gas distribution utility are those of regulatory and financial efficiency, in the best interests of all of our customers. Please see the responses to BCUC IRs 1.24.1 and 1.37.6.

- 37.8 What are the costs or problems and the benefits associated with maintaining a separate utility outside of the existing FEU to establish, hold and maintain upgrading facilities?

**Response:**

Please refer to the responses to BCUC IRs 1.24.1 and 1.37.6.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 130

**38.0 Reference: Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.3.5, p. 80 and Appendix H-1,  
BCUC December 14, 2010 Terasen Gas Biomethane Decision, p. 39**

**Transfer Pricing Policy**

On page 80 the FEU state that:

"...the FEU have outlined why they believe that owning and operating upgrading equipment is a regulated activity, and that there is a sound rationale for retaining flexibility in the ownership model employed for the upgrading plant. In circumstances where FortisBC is to own and operate upgrading equipment, the upgrading plant should be held by the existing utilities rather than in a separate regulated entity created for that purpose and owned within the FortisBC group of companies." FEI suggests two reasons support holding an upgrading plant within the existing utilities: the costs of transfer pricing between the two entities as well as the costs of setting-up and maintaining a new company, and the transfer pricing policy addresses the pricing of resources and services provided by FEI to non-regulated businesses but not to transactions between regulated utilities."

- 38.1 Please provide copies of the transfer pricing policy or policies currently in use by the FEU.

**Response:**

Please see Attachment 38.1 for a copy of FEI's Transfer Pricing Policy.

- 38.2 Is there any reason why the transfer pricing policy could not be amended to include transactions between separate regulated utilities? If so, please provide the reasons.

**Response:**

No, however, the FEU has Shared Services Agreements that deal with transactions between separate regulated entities, such as that of FEI with FEVI and FEW. As discussed in the response to BCUC IR 1.24.1, going forward, the FEU believe that the Shared Services Agreement approach will continue to be an effective means of allocating costs between separate regulated entities/activities, serving the best interest of customers. Today, no costs

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 131

are being allocated to Biomethane so there is no question around the allocation methodology to be used.

On page 39 of the BCUC's December 14, 2010 Terasen Gas Biomethane Decision, the Commission Panel directed as follows:

"The use of a separate entity, owned by Terasen, will maintain the advantages Terasen's cites in terms of its reputation, experience and expertise. **Accordingly, the Commission Panel directs that Terasen's costs of the upgrading project be segregated so they may be compared with costs of other potential upgrading operations by other industry participants in the future. The Commission Panel further directs that the upgrading business be kept sufficiently distinct so as to be severable, should the Commission determine that this business ought to be conducted through a separate entity in the future.**" [bold in original]

- 38.3 The Commission directed that the upgrading business be kept sufficiently distinct so as to be severable. Are the FEU applying a transfer pricing policy to transactions related to the upgrading business, and if so, which transfer pricing policy is being used? If not, why?

**Response:**

The FEU always maintain adherence to our Transfer Pricing Policy, but it is not a necessary tool in this case to ensure adherence to the Commission's directive. The Transfer Pricing Policy addresses the pricing of resources and services by the FEU to non-regulated businesses and is intended to apply to transactions between regulated utilities and non-regulated affiliates. Since the FEU is to own and operate the upgrading facilities and since the upgrading facilities are held by the existing regulated utilities it is not necessary to use a Transfer Pricing Policy.

All costs associated with the construction of the biogas upgrading project are capitalized within it, so they can be readily identified through the asset tracking tools already in place. Ongoing operation and maintenance costs associated with biogas upgrading will be charged to the Biomethane Variance Account; therefore they are also readily identified and severable from other activities.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 132

- 38.4 How can the costs of upgrading projects be compared on an equal footing with the costs of other existing or potential upgrading operations by other industry participants without an appropriate framework such as a transfer pricing policy?

**Response:**

The FEU are uncertain as to the intention of the question, but believe it is important to highlight that we have mechanisms in place to ensure that our costs are tracked transparently. The Transfer Pricing Policy applies a value to services provided from a regulated to a non-regulated affiliate. These services may be accounting, engineering expertise, marketing etc. The upgrading equipment will be owned and operated by the FEU and not a non-regulated affiliate hence the implementation of transfer pricing is not necessary.

The upgrader facility is a capital investment in equipment and an evaluation depends on the amount of capital investment, performance effectiveness, length of service, reliability and throughput capacity of this particular piece of equipment. There are many factors that will have to be identified for the evaluation of equipment. This makes it very difficult, if not impossible, to compare in this setting with the costs of other potential industry participants with upgrading operations.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 133

### 39.0 Reference: Issue 2 Scope (c)

#### Exhibit B-2, Evidence of FEU, Section 4.4, pp. 81-82

#### Practice in Other Jurisdictions

- 39.1 Please identify all known jurisdictions in North America where the facilities to upgrade raw biogas to pipeline quality biomethane are owned and operated by the public utility that operates the transmission and distribution system that the biomethane is delivered into.

#### **Response:**

This response covers BCUC IRs 1.39.1 and 1.39.2.

There are few cases in North America where biogas is upgraded to biomethane and injected into the natural gas grid. Most of the biogas projects in North America are in the United States where the regulated electric utilities are required to procure a certain percentage of their electricity from renewable resources such as biogas. To date, direct injection of biomethane into the natural gas system has been limited to a small number of projects mainly in the United States. There seems to be an emerging movement towards the production of biomethane to pipeline quality, for direct use, in both US and Canada.

#### United States

In the US, a very limited amount of biogas is upgraded to natural gas quality<sup>18</sup>, despite the participation of more than 500 landfills across the country in the Environmental Protection Agency program that helps landfill owners and operators to recover methane from landfills for use as an energy source<sup>19</sup>. The high returns from the feed in tariff programs, meant to encourage the production of electricity from renewable energy sources, and Federal and State incentives such as grants and loans have led biogas producers to focus on the production of biogas to generate electricity. Biogas can be used to generate electricity without being upgraded to biomethane. There are efforts by utilities, farmers, municipalities, and landfill owners and operators to develop and upgrade biogas to biomethane for direct use or generation of electricity. Generally the biogas producers do not have the necessary technological experience to own and operate upgrading and interconnection facilities. Some utilities are finding it appropriate to use their experience to own and operate the upgrade and interconnection equipment to enhance the development of the industry and/or to ensure safe and reliable supply of biomethane.

<sup>18</sup> <http://www.energimyndigheten.se/Global/Engelska/News/biogas.pdf>

<sup>19</sup> <http://www.post-gazette.com/pg/10112/1052403-115.stm#ixzz1ZrBUlgOI>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 134

Southern California Gas, Duke Energy and Michigan Gas Utilities are examples of public utilities whose business model entails owning and operating the upgrading and/ or interconnecting facilities. These companies' biogas activities are described below.

First, Southern California Gas ("SoCal Gas") is committed to own and operate the biogas collection facilities as well as the upgrading and interconnection facilities to enhance the production of pipeline quality biogas in its service areas in California for direct use and/or generation of electricity. In November 2010, Southern California sought approval from the California Public Utilities Commission to enable the establishment of products and services relating to the production and conditioning of biogas<sup>20</sup>.

The proposal, which is still being considered by the Commission, stipulates that SoCal Gas will provide biogas production service as a solution to encourage owners of organic matter to produce biogas. This means SoCalGas will design, install, own, operate, and maintain the biogas production facility (digester) on or adjacent to the customer's premises and charge the facility owner a "biogas production facility service fee." SoCalGas will not own the source of biogas such as landfill and feedstock nor will it own the biogas/biomethane.

In addition, Southern California Gas will install, own, operate, and maintain the biogas conditioning (upgrade) systems on, or adjacent to, the customer's premises. SoCal Gas will enter into long term service agreements with biogas producers for the production and upgrade of biogas. The biogas producers will choose to inject the biomethane into SoCal Gas distribution network and will choose its customers or use it on site for electricity generation or heating.

SoCal Gas believes that its proposed business model will create benefits to developers and customers as it provides turnkey options to their organic matter and/or biogas<sup>21</sup>. The turnkey options will eliminate the market barriers such as high upfront capital requirements for the investments, operating and maintenance costs and gas quality risk. Many utilities are reluctant to let biomethane into their grid and have put very strict requirements on the quality of the biogas they accept and SoCal Gas believes that its investment in upgrade facilities will provide a solution to the biomethane producers. SoCal Gas believes that its proposal to be responsible for the upfront capital costs for the investment in facilities that include upgrade, interconnection and digesters and O&M expenses will unlock value to developers and customers and help expand the biomethane market. The proposal will divert organic waste from landfills, provide a solution to wastewater treatment plants that flare their biogas to the atmosphere, and support California's GHG emission reduction goals and objectives<sup>22</sup>. SoCal Gas sees the development of biogas or biomethane from the abundant California's resources, such as agricultural sector,

<sup>20</sup> <http://socalgas.com/regulatory/tariffs/tm2/pdf/4172.pdf>

<sup>21</sup> <http://socalgas.com/regulatory/tariffs/tm2/pdf/4172.pdf>

<sup>22</sup> Southern California Gas' Request for Authorization to Offer Biogas Conditioning Services and Bioenergy Production Facilities Services on a Non-Tariffed Basis

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 135

which has the biggest number of dairy cows in the country, landfills and water waste as a window of opportunities for the company and the State of California.

SoCal Gas has in the meantime initiated negotiations with potential customers to upgrade their biogas to pipeline quality. On February 9, 2011, Southern California Gas and the City of Escondido announced that they had entered into agreement to upgrade biogas from wastewater at the City's Hale Avenue Resource Recovery Facility to biomethane. This \$2.7 million demonstration project, which is expected to produce biomethane to serve about 1,200 homes, will run for up to 12 months and is meant to establish whether the technology will cost effectively produce biomethane<sup>23</sup>. SoCal Gas will develop, own, operate and maintain the waste water biogas upgrade facilities<sup>24</sup>. The success of this project will result in SoCal Gas expanding its biomethane business in its area of responsibility.

Second, in North Carolina Duke University and Duke Energy have developed a prototype system to produce biomethane for the generation of electricity at Loyd Ray farms. Duke Energy and Duke University have invested the total cost of the project that includes aerobic digester and aeration basin<sup>25</sup>. Duke Energy and Duke University will own and operate the system for the first ten years of operations. This is a build, own, operate and transfer project that is also receiving grants from the US Department of Agriculture ("USDA") and North Carolina Department of Environment and Natural Resources Lagoon Conversion Program. Google will invest in high-quality carbon offset credits generated from the project<sup>26</sup>. Duke Energy and Duke University hope that the successful implementation of this project will inspire other farms to emulate the example of Loyd Ray Farms thus stimulating the growth of the biogas industry in the country.

Third, in Michigan State, Scenic View Farm in Fennville produces 475,000 cubic feet/day of biogas from farm manure that is upgraded to pipeline quality biomethane by XEBEC Absorption Inc. Part of the biomethane is used to generate electricity and the surplus is injected into the Michigan Gas Utilities ("MGU") natural gas system. To ensure the biomethane meets the required pipeline quality Michigan Gas Utilities own and operate the interconnecting facilities as indicated in the Figure below<sup>27</sup>.

<sup>23</sup> <http://www.escondido.org/socialgas-city-of-escondido-create-renewable-energy-from-sewage.aspx>

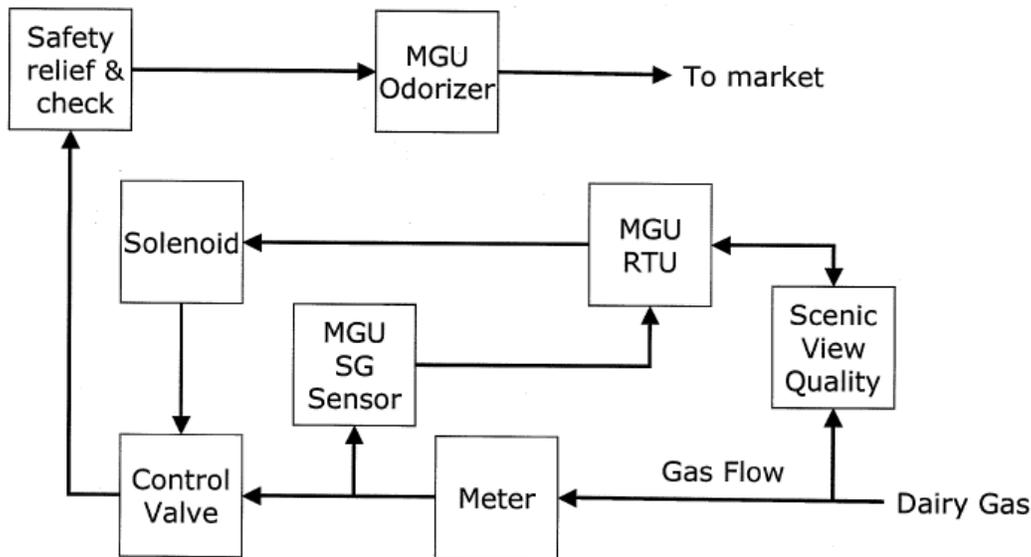
<sup>24</sup> <http://www.scap1.org/POTW%20Reference%20Library/110727%20SoCalGas%20ppt.pdf>

<sup>25</sup> <http://green.blorge.com/2011/09/google-supports-hog-waste-energy-project>

<sup>26</sup> <http://www.cavanaugholutions.com/GooglePressRelease.htm>

<sup>27</sup> <http://www.jgpress.com/bcre07/m12.pdf>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 136



Michigan Gas Utilities does not own and/or operate the upgrading facilities however its ownership of the interconnecting facilities demonstrates the importance of a utility investing in the biomethane projects to ensure safe and reliable supply of biomethane.

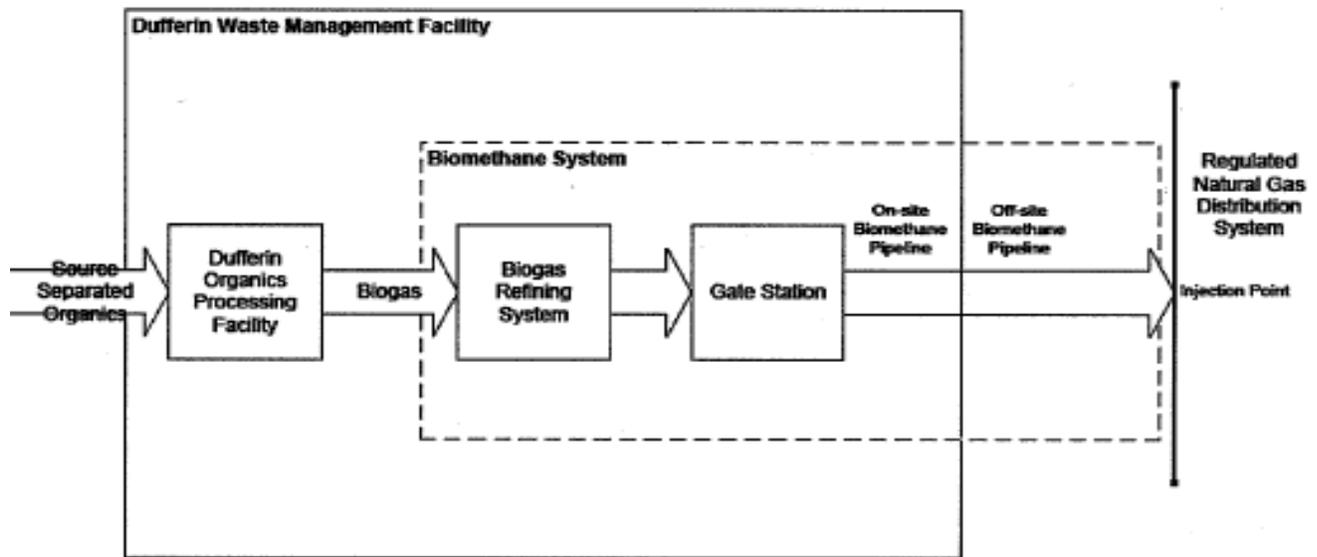
The investment by public utilities in upgrade and interconnecting facilities in the USA will remove the financial and technical constraints and ensure that the biomethane meets the EPA stringent standards. In the absence of public utility investment companies without natural gas experience and infrastructure will find it difficult to upgrade biogas to the required pipeline standards.

### Canada

In Canada, like in the US, developers of biogas projects have been focused on the production of biogas for generation of electricity following the high returns in the electricity sector and also in compliance with the government GHG emissions reduction objectives and energy policies. For example in Ontario the Green Energy and Green Economy Act guarantees developers of green electricity high and stable prices, through the feed in tariff program, which are not applicable to the production of biomethane for direct use. Consequently developers have been attracted by the feed in tariffs program and have focused on the production of biogas for generation of electricity, at the expense of direct use. Some developers and utilities have seen value in the production of biomethane for direct use heating and are beginning to undertake projects that will produce biomethane for injection into the natural gas pipeline network. The City of Toronto's proposed biogas development agreement with Enbridge Gas is one such example.

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 137</p>

The agreement between the City of Toronto and Enbridge Gas for the development of a Biogas Pilot Project at the City's Dufferin Organics Processing Facility (waste management site) stipulates that Enbridge Gas will install, own, and operate a biomethane system at the City of Toronto's waste management site<sup>28</sup>. If the project is successful the biomethane will be injected into the Enbridge Gas' natural gas system to be used for heating and/ or to generate electricity. The biomethane system that was proposed by Enbridge Gas is demonstrated in the Figure below<sup>29</sup>.



The City of Toronto intends to utilize Enbridge Gas' experience in the distribution of natural gas in the development of the biomethane system at Dufferin and if the pilot project is successful more projects will be developed. The City of Toronto will pay Enbridge Gas for the operation of the biomethane system.

The investment by public utilities in upgrade and interconnection facilities is important to enhance development of biomethane projects in North America and also to ensure safe and reliable supply of biomethane.

<sup>28</sup> <http://www.toronto.ca/legdocs/mmis/2010/pw/bgrd/backgroundfile-29805.pdf>  
<sup>29</sup> <http://www.toronto.ca/legdocs/mmis/2010/pw/bgrd/backgroundfile-29805.pdf>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 138

- 39.2 Please repeat the previous question with respect to the pipeline that connects the upgrading facility to the existing transmission and distribution system.

**Response:**

Please see the response to BCUC IR 1.39.1.

- 39.3 Please confirm that the typical practice in North America is for the public utility to not own or operate the upgrading facilities or the connecting pipeline. If not, please explain your response.

**Response:**

The general business model in North America for the ownership of Biomethane upgrading facilities is changing. Where Biomethane is produced, the general practice is that biogas developers rely on the expertise of biogas upgrade companies to install and operate upgrade facilities where necessary. Slow progress is taking place in the Biomethane industry and utilities with strong residential and commercial support are committed to invest in projects that upgrade biogas to Biomethane for direct use heating in order to hasten the development of Biomethane projects. A trend seems to be emerging whereby the developers would prefer the utilities to own and operate the Biomethane upgrading facilities in order to remove the financial and technological constraints that are negatively affecting the development of Biomethane projects. As discussed in the response to BCUC IR 1.39.1 the legal environment in most jurisdictions encourage the production of biogas for the generation of electricity which does not necessarily require biogas to be upgraded to Biomethane. There are no legal requirements in North America for natural gas utilities to meet a certain percentage of their natural gas supply from renewable natural gas. The lack of legal support and the high upfront capital together with operating and maintenance costs of upgrading facilities have made it difficult for companies to develop Biomethane projects for injection into natural gas pipelines.

For example, in Texas, Microgy Holdings planned to develop, own and operate two projects that upgraded biogas from dairy farms to biomethane. Huckabay Ridge, one of two projects, started operations in 2007 and in July 2010 it went into receivership when Microgy failed to pay the debt that was used to finance the plant and other facilities that the company was undertaking<sup>30</sup>. The second project, Rio Leche did not materialize because the company failed to get financing.

<sup>30</sup> <http://eon.businesswire.com/news/eon/20100709005555/en>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 139

Without guaranteed prices of biomethane such as feed-in tariffs, the ownership of upgrading facilities poses a high risk to the developers. The increasing supply and falling price of natural gas is denting the competitiveness of renewable energy<sup>31</sup> such as biomethane compounding the problems related to the development of biomethane for direct use. To avoid the risk associated with the production of pipeline quality biomethane developers are focusing on the production of biogas for generation of electricity where they are assured of earning high returns on their investment.

The emerging trend towards ownership of upgrading and interconnection facilities by public utilities, such as the SoCal Gas's application to the CPUC (refer to the response to BCUC IR 1.39.1) arises as a solution to the problems that have hindered the development of biogas to pipeline standards. Investors have focused on the production of biogas to generate electricity. To enhance progress in the development of biomethane projects some natural gas utilities are committed to own and operate the upgrade and interconnecting facilities. This option allows the natural gas utilities to ensure reliable and cost effective supply as they already have the necessary infrastructure and expertise to operate the upgrading and interconnection facilities. Unlike third parties, who in order to reduce costs might compromise on safety and quality; public utilities have the reputation and experience of providing safe and reliable natural gas supply.

Developers who have difficulties in raising capital to finance the upgrade facilities benefit from the partnership with public utilities as they will find it easier to obtain loans or the utilities will finance the investment. Public utilities are better placed to own and operate upgrade and interconnection facilities because they have strong financial capabilities to finance investment in these facilities. In addition they have proven experience and expertise necessary to successfully own and operate upgrade and interconnection facilities obtained from their operation of natural gas business.

Some public utilities are convinced that enhancing the development of biogas to pipeline quality will promote the government GHG emissions reduction objectives as biomethane, which is carbon neutral, will replace natural gas. In addition the investment by public utilities in upgrade facilities will benefit the customers who want to reduce their carbon footprint. Without the public utilities being involved in the ownership of upgrade and interconnecting facilities the producers of biogas will continue to flare the gas thus increasing greenhouse emissions.

The investment by public utilities in upgrade and interconnecting facilities will accelerate the development of biogas to pipeline quality, by removing the financial and technological barriers, for the benefit of the customers and in support of government GHG emissions reduction objectives and energy policies. Public utilities can play a major role in the development of biomethane projects by partnering with biogas producers who do not have the necessary financial ability and expertise to go it alone.

---

<sup>31</sup> Bloomberg [http://www.businessweek.com/technology/content/nov2010/tc20101123\\_553838.htm](http://www.businessweek.com/technology/content/nov2010/tc20101123_553838.htm)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 140

- 39.4 In its web page, Ebi énergie of Québec (Exhibit A2-21) describes its biogas treatment facility, and the use of resulting natural gas that will be introduced into TransCanada Pipelines' national network. Is Ebi Énergie a regulated utility?

**Response:**

The FEU understand that Ebi Énergie is an unregulated utility that converts biogas to Biomethane for injection into the TransCanada Pipelines national network. If Ebi Énergie were operating in BC it would be subject to regulation. In terms of the *Utilities Commission Act*, any entity that engages in the production (upgrading), distribution and sale of Biomethane to customers is engaged in a public utility service that is subject to regulation. The term "public utility" is defined in section 1 of the *Utilities Commission Act* as follows:

"public utility" means a person, or the person's lessee, trustee, receiver or liquidator, who owns or operates in British Columbia, equipment or facilities for

- (a) the production, generation, storage, transmission, sale, delivery or provision of electricity, natural gas, steam or any other agent for the production of light, heat, cold or power to or for the public or a corporation for compensation...

This definition covers both the upgrading of biogas to Biomethane and the notional sale of

Biomethane gas to customers. The Biomethane upgrading assets are used for the "production" of an "agent" (Biomethane) that is used for the "production of... heat", which in the context of the green gas offering will be sold to the "public (customers) for compensation". The sale of Biomethane to the public is a public utility in that Biomethane itself is an "agent" that is used for the "production of... heat", which in the context of the green gas offering, will be sold to the "public (customers)... for compensation". This means that any entity in BC that converts biogas to Biomethane or sells Biomethane to either the public or a corporation, such as FEI, is subject to the *Act's* provisions and the Commission's regulatory oversight. Ebi Énergie owns biomethane upgrading assets and sells biomethane to TransCanada Pipelines and in terms of the *UCA* would be subject to Commission regulation if it was operating in British Columbia.

- 39.5 Would it be satisfactory to proceed on the basis that the project developer will normally be responsible for the upgrading facilities and connecting pipeline, while



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 141

FEU could apply for a CPCN for such facilities if this were indicated by some particular circumstances? If not, why not?

**Response:**

No. Please see the response to BCUC IR 1.37.1 regarding why FEI's flexible approach to ownership of upgrading assets is in the public interest. Please see the responses to BCUC IRs 1.129.1 and 1.129.2 regarding CPCN applications for Biomethane projects (and the other New Initiatives).

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 142

## Guidelines on Biomethane Upgrading

### 40.0 Reference: Issue 1 Scope (b); Issue 3 Scope(c)

#### Exhibit B-2, Evidence of FEU, Section 4.5, p. 83

#### Guidelines on Biomethane Upgrading

- 40.1 Guideline 3 on page 93 seems to allow FEU the right to determine who would be qualified to undertake the upgrading facilities and operation. Is this appropriate if FEU may be a potential supplier of these services?

#### Response:

Yes it is appropriate for the FEU to make this determination in the first instance. The FEU are responsible for managing the business, and should be making these decisions in the first instance and then seeking the required Commission approvals.

The FEU believe that the question is implying a conflict of interest that does not exist in any real sense. The most important benefit our shareholder receives from these activities is that of customer satisfaction, which allows our continued corporate viability. The FEU have every motivation to make Biomethane Service a success, and to that end ensure the safe, reliable and economic supply of Biomethane to our customers who want to purchase it. This requires flexibility in how upgrading projects are handled; in some cases the FEU will own the upgrader and in other cases the partner will own it.

It is correct that the shareholder earns a return on an investment in upgrading facilities; however, this is inherent in the regulatory framework and the Companies believe that the utility should be presumed to be acting in good faith. To underscore this point,

- The magnitude of potential earnings from the Companies' involvement in Biomethane production is very small relative to the Company's overall earnings. The capital investment opportunity in upgrading facilities is normally going to be in the range of \$1 - \$2 million. Over the life of the asset, the shareholder will earn a regulated return on only 40% of value that is rate based. For a project this size, assuming a continued 9.5% allowed return on equity, the earnings would therefore start out in the neighbourhood of \$38,000-76,000 in the first year and decline from there. Routine investments in the natural gas system dramatically exceed that level of investment and the earning potential.
- The FEU have yet to deny any potential project partners the ability to own and operate the upgrading equipment. Nor have any potential project partners complained to the Commission about anything regarding their business relationships with the FEU.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 143

Ultimately, the Commission reviews supply agreements and can, if it wishes, require a CPCN application. The Commission, thus, has the ability to ensure that the FEU are acting in the best interests of customers.

- 40.2 If FEU is to take on this role, should it be excluded as a candidate for supplying the service, or perhaps be the supplier of last resort?

**Response:**

The FEU are not certain what is intended by the term "supplier of last resort"; however, the FEU have a role to play and the role has been articulated elsewhere.

The FEU's ability to provide this service is providing opportunities in the market place. The FEU have been active in this market in a variety of ways for almost three years and have received only accolades from stakeholders and customers rather than complaints. The FEU believe that they should be involved in owning and operating the upgrading facilities where it makes commercial sense to do so or is necessary to ensure reliable and safe operation. Please see the response to BCUC IR 1.40.1.

The FEU believe that the customers' interest should be paramount and the FEU fail to see any benefit to customers from excluding or limiting the FEU's participation.

- 40.3 Should there not be a section 3(c) to evaluate the efficiency of alternative suppliers and operators? For example, the Catalyst option seems to highlight a case where the proponent has better resources than FEI located on site rather than remotely located.

**Response:**

The guideline specified on p.83 already includes the FEU giving "consideration as to whether the project partner proposing to own and operate the upgrading facilities can provide the upgrading service for the same or lower cost than would be the case were the FEU to own or operate the upgrading facilities." Efficiency would be a part of that analysis.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 144

**41.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.3.4, p. 79, Section 4.5, p. 84**

**Proposed Guidelines for Biomethane Upgrading Ownership**

On page 79 FEI states that "There is limited cost or price risk on an upgrading plant" and on page 84 notes that it will submit for review, through the ordinary CPCN process, projects that are estimated to cost in excess of the CPCN threshold (currently \$5 million).

41.1 Why does FEU propose a \$5 million threshold in 2(a)? What is the expected cost of each of the Salmon Arm and Catalyst projects?

**Response:**

The projects have a deemed CPCN unless the Commission requires one. The Commission has determined to require CPCNs for extensions to the system above a particular threshold. The CPCN threshold of \$5 million was agreed to in FEI's 2010 – 2011 Revenue Requirements Negotiated Settlement Agreement, as per Commission Order No. G-141-09. This threshold has been in place since 2003 and for the 2012 – 2013 Revenue Requirements application, the FEU have not applied for any change to the threshold amount.

The cost of the Catalyst interconnection facilities is approximately \$502,000. The projected cost of the Salmon Arm Project for the Upgrader is \$1,934,000 (excluding AFUDC) and for the interconnection facilities is \$683,000 (excluding Overhead Capitalized and AFUDC). This would suggest that the FEU would generally not need to apply for a CPCN unless the Commission specifically requires one (which the Commission can do). Instead, the FEU would normally be submitting the energy supply contract for acceptance, and possibly requesting an expenditure schedule. Regardless of the section under which the FEU applies, the FEU are hopeful that the Commission will, in the interest of cost-effectiveness for customers, implement a review that is commensurate with the small size of the project.

41.2 Based on the evidence with existing upgrading plants, how stable are the operating and maintenance costs for upgrading plants? What sort of mechanical, electronic or chemical problems are common to upgrading plants and how significant are those problems to variations in the cost of biomethane?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 145

**Response:**

The FEU have only one project (Salmon Arm) where we own the upgrading equipment and that plant is not operational yet. The FEU will be in a position to comment on the stability of operation and maintenance costs once we receive the data and other evidence for a period of time. The FEU are not aware of any mechanical, electronic or chemical problems common to upgrading plants at this point in time.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 146

**42.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.5, p. 83-84**

**Proposed Guidelines for Biomethane Upgrading**

The FEU evidence states that:

"...the appropriate time to address guidelines for most aspects of future Biomethane development is at the end of the two-year test period, as contemplated in the Biomethane Decision. FEI does believe that this Inquiry is an appropriate forum for addressing the ownership issue that was left unresolved in the Biomethane Decision. For the reasons stated above, FEI believes that the Commission should find that FEI's flexible approach to ownership and operation of upgrading facilities is appropriate and should be approved by the Commission."

- 42.1 The above quote suggests that the appropriate time to address guidelines "for most aspects" of future biomethane development is at the end of the two-year test period contemplated in the Biomethane Decision, but then the remainder of the section proposes guidelines for biomethane upgrading. Please identify those aspects for which guidelines should be developed at the end of the two-year test period.

**Response:**

The two year review was established to review the rate offering and the level of demand for Biomethane. The review will consider operational issues such as gas processing technology, gas quality, injection location, as well as matters such as contract length, project design, and project proponents. These matters really require additional data. The FEU do not have specific guidelines in mind for those matters, but rather were making the point that the Commission should try to avoid too much redundancy with the established Biomethane review. There is little value in considering such issues in the context of this Inquiry since the program is still in its nascent stage.

- 42.2 Rules for Natural Gas Energy Supply Contracts currently exist; they were most recently amended and issued by BCUC Order G-130-06. Please explain how, if at all, those rules might need to be amended to accommodate biomethane



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 147

contracts and why those Rules would not be sufficient for the review of biomethane contracts.

**Response:**

FEI does not see the need to amend the Rules for Natural Gas Energy Supply Contracts to accommodate Biomethane supply contracts as Biomethane is covered by the rules as a form of energy. In terms of Appendix A of Order No. G-130-06 these rules are meant to facilitate the review by the Commission of the natural gas energy supply contracts pursuant to Section 71 of the *Utilities Commission Act* and include "the price and availability of any other form of energy, including but not limited to petroleum products, coal or biomass, that could be used instead of the energy". These rules can therefore act as a complement to the FEU's proposed guidelines in this Inquiry for Biomethane. The FEU believe that these rules are sufficient for the review of Biomethane supply contracts. To the extent that the Commission disagrees that Order No. G-130-06 applies to Biomethane contracts, the FEU suggest that they could amend the Order to include these contracts.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 148

**43.0 Reference: Issue 2 Scope (a) (b); Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.5, p. 84**

**Proposed Procedural Guidelines for Biomethane Supply Project**

On page 84, FEI states that:

"The Commission recognizes the benefit of a streamlined regulatory process when it comes to Biomethane supply projects, and also recognizes that energy supply contracts are typically accepted by the Commission without process and supplemental evidence."

In Section 45 2(c) FEU state:

"When filing contracts for upgraded biomethane (i.e. the project partner, and not the FEU, owns and operates the equipment for upgrading the biogas to biomethane), without the FEU seeking an expenditure schedule or a CPCN it will be sufficient for the FEU to file only the supply contract under section 71 of the *UCA* with information confirming that the supply is required. In such circumstances, the Commission expects that its consideration can normally occur without further process."

43.1 Is FEI restricted in any way in owning and operating natural gas wells and/or processing facilities? If so, please identify the restrictions on such ownership. If not, please discuss why FEI does not own and/or operate such facilities.

**Response:**

FEI is not restricted from owning or operating natural gas wells and/or processing facilities. FEI does not currently own and /or operate such facilities because, until recently, producers had not been proactively seeking joint venture arrangements in order to secure demand markets for their natural gas supply. However, given the current environment of increased natural gas supply, weak demand and low natural gas prices, producers are actively seeking secure, longer term outlets for their supply, including Liquefied Natural Gas ("LNG") export arrangements and joint venture arrangements with natural gas utilities.

Given this situation, FEI is currently considering marketplace opportunities with natural gas producers that will allow it to effectively meet the objectives of its Annual Contracting Plan related to long term security of supply, diversity in its portfolio while potentially minimizing the cost in its gas supply portfolio. With the shale gas revolution occurring in North America, including the development of key basins in north east BC, the overall climate for investing in gas reserves of established producers has become more open than prior years. This opportunity

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 149

has the potential to provide long term gas supply at a cost based price to the customers of FEI compared to procuring supply at market based prices.

Furthermore, investment in gas reserves would also help FEI with one of the key objectives of its price risk management activities, to mitigate the impact of market price volatility on customer rates. Securing long term supply on a cost, rather than market price, basis would help meet this objective. As per Commission Decision regarding the review of the FEI's Price Risk Management Plan and Hedging Strategy (Order No. G-120-11, dated July 12, 2011), FEI is urged to explore new alternatives in managing market gas price volatility: "FEU should continue to explore other alternatives: in particular, alternatives that would enable it to manage potential longer periods of persisting price volatility"<sup>32</sup>.

Therefore, investing in natural gas reserves is one alternative that FEI is considering to help meet the objectives of the Annual Contracting Plan and price risk management on behalf of natural gas customers.

- 43.2 When energy supply contracts are filed for acceptance by the Commission, what criteria are used to determine if a contract should be accepted or not?

**Response:**

Generally energy supply contracts submitted for Commission acceptance have to comply with Section 71 of the *Utilities Commission Act* and the objectives and gas portfolio framework provided in the Annual Contracting Plan ("ACP"). Section 71 involves a public interest inquiry, accounting for the factors set out in that section. The ACP is filed annually with the Commission for review and acceptance.

- 43.3 Please confirm that when energy supply contracts are filed with the Commission for expedited approval that the submission of the contracts is done within the context of an Annual Gas Contracting Plan. If not confirmed, please elaborate on the context for filing energy supply contracts.

---

<sup>32</sup> Commission Order G-120-11 dated July 12, 2011, page 25.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 150

**Response:**

Confirmed.

- 43.4 Is section 2(c) on page 84 necessary or desirable? Does it not fetter the Commission to commit to these conditions at this stage? Isn't the last sentence of 2(c) a proposal to the Commission to fetter or pre-judge its responsibilities under the *UCA*?

**Response:**

The intention is to provide procedural clarity without fettering the Commission's discretion, much like how the CPCN Guidelines specify the type of evidence generally expected in a CPCN application

Section 2(c) on p. 84 needs to be understood in context. First, it will only apply in respect of projects below the CPCN threshold, ensuring that the Commission has CPCN oversight of projects with significant costs. Second, the Commission has already had an extensive review of the biomethane program through FEI's Biomethane Application proceeding, and determined that the program is consistent with British Columbia's energy objectives (see Evidence, p. 72). For these reasons, FEI believes that in most cases the Commission should be able to conduct its review under section 71 of the *Act* by considering the terms of the supply contract, along with supporting information that confirms that the supply is required. FEI is not asking the Commission to fetter its discretion, and has proposed a guideline that affirms that the Commission always retains the discretion to determine its own process and depart from the guidelines in appropriate circumstances (see Proposed General Guideline 1, included in Evidence, pp. 157-158). To make this intention clearer, it would also be possible to change the above quoted guideline 2(c) to say "it will *normally* be sufficient".

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 151

**44.0 Reference: Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 4.5, p. 84 and Appendix H-1:  
BCUC December 14, 2010 Terasen Gas Biomethane Decision**

**Proposed Procedural Guidelines**

On page 84 the FEU's proposed guidelines state that when filing contracts for upgraded biomethane (i.e. the project partner owns and operates the upgrading equipment), without the FEU seeking an expenditure schedule or a CPCN it will be sufficient for the FEU to file only the supply contract and confirm that the supply is required and that, "...in such circumstances, the Commission expects that its consideration can normally occur without further process."

- 44.1 Is it implicit in these guidelines that no information about a maximum price would be required as discussed in the December 14, 2010 Terasen Gas Biomethane Decision? Would the price to be paid under a contract for upgraded biomethane be a matter for the Commission to consider, and if so where in the process would that consideration occur?

**Response:**

The guideline meets the intent of the Commission order. The supply contract, which must be filed for acceptance, includes the price paid as one of its key terms. FEI would not submit a contract that contemplates a price higher than the previously approved maximum price. In accordance with the Commission Order No. G-194-10, (included in Appendix H to the Evidence) FEI is required to ensure that the price for Biomethane is below a maximum price.

The price paid is an integral part of any supply contract, and the FEI would thus expect that the Commission would review it in the course of determining whether to accept the Biomethane supply contract. Because FEI is responsible to sell the Biomethane to voluntary customers, FEI has an incentive to negotiate for a price that is as low as possible in order to more easily sell it to Biomethane customers.

Further, FEI recognizes the directive for a maximum annual supply of 250,000 GJ in Commission Order No. G-194 -10. FEI notes that any amount in excess of the cap must meet Commission approval and that FEI will not purchase any amount in excess of the cap without Commission approval.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 152

**45.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 4.5, p. 84**

**Proposed Procedural Guidelines**

On page 84, the FEU state that when filing supply contracts for raw biogas, FEU will provide the following information:

"If the project partner remains interested in owning and operating the upgrading facilities, but the FEU is instead proposing to own and operate the upgrading facilities itself based on its assessment of the items identified in 3 above, the FEU's assessment of why (with reference to the items identified in 3 above) the FEU ownership is preferable."

- 45.1 What process does FEI propose the Commission to undertake, if any, to determine whether the FEU ownership or the project partner ownership is preferable from a ratepayer perspective?

**Response:**

In terms of process, the FEU believe that when a Biomethane supply contract is submitted for consideration (the provision of raw biogas under the agreement means that FEU is performing the upgrading), the Commission should review the assessment provided by the FEU on the items identified. The FEU believe that in most cases this will allow the Commission to determine the issue as it sees fit. If the Commission were to require further information from the parties, or other process, it can make that determination at the time.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 153

## Natural Gas Vehicle Service

### 46.0 Reference: Issue 1 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 5.1, p. 86

#### Rate Design Elements in CNG/LNG Service Contracts

FEU state that the NGV decision must "Ensure that actual operating and maintenance costs are recovered as fully as possible."

46.1 Will FEI be using incremental or fully loaded and fully allocated costing for the services provided by FEI?

#### **Response:**

FEI will be using incremental costing for operating and maintenance. Cost recoveries from CNG/LNG customers for overhead and marketing also exist as a separate rate design element on page 86, Section 5.1 of the Evidence.

For the fueling station agreements, the fueling rate incorporates a provision for projected O&M expenditures for the fueling station asset. The O&M projections are made based on FEI experience, manufacturer guidelines and actual expenses incurred with respect to similar assets. The projections are based on incremental costs incurred beyond FEI existing budgets as the management of these assets will be done with existing resources. As per the NGV Decision, the operating and maintenance costs will be escalated according to changes in the CPI.

FEI also notes that CNG/LNG customers with fueling station agreements will receive gas supply under one of FEI's existing Rate Schedules (ie. 6, 16, 23, 25). The delivery charge component in these Rate Schedules also recovers costs associated with FEI's operational activities, thus FEI believes it would be inappropriate to allocate these costs again in the fueling station agreement beyond the NGV Decision requirements as this would result in double allocation of these costs.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 154

**47.0 Reference: Issue 2 Scope (a) (c)**

**Exhibit B-2, Evidence of FEU, Section 5.2, pp. 86-87 and Section 5.4,  
pp. 95-97 Regulated Public Utilities**

On pages 86 and 87 of its evidence, FEI states that CNG/LNG is a regulated service, and quotes the Commission as stating that "...a CNG/LNG fueling infrastructure has no natural monopoly characteristics and the service offerings applied for would not be subject to regulation, unless the services were being provided by an organization that is already a regulated public utility."

On pages 96 and 97, the FEI evidence notes that Gaz Metro provides NGV through an unregulated company and that Atco Gas Alberta offers NGV with refueling assets that are regulated if required to serve company vehicles and unregulated if not.

47.1 To what extent did FEI consider either of those models for its CNG/LNG service and why did it reject them?

**Response:**

The FEU note that, in order to offer a non-regulated NGV Service, the FEU would have to establish a separate legal entity that was not otherwise a public utility.

FEI considered the possibility of a non-regulated service offering through this framework. FEI believes, however, that the most appropriate business approach for development of the BC market involves FEI initiating the market under a regulated service offering. The proposed approach provides the best opportunity for success for two reasons.

First, in our view a regulated offering is most attractive to the target market. Rate regulation provides comfort to fleet owners because the rates are cost of service based and the ultimately reviewed and determined by the Commission. By contrast, the non-regulated model can lead to markup of service to end users. This provides increased economic returns to the non-regulated entity offering such services, but it increases costs to end NGV customers and this will retard the rate of market adoption to the detriment of all stakeholders.

Second, a regulated offering allows FEI to develop the natural synergies between the existing business and the natural extension of services to NGV customers. For example, FEI already incurs costs related to activity in support of delivery tariffs such as Rate Schedule 6 (e.g. sales costs). There is very little incremental cost incurred by having the sales contact also offer NGV fueling services in addition to offering natural gas delivery to that location.

This regulated approach, however, is not exclusive and does not preclude others from pursuing a non-regulated business model as the market grows and develops.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 155

Were FEI to pursue an unregulated model there would be little reason to pursue NGV market development in the BC market as a place to initiate market transformation. The BC market is relatively small and the number of large fleets that present development opportunities is small. If FEI were to pursue an unregulated entity it would make more sense to pursue opportunities in the US market, just as other non-regulated service providers have. The NRB would be drawn to the geographical markets that provide the most opportunities. As the NRB would be paying the regulated business for any services provided in developing the BC market there would be no cost savings to the NRB from staying close to the regulated business rather than just providing those services directly and moving to the markets of greater opportunity. The situation would be similar to what happened after BC Gas divested the fueling station business to 4Pro Systems Inc. in 1999. This company chose to focus its market development activities in the US market. The end result would be a continuation of the lack of services provided to the BC market and a delay in realizing benefits to all stakeholders from NGV market development.

- 47.2 On page 95, FEI states that the allocation of risk to the potential NGV customer may slow market uptake. To what extent would the adoption of an unregulated model for CNG/LNG service allow the FEU to shift risk away from the potential NGV customer and potentially quicken market uptake?

**Response:**

The original FEI strategy outlined in the NGV Application involved sharing of risk between the different customer classes that benefit from NGV market development. The bulk of the risk was borne by the NGV customer through a long term 'take or pay' contract. In addition the NGV customer takes on additional risks involved with acquisition of the vehicle, upgrades to their maintenance facilities, changes to driver training and safety programs etc. Under the original proposed strategy, other natural gas customers were to take on the risk of potentially stranded assets upon completion of the initial agreements in the event that the NGV market traction is not sustained and a full buyout clause could not be negotiated. FEI believes that this is a reasonable level of risk given the benefits provided to existing customers from load additions.

This approach was subsequently modified as a result of the BCUC Decision contained in Order No. G-128-11, which requires FEI to ensure that any possible risk of stranded assets is borne by the NGV customers as well. The mechanism is through a buyout provision where the NGV customer is forced to pay out the remaining undepreciated capital associated with a station at the end of the contract if the contract is not renewed.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 156

A shift to an unregulated model (and to a certain extent the adjusted regulated model discussed above) allows existing customers to be free riders on the NGV system, receiving benefits but not participating in any of the risks. The unregulated model could be structured in many different ways but it is likely that the unregulated entity would assume the stranded asset risk in exchange for increasing the rate of return on the investment and taking a share of the commodity price split. The result would be unwarranted increases to the end NGV customers costs and a slower adoption rate.

The unregulated model has had the opportunity to develop business in BC, but has failed to do so. No new stations have been introduced prior to FEI involvement for approximately 10 years. FEI believes that a switch to an unregulated model would not speed market development.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 157

**48.0 Reference: Issue 1 Scope (a), Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Sections 5.2 and 5.3, pp. 86-87, 93-94**

**Need to Regulate a NGV Service Provider**

- 48.1 For clarity and further to the statement in subsection 5.3.4.3, please confirm that a FortisBC company that is "not otherwise a public utility" could provide CNG or LNG service without being subject to regulation by the Commission. If not, please explain your position.

**Response:**

FEI confirms a FortisBC company that is "not otherwise a public utility" could provide CNG or LNG service without being subject to regulation by the Commission.

- 48.2 What criteria do FEU believe should determine when FEI should provide CNG or LNG service and when a non-regulated FortisBC company (NRB) or a separate regulated FortisBC public utility should provide the service? Please justify the criteria you propose.

**Response:**

The *UCA* contemplates the provision of a regulated NGV Service. The FEU believe that FEI should be able to provide CNG and LNG fueling services and that non-regulated companies should also be able to provide fueling services should any emerge in the future who have a serious interest in serving the relatively small BC market. The FEU are not interested in establishing a non-regulated entity to pursue the market at this time for the same reasons described in the response to BCUC IR 1.47.1.

Once the market is developed, the FEU expect that competition may arise from non-regulated parties. For example, major fuel retailers such as Shell and Chevron may elect to provide LNG at their existing cardlock stations. They would presumably offer LNG under a business model that builds on the strength of existing stations and would be expected to be competitive with the FEU's offerings.

Seeking to restrict FEI from participating in the NGV fueling services market is detrimental to all stakeholders. The FEI service has attractive features that will remain relevant once the market develops. They include the benefit of transparent regulation by the Commission and cost of service rates.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 158

- 48.3 Please confirm that each of the three benefits identified in section 5.3 apply whether FEI or a FortisBC NRB or a separate FortisBC utility provides CNG service. If not, please explain your position.

**Response:**

The FEU confirm that in theory these three benefits would apply whether FEI or a FortisBC NRB or a separate FortisBC utility provides CNG service. However, it assumes that the same level of uptake will occur in both cases. The FEU have adopted the regulatory model it has, accepting with it the additional challenges that regulatory oversight of the offering brings, because we believe that it is most likely to spur uptake of NGVs in the Province. Please see the response to BCUC IR 1.47.2.

The FEU do not intend to pursue an NRB initiative in the BC market and no other parties have been active in the BC market. The FEU have every expectation that the benefits would not be delivered under the non-regulated model.

- 48.4 Please also confirm that each of the three benefits identified in section 5.3 apply whether FEI or a FortisBC NRB or a separate FortisBC utility provides LNG service. If not, please explain your position.

**Response:**

Please see the response to BCUC IR 1.48.3.

- 48.5 Please compare the potential impacts on existing FEI customers of having a FortisBC NRB or a separate FortisBC utility provide NGV service, rather than FEI. Please include a discussion of financial risk related to increases in future interest rates and return on equity, the risk of the customer going out of business, and the risk of higher administration and overhead costs resulting from FEI undertaking the additional activity.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 159

**Response:**

The FEU have not conducted an assessment of this type and does not intend to pursue the NRB approach to NGV market development. At a high level, the creation of a separate legal entity that is not regulated reduces the risk to existing natural gas customers associated with stranding, construction risk and operational risks. However, the FEU consider that the initiative would not have the same degree of success for the reasons described in the response to BCUC IR 1.47.1 for example. To the extent that the initiative is less successful, it will generate less throughput and existing natural gas customers will experience higher rates than they otherwise would experience were the throughput added to the system. The overall business risk of the utility will continue to increase to reflect continuing throughput declines, and this will have an impact on the cost of capital recovered in rates.

- 48.6 Further to the comments in subsection 5.3.4.2, please discuss and contrast the impacts that (a) having FEI provide NGV service, and (b) FEI making a EEC incentive contribution, have had on convincing Waste Management and Vedder Transportation to proceed with CNG and LNG service, respectively.

**Response:**

Both elements listed above were essential in order for WM and Vedder to proceed with their decisions to purchase NGVs for their BC fleets.

With respect to the fueling service, WM and Vedder are used to having fuel delivered to their vehicles in a useful form. It is not industry practice for a fleet operator to have to cobble together fuel supply, fuel delivery and fuel dispensing services in order to operate their vehicles. FEI filled the customers' need by assembling all three required elements and communicating the net cost of natural gas fuel delivered to the vehicles' tanks. In the case of Vedder, the customer had no prior experience in dealing with cryogenic fuel delivery systems and no interest in taking on this task. In the case of WM, the company had extensive experience in dealing with CNG operations in the US market but no experience in Canada. WM was very pleased not to have to take on the non-core related aspects of gearing up to manage a CNG dispensing system. WM staff are not conversant with CNG safety regulations in Canada and their operating personnel in Canada had no prior experience with CNG systems. Development of an end to end service allowed both customers to see the net advantages of natural gas for their vehicles and to make an informed choice to switch to NGVs.

The EEC NGV contribution agreement was a totally separate initiative. There was no attempt made to tie receipt of incentive monies to a requirement to buy fueling services from FEI. The



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 160

incentive program was viewed as a necessary prerequisite to help customers make a difficult decision to proceed with NGVs. The capital cost of NGVs is significantly higher than diesels and if the vehicles do not perform as advertised, the carrier can no longer carry on business with these vehicles. The risk level for the first adopters is perceived to be high and the customer must also incur additional expenses to prepare for NGV operation. No operators have purchased NGVs for heavy duty transport applications in BC prior to FEI offering vehicle incentives. FEI's use of incentives made the first introduction of NGVs possible.

- 48.7 Further to the reference to transfer pricing in subsection 5.3.4.3, please compare and contrast the challenges and administrative effort required to properly allocate costs related to a FortisBC NRB or a separate FortisBC utility providing NGV service under a transfer pricing mechanism, with the proper calculation and allocation of operating and maintenance costs and the allowance for overhead and marketing when FEI provides the NGV service.

**Response:**

The FEU are unable to speculate on the comparison between the present scenario and a speculative one which we do not foresee occurring. To address this question, the FEU would have to develop a business plan and operating cost projections for a NRB that the FEU have no plans to develop. Please see the response to BCUC IR 1.27.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 161

**49.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 5.3.1, p. 89**

**Benefits to Existing Customers**

FEU state on page 89 that:

"These benefits can be achieved without imposing stress on the existing system assets. NGV load is high-load factor load, which improves the efficient use of the existing system. FEI has adequate system capacity to serve many incremental NGV customers, with impacts on system capacity being localized. Each NGV customer will be subject to the Main Extension ("MX") Test in the normal course to ensure that any required system upgrades to bring natural gas to the CNG/LNG fueling facility are economic for the system or are recovered from the NGV customer through a Contribution in Aid of Construction. The contractual model that underlies the proposed rate design ensures that system additions to serve NGV load remain tied with committed demand. The customers will also pay for distribution service under an existing Rate Schedule."

- 49.1 In FEI's most recent rate design, were the various rate schedules to provide distribution service to NGV operations shown to be above or below an R/C ratio of 1? What were the R/C ratios?

**Response:**

The FEU believe that NGV load uses the distribution system very efficiently due to its high load factor characteristics. Since transportation service load is not driven by ambient temperature it has high efficiency system load characteristics that make it a desirable load for the distribution system. Connection to the distribution system of any new customers is subject to the Company's Main Extension Test in order to ensure sufficient revenues are received from these customers to cover any additional system costs. Rates associated with the CNG service are based on the full cost of service associated with the compression facilities.

While rate design is subject to the consideration of many often conflicting principles, one major factor considered is the Cost of Service Allocation ("COSA") study. The COSA study allocates common system costs to the various rate classes based on industry accepted principles. The allocated cost of service for each rate class is compared to the revenues for that customer class as a gauge to a reasonable range for the class rates. Generally the Company has used as a guide a reasonable range of 90% to 110%, however, this is only a guide given consideration to other rate design principles for the rate design.

It is not possible to fully isolate the revenue to cost ("R/C") ratios of NGV rate schedules because rate schedules are generally designed based on volume and load factor, not by end



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 162

use application. For example a CNG NGV customer can take delivery under a variety rates including Rate Schedules 6, 23 and 25 depending on the supply of gas, total annual deliveries and load factor for the service required.

FEI's most recent rate design proceeding took place in 2001. The revenue to cost ratio from the cost of service allocation study for the NGV Rate 6 class was 101.0% (i.e. revenues slightly exceeded the cost of service). The revenue to cost ratio results at that time demonstrated that the NGV rates were at a reasonable level relative to the allocated cost of service and that NGV customers were at least recovering their allocated cost of service.

The FEU have prepared an updated cost of service allocation study for its Amalgamation and Rate Design Phase 'A' Application which it has just filed with the Commission on November 1, 2011. The revenue to cost ratios for NGV legacy Rate Schedule 6 is 113%. The updated results continue to show that NGV rates are at a reasonable level relative to the allocated cost of service and that NGV customers continue to recover in excess of their allocated cost of service.

- 49.2 If EEC grants were extended to NGV refueling, should the cost be recovered somewhere in the NGV line of business? Would inclusion of EEC grants in the costs used in the R/C ratio calculation result in deteriorated R/C ratios?

**Response:**

In Commission's Order No. G-145-11 the use of EEC program funds for NGV incentives was disallowed. Hence there is no program cost to include in the revenue to cost (R/C) ratio calculations. The FEU will need to look at another program and funding mechanism that is suitable for natural gas fueled vehicles. Until such time no incentives other than the grants under Rate Schedule 6 are in the marketplace. The FEU believe that if re-established, NGV incentives will benefit the entire business through helping to build a consistent high load factor load which uses the system efficiently and helps to reduce GHG emissions. As such FEI believes that NGV incentives should be recovered from the entire business, not just the NGV line of business.

If the cost of the EEC grants were directly assigned to the NGV rate class, this would result in an increase in the allocated cost of service and reduction in revenue to cost ratio. In addition, the recovery of NGV incentives only from NGV customers would remove much of the benefit of the incentive. The incentives have been constructed to provide more incentive to early adopters of NGV that incur the greatest risk. If that incentive was clawed back through higher rates, the incentive to switch to natural gas would be diminished and we expect that adoption of the



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 163

technology would be too. The early adopters of this technology are sophisticated entities and if adopting natural gas in their fleets were as easy as utilizing a financing option which, in effect, allocating the incentive to the NGV line of business would be, these companies have the capacity to do so without assistance from the utility. In that natural gas technology has not been adopted prior to the FEU's involvement indicates that the issue is more complex and the incentive is required. The opportunity to provide NGV refueling grants and acquire the corresponding new load is one of the best ways that the FEU have to offset its declining throughput and capture rates in new homes for space and water heating as discussed in section 2.1 of this Evidence.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 164

**50.0 Reference: Issue 1 Scope (a); Issue 2 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 5.3.2, p. 91 and Section 5.3.3  
p.92**

**Benefits to NGV Customers and B.C.'s Energy Objectives**

FEU state on page 91:

"The third way in which FEI's investment can benefit fleet owners is by enabling fleet owners to access a lower carbon fuel relative to diesel or gasoline, and thus reduce their GHG emissions. There are businesses that wish to employ measures to reduce their carbon footprint as a matter of principle. The reduced carbon output associated with CNG and LNG relative to diesel may also create competitive advantages for the fleet owner that complement the fuel cost savings.

An increasing number of municipalities have introduced procurement policies which favour clean air standards for garbage trucks, and as a result fleet operators running NGVs may hold an advantage in winning competitive bid contracts due to the GHG savings associated with NGVs. Public service organizations or municipalities that have made commitments to be carbon neutral will also see benefits from NGVs. As mentioned in Section 2.2.5, the City of Surrey is an example of an organization that is aiming to achieve GHG emissions reduction benefits using compressed natural gas vehicles. The city is seeking a proponent to provide waste management services and one of its objectives is, *'the reduction of adverse environmental impacts from the performance of the Services, including where appropriate the adoption of clean technologies.'* "[italics in original]

"The WM conversion, which required FEI's investment in NGV fueling facilities, will reduce GHG emissions by approximately 214 tonnes annually."

50.1 Are these emissions savings theoretical or have they been proven in actual operations?

**Response:**

The GHG emissions savings estimate of 214 tonnes is theoretical as it is based on a 'distance travelled' estimate of WM's existing diesel trucks. GHG emissions reductions from diesel to natural gas have been proven in numerous refuse truck operations in the US. The FEU have based the estimate for WM on detailed emission factors derived from a model developed for Natural Resources Canada (GHGenius). These factors reflect BC-based fuel pathways and experience and include an efficiency loss penalty. The model is well respected and is presently



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 165

used by the BC Government in administering programs such as the Low Carbon Fuel Requirement Regulation. Please refer to <http://www.ghgenius.ca/about.php> for additional discussion on this topic.

Based on WM's actual operations of their refuse trucks to date, the FEU believe WM's GHG emissions savings will exceed 214 tonnes per year. Over the first six months of operation, WM has consumed, on average, approximately 40% more fuel per month than their expected monthly fuel consumption. The FEU understand that WM is operating their NGV fleet in preference to their diesel fleet so that the utilization of the NGVs is higher than the fleet average and additional diesel fuel consumption is being displaced. WM report that they are very pleased with the operating performance of the vehicles and are utilizing the vehicles to the maximum extent possible in their operations to achieve fuel savings and GHG emissions reductions.

- 50.2 Please confirm that in the 1980's and 1990's when Inland Natural Gas and BC Gas first offered NGV refueling service to cars, NGV conversions were not as efficient as expected, vehicle horsepower and performance deteriorated, the tanks took up too much space, and the automobile manufacturers greatly improved the relative efficiency of gasoline driven autos. If not confirmed, what was the NGV experience of the NGV customers?

**Response:**

Inland and BC Gas experienced a number of obstacles in the 1980s and 1990s including the ones outlined above. The circumstances today are quite different, as is the business model that the FEU are using.

The experience during the 1980's and 1990's in light duty vehicles is not representative of the natural gas engine technology deployed in today's heavy duty vehicles. The FEU are not targeting light duty trucks and cars, but rather heavy duty trucks, buses, and Class 8 tractors.

In addition, the FEU are pursuing a business model that is based on vehicles supplied and supported by Original Equipment Manufacturers such as Kenworth, Peterbilt, Freightliner and Autocar.

The FEU do not dispute that historically there were operational issues associated with early aftermarket conversion kits for light duty vehicles, however, the current experience is different. The FEU can also report from direct experience with current aftermarket conversion technologies designed for light duty applications, that vehicle performance and operability is

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 166

comparable to operation on gasoline. As with any product incorporating advanced technology, performance has improved over time.

- 50.3 Did the NGV forecasts not live up to expectations? Did the NGV compression activity by the utility result in an unfavourable cost and loss to ratepayers? Please elaborate.

**Response:**

NGV forecast in the 1980's and 1990's were based on a prior business model which is not indicative of the FEU's current business model and outlook on NGVs. The previous business model relied on light duty vehicles and public fueling stations whereas our current model is based on heavy duty vehicles and private fueling stations backed by take or pay contracts. As the response to BCUC IR 2.6.1 from the CNG-LNG Service Application stated:

*"Terasen Gas believes that the 51% write-down of those assets experienced in 1999 was significant. However, the past experience is not indicative of the potential stranded asset risk of the proposed business model here. In contrast to the former business model, the NGV business model proposed in the Application achieves increased volumes and revenues for all customers on the Terasen Gas delivery system through the development of dedicated return-to-base refuelling assets structured into agreements with customers who will contractually be obligated to pay the forecast cost of service of these assets on a "take-or-pay" basis. The prior model developed stand-alone refuelling assets which generated volumes and therefore revenues to support the Terasen Gas distribution system. They were sold out of the regulated utility for an amount below book value, and continue to provide volumes and therefore revenues to support the Terasen Gas distribution system to this day. Unfortunately, as shown in Figure 2-1 of Appendix A-2 of the Application, these volumes have declined substantially in recent years and will result in small increases to all delivery customers if the revenue cannot be generated elsewhere within the utility.*

*Terasen Gas believes that the proposed model, which ties assets and their resulting costs of service, to take-or-pay contracts with dedicated customers, is prudent and not comparable to the prior model in regards to stranded asset risk."*

The previous NGV program generated significant demand which peaked at more than 1 million GJ per year in 1992. Unfortunately, this demand level could not be sustained as a result of various changes that happened in the market. These changes included lack of OEM vehicle support, withdrawal of utility program support and changes in the pricing differential between



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 167

natural gas and conventional fuels. Ultimately, the FEI's predecessor company sold off its remaining natural gas fueling stations in 1999 and ratepayers absorbed the economic impact of a \$2.1 million write down in station assets.

While the previous program was ultimately not sustainable, it should be mentioned that it did generate 10.9 GJ of fuel switching load onto the system between 1988 and 2009 and that even in 2010 there is a residual NGV load of 66,000 GJ under Rate Schedule 6. Looking specifically at the period after the write-down (2000 to 2010), 2.5 million GJ was delivered under Rate Schedule 6 at rates that ranged from \$2.54/GJ to \$3.57/GJ over this time frame. Delivery margins incurred during this period would have more than offset the impact on ratepayers from the write-down.

The FEU believe that the present program includes sufficient protections for ratepayers through take or pay contracting to avoid a repeat of the previous experience.

- 50.4 What changes have FEU undertaken to ensure that other natural gas ratepayers are not burdened with future costs for the proposed NGV activities?

**Response:**

FEI's current business model ties assets and their cost of service to take-or-pay contracts with dedicated customers. FEI's General Terms & Conditions, which were revised and filed with the Commission on September 28, 2011 (pursuant to Commission Order No. G-128-11) also include ways to protect existing customers against stranded asset and cost recoveries risk in future contracts. These rate design elements are described on Page 86 of the Evidence.

In addition FEI's business strategy is focused on fleets that have the potential to grow. WM, for example, operates approximately 100 vehicles at the Coquitlam site and has already expressed plans to add to their fleet. The compression and dispensing station has the capacity to fuel 50 to 60 vehicles and can be expanded to service all 100. Vedder is a further example. Vedder operates in excess of 400 tractors and can be expected to add load to their station.

Other measures include strong project execution discipline, such as the use of fixed price contracts for key equipment, to manage costs and avoid capital cost overruns.

Please see the response to BCUC IR 1.50.3 for a discussion of how the impacts of the write-down of past NGV assets was more than offset by revenues earned subsequent to the write-down.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 168

**51.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 5.3.4.2 p. 93; Exhibit A2-11**

**Non-Regulated Options and Market Development**

In the Evidence, FEU state that the CNG/LNG market has failed to develop in such a way that would ensure FEI's existing customers benefit from the increased throughput. FEU consider it reasonable to conclude that if FEI does not provide the service, the potential to build NGV load on FEI's system and deliver the attendant benefits will be delayed or may not occur.

In the press release from the City of Surrey that is in Exhibit A2-11, the Surrey City Council has passed an innovative new fuel initiative in May 2011 where all new service stations in Surrey will be required to provide at least one alternative fuel source, such as hydrogen, compressed natural gas, or electric vehicle recharging, in addition to conventional gasoline, diesel and propane energy.

51.1 Does FEI see this requirement as an impetus to transform the CNG fuelling station market?

**Response:**

FEI does not believe this requirement will have a significant impact on the CNG fueling station market. Firstly, the initiative is related to public refueling stations, which FEI is not pursuing with its current business model. The proposed CNG Service involves an 'anchor-tenant' fleet customer where access to fueling infrastructure is at the customer's facility.

Secondly, FEI does not believe the mandate will translate into robust, full-scale alternative refueling solutions for new service stations. Rather, service station operators may simply install low-cost vehicle recharging units to comply with the regulation. Investment of a CNG fueling station requires an investment of approximately \$300 to \$500 thousand. Service station operators are unlikely to invest this amount with no assurances of demand.

Municipal regulations can be effective depending upon their structure and the market characteristics. FEI believes City of Surrey's requirement for CNG in its recently released RFP for hauling services is an encouraging mandate. Please see the response to BCUC IR 1.51.2 for additional discussion on this topic.

Discussions with the City of Surrey after the press release date indicate that the announcement was premature. Surrey is presently engaged in a public consultation stage regarding this proposed initiative and has in fact not implemented the initiative to require alternative fuel capabilities at its stations.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 169

- 51.2 Does FEI agree that regulatory requirement from municipalities could be as effective, or more effective, than having FEI kick-start the market?

**Response:**

FEI believes that municipalities must play an active role in transforming the fueling market, but a collaborative effort from industry partners is needed to overcome barriers such as fueling infrastructure, vehicle capital cost premiums and industry education of NGV benefits. The actions of one municipality are not reflective of the entire NGV fueling market in BC but they are an encouraging start.

FEI is encouraged that policy initiatives such as the one referenced in the question are being proposed. However, FEI does not believe that the specific initiative of requiring an alternative fuel source at new stations will be effective. Previous experience in the light duty market indicates the strategy of building stations in the expectation of demand from vehicles has not been successful in stimulating market growth. In addition, experience in California, where stations were required to install methanol stations, was not enthusiastically received by the station operators. The rudimentary requirements were met, but there was no ongoing support from the operators, leading to ultimate failure.

FEI is more encouraged by the City of Surrey's requirement for CNG in their recently released RFP for refuse hauling service. Their requirement for CNG service is for a return-to-base fleet of waste haulers which is consistent with FEI's business model for NGV refueling service. It should be noted that the City of Surrey has experience and familiarity with CNG as they have owned and operated a CNG station at their works yard facility for many years. FEI also provided City of Surrey with incentive funding to offset the incremental capital cost of its first heavy duty truck in 2010.

- 51.3 Please comment if FEI's projects in LNG/CNG in the transportation sector will face at least three sources of competition: (a) from public fuelling stations offering CNG; (b) from other energy sources such as hydrogen fuelling stations and electric vehicle recharging; and (c) from Encana's stated development of LNG for trucks.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 170

**Response:**

FEI's CNG/LNG projects are affected by these sources of competition in the following ways:

- a) Public fueling stations predominately service light duty CNG vehicles. FEI's CNG/LNG Service business model does not target the light duty vehicle market, therefore this factor does not have direct or significant impacts to FEI's NGV initiatives. It is also questionable whether light duty stations will have the capacity to service HD vehicles.
- b) Hydrogen and electric vehicle charging and other sources of energy are primarily focused on developing the light duty vehicle market, which FEI is not pursuing. Demonstration projects, such as the Resort Municipality of Whistler's hydrogen bus pilot have been undertaken in the heavy duty vehicle market, but no economically viable solutions for heavy duty vehicles exist at this time. FEI openly welcomes other fuel alternatives in the market to help achieve BC's energy objectives.
- c) FEI has had high-level discussions with Encana regarding the use of LNG for trucks. At present Encana is developing a small scale (4000 gallon per day) LNG production facility at a gas plant in Alberta. Completion of this first facility is expected to be in Q1 2012. Encana have also invested in a mobile refueling unit that can service LNG trucking operations on an interim basis as load develops. FEI has supplied LNG to Encana, loading the mobile refueling unit at the Tilbury facility. Early stage discussions regarding collaboration on market development initiatives has been undertaken. These discussions have centered around FEI providing backup supply to Encana's development projects through the RS 16 tariff. As the market emerges it is likely such backup arrangements will become reciprocal in nature. As the BC market emerges it is expected that competition for providing fueling station service from third parties such as Encana or major fuel retailers (commercial card lock stations) will emerge in this market.

FEI's supply strategy for the first 5 years of market development is focused on providing LNG from existing facilities that are located in close proximity to expected market demand. LNG produced from these facilities is expected to be competitive with other alternatives. This approach allows low risk market development in the early years.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 171

**52.0 Reference: Issue 1 Scope (a) and Issue 3 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 5.3.4.3, p. 94 and Section 5.4.5, p.97**

**Continued Involvement by FEU**

FEU state that "The FEU are capable of providing cost-effective NGV service, and this enhances the economic benefits for fleet owners interested in NGV service, thereby making it more likely that FEU will be able to add cost-effective natural gas load and promote GHG emissions reductions. ... Assuming that other providers emerge over time, they should have to compete with the FEU. ... Insulating third-party providers from competition from the FEU's cost of service based rates has the effect of transferring the benefits of cost savings that should accrue to customers to unregulated third-party providers as windfall profit gains."

And "Encana is working with various levels of government in Canada to develop two natural gas corridors - one in western Canada (linking Vancouver, Calgary and Edmonton), and the other eastern Canada (linking Windsor, Toronto, Ottawa, Montreal and Quebec). The company's aim is to fuel 145,000 trucks by LNG, 2.5 million light-duty vehicles by CNG, owning more than 50 LNG plants across the country and a network of more than 900 CNG and LNG fueling stations countrywide."

52.1 Is there a risk that FEU participation in NGV service could inhibit the expansion of NGV services by other suppliers like Encana? Because of this potential to interfere in what could become a competitive market, would it not be of added importance that all FEU costs (including full overheads and corporate return) be recovered directly from NGV customers and that FEU shareholders carry the risk of any unrecovered investments?

**Response:**

The FEU disagree that the FEU's involvement in NGV service could actually harm adoption rates of NGVs in BC. To illustrate: First, the only significant adoption of NGVs in BC that the FEU are aware of in the past decade is from those projects which the FEU have had a direct involvement in. Second, the FEU are actively co-operating and collaborating with Encana to encourage the mutually beneficial adoption of NGVs. This would not occur if Encana considered that the FEU's involvement in NGV service was likely to harm Encana's efforts,

The FEU believe that the greatest risks to be considered regarding our offering of NGV service are those risks of the FEU not offering NGV Service. Under the status quo, while adoption of NGVs in other jurisdictions has grown tremendously, British Columbia has lagged behind and even seen abandonment of NGVs since the FEU exited to the NGV service business. To allow this status quo situation to continue and deny all of our customers the ability to enjoy the



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 172

economic and environmental benefits of significant adoption of NGVs in BC is detrimental to the interests of all stakeholders.

Impeding the FEU's ability to develop and compete in the emerging fueling services market does not support the development of a market in the future. Rather, the FEU should be allowed to develop and compete in the market and new entrants should also be encouraged to compete as the market grows with each party bringing its respective strengths and weaknesses to the marketplace. For example, if major fuel retailers elect to introduce LNG or CNG service at their cardlock locations, it is probable that they will introduce such services considering the marginal costs that they will incur to add NGV services. They will have the ability to set their pricing reflecting this incremental cost of service and the competitive advantage of having access to existing assets upon which they can grow their business. Similarly, the FEUs offering should reflect all incremental costs incurred by the utility to provide the new NGV Service including the approved return on capital as the FEU have proposed under the NGV Service.

52.2 Should FEU become a supplier of last resort in the future if competitive entrants enter the NGV refueling business?

**Response:**

The FEU are unclear about what is being meant by "supplier of last resort", i.e. whether it means that we should also backstop supply for other participants as well as provide our own NGV Service, or whether the question is implying that we should only be involved if it can be demonstrated that nobody else wants to provide service.

The FEU have a role to play in providing NGV Service, a role that is contemplated as a regulated service offering in the *Utility Commission Act*. The FEU welcome and encourage as many competent market players as possible into this market, as our primary goal for NGV Service is to see the economic and environmental benefits of this service be enjoyed by all of our customers. Further, other market entrants may be able and/or willing to provide value-added services outside the purview of a regulated utility, which could encourage fleets that might not otherwise adopt NGVs to convert. Impeding the FEU's involvement in the market is contrary to the interest of customers because the market has not prospered in the absence of our involvement.

In the case of LNG supply, if and when others provide LNG supply into the BC market, the FEU would consider reciprocal arrangements where each party would provide backup service to the other so that customers could benefit from improved overall supply reliability.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 173

To the extent that other parties develop fueling services and require natural gas supply, FEI's services in providing natural gas supply would be available to those parties. For example, if Encana or Shell were to establish fueling locations, they would be able to purchase LNG or natural gas under existing tariffs.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 174

## NGV Guidelines

### 53.0 Reference: Issue 1 Scope (a); Issue 2 Scope (c)

#### Exhibit B-2, Evidence of FEU, Section 5.4.5, p. 97 and Section 5.5, p. 100

#### Proposed Guidelines for NGV

On page 97 of its evidence, FEI notes the aim of Encana to develop two natural gas corridors - one in western Canada and one in eastern Canada - and that it aims to own more than 900 CNG and LNG fueling stations countrywide.

On page 100 of its evidence, item 6 of the FEU's proposed guidelines would limit circumstances in which weight would be given to evidence of the existence of a CNG/LNG provider other than FEI to serve a customer.

53.1 To what extent are the circumstances the guideline is intended to address largely hypothetical at present? What purpose is served by adopting guidelines that serve to limit the discretion of a future Commission Panel in situations that may now be hypothetical?

#### Response:

These circumstances are entirely hypothetical, and this is precisely the point that the FEU have been articulating when objections have been voiced about the FEU's participation in NGV fueling based on the potential to impact market competitors. No such competitors currently exist and market uptake has been essentially non-existent to date. The FEU's proposed guideline really brings into focus the problem of objections to the FEU's involvement in NGV fueling being based on hypothetical market competition.

Put another way, the FEU believe that, rather than limiting the discretion of any further regulatory proceeding, the proposed guidelines instead anticipate potential sources of conflict and provide a solution to ensure regulatory efficiency in that setting.

53.2 Does FEI, as the owner of the natural gas distribution system gain the benefits of NGV load growth no matter who owns CNG refueling facilities?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 175

**Response:**

No, our customers, rather than the FEU, are the primary benefactors of the referenced NGV load growth. While the customers obtain that benefit of any increased throughput associated with a fueling facility regardless of the ownership of the facility, the market has stagnated in the absence of the FEU being able to provide to customers the option of having the FEU own and operate NGV facilities.

- 53.3 To what extent would such guidelines serve to hinder the growth of a robust CNG/LNG market by providing obstacles to other market entrants? Please explain.

**Response:**

The FEU believe that there is nothing in these proposed guidelines that could realistically hinder growth of a robust CNG/LNG market, but rather the very purpose of these guidelines is to encourage said growth. Please see the response to BCUC IR 1.53.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 176

**54.0 Reference: Issue 2 Scope (a); Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 5.0 p. 85 and Section 5.5, pp. 98-100**

**Proposed Guidelines for NGV**

- 54.1 On page 85, FEU state that it will re-file the GT&Cs for NGV service in due course. Please discuss whether it is premature for the Commission to consider Guidelines for NGV service prior to FEU filing the GT&Cs.

**Response:**

FEI's proposed guidelines are not, in its view, impacted by the amended GT&C's for NGV Service. Nevertheless, the amended GT&C's for NGV were filed on September 28, 2011.

- 54.2 With regard to the Guidelines for NGV related to CPCN applications, please discuss whether it would be more efficient and consistent to make changes to the existing 2010 Guidelines for CPCN Application (Order G-50-10) as required, rather than develop separate Guidelines for NGV service?

**Response:**

The FEU wish to clarify that it has not proposed separate CPCN guidelines for NGV Service. FEI's proposed guidelines establish that the current \$5 million threshold for the FEU CPCNs applies to NGV projects, and that any project over the threshold would require a CPCN and therefore be subject to the existing CPCN guidelines. The FEU address the question of whether there should be separate CPCN guidelines for NGV Service, TES and Biomethane Service in the response to BCUC IR 1.54.3.

- 54.3 Would it be more efficient to have a consistent set of CPCN Application Guidelines for NGV, TES and biomethane? Please explain your response.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 177

**Response:**

In theory, the FEU's proposed guidelines could be incorporated in the CPCN Guidelines; however, the FEU believe for two reasons that it makes more sense to keep them separate from the CPCN Guidelines.

- First, the FEU's approach of having separate guidelines reflects our expectation that the CPCN threshold of \$5 million will continue to apply to these projects, and many of these projects will come in below that threshold.
- Second, the FEU are also seeking to obtain clarity on the requirements for all applications, including those that would not be made under section 45.

Hence, the FEU are not proposing new CPCN guidelines for NGV Service, TES and Biomethane Service in this Inquiry, but rather (as discussed at page 158 of the Evidence) the adoption of certain policy-related guidelines specific to these initiatives that acknowledge that the determination of the public interest in particular instances for NGV, TES and Biomethane projects going forward will normally turn on considerations such as customer benefits and impacts, as opposed to whether or not these projects support provincial policy objectives. For projects larger than \$5 million, these policy-related guidelines, if adopted, would ultimately inform how the existing CPCN guidelines are applied.

Regardless of the form the guidelines ultimately take, there are requirements included in the existing CPCN guidelines that may not make sense in the context of these projects. A good example is the alternatives analysis. FEI will only be applying for CPCN approval for TES and NGV projects after it has a willing customer (or project partner) who wants to go forward with the particular project with the FEU. This is in contrast to a public utility bringing forward, for example, a new transmission project to service a large number of ratepayers. In the latter case, there is no individual customer who has signed up for the project, and the Commission's consideration of other alternatives is meaningful and appropriate in considering the public interest. In the case of TES and NGV, however, there is little to be gained from considering whether the customer or developer has selected the appropriate project, since it is the customer's choice to have the particular project applied for. For this reason, an important difference with CPCN applications in relation to these new initiatives is that they will not include alternatives analysis. FEI does not believe that new CPCN guidelines are required to reflect these kinds of distinctions, as CPCN guidelines are necessarily designed to be applied in a flexible manner as the circumstances warrant. Another example from the CPCN guidelines that will often not make sense in the context of these projects are the requirements regarding consultation. In the case of a school district project, for example, where the entire project will take place on school property owned by the district, there will be no useful purpose served by consultation (though circumstances may vary to change this). The same would be true for a Biomethane upgrading project located entirely on private property.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 178

**55.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence from FEI, Section 5.3.3 p. 92**

**Compliance Requirements and Benefits from Expansion into New Initiatives**

FEU have taken the position that Integrated Energy Services solutions are a key part of the FEU low carbon strategy to help existing and future customers in cost-effectively reducing the carbon footprint for their energy needs. FEU state that the Energy Plan identified natural gas as a cleaner option in the transportation sector.

FEU also believes that FEI is needed to kick start the market in New Initiatives in B.C.

55.1 Are there compliance requirements for an energy provider in particular, such as FEI, to reach those GHG emissions reduction targets as set out in the *Clean Energy Act*?

**Response:**

The BC provincial government has legislated aggressive GHG emissions reduction targets. The public sector has compliance requirements to meet these reduction targets and in order to support the government's GHG emissions reduction objectives, local governments from across BC have pledged to significantly cut GHG emissions by 2012 through carbon neutrality. Among the public sector, BC Hydro, an energy provider in BC, also has a legal binding commitment to carbon neutral operations and compliance requirements to meet these GHG emissions reduction targets.

The FEU, although not bound by the legislated GHG emissions reduction targets, is actively taking steps to help the Province reach these targets by reducing its own operating GHG emissions and helping customers reduce their GHG emissions. Furthermore, the *Act* now requires the Commission to consider the extent to which long term resource plans, expenditure schedules, energy supply contracts and CPCNs are consistent with or achieve British Columbia's energy objectives, including those that are concerned with the reduction of GHG emissions. These requirements are an indication that the legislature intends for public utilities to play an important role in achieving British Columbia's energy objectives. Furthermore, the *Act*, through long term resource plan requirements, also requires that public utilities attempt to meet some of their demand through "demand-side measures", which can also involve efforts aimed at reducing GHG emissions.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 179

- 55.2 Are there compliance requirements for stakeholders of FEI (e.g. competitor energy suppliers, school boards and municipalities, or other ratepayer groups such as commercial and industrial customers, etc.) to reach those GHG emissions reduction targets?

**Response:**

The BC provincial government has legislated aggressive GHG emissions reduction targets and is legally committed to becoming carbon neutral by 2012. The public sector has compliance requirements to meet these GHG emissions reduction targets and in order to support the government's GHG emissions reduction objectives, local governments from across BC have pledged to significantly cut GHG emissions by 2012 through carbon neutrality. These compliance requirements apply to public sector entities and municipalities who are customers of the FEU. Furthermore, entities in the private sector are subject to the Carbon Tax, which provides a price signal to reduce GHG emissions. As stated in Section 2.2.5 of the Submission, the FEU can play a role in helping public sector and municipalities meet the provincial GHG emissions reduction targets.

- 55.3 Gaz Métro describes Gaz Métro Transportation Solutions, its wholly owned subsidiary whose mandate is to develop the market for natural gas as a fuel in Quebec, as taking part in a project for use of natural gas in transportation (Exhibit A2-20). To the best of FEI's knowledge, is Gaz Métro Transportation Solutions regulated by Régie de l'énergie du Québec?

**Response:**

The FEU understand that GazMetro Transportation Solutions is responsible for the provision of NGV services and that, under the relevant legislation in Quebec, this is an unregulated service. Consequently, GazMetro Transportation Solutions is not regulated by Régie de l'énergie du Québec.

There is no legal requirement in British Columbia that prevents FortisBC Energy Inc. from providing a regulated NGV Service to its customers. As we stated in section 5.2 of the Evidence, FEI's provision of NGV service is subject to regulation as a "public utility" service. FEI believes that CNG and LNG Service meet the definition of public utility as it involves the "production, generation, storage, transmission, sale, delivery or provision of ... natural gas..." to the public for compensation. The definition of "public utility" contains an exclusion for the "petroleum industry" (defined as including the retail distribution of CNG and LNG), but only to the extent that the "petroleum industry" entity providing the service is "not otherwise a public



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 180

utility". FEI believes that as a regulated public utility we can only offer regulated NGV Service for the benefit of our customers.

We believe that a comparison with other jurisdictions is not appropriate as the energy environments and legal framework in the jurisdictions are different. Unlike in BC, in most other jurisdictions the use of natural gas for generating electricity and the use of natural gas in direct use application is supported. Consequently, the support given to these traditional applications may lead to the NGV Service being of less importance to other utilities across Canada as compared to what the opportunity means to the FEU and their customers. We believe that NGV Service is an opportunity for us to mitigate declining throughput for the benefit of our customers as well as supporting government energy objectives and policy.

The FEU believe that other providers, including a sister company of the FEU, can provide an unregulated NGV Service but there will be greater benefits to customers if FEI is involved in and provides a regulated NGV Service. We are committed to the provision of safe, reliable and cost effective NGV Service to our customers and we are convinced that existing and potential NGV customers will benefit from the involvement of FEI, which has proven expertise and knowledge, a reputation as a safe and reliable integrated energy provider, and a singular British Columbia focus. The Commission in the NGV Decision supported FEI's view that NGV projects have significant potential benefits to NGV customers.

"The Panel is persuaded that benefits will accrue to FEI, FEI's NGV customers, its ratepayers and the people of British Columbia if the NGV market can be kick-started. FEI's NGV customers could potentially save a significant amount on their fuel costs."

The FEU are cognizant of the important role that NGV Service plays in reducing the customers' carbon footprint in the province in support of the government energy objectives and policy and is determined to advance the energy objectives and policy. The Commission in the NGV Decision recognized that CNG/LNG Service advances "British Columbia's energy objectives" and provincial policy generally. Although the Commission expressed some reservations about the scale of the benefits, it specifically found that:

*"The panel does accept, however, that the use of natural gas as a fuel will result in fewer carbon and other emissions than the diesel which it replaces and the Application is therefore consistent with the energy objectives which relate to the reduction of greenhouse gas emissions... The Panel further accepts that there may be some economic development benefits in that certain component manufacturers for NGVS are located in British Columbia."*

Unlike in Quebec, NGV Service is a regulated public utility service in British Columbia. FEI believes that our investment in the NGV fueling stations provides delivery rate benefits for all non-bypass natural gas customers, provides fleet operators with access to a beneficial fuel



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 181

alternative, which will translate to the end user benefits over time, and delivers GHG emissions reductions that advance government policy and benefits British Columbians generally.

55.3.1 To what extent will the benefits from (i) reducing GHG emissions, and (ii) developing the natural gas as fuel accrue whether the new NGV initiative is regulated or not?

**Response:**

The FEU believes that the economic and environmental case for adoption of NGV Service is strong and will result in significant benefits of GHG emissions reduction and natural gas load building regardless of whether such service is regulated or not. However, the FEU also believe that the adoption of NGV will occur much more rapidly in a transparent, regulated environment, resulting in these benefits occurring faster and at a much larger scale. As a case in point, despite the economic and environmental benefits from NGVs, this market had not seen significant growth for almost a decade, until recently when the FEU became a leading example in stimulating NGV market transformation.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 182

**56.0 Reference: Issue 2 Scope (a); Issue 1 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 5.5, pp. 98-100**

**Proposed Guidelines for NGV**

FEU proposed several CNG/LNG Services guidelines.

56.1 Is there a #1 that was deleted?

**Response:**

No, the "2" is the result of a formatting error. It should read "1" and the numbers that follow should be adjusted accordingly.

56.2 Why do FEU propose a \$5 million threshold in Guideline 2? What is the expected cost of each of the expected CNG/LNG projects? Are not these projects sufficiently novel that FEU should apply for CPCNs for each project until the Commission becomes comfortable with the new services?

**Response:**

The FEU propose the \$5 million threshold as it is consistent with present practice with respect to the need for CPCNs for utility investments. Please see the response to BCUC IR 1.129.2 for further discussion on this topic. The projects contemplated are only novel with respect to the market that is being developed. The FEU have experience in executing projects that involve compression and storage equipment and experience in executing projects involving LNG storage and transfer systems.

In addition, the FEU believe that the CPCN process would overly burden the development of NGV projects with administrative expenses related to filing CPCNs. Projects typically range from \$500 thousand to \$2 million, hence the risk level is modest and does not justify the use of the CPCN process.

56.3 Why are Guidelines 3 and 5 required? Doesn't FEU have these rights under the UCA already?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 183

**Response:**

The FEU confirm that we already have the rights that are described in these guidelines, and that these guidelines are not strictly speaking necessary, as the Commission's guidelines cannot displace the FEU's rights under the *UCA* to apply for expenditure schedules and to recover prudently incurred costs.

In preparing guidelines, the FEU have taken the approach that it is desirable for all stakeholders to be "working off the same page" in terms of expectations. The FEU proposed guideline 3 in order to make sure that all parties and the Commission understand that, even though the FEU are not proposing to file expenditure schedules as a matter of course in respect of the New Initiatives, the FEU may do so from time to time. To the extent that the FEU have conveyed this intention in this Inquiry, the intended effect of this proposed guideline has been achieved and the Commission, in its discretion, may choose not to adopt it.

The FEU proposed guideline 5 for a similar purpose; that is, to ensure that all parties share a common understanding of the relevant legal principles of cost recovery. To the extent that the FEU have conveyed this understanding in this Inquiry, and it is accepted by the Commission, the intended effect of this proposed guideline has been achieved and the Commission, in its discretion, may choose not to adopt it.

56.4 Why is Guideline 6 necessary? Doesn't it impede the rights of any third party that may wish to participate in the Commission's review of FEU applications?

**Response:**

Guideline 6 is not intended to impede the rights of a third party to participate in the Commission's review of NGV applications. What the guideline is intended to convey is that third parties who wish to argue in these proceedings that they should be the project partner for an NGV project, should be required to file compelling evidence that establishes why this is the case.

56.5 On page 100 of its evidence, item 7 of the FEU's proposed guidelines would encourage the FEU to apply for modifications to the approved CNG/LNG Service

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 184

rate design "...based on new evidence that the approved rate design is presenting a significant impediment to the adoption of CNG/LNG Service, such that the interests of ratepayers in reduced risk is outweighed by lost opportunities to build load".

What, if any, restrictions currently exist on the FEU's ability to bring forward an application for a change to a Commission ruling based on new evidence? Don't FEU have this right under the *UCA*? If there are no restrictions preventing such an application and it is allowed under the *UCA*, is Guideline 7 necessary?

**Response:**

The FEU confirm that it already has the right described in this guideline, and that this guideline is not strictly speaking necessary, as the Commission's guideline cannot displace the FEU's right under the *UCA* to apply for reconsideration under s.99 of the *Act*. The FEU have proposed this guideline for similar reasons as described in the response to BCUC IR 1.56.3.

56.6 Isn't the statement "Nevertheless, the FEU are encouraged to apply for modifications to the approved CNG/LNG Service rate design based on new evidence that the approved rate design is presenting a significant impediment to the adoption of CNG/LNG Service, such that the interests of ratepayers in reduced risk is outweighed by lost opportunities to build load" an opinion on reduced risk versus lost opportunities for FEU rather than a guideline? Don't FEU have the right to present new evidence under the *UCA* and wouldn't this statement be seen as an attempt to undermine the current Commission determinations?

**Response:**

The proposed guideline recognizes the current order and that FEI has the right to seek reconsideration of the NGV Decision. In part, the FEU have put forward these guidelines to set out in writing its views so as to promote a common understanding among all stakeholders. See the response to BCUC IR 1.56.5.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 185

## Thermal Energy Services

### 57.0 Reference: Issue 1 Scope (b)

#### Exhibit B-2, Evidence of FEU, Section 2.2.5 p. 39, and Section 6.1, pp. 102-103

#### DES and Discrete energy systems

On p. 39 of FEU's Evidence: "While FEI is already operating some discrete geo-exchange systems, development work is currently in progress to evaluate DES systems in many municipalities and packages of thermal energy systems in discrete sites throughout many school districts."

The characteristics of "typical" discrete thermal energy systems and District Energy Systems are described by FEU on pages 102 to 103.

57.1 Please identify the discrete geo-exchange systems currently owned or operated either by FEI or FAES Inc., and clarify which entity is operating them.

#### Response:

The discrete geo-exchange systems and/or components (GeoX) currently owned or operated either by FEI and FAES are shown in the table below.

	<u>PROJECT</u>	<u>Location</u>	<u>TYPE</u>	<u>Owner/Operator</u>
1	Alysen I	Penticton	GeoX	FAES
2	Aquattro Estates	Colwood	GeoX	FAES
3	Flatiron	Vancouver	GeoX	FAES
4	Hudson	Victoria	GeoX	FAES
5	Pomaria	Vancouver	GeoX	FAES
6	Summit Pointe	Kamloops	GeoX	FAES
7	Wakefield Beach I	Sechelt	GeoX	FAES
8	Wakefield Beach II	Sechelt	GeoX	FAES
9	Waterstone Pier	Richmond	GeoX	FAES
10	Helen Gorman Elementary	Kelowna	GeoX	FEI*
11	Tsawwassen Springs	Tsawwassen	GeoX	FEI*
12	Glen Valley	Kelowna	GeoX	FEI*
13	Camden Green	Victoria	GeoX	FEI*

\* Note: the systems developed by FEI and their contracts are anticipated to be submitted to the BCUC in 2011 or early 2012 for approval.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 186

57.2 Please list the district energy systems that FEI owns and/or operates?

**Response:**

At present, FEI does not own or operate any district energy systems, however, as noted FEI is currently in discussions with a number of parties related to the construction, ownership and operation of district energy systems.

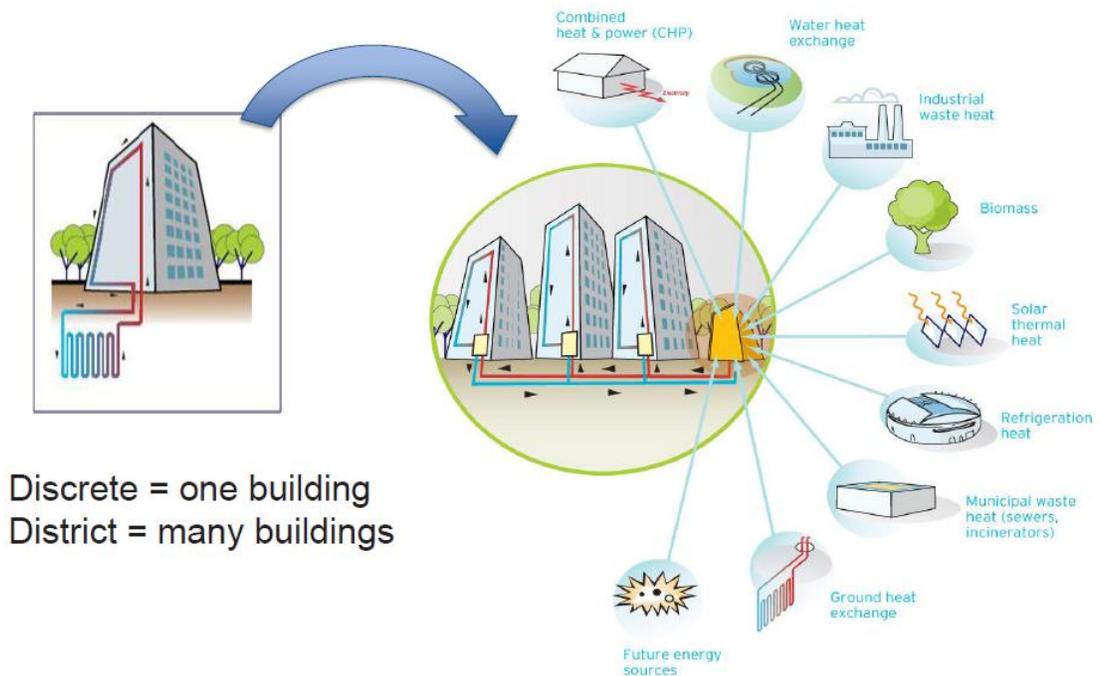
An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 187

**58.0 Reference: Issue 2 Scope (a)**

**Exhibit A2-13 FortisBC Presentation at CDEA-IDEA Conference on Integrated Energy Solutions in BC, June 2011 p.20;**

**District and Discrete Energy Systems**

## Discrete to District Thermal Energy Systems



Source: FortisBC Presentation at CDEA-IDEA Conference on Integrated Energy Solutions in BC, June 2011 p. 20

58.1 Please explain what steps would have to occur for a discrete energy system to become a district energy system, as shown in the slide above.

**Response:**

As described in Evidence of the FEU, Section 6.1, "Overview of Thermal Energy Systems and Customer Demand", a discrete system typically serves one customer (building type) in one or more buildings such as an individual home, a strata building, or a commercial property on one piece of land. A District Energy System ("DES") can serve a range of building use types (multi-family residential, commercial, institutional and industrial customers). DES are generally

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 188

designed to serve multi-use neighbourhoods or communities. The steps involved in moving from a discrete system to a district system may be as simple as connecting one or more other customers in separate buildings to the thermal energy system and expanding the capacity of the system as needed to serve these other customers.

Typically whether a project is a candidate for discrete or a district energy system is obvious based on the above definition. In some cases however, it is possible that a discrete system could be expanded to serve more than one customer and one building after it has been built. For example in the case of an discrete project based on geo-exchange, if an additional building adjacent to the project wanted to become attached to the system, a thermal loop could be installed to interconnect the two buildings. The decision to interconnect the buildings would be determined based on technical and economic benefits of an interconnected system versus a separate standalone system.

The distinction between discrete and district systems is a useful concept to understand the nature of the service being provided but the definitions should not be pressed to the point of making precise distinctions. For instance, a developer may construct a condominium development under one strata (and therefore one utility customer) with multiple buildings adjacent to each other in the same property where the buildings are all served by a single centralized energy system. As a dedicated system serving one customer this could be considered a discrete system even though multiple buildings are involved. However, without any change in the physical system, if one more customer was added the project would be considered a district system.

In at least one example, the Corix Sun Rivers utility service, which is a series of discrete geo-exchange systems serving separate customers is described by Corix as a district energy system in presentations such as the one provided to the BC Bioenergy conference on October 1<sup>st</sup>, 2010<sup>33</sup>. The FEU requested a copy of the Corix tariffs for geo-exchange utility service at Sun Rivers from the Commission and found that the rates and tariff for this service have not been filed with the Commission (although the Commission does have tariffs for Sun Rivers for both the natural gas and electricity service offered there by Corix).

---

<sup>33</sup> A copy of the presentation can be viewed at:  
<http://www.bcbioenergy.com/wp-content/uploads/2010/10/Van-Roon-Corix-Cambio-1-Oct-2010.pdf>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 189

**59.0 Reference: Issue 1 Scope (a)**

**Exhibit B-1, FEU Submission dated June 19, 2011, pp. 2, 3**

**Order G-141-09, 2010/11 Negotiated Settlement, pp. 7-9**

**Exhibit B-2, Evidence of FEU, Section 2 and Section 6.1.2, p. 102**

**Service Area for TES and Efficiencies Resulting from Utility Provision of AES**

FEU states that they articulated their intention to pursue NGV fuelling service, biomethane and AES in the 2008 Long-Term Resource Plan. As set out in the 2010/11 Negotiated Settlement, AES (now known as Thermal Energy Solutions, TES) include geo-exchange, solar thermal and district energy systems. FEU maintain that the TES, NGV and biomethane initiatives "deliver tangible benefits to existing and potential customers".

FEI states on page 102: "DES can serve a range of building use types (multi-family residential, commercial, institutional and industrial customers). Since DES are generally designed to serve multiuse neighbourhoods or communities, there are several levels of customer markets to consider."

59.1 What is the service area for a TES system? Please respond in terms of both discrete and district energy systems.

**Response:**

The service area for a discrete energy system would be the property which contains the building(s) for which the energy system was purpose-built.

The service area of a standalone DES, from a practical standpoint, is dependent on many factors including, but not limited to, the amount of heat available from the energy source, the load density of the customers, the proximity of the customers to the heat source, and the geographic conditions of the area. In addition the municipality in which a DES operates may establish boundaries within which the DES must operate.

However, as demonstrated by more mature European models, DES infrastructure over time may take on an appearance similar to natural gas infrastructure whereby a main transmission system circulates thermal energy over significant distances to urban distribution systems and/or larger municipalities may be served by expansive distribution grids with multiple thermal energy sources. On this basis, provided there is sufficient load density, the service area of a DES may encompass an entire municipality or even several municipalities.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 190

- 59.2 Will FEI develop TES that lie, in whole or in part, outside the service area of its gas and propane distribution systems? If yes, please explain why and provide examples.

**Response:**

It is possible that FEI will develop TES that lie outside the service area of its gas and propane distribution as the potential service area for TES encompasses the entire Province. This is an advantage for potential TES customers such as those that reside in remote "off-grid" communities. In areas where it is not economically feasible to expand gas, propane, or electricity service, it may be economically feasible to utilize local energy sources to provide TES.

- 59.3 Please explain how a public utility's duty to serve customers within reasonable reach of its distribution system relates to any duty to provide TES service to persons within FEU's service area. What extension policy would be in place? Please elaborate with examples.

**Response:**

The question appears to be based on a utility's obligation to provide service as set out in sections 28 and 29 of the *UCA*. Section 28 sets out that a utility must provide service upon request by an owner or occupier whose premises are within 200 metres of a utility supply line. Section 28 also sets out that the utility may require the owner/occupier of the premises to provide security or payment for costs of the connection in accordance with the provisions of the utility's tariff. Also, the Commission may prescribe a lesser distance for a particular public as it finds suitable. Section 29 deals with requests for service that are more than 200 metres from the utility's supply line.

The FEU expect that the duty to serve for thermal energy systems will apply to the utility's obligation to provide TES to potential customers that are close *to the existing distribution system of a thermal energy system*. The FEU expect that system extension and connection policies for TES will be based on similar principles and concepts as those used in the gas main extension and connection policies. These would make use of an analysis of the expected incremental revenues and costs associated with an extension in order to balance the interests of new and existing customers in receiving the TES. The FEU's duty to serve customers within reasonable

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 191

reach of its thermal energy service distribution system will be subject to favorable results of an economic (or extension) test. The methodology as set out in Section 12A of FEI's General Terms and Conditions for "Alternative Energy Extensions" (approved by BCUC Order No. G-141-09) will be followed using accepted cost of service modeling practices in BC setting customer rates on a project by project basis and for extensions to previously established systems.

The FEU's pursuit of TES is based on meeting the needs of customers and helping to achieve provincial energy objectives while making a positive contribution to managing long term business risks that arise from declining throughput levels on the natural gas system. It is not tied to a duty to serve obligation in the sense that the FEU would be under a duty to provide TES to someone in proximity to the natural gas system (Similarly, a hypothetical utility that provides natural gas and electric service would not be expected to provide gas service simply because the customer's premises are located near the electrical distribution system). The proper type of distribution infrastructure to provide a service must be in place first.

As FEI's DES systems are currently in development, examples of extensions are not yet available.

- 59.4 Where FEI has developed a district energy system, how will FEU's duty to serve affect its response to other potential customers in close proximity to the TES that request service from the system?

**Response:**

The FEU would serve potential customers within close proximity to the TES subject to the provisions of the *Act*. Please see the response to BCUC IR 1.59.3. The extension for a new customer that requests service from the TES would be run through an economic test to determine if a capital contribution in aid of construction was required.

- 59.5 Please explain and quantify any benefits of scale or scope that TES projects bring to existing FEU ratepayers. In the response please confirm that these projects will at best hold constant the gas load and the gas load factor for the corresponding customer(s), and typically will reduce load and load factor,

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 192

compared to the customer(s) meeting load through conventional gas consuming equipment. Please specifically address and quantify the scenario where load and load factor are reduced.

**Response:**

Details compiled by Sampson Research and shown in Tables 2.1, 2.2, and 2.3 in Section 2 of the Evidence of the FEU demonstrate the decline in the use of natural gas and the emergence of other energy sources within the residential new construction market. In addition, Section 2.1.4 of the Evidence of the FEU quantifies how load and load factor are impacted when gas load is lost to other energy sources. As described in Section 2.1.5 of the Evidence of the FEU, the benefits to existing ratepayers of the FEU providing TES arise from striving to keep natural gas as part of the overall energy solution and from being able to share common costs and overheads across more than one class of service. Consumers are increasingly looking for low carbon energy solutions and this demand may be served by other participants and forms of thermal energy. If other market participants serve the demand for TES there will be no such benefits for the FEU's natural gas ratepayers.

As the TES market is still in an early stage of development, the FEU have not yet quantified the impact of TES projects on the FEU's natural gas load or system load factors. However, the natural gas use for these projects would be focused during the winter peak if it was the backup source, and this would have an effect on load factor. It is reasonable to surmise that the impact would reflect the scale and scope of losses to other energy sources particularly the increasing trend towards TES as noted in the referenced research. Thus, to the extent the TES customer was a former natural gas customer, the adoption of TES would likely result in a reduction of natural gas consumption on the FEU's system. To the extent that the TES customer was an entirely new customer to the FEU, then it would add load. The issues of load factor and the overall reduction of load on the system can have offsetting effects. The FEU believe that issues relating to natural gas usage for TES is a natural gas rate design issue and should be addressed in that context based on cost allocation evidence, and not the Inquiry.

The impact on the natural gas load will be similar whether FEI or another company provides TES (although FEI may give greater consideration to keeping natural gas as part of energy solution so the impact may be greater if another provider serves the TES demand).

Overall, the FEU believe that it is better to work to keep the load on the system to the extent possible, so that we have the luxury of dealing with rate design considerations flowing from the additional throughput to ensure fair treatment among natural gas customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 193

- 59.6 What efficiencies of scope or scale will accrue to existing ratepayers if FEU undertakes TES projects, compared to the identified projects being undertaken by other TES-equivalent project providers? Please quantify the efficiencies identified.

**Response:**

As noted in Section 6.4.2 of the Evidence, when undertaking TES projects, FEI's shared services approach to allocate corporate overheads and common costs between classes of service and using established utility resources and expertise in the operation and management of both classes of service is the best model to achieve economies of scale and provide benefits to both classes of service. If other TES project providers served FEI's projects these efficiencies of scale or scope would not be achieved for the benefit of the FEU's natural gas customers. Other TES-equivalent project providers will also achieve economies of scale and scope within their own multiple businesses. While TES projects pursued by FEI would provide benefits for British Columbia natural gas customers through the sharing of overheads, similar economies of scope for other providers may be directed outside of the Province or may benefit shareholders rather than their other utility customers.

- 59.7 What efficiencies of scope or scale will accrue to the customers served by the FEU TES projects, compared to the identified projects being undertaken by other TES-equivalent project providers? Please quantify the efficiencies and cost savings identified.

**Response:**

Please see the responses to BCUC IRs 1.59.5 and 1.59.6. At this early stage of the development of the TES market, and the FEU's involvement in it, the FEU are not able to quantify the efficiencies and cost savings. Other TES utility service providers will bring their own unique corporate strengths, skills and advantages to bear in their own pursuit of TES projects. The FEU are equally entitled to employ their own strengths and advantages to develop the TES class of service within the utility.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 194

**60.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.1.2, p. 103**

**District Energy Systems – rate structure**

FEU on page 103 state:

“The target customers of this offering would be charged rates that would recover the FEU’s cost of service, although the high upfront capital costs of these systems may necessitate the use of rate management techniques such as levelized rates to avoid prohibitively high rates for the initial customers joining the system. In these cases the rates would recover the cost of service over a longer time period such as the life of the assets or the term of the service contract. The rate includes cost recovery for capital, O&M (including energy inputs), taxes, depreciation etc. Anchor customers may have separate negotiated rates with residential and commercial customers having postage stamp type rates.”

60.1 Please state all the criteria FEU will use to calculate a negotiated rate.

**Response:**

The rationale for negotiated rates has similarities to the concept of by-pass rates in the natural gas system. Customers (usually large volume ones) have competitive options that would lead them to leave the system (or not join the system). Because of their importance to the system lower rates are offered to respond to the customer’s competitive options but the lower rates must recover more than the incremental costs to serve that customer. In DES it is contemplated that institutional customers such as hospitals or universities may be the “anchor” client without whom the DES would not be feasible.

Negotiated rates are appropriate when the potential customer represents a significant load for the system and their competitive business-as-usual rate for energy would likely be significantly lower than the general market rate(s). However, the overall rate design for a system comprised of customers on the standard tariff rate and one or more on negotiated rates must still recover its cost of service over time. The potential DES customers to receive negotiated rates are characterized as “anchor” customers because their participation in the DES is often essential in enabling the DES to proceed. They may have a very large load and possibly a heat source that can be used to serve other DES customers. The strategic significance of these customers to the DES puts them in a unique position of being able to require negotiated rates. The criteria to be used in establishing negotiated rates will involve a comparison of their energy costs on the DES against the energy costs of their conventional supply alternative and ensuring that their rates recover at least their incremental costs and make a contribution to the DES fixed costs. There may also be merit in offering time-limited negotiated discounts to attract key customers to the

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 195

DES. The magnitude of the rate discounts would be limited by ensuring that rates for these customers would at least recover the incremental costs.

60.1.1 What would the typical term length in years for the negotiated rate?

**Response:**

The term length for the negotiated rates will vary from project to project depending on the attributes associated with recovery of the COS for that particular project. These attributes include but are not limited to, size and scale of the project, type of customers (i.e. institutional, residential, etc.), and security of energy source. They are anticipated to typically be in the range of 10 to 20 years.

60.1.2 Would all negotiated customers be required to commit to "take-or-pay" contracts?

**Response:**

In many cases a "take-or-pay" commitment will be necessary to address the risks of not fully recovering the project cost of service particularly when the customer requires capacity to be reserved. However, in some cases a "take-or-pay" contract may not be required. For example, a customer who has a significant credit worthiness (such as a government or large institutional customer), a well-defined annual energy consumption, and has committed to a lengthy term of service may not require such a commitment.

60.1.3 Will there be a requirement for a termination payment to help offset possible future stranded TES assets?

**Response:**

Absent a long term agreement, a termination payment may be appropriate to offset the possibility of significant impacts to the cost of service if one or more customers were to terminate their service. Each project will be assessed to determine whether a termination payment is needed for the customers, if any, on negotiated rates. The risk of stranded assets can be further addressed in future rate design by pooling TES assets which is similar to how this



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 196

risk is managed within the natural gas system, where customers generally can leave the system without penalty.

- 60.2 Suppose FEI had three separate district energy systems (DES A, DES B, and DES C). Does FEI contemplate that the postage stamp rate be applicable to each district energy system separately so that the DES A postage stamp rate is different than the DES B postage stamp rate? Or is the postage stamp rate applicable to all district energy systems in aggregate so that each of the customers in DES A, DES B, and DES C pay the same rate?

**Response:**

In keeping with the terms of the FEI's 2010-2011 RRA NSA (BCUC Order No. G-141-09), the FEU will be establishing separate rates for each DES. The FEU believe there is merit in pursuing an ultimate goal of providing one postage stamp rates across the TES class of service for simplicity and uniformity across the Province. However, many issues would need to be resolved in establishing a postage stamp rate structure since each DES is unique and there is a wide variety of energy solutions that can be employed to serve TES demands in any given area. As such, the approach, for the time being, is that the rates for each DES will be established based on the cost of service for that particular system (including appropriate allowances for recovery of overheads allocated to the TES class of service and a portion of the balance in the Thermal Energy Solutions Deferral Account).

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 197

**61.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.1.1 p. 102; Exhibit A2-9;  
Exhibit A2-10**

**Characteristics of Discrete Energy Systems**

According to the FEU Evidence, the development of a discrete system is much quicker than district energy systems and their development is often carried out by a developer.

In the 2010 LTRP (Exhibit B-6, Response to BCUC IR No. 1 Q 9.2), FEI states that given the infancy of the integrated energy services market, it may not be aware of all competitors; it also says that no one competitor appears to have a significant market share. FEI listed in their IR response a number of private companies in the market: Central Heat Distribution, Corix Utilities, Dalkia, Van Maren Group of Companies, and TerraSource.

61.1 Are those private companies mentioned by FEI active in both the discrete energy systems and the district energy systems?

**Response:**

FEI has limited information regarding all of the activities of the private companies listed. To the best of our knowledge, Central Heat Distribution, Corix Utilities, and the Van Maren Group are actively involved in district energy systems within BC and Dalkia, a European based company, is pursuing district energy systems across Canada. Corix and TerraSource operate discrete systems. This list of companies is not exhaustive as there are others such as Oris Geo Energy Ltd. which is developing a district energy system in partnership with the City of Richmond. For several of these companies, information about their activities can be found on their respective websites.

61.2 What distinguishes FEI from its competitors?

**Response:**

Some competitors have attributes somewhat similar to FEI due to their size and product offerings whereas other smaller companies may develop market niches in accordance with their respective business strengths. However, having multiple parties that compete with each other to develop TES in BC and provide utility TES service does not change the essential nature of this service being regulated in BC.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 198

FEI has established a positive reputation as a utility provider based on its years of providing competent and cost effective utility service as well as a model of collaboration with customers, stakeholders and service providers. FEI anticipates that its reputation will extend to its initiatives in the alternative energy sector, which will lead to a successful outcome for both customers and the Company.

The response to BCUC IR 1.149.1 discusses how the FEU intends to ensure "performance in the public interest".

61.3 In the Evidence, FEU state that the target customers of this offering would be charged rates that would recover the FEU's cost of service, although the high upfront capital costs of these systems may necessitate the use of rate management techniques such as levelized rates to avoid prohibitively high rates for the initial customers joining the system. According to the TerraSource website (Exhibit A2-9), customers pay a one-time connection fee to initiate access and a monthly loop access fee; TerraSource provides the exterior portion of the system.

61.3.1 Is this business model open to FEI? Please discuss the reasons for accepting or rejecting this model.

**Response:**

As we do not have full details of the Terrasource business model, we are unable to provide an opinion as to whether or not it is a business model we would consider.

Whether or not to have connection fees, in addition to monthly fees or energy-based charges in the rate structure, is ultimately a matter of cost recovery and rate design. For FEI's discrete systems, the monthly fees that FEI calculates reflect recovery of the cost of service as outlined in the contract over the term of the contract and as such a connection fee is not required. If FEI were to include a connection fee it would result in a corresponding reduction in the amount to be collected over the term. If in the future we determine that there is a value either to FEI or the customer to adopt a connection fee within the business model and rate design, FEI would do so. For district systems, connection fees that are set too high may be a barrier to attracting economic load to the DES. The overall rate design for a DES will need to balance many factors, including connection fees and other rates and charges, in order to facilitate the successful development and growth of the DES.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 199

61.3.2 To what extent is FEI's expertise in the exterior portion of the system (e.g., pipe, metering, connection) similar to that of TerraSource?

**Response:**

The FortisBC group of companies have been operating and maintaining geo-exchange systems since 2007 and as such have a thorough understanding of the exterior portion (otherwise known as a loop field) of the system as well as connections from the exterior portion to interior portions (mechanical equipment) of the system. While metering of these systems does not currently occur at the level of the individual consumer, the FEU have extensive metering knowledge from providing other types of service. The FEU rely on accredited drillers/loop field constructors to install loop field systems.

The FEU also have many decades of experience in operating and maintaining piped energy systems through its natural gas utility business. Further, the FEU have the capabilities, experience and expertise in providing customer care and billing functions.

TerraSource operate systems that have been designed and installed by GeoTility Systems Corp, a sister company of TerraSource. FAES also owns, operates, and maintains systems that have been designed and installed by other geo-exchange contractors.

61.4 The webpage of GeoTility is included in Exhibit A2-10. Please comment if the projects are similar to those discrete energy projects that FEI wishes to participate in as a regulated utility.

**Response:**

Yes, the projects as shown on the GeoTility webpage (Exhibit A2-10) are similar to those discrete energy projects that FEI will be submitting to the BCUC in accordance with FEI's 2010-2011 RRA NSA (BCUC Order No. G-141-09) although FEI's projects are generally larger scale.

GeoTility is an installer of geo-exchange systems for many developments. The FEU are of the understanding that some of the systems installed by GeoTility in the single family home market are owned by GeoTility's sister company, TerraSource, which charges a connection fee and a monthly loopfield access fee for geo-exchange-based TES utility service.

The FEU do not charge a connection fee and has other differentiating features in its service such as remote monitoring.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 200

## 62.0 Reference: Issue 1 Scope (a)

### Exhibit B-2, Evidence of FEU, Section 6.1.2 p. 103

#### Scope and Scale of DES

Development of DES tends to take much longer than a Discrete Thermal Energy System due to the scope and scale of the projects being larger than discrete projects, but also due to the increased number of stakeholders involved, such as municipalities and other levels of government.

FEI describes in Response to BCUC IR No. 1 Q 9.2 in the 2010 LTRP proceeding that the limited number of participants in this market is reflective of the significant upfront capital investment required, the relatively low Return on Equity required for the product to be competitive in the market, the long term required to realize the ROE, and the requirements for high levels of reliability and safety. As such, FEI asserts that utility companies such as the Terasen Utilities operating in a regulated environment, are best suited to this business.

62.1 Are the conditions described in the preamble unique to B.C.?

#### **Response:**

The FEU do not believe the conditions described in the preamble are unique to BC. One aspect affecting the development of TES in BC that is relatively unique is the legislative context in the *UCA* that defines TES as regulated activity. This provides a context for TES to be pursued by utilities in BC in a way that is not available in other provinces.

The Canadian District Energy Association issued a research report, dated June 17, 2011, that summarized findings from extensive consultation with over 200 energy and policy stakeholders across Canada. The conditions described in the preamble above were highlighted throughout the report. Specific to BC, the report noted:

*"Respondents expressed a strong sense that BC was leading the way in progressing new DE projects. Respondents across Canada generally applauded BC for their suite of progressive climate change policies and the investment they have made in green energy. Participants from other Canadian provinces often expressed significant frustration that DE is being overlooked as a viable option by legislators, policy makers, investors and utility companies to contribute to green energy solutions for their local communities."*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 201

- 62.2 Given that DES is not a regulated activity in Ontario and that the province is reportedly the current leader in district energy, is significant upfront capital investment a deterrent for a business that is potentially profitable?

**Response:**

While Ontario has several DES in operation, according to the list provided in the September 2007 report titled, "*Canadian Census of District Energy Owners and Operators*", many of those systems are government owned and operated including those serving universities, hospitals, and government buildings and hence were developed via government financing. These publicly owned systems and the privately owned systems are, with a small number of exceptions, systems that have been in operation for many years. The economics of the ongoing operation of these established systems is very different from setting up new DES from scratch. As indicated in the response to BCUC IR 1.62.1, BC is the leader in the development of new district energy systems.

For new projects that are not government financed, while the project may potentially be profitable, the upfront capital investment combined with operating and maintenance costs that have a level of uncertainty (such as the cost of fuel inputs) over the life of the project can be a deterrent for investment. Utilities like the FEU are familiar with these types of risks and work in an environment of capital recovery over the long term, and hence are good candidates to invest in DES.

As is typically the case, the full cost impact of the upfront capital costs of a new DES or alternative energy system occur right after the system comes into service but the customers that will use the system are added over time. By regulating the service and enabling rate smoothing or deferral account mechanisms<sup>34</sup>, the initial customers do not experience uncompetitive energy bills nor do they subsidize the customers who attach in later years.

- 62.3 Will FEI also face similarly low ROE in the short term or might it request deferral of its return to a future period?

**Response:**

If an FEI project will realize revenue shortfalls in the early start-up years, FEI would request that the shortfalls be recorded in a deferral account for recovery in later years. This would be a

---

<sup>34</sup> TES developers also employ other methods to reduce the impacts of the high initial costs on customers. Developing the TES project in phases or using temporary energy solutions while the customer load grows are examples.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 202

similar levelized rate approach that the Commission approved for the Dockside Green (Order No. C-1-08) and UniverCity (Order No. G-157-08) district energy systems. This treatment is also similar in concept to what occurred with the startup of FEVI in the 1990s as a new gas utility where a revenue deficiency deferral account was used to capture revenue shortfalls in the early years for recovery in later years after the customer base and revenues had grown sufficiently to begin repaying the earlier shortfalls.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 203

## Peak Demand

### 63.0 Reference: Issue 1 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 6.1.4, p. 109

#### Peak Capacity on Conventional Energy Systems

On page 109 of its evidence, FEI states that:

"Renewable TES almost always rely on conventional energy systems to provide back-up and peaking energy service. Designing an integrated energy system that can provide 100 percent of peak thermal energy requirements presents both technical and economic challenges. Often, a single renewable energy source such as geo-exchange will be combined with conventional natural gas service. As discussed in Section 2.3, natural gas is efficient, reliable and cost-effective as a back-up energy source. Using natural gas as a back-up energy source and during periods of peak energy requirements improves the economics of the TES overall. Using natural gas in this role also avoids adding to peak electricity demand (which typically occurs in the same timeframe as peak thermal energy demands) which is significant because peak demand is what drives potentially costly system capacity improvements of the electricity system."

63.1 Would it be reasonable to conclude that the peak natural gas demand also typically coincides with the peak electric and thermal demand? Please elaborate.

#### **Response:**

Confirmed. The FEU agree that a significant portion of natural gas, electric and thermal energy demand is driven by ambient temperature for space heating. Therefore all three forms of energy delivery will have similar coincident winter demand peaks due to low winter ambient temperatures. For electricity systems, there also is a smaller summer peak driven by space cooling requirements. The summer peak is most prominent in the Southern Interior of the Province but even there the summer peak is smaller than the winter one.

A significant differentiation however between the three energy delivery modes is the overall efficiency of the energy delivery both during on and off peak periods. While electric forms of heating delivery are quite efficient at the end use appliance level, the marginal cost of adding energy and capacity to serve winter demand with electricity is high relative to thermal energy systems and natural gas. The FEU believe that using thermal energy and natural gas should be the heating energy delivery forms of choice due to the lower overall marginal cost compared with adding electric capacity and energy. In the case of TES delivery, the employment of new technologies results in significant benefits to customers over time and the opportunity to

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 204

contribute to meeting provincial energy objectives and emission reduction objectives cost effectively.

- 63.2 Does using natural gas as a back-up energy source and during periods of peak energy requirements also drive potentially costly capacity improvements of the natural gas system?

**Response:**

Natural gas as a back-up energy source for TES will in most instances reduce peak demand on the system since it is anticipated that the peak gas load will be reduced. All natural gas customers, including those that use natural gas in TES systems as a back-up fuel will share in the existing peak energy capacity of the system. Natural gas customers benefit through continued use of natural gas as backup at TES projects as the natural gas use per customer declines due to the installation of high efficiency appliances and the continued focus on energy conservation.

Capacity improvements due to natural gas service to TES projects would be required only if the natural gas system has reached its capacity in the local area and the customer is an incremental customer on the natural gas system. This would also be the case if new natural gas customers were added to the system in that area – therefore, this concern is not specific to thermal energy, as it applies to the addition of any natural gas customer.

In most cases, the TES systems will be developed where there is adequate local system capacity or where energy consumers formerly used natural gas for a larger portion of their thermal energy needs. If the FEU are not proactive in participating in the TES market (and other energy delivery uses) others that have no interest in maintaining the viability of natural gas system will serve these TES demands and natural gas customers will experience rate increases due to declining total delivery volumes. The FEU believe that it is critical that FEI participates in TES to ensure natural gas is part of the energy delivery solution.

- 63.3 If FEU added a new thermal customer (that never used natural gas) and natural gas is used as peak back-up service, would the new thermal customer be adding to the peak demand requirements for the natural gas system? If so, would the

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 205

peak demand potentially drive costly system capacity improvements of the natural gas system?

**Response:**

Yes, a new TES customer that will now require natural gas as a back-up would add to peak gas system demand since a portion of the peak energy needs of the TES would be met by natural gas with the remainder being supplied by the TES system. There are no restrictions on connecting to the natural gas delivery system based on the usage of the commodity. In comparison to other customer types non-thermal in nature that use the system in a similar way, i.e. for space and water heating – these customers also add to the system demand and drive capacity additions. So the addition of TES customers is essentially a business as usual scenario for the FEU, and nothing is new just because it's a TES project.

System capacity improvements may or may not be required depending on local system conditions. If gas use per customer has been declining in the local area as it has been generally across the FEI service territory then there may be enough system capacity locally to accommodate the natural gas back-up load at a new thermal energy system. However, the gas back-up demand for TES would be added to the natural gas system demand that will be much less than the demand under a natural gas-only service. Also, the system demand increase must be put in perspective of the alternatives to adding the TES delivery. One alternative would be to add the customer as a sole-source gas customer. In this case, a higher gas system peak than the gas back-up alternative would result from this energy delivery mode with 100% of the peak energy delivery being supplied by natural gas. The highest cost alternative would be to deliver the energy through electricity at the marginal cost of electric supply in BC since BC Hydro does have full system usage at this point.

- 63.4 Suppose FEU added a new thermal customer, who is presently a natural gas customer, and natural gas is used as peak back-up service. Presumably some of the thermal energy would be used to offset peak load requirements reducing the natural gas peak demand on the natural gas system. However, this new thermal customer would still require a portion of the old natural gas peak demand and would be contributing less to delivery margins on the off-peak periods.

**Response:**

The example set out in the table below models a hypothetical situation based on the FEU's discussions with customers regarding TES projects. Assume that the consumer is an

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 206

institutional building of 18,750 m<sup>2</sup> in the lower mainland and the normalized demand for thermal energy is 6,175 GJ in a year and the peak day demand for TES is 58 GJ.

If the customer is currently a natural gas customer, using an older natural gas boiler with an efficiency rating of 60%, then the customer will use 10,292 GJ of natural gas in a normal weather year and 96.7 GJ on a peak day.

At the current (Q3 2011) Rate Schedule 3 for natural gas, the natural gas revenues will be \$76,647 for production of thermal energy. Of that amount, the midstream cost recovery and commodity cost of gas amounts are pass-through costs that amount to \$51,695. The delivery margin revenues are the difference between the two foregoing amounts or \$24,952. The rate structure and regulatory construct for the natural gas commodity and mid-stream costs produces full cost recovery because of the pass-through treatment – only the remaining amounts (i.e. the delivery- related charges) will be affected by rate increases if throughput volumes decline.

Typically, a geo-exchange system that meets 50 percent of the peak day demand for thermal energy will be able to deliver 90 percent of the annual demand for thermal energy. If natural gas is used for the remaining 50 percent of peak thermal energy demand, then 10 percent of the annual demand for thermal energy will be natural gas. This means that the new system will require 1,029 GJ of natural gas in a normal weather year and 48.3 GJ of natural gas on the peak day. This is a reduction of 9,263 GJ of natural gas each year (which equates to a reduction in GHG emissions of 460 tCO<sub>2</sub>e each and every year after the new system is installed). In addition, this frees up 48.3GJ of natural gas system capacity on the peak day, without incurring any new capacity costs, which also enables FEI to add other new natural gas customers at a lower marginal cost, by delaying capacity expansion requirements.

The new natural gas usage would change the rate classification to Rate Schedule 2 from Rate Schedule 3 due to the lower usage of natural gas. Using this rate structure, the natural gas revenues will be \$8,521 for production of thermal energy. Of that amount again, the midstream cost recovery and cost of gas amounts are pass-through costs amounting to \$5,488. As can be seen, the natural gas revenue still recovers an amount for the shared costs of delivering natural gas above the avoidable costs of production. The delivery margin in this case is \$3,033.

The current rate design contemplates recovery of the delivery margin as a monthly charge and a per GJ delivery charge. Therefore, the share that this customer contributes towards the embedded costs of the natural gas service falls. However, the customer could adopt other solutions in regard to changing thermal energy systems, such as acquiring a high efficiency natural gas boiler (perhaps with incentive support through EEC funding) or adopting a thermal energy solution that excludes natural gas altogether, with similar or perhaps greater impacts on other natural gas customers. Given the very small scale of these services at this stage of development, it is premature to engage in natural gas rate design methodologies that arise from the provision of this service. The Company will require actual operating data to undertake an



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 207

embedded cost study for the purposes of rate design. FEI respectfully submits that natural gas rate design issues should be considered in full, with adequate information and review in a separate proceeding.

	<u>Current</u>	<u>New</u>	<u>Change</u>
Building Size in m <sup>2</sup>	18,750	18,750	-
Normalized Annual Thermal Energy Demand (GJ)	6,175	6,175	-
Annual Thermal Energy met with Natural Gas (%)	100%	10%	-90%
Annual Thermal Energy met with Natural Gas (GJ)	6,175	618	(5,558)
Boiler Efficiency	60%	60%	-
Annual Natural Gas Consumption (GJ)	10,292	1,029	(9,263)
Average Daily Natural Gas Consumption (GJ)	28.2	2.8	-25.4
Peak Day Thermal Energy Demand (GJ)	58.0	58.0	-
Peak Day Thermal Energy met with Natural Gas	100%	50%	-50%
Peak Day Natural Gas Demand (GJ)	96.7	48.3	(48.3)
Load Factor	29.2%	5.8%	-23.3%
Natural Gas Rate Class	3	2	
Basic Charge per Month	\$ 132.52	\$ 24.84	\$ (107.68)
Delivery Charge per GJ	\$ 2.318	\$ 2.714	\$ 0.396
Rider 3 per GJ	\$ (0.028)	\$ (0.036)	\$ (0.008)
Rider 5 per GJ	\$ (0.020)	\$ (0.020)	\$ -
Midstream Cost Recovery Charge per GJ	\$ 1.018	\$ 1.327	\$ 0.309
Cost of Gas per GJ	\$ 4.005	\$ 4.005	\$ -
Annual Basic Charges	\$ 1,590	\$ 298	\$ (1,292)
Annual Delivery Charge	\$ 23,856	\$ 2,793	\$ (21,063)
Annual Rider 3 Credit	\$ (288)	\$ (37)	\$ 251
Annual Rider 5 Credit	\$ (206)	\$ (21)	\$ 185
Annual Midstream Cost Recovery	\$ 10,477	\$ 1,366	\$ (9,111)
Annual Cost of Gas	\$ 41,218	\$ 4,122	\$ (37,096)
Total Annual Revenues	\$ 76,647	\$ 8,521	\$ (68,126)
Average charge for Natural Gas (\$/GJ)	\$ 7.45	\$ 8.28	\$ 0.83
Average Charge for Natural Gas to Generate Thermal Energy (\$/GJ)	\$ 12.41	\$ 1.38	\$ (11.03)
Avoidable Costs	\$ 51,695	\$ 5,488	\$ (46,208)
Revenue Contribution towards Avoidable Costs	148%	155%	7%



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 208

Please model a typical hypothetical situation based on the situation outlined above comparing the old revenues and costs to the natural gas system and the new revenues and costs to the natural gas system when a natural gas customer is converted to a thermal customer. Please provide the assumptions including the calculations of peak requirements.

63.5 What would be the typical natural gas load factor of thermal customers that use natural gas as a peak back up service? Please elaborate on the assumptions and types of thermal customers.

**Response:**

The FEU have calculated the load factors for the typical TES customer presented in the response to BCUC IR 1.63.4 as follows:

- Typical ground source heat pump customer – this customer would take gas service under FEI large commercial Rate Schedule 3, and the average load factor for Rate Schedule 3 is 38%. Load factor is defined as the Average Load divided by the Peak day load. In the case of this customer, the average load is reduced to 10% of the original load, and the peak day load is reduced by one half. The resulting load factor would therefore be approximately one fifth of the original load factor, or approximately 8%.
- Typical district energy customer utilizing waste heat – this customer may be a city where district energy is installed in the downtown core. Gas service would typically be delivered in the city to primarily space heating applications under either Rates Schedule 3 or 5. Since primarily space heating service would be involved, it is assumed that the Rate Schedule 3 load factor at 38% would be a reasonable representation for this load. With the same definition load factor in the above example, it is expected that since the waste heat recovery would be continuous, that it would represent a similar portion of the load at peak conditions as at average conditions, resulting in no change to the load factor for this customer.

In both of the above examples a significant portion of the annual gas system load has been supplied by the TES systems, thus freeing up gas system capacity in both cases. Neither of the examples would drive gas system capacity additions, and indeed, the Company is concerned that gas system usage may diminish in the future if current trends continue. If TES customers are added to the system, they can slow the throughput decline in the gas system, benefitting all customers.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 209

63.6 What are the FEI natural gas load factors for residential, small commercial, large commercial, and general firm service customers?

**Response:**

The FEI gas system sales rate class load factors based on the most recent three-year average are as follows:

Rate Class	Residential Rate 1	Small Commercial Rate 2	Large Commercial Rate 3	General Firm Service Rate 5
Load Factor (%)	29.8%	30.1%	38.2%	49.5%

63.7 Will all FEU thermal customers also use natural gas service in the customers' premise?

**Response:**

Not all TES customers will use natural gas service in the customers' premises. For example, in the case of District Energy Systems, thermal energy will be used in many of the buildings in the downtown core area. The buildings that had natural gas replaced with thermal energy would still have natural gas services into those buildings. Some uses of natural gas will not be replaced by the TES such as, for example, cooking in restaurants and institutions and clothes drying at commercial laundries. Other buildings that did not initially have natural gas service likely would not require natural gas service to be installed. In aggregate, the FEU expect a reduction in the peak gas demand, which will free up gas system capacity for use by other customers. The installation of TES may in fact cause a delay in the requirements for gas system capacity increases.

63.8 Is it possible that in the future FEU could add thermal customers who do not use natural gas service in the customers' premise?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 210

**Response:**

Confirmed. Energy customers will require either electricity, gas, thermal or a combination of all three in order to meet their energy needs.

In the delivery of TES, energy supply can come from many combinations of energy including natural gas, electricity and renewable energy. The challenge is to find the right balance of these energy supplies, recognizing the economic constraints of an entirely renewable energy solution.

As discussed in the response to BCUC IR 1.63.7, in the case of District Energy systems, there may be many customers who would not use natural gas. In the case where natural gas is used as a back-up fuel, the natural gas service would be used in particular at the thermal energy centre, not for use directly in each of the premises. It would be the thermal energy systems that would provide the heat in the form of hot water that would be piped to each premise.

- 63.9 The Consolidated Edison Company of New York Inc. offers natural gas, electricity and steam as different classes of service. The use of steam reportedly provides significant benefits to electric customers, gas customers and the community based on avoided costs related to peak load requirements on electric supply and delivery infrastructure. In the case of FEI, what is the avoided cost of natural gas that results from the provision of TES?

**Response:**

The avoided cost of natural gas would be the marginal cost of new gas system capacity increases if the customer was not a natural gas customer before, as well as the market based cost of the incremental natural gas commodity supply. In the case where the customer was previously using natural gas to produce thermal energy, the only avoidable costs are the market based costs of the incremental natural gas commodity supply. The real issue (affecting customers that were previously natural gas customers) is the extent to which there may be a difference between avoided system costs and lost delivery revenues. This would occur whether FEI or another party was providing the thermal energy services.

The FEU have not completed a marginal cost study for a number of years, and therefore does not at this time have updated marginal cost numbers for delivery costs. However, since the natural gas commodity is market priced, the commodity cost is flowed through to customers at the market or marginal price.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 211

63.9.1 To what extent do traditional natural gas services and the thermal energy services compete for the same customers?

**Response:**

The answer to this question depends on whether the potential customer is already using natural gas or not, and also on what alternatives the customer is considering to natural gas. When a customer is already receiving natural gas service and they switch to an alternative or more efficient means of providing thermal energy, then there will be a corresponding decrease in natural gas throughput. The extent to which this will occur is, at this point in time, not certain given the relatively new stage of the TES market. It is the FEU's belief that the natural gas customers are better off if the FEU provide the thermal energy and recover some allocation of overhead/indirect costs than if another provider delivers the thermal energy, in which case no recovery of overheads/indirect costs would occur while throughput would decrease, putting upward pressure on natural gas service delivery rates.

The FEU believe there is competition between all energy forms for the overall thermal energy market in the province. The question mentions natural gas and thermal energy service specifically, but a significant portion of the thermal energy demands in BC are served by electricity and smaller percentages are served by heating oil, propane and wood. In new buildings and developments the competition is strongest before the thermal energy solution has been decided upon. It is only after the thermal energy solution has been selected and the buildings built that the utility provider of energy service has a degree of monopoly power over the consumer. The FEU believe the competition from electricity is currently a much larger concern in certain segments of the thermal energy market than any competition between natural gas and thermal energy service.

63.10 FEU provided an example of propane and natural gas provision within a single regulated utility (Section 6.4, p. 113). Have propane and natural gas competed for customers within FEU or has propane been a substitute where natural gas cannot be effectively delivered?

**Response:**

The FEU have had both circumstances where propane and natural gas compete directly, and where propane service is in place due to the prohibitive cost of running a gas pipeline into



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 212

certain areas for the load that would be served. As stated in the response to BCUC IR 1.63.9.1 there has also been competition with other forms of energy such as electricity and fuel oil.

For example, propane and natural gas have traditionally competed against each other when natural gas service is introduced to an area. FEVI and Squamish experienced this in the 1990s where the traditional service had been a mixture of piped propane and bottled / tank propane distribution service. With the completion of the Vancouver Island pipeline, the introduction of natural gas service started in 1991. Many of these customers were captured through the conversion of the propane distribution systems in place at the time. In addition, the Company also competed with bottled propane providers for customers to connect to the natural gas distribution system. The Municipality of Whistler is a recent example where a gas pipeline was constructed and the existing propane distribution system and appliances were converted to natural gas.

Competition with bottled propane exists also within the FEI region, and comes into play in main extension test cases where expensive mains would be required in order to connect customers. In this case FEI and FEVI compete on an ongoing basis with bottled propane providers, especially in rural areas where new gas distribution mains must be installed.

Propane can also be considered a substitute for natural gas with the Company's propane distribution system in Revelstoke where costs would be prohibitive to construct a natural gas pipeline for the load to be served. In this case, the Company's propane distribution system competes with bottled propane.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 213

## Retail Market Downstream of the Meter Guidelines and Placement of the Meter

### 64.0 Reference: Issue 2 Scope (a)

**Exhibit B-2, Evidence of FEU, Section 6.1.3.3, p. 108**

**Exhibit B-16 FEU Response to ESAC IR2 5.3 2012-2013 RRA p.16;**

**Pipes, Meters and Downstream of the Meters**

On page 108 of its evidence, FEI states that: "Solar-thermal water heating systems, also called solar hybrid water heating systems, are more typically used to supplement conventional gas and electric energy systems that supply Domestic Hot Water ("DHW")..." In figure 6-4 FEI provides an illustration of a solar thermal water heating installation.

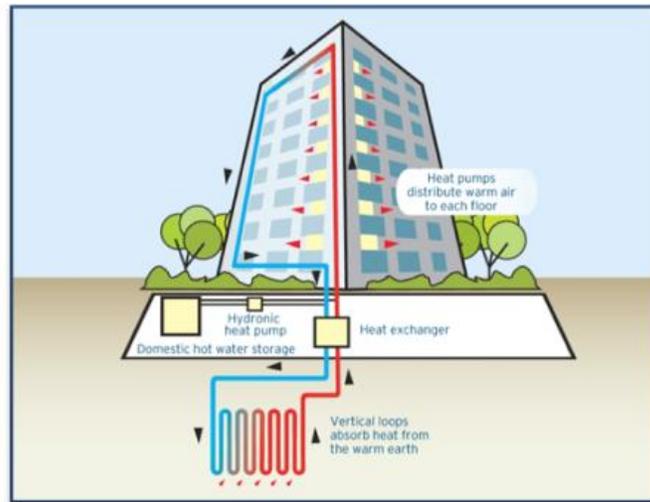
In the 2012-2013 FEU RRA response to ESAC's IR#2 5.3 p.16 question regarding the position of the meter relative to the boiler for the Delta Schools Project they responded that "the thermal energy will be measured and the customer will not continue to pay the gas bill for the meter upstream of the boiler."

64.1 Please provide an updated diagram showing the same solar thermal water heating system, but including the conventional gas fired hot water system and indicating the placement of the metering equipment required.

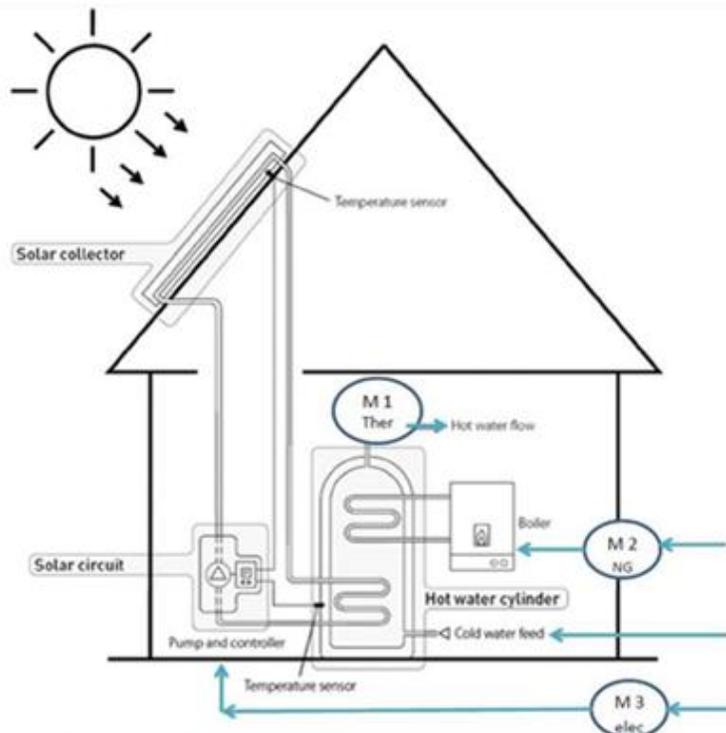
### **Response:**

To clarify, the Delta School Project referenced in the response to ESAC IR 2.5.3, p.16, in the FEU's 2012-2013 RRA, cited above, does not involve a solar thermal water heating system such as the one illustrated in figures below. The Delta School Project can involve a geo-exchange system and boiler replacement similar to Figure 6-3 that is re-created below.

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 214</p>



In response to BCUC IR 1.64.1, the figure below shows a solar thermal water heating system in similar fashion to Figure 6-4 in Section 6.1.3.3 of the Evidence. The arrows show the flow of material. Thermal meter M1 is placed on the downstream side of the hot water system. The M1 is measuring the output of the hot water system and the arrow shows the flow of hot water to the house. The other arrows show the inputs to the system, M2 measuring natural gas into the boiler and M3 measuring electricity into the controller, pumps and other related equipment.





An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 215

In response to BCUC IR 1.64.2, if a solar hot water heating system were incorporated, it would exist completely upstream of the thermal meter M1 and completely downstream of the natural gas meter M2 and electrical meter M3.

To further clarify, if a geo-exchange system were incorporated, it would be positioned similarly to a solar hot water heating system and also exist completely upstream of M1 and downstream of M2 and M3.

64.2 How much of the solar hybrid water heating system exists downstream of the meter?

**Response:**

Please refer to the response to BCUC IR 1.64.1.

64.3 Would the Guidelines for Retail Markets Downstream of the Utility Meter (RMDM) (Exhibit B-1, Tab 17) not apply in such situations? If not, why not? If they would not apply, how would they need to be modified in order to apply in such situations?

**Response:**

No, RMDM are not relevant to TES projects. The reason they are not relevant has to do with the fact that RMDM are intended to apply to non-regulated businesses, and TES is a regulated service. The physical location of the meter is not the determinant of whether a service is regulated, and the phrase "downstream of the meter" was really just shorthand for non-regulated services. RMDM are ill-suited to deal with circumstances where there are two regulated classes of service within a utility; the application of appropriate cost allocation methodologies is more appropriate.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 216

64.4 Do FEU consider the RMDM guidelines to be relevant in the case of thermal metering where the boiler is now upstream of the meter?

**Response:**

No, RMDM are not relevant to TES projects. Please see the response to BCUC IR 1.64.3.

64.5 What is the status of approved thermal meters by Measurement Canada for the residential, commercial and industrial sectors?

**Response:**

At present time Measurement Canada ("MC") does not regulate the use of steam or thermal energy devices, however, steps are being taken to harmonize approval requirements for thermal energy devices with international standards such as the International Organization of Legal Metrology ("OIML"). Thermal meters used throughout Europe and North America adhere to the European EN1434, standard for thermal meters that was developed in 1997 and revised in 2007. MC used the EN1434 (1997) version to develop its own Canadian Standard CSA C-900 for thermal meters that is currently revised to include 2007 EN1434 revisions. It is anticipated that thermal meters that adhere to EN1434 will be adopted by MC, with minor changes, as suitable for measurement of thermal energy. FEI will adhere to the practices and standards set out by MC for thermal devices.

The supporting information found in "*Measurement Canada Senior Management Committee's Decision on Steam and Thermal Energy Trade Sector Review and Recommendations*", dated September 2010, states that MC should require approvals for all devices in the steam and thermal energy sector with the exemption of the sub metering devices. There are seven recommendations regarding implementation of the initial inspections that are expected to be implemented in the next 2-3 years<sup>35</sup>.

---

<sup>35</sup> For more information please refer to the following link:  
[http://www.e-economy.ca/eic/site/mc-mc.nsf/vwapi/TSR\\_SteamDecision.pdf/\\$file/TSR\\_SteamDecision.pdf](http://www.e-economy.ca/eic/site/mc-mc.nsf/vwapi/TSR_SteamDecision.pdf/$file/TSR_SteamDecision.pdf)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 217

**65.0 Reference: Issue 2 Scope (c)**

**Exhibit A2-20 Nature of AES activities as regulated or unregulated activities under the UCA: water heater rentals**

The OEB appears to have no role with regard to water heater rental and maintenance activities in Ontario, according to the website extract shown below:

### OEB's Role in Natural Gas Rates

**In natural gas, the OEB sets rates for:**

- the distribution, transmission, and storage of natural gas;
- the commodity price for natural gas;

**The OEB does not regulate prices charged for competitive services such as:**

- contracts offered by natural gas marketers;
- water heater rentals; and
- repair or maintenance services for water heater rentals.

These products and services are available from a number of companies competing for your business.

Source: [www.ontarioenergyboard.ca/OEB/Consumers/Natural+Gas/Natural+Gas+Rates#role](http://www.ontarioenergyboard.ca/OEB/Consumers/Natural+Gas/Natural+Gas+Rates#role)

Gaz Metro's Corporate Structure shown in Exhibit A2-20 below indicates that water heater rentals are provided through the unregulated energy services provided by Gaz Metro Plus, Servitech Energy and Hydrosolution

([www.corporatif.gazmetro.com/lentreprise/structurecorporative.aspx?currentcontentid=46&culture=en-ca](http://www.corporatif.gazmetro.com/lentreprise/structurecorporative.aspx?currentcontentid=46&culture=en-ca)).

65.1 To the best of FEI's knowledge, what is the history of the regulation and deregulation of the water heater industry in Ontario? How and why has this changed over time?

**Response:**

The natural gas water heater rental programs in Ontario were introduced in the late 1950's by the gas utilities to help create a market for the natural gas industry. The rental cost covered installation, removal and a range of maintenance and repair services and depended on the size and efficiency of the system. Over the years changes have taken place in the water heater rental programs driven by factors that include changes in the natural gas industry in Canada.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 218

Prior to 1985, the commodity price of natural gas in Canada was set by agreements between the federal government and the government of Alberta. The Canadian energy industry was heavily regulated and utilities were the sole providers of rental water heaters. In response to political and economic pressures, in 1985, the federal government and the governments of the major natural gas producing provinces namely Alberta, British Columbia and Saskatchewan signed the Agreement on National Gas Markets and Pricing (the Halloween Agreement) that created a more flexible, market oriented gas price system<sup>36</sup>. The agreement removed regulation of the natural gas commodity prices and allowed prices to be determined in the competitive gas market. This change led to changes in all sectors of the natural gas business. The National Energy Board and provincial regulatory boards allowed the customers in Eastern Canada to obtain natural gas supplies direct from Trans-Canada Pipelines thus eliminating the financial liabilities imposed on the gas customers by the involvement of Local Distribution Companies' such as penalties and unabsorbed demand charges<sup>37</sup>.

In 1999, the electric and natural gas utilities in Ontario which offered rental water heaters and the related service and repairs/replacements were required by a new government regulation to divest themselves of that business<sup>38</sup>. In response the utilities in Ontario formed non-regulated subsidiary companies to carry out the separated business. For example, Enbridge Gas formed Enbridge Home Services for this purpose.

The effect of the change was the introduction of more competition in the industry through a dealer network of smaller water heating companies and heating, venting, and air conditioning contractors/businesses offering rental equipment through various brands. The rental water heater industry is now open to any service provider willing to offer rental equipment to homeowners. Energy marketing companies such as Direct Energy (formerly Enbridge Home Services that was sold to Centrica North America in 1999) National Energy Corporation, Reliance Home Comfort, and Summitt Energy are very active offering heating and cooling sales, service and installations; as well as rental water heaters. Reliance Home Comfort and Direct Energy dominate the water heater rental market, with portfolios of roughly 1.5 million and 1.4 million heaters respectively<sup>39</sup>.

To create a more competitive environment for the companies, the government of Ontario established the Open Bill Access Program by which the emergent companies are given access to bill their services on the utilities distribution bill<sup>40</sup>. Consequently, many different companies include charges for their services, including water rentals, on the utilities distribution bills.

<sup>36</sup> [http://www.piac.ca/energy/deregulation\\_of\\_the\\_canadian\\_natural\\_gas\\_market/](http://www.piac.ca/energy/deregulation_of_the_canadian_natural_gas_market/)

<sup>37</sup> [http://www.piac.ca/energy/deregulation\\_of\\_the\\_canadian\\_natural\\_gas\\_market/](http://www.piac.ca/energy/deregulation_of_the_canadian_natural_gas_market/)

<sup>38</sup> Solar Task Force Report [http://www.mei.gov.on.ca/en/pdf/conservation/OSTF-Final\\_Report103108.pdf](http://www.mei.gov.on.ca/en/pdf/conservation/OSTF-Final_Report103108.pdf)

<sup>39</sup> Solar Task Force Report [http://www.mei.gov.on.ca/en/pdf/conservation/OSTF-Final\\_Report103108.pdf](http://www.mei.gov.on.ca/en/pdf/conservation/OSTF-Final_Report103108.pdf)

<sup>40</sup> History of Water Heaters [http://livcleanhomeservices.com/?page\\_id=259](http://livcleanhomeservices.com/?page_id=259)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 219

65.2 If a company offered water heater rentals in BC would that be a public utility regulated activity?

**Response:**

Yes. In BC, which hasn't undertaken the same deregulation as in Ontario, a person who owns or operates the water heater for the provision of heat to a homeowner for compensation is a public utility, and in the absence of an exemption order would be subject to regulation.

This is to be distinguished from a repair and maintenance service, which would not be regulated.

65.3 Does FEU plan to provide a residential hot water heater rental service within the next 15 years?

**Response:**

The FEU believe there is likely merit in facilitating the delivery of a residential hot water rental or financing service for our customers in the near future.

As described in the Section 2.1 of the Evidence, space and water heating represents the largest household energy usage, equating to approximately 80 percent of household energy use. The loss of such loads on our system leads to upward rate pressure for the remaining customers. Table 2-2 on p.25, summarized that 69 percent of gas homes built since 2005 had a domestic hot water heater in the dwelling that used gas, compared to 91 percent of gas homes built prior to 2006, representing a 22 percent drop in the past six years.

As noted in the 2010 FEI-FEVI Main Extension Report and FEI Vertical Subdivision Report,<sup>41</sup> feedback from our customers to sales managers indicates that builders and developers are more likely to select electricity over natural gas due to the incremental capital cost of installing natural gas equipment and the inability to recover these cost differences in the selling price of a home. The up-front cost to install a gas hot water heater in a home is estimated to be approximately 44% percent higher than installing an electric hot water system (\$1,400 versus \$975 respectively).

---

<sup>41</sup> p.25. Filed with the Commission June 1, 2011



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 220

Anecdotal evidence from our customers suggests a hot water rental or financing program would remove the barrier of higher up-front costs for builders and developers and provide the right market signals to promote the installation of a hot water system fuelled by natural gas. In this way, the FEU would be able to help mitigate the loss of this critical load and in turn, lessen upward pressure on our customer's rates.

The FEU will be performing further analysis to develop the business case for a hot water rental and/ or financing program including the role the FEU might play.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 221

**66.0 Reference: Issue 2 Scope (a), Issue 1 Scope (a)**

**TGI 2010/11 RRA EXHIBIT B-4 IR 1.21.1;**

**Exhibit B-2, Evidence of FEU, Appendix F-2, 2010 Long Term Resource Plan Excerpts; Section 3.1.1.2, p.56,**

**Geo-exchange and Solar Thermal metering market**

In FEU's response to BCUC IR1.21.1 (Exhibit B-4) of the 2010-2011 RRA proceeding, TGI stated that "With respect to Alternative Energy Solutions, TGI intends to offer energy and heat delivery services to customers where that energy delivery is via a district energy system (DES), solar, geothermal or other energy source, where TGI would own and operate the heat delivery systems and where TGI would charge the end use customer for the delivery of heat. Primarily, this service would be to commercial and industrial customers and those who could tie into a district energy system. We do not contemplate building stand alone geothermal or solar heat delivery systems for single detached homes." [emphasis added]

According to page 56 Section 3.1.1.2 of the 2010 LTRP: "Both installation and/or ongoing O&M for geo-exchange and solar-thermal heating systems can be provided either directly by TGI or through yet-to-be-identified alliance partners such as engineering service providers. TGI does not at this time expect to provide mass market geo-exchange or solar-thermal services to individual home owners, but may in the future." [emphasis added]

66.1 Has the Companies' view of the single-detached home market changed since the 2010-2011 proceeding? If so, what are your current plans with regard to this market segment?

**Response:**

No, the FEU's view of the single-detached home market has not changed since the 2010-2011 proceeding. FEI's main targets at this time continue to be in the commercial, institutional, industrial and multi-family residential sectors. FAES has entered into one service agreement to provide geo-exchange services to a strata corporation in which a number of the strata lots are detached homes. In this arrangement, the geo-exchange services are contracted directly to the strata corporation and not the individual owners. FEI may undertake future projects of a similar nature.

Further, there may be instances in the future where it is economic to connect single family dwellings to a district thermal energy system or even to establish a district energy system to serve a mixed neighbourhood of single and multi-family dwellings, however, FEI does not intend to pursue standalone TES serving individual single family homes at this time.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 222

66.2 Is it possible FEU could offer these thermal energy services to the single residential customer market?

**Response:**

It is possible for the FEU to offer these TES to the single residential market. Please see the response to BCUC IR 1.66.1 for an explanation of the FEU's intentions in the single family dwelling market.

66.3 If FEU decides to enter the single-detached home market, would this necessarily be done in combination with the natural gas system?

**Response:**

Regarding the FEU's participation in the single-detached home market, please see the response to BCUC IR 1.66.1. The FEU would not expect that TES to this market segment would necessarily have to be done in combination with natural gas service as the alternative energy source(s) may be sufficient to provide 100% of the thermal energy requirements.

66.4 Would the RMDM Guidelines be applicable in the case of standalone TES systems for single detached homes?

**Response:**

No. The objectives of the RMDM Guidelines were to establish a set of principles and guidelines to help the Commission make determinations regarding utility and related non-regulated business participation. The ownership and operation of standalone TES systems by FEI or another entity for compensation meets the definition of public utility service and therefore are regulated. RMDM will not apply. The sale of products or services which do not meet the definition of public utility (such as a maintenance contract, or the sale of equipment to owners) will be marketed in a non-regulated business and the RMDM Guidelines would apply. FEI notes



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 223

that our business model does not currently contemplate offering residential TES services from a dedicated energy system for each residential customer.

66.5 Under which TES business model, summarized in Evidence from FEU, Section 6.4.1.1, Table 6-1, p115, would the discrete systems for single detached homes fall?

**Response:**

FEI's participation in the single detached home market as described in the response to BCUC IR 1.66.1 falls under the first business model outlined in Table 6-1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 224

## Clarification of Activities under TES Inc. and FAES Inc.

### 67.0 Reference: Issue 1 Scope (b)

**Exhibit B-2, Evidence of FEU, Section 6.4.1.4, p. 118; Fortis Inc. 2010 Annual Report p. 12; Terasen Inc. 2008 Annual Report "About us" p. 2 of electronic version**

**Thermal Energy Services Inc. and FortisBC AES Inc. (formerly Terasen Energy Services Inc.)**

The Terasen Inc. 2008 Annual Report at page 2 states: "Terasen Energy Services Inc. provides both regulated and non-regulated alternative energy, delivered through integrated energy systems, to multi-family developments, larger commercial buildings and resorts."

The Fortis Inc. 2010 Annual Report states on page 12 that "[t]he financial results of Terasen Energy Services Inc. ("TES") are also reported in the Corporate and Other segment. TES is a non-regulated wholly owned subsidiary of Terasen that provides alternative energy solutions."

In Section 6.4.1.4 p. 118: "Prior to 2010 a number of (thermal energy services) projects were developed by FortisBC Alternative Energy Services Inc. (FAES , formerly Terasen Energy Services). These projects have not been actively regulated by the Commission up to now. Since January 1, 2010, the (thermal energy services) previously offered by FAES are now being done through FEI as approved by the FEI 2010-2011 RRA NSA."

67.1 Regarding the activities of TES Inc.:

67.1.1 What thermal energy activities were conducted under TES Inc.?

### **Response:**

For a list of discrete geo-exchange assets and/or components currently owned or operated by FAES, please see the response to BCUC IR 1.57.1. In addition, FAES has a 17% ownership stake in the Dockside Green Energy LLP, which owns and operates a district energy system.

67.1.2 Please clarify which of the activities conducted under TES Inc. were regulated at the time of the 2008 Annual report and which were non-regulated.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 225

**Response:**

Please see the responses to BCUC IRs 1.67.1.3, 1.57.1.1 and 1.69.4.4.

67.1.3 Please clarify which activities were performed by the "non-regulated" TES Inc. referred to in the Fortis Inc. 2010 Annual Report.

**Response:**

Activities performed by FAES (formerly TES Inc.) relate to the operation, maintenance and administration of the FAES assets. Please see the response to BCUC IR 1.57.1 for a list of the FAES TES assets. The description in the Annual Report reflected the treatment of those assets at the time, as they were not (and still are not) actively regulated. The regulatory treatment of these assets was subsequently revisited by the Companies and it was determined that some of the assets held by FAES should, in fact, be regulated assets. This issue is to be addressed in this Inquiry, and the FAES will respond accordingly upon the Commission's determination.

Please also see the response to BCUC IR 1.69.4.4.

67.1.4 Please provide the operating address of TES Inc. in both 2008 and 2010.

**Response:**

The operating address of TES Inc. (now FAES Inc.) in both 2008 and 2010 was as follows:

Terasen Energy Services Inc.  
3700 – 2<sup>nd</sup> Avenue  
Burnaby, BC V5C 6S4

67.2 Regarding the current activities of FAES Inc.:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 226

67.2.1 What activities are currently conducted under FAES Inc.? If these differ from the activities conducted under TES Inc., what changes have occurred, and under what department(s) of FEI are these activities now located?

**Response:**

The activities currently undertaken by FAES relate to the projects owned and operated by FAES. These are TES projects that were developed prior to 2010. These activities involve customer care, billing and the operation and maintenance of equipment.

At the beginning of 2010, the responsibility for the development of new TES projects transferred from TES [FAES] Inc. to FEI (then TGI) in accordance with the approval provided in the FEI 2010-2011 RRA NSA. The primary responsibility for this activity is within the Energy Solutions and External Relations department within FEI, however, other departments also provide resources for this activity and charge time and/or expenses into the Thermal Energy Services deferral account if related to Thermal Energy Services projects.

67.2.2 Please provide the business and operating address of FAES Inc.

**Response:**

The business and operating address of FAES is:

FortisBC Alternative Energy Services Inc.  
3700 – 2nd Avenue  
Burnaby, BC V5C 6S4



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 227

**68.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1, pp. 114, 118 Footnote 76**

**TES Regulated under the UCA**

"Regulation of TES is both appropriate and necessary because TES are generally complex and costly to operate and maintain, and once installed, the owner or operator has a measure of monopoly power over the customers because there will only be one thermal energy services provider within a certain area, and it is also costly to switch to another energy source. As a result, the customers of these systems have a strong interest in having recourse to a regulator who can ensure just and reasonable rates for the services, and ensure that the service provided is reasonable, safe, adequate and fair."

FEI states that it is actively considering bringing the pre-2010 TES Inc. (now FAES Inc.) contracts into FEI and filing them with the Commission for acceptance as a rate.

68.1 When requested to provide information on the TES Inc. in the 2010 LTRP, FEU said that TES Inc. was not the party under review (2010 LTRP Exhibit B-3 BCUC IR 2.1). In order to better appreciate the evidence in Section 6.4, please complete the table provided below with the following information on FAES Inc.

	TES Inc. 2007	TES Inc. 2008	TES Inc. 2009	TES Inc. 2010	FBC AES Inc. 2011
Number of dedicated employees (people)					
Employees (FTE)					
Gross revenue					
Total assets					
Return on equity					

**Response:**

As FAES Inc. (formerly TES Inc.) is a private company and hasn't been actively regulated as a public utility, its financial information is not released to the general public. The FEU respectfully decline to disclose this information given the Commission's determination on the scope of its jurisdiction over TES projects remains outstanding. Further, there are some assets that would not be regulated either way (e.g. propane facilities and service contracts) and the information relating to those matters should remain confidential.

At the beginning of 2010, six full time employees were transferred from Terasen Inc. to FEI in order to carry out the development of new TES within FEI in accordance with the FEI's 2010-



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 228

2011 RRA NSA (BCUC Order No. G-141-09). FAES has no employees. Employees who continue to manage the ongoing FAES business, cross charge their time accordingly to FAES. An application will be submitted to the Commission in due course once the issues in this Inquiry are settled for any FAES Inc. assets that will be transferred to FEI Inc. That application would address the financial situation of the projects to be transferred.

- 68.2 Please provide the capital costs of New Initiatives that: (a) have always been in FEI's rate base; (b) have entered the rate base since approval of the 2010-2011 RRA NSA; and (c) have been placed in non rate base deferral accounts.

**Response:**

While EEC expenditures are treated as equivalent to capital from the perspective that they go into a deferral account, are amortized, and the Companies earn a regulated rate of return, for the purposes of this response, the FEU are taking the approach that the Information Request refers to capital costs related to equipment installed and owned by the utilities.

Capital costs of New Initiatives that (a) have always been in FEI's rate base:

- Biomethane – prior to 2010 no costs related to Biomethane have been included in rate base.
- NGV – In the early 1980's the predecessor companies to FEI had invested in CNG equipment for public refueling stations, a taxi fleet and a refueling station for BC Transit. The assets were disposed of according to Commission Order No. G-143-99. On the sale of NGV assets, a loss upon disposal amounted to approximately \$2.13 million and this was amortized over 10 years.
- TES – no capital costs related to thermal energy projects have been included to date in the rate base for FEI's TES class of service. TES capital costs will be included in the TES class of service rate base once TES contracts have received Commission acceptance as a rate.
- EEC – please see comment above.

Capital costs of New Initiatives that (b) have entered the rate base since approval of the 2010-2011 RRA NSA:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 229

- Biomethane – projected capital additions in 2011 for upgrader equipment is \$2,009,000 less a capital contribution of \$566,000; and for interconnecting facilities capital additions of \$1,528,000 for a total cost of \$2,971,000. Note that the cost of service for the upgrader equipment is included in the cost of Biomethane that is charged to Biomethane customers and do not affect natural gas delivery rates.
- NGV – In the Evidentiary Update, Volume 6 of the 2012-2013 Revenue Requirement and Rates Application, the projected capital cost in 2011 of NGV spending is \$5,878,000 (Tab 7.1, Schedule 45, Line 9).
- TES – see response to (a) above.
- EEC – please see comment above.

#### Capital costs of New Initiatives that (c) have been placed in non-rate base deferral accounts

- Biomethane – Upgrader equipment is charged to Gas Plant in Service, the depreciation of this asset is charged to the Biomethane Variance Account ("BVA"). Also, a calculated earned return and income tax associated with the upgrader is charged to the BVA. For the 2012-2013 RRA, the BVA deferral account is treated as a non-rate base account.
- NGV – There are no new capital initiatives forecast beyond 2011 for NGV at this time.
- TES – As noted in Appendix G of the 2012-2013 RRA, the projected capital cost at the end of 2010 for direct costs was \$1,196,000. This cost is projected to be approximately \$2,820,000 at the end of 2011. Direct costs related to successful projects will be capitalized along with an allocation of overheads. As noted in the response to (a), TES capital costs to be included in rate base will be filed with the BCUC.
- EEC – please see comment above.

68.3 The response to the Commission IR 8.1 under the TU 2010 LTRP proceeding states that: "As approved in the 2009 Negotiated Settlement Agreement, Terasen Gas Inc. started to develop alternative energy within Terasen Gas Inc. The



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 230

development of this business within Terasen Gas Inc. has been kept separate as directed. Terasen Energy Services is a sister company to the Terasen Utilities.”

Please provide details on thermal systems that have been developed within FEI (formerly TGI) to date, including: the number of such systems, the number of customers in each, the heat output, and whether each system as either discrete or district energy. Please distinguish between those initiated within FEI and those formerly belonging to TES Inc.

**Response:**

No systems belonging to FAES Inc. have been filed with the Commission and as such they are not part of FEI at this time nor have any further developments related to these systems occurred or new systems developed within FAES since January 1, 2010, since the 2010-2011 RRA NSA for FEI came into effect.

The TES developed within FEI are shown in the table below.

	<b>PROJECT</b>	<b>No. of Customers</b>	<b>No. of Systems<sup>2</sup></b>	<b>TYPE</b>	<b>Owner/Operator</b>	<b>Est. Heat Output GJ per Year<sup>1</sup></b>
1	Helen Gorman School	1	1	GeoX-discrete	FEI	1,300
2	Tsawwassen Springs	1	4	GeoX-discrete	FEI	13,000
3	Glen Valley	1	100	GeoX-discrete	FEI	7,800
4	Camden Green	1	1	GeoX-discrete	FEI	2,000
5	School District 37 - Delta	1	19	GeoX-discrete	FEI	38,000
Notes:						
<sup>1</sup> Annual heating loads are based on forecast energy requirements upon completion of all phases of the projects. The heating load figures include electrical and natural gas requirements as well as geo energy.						
<sup>2</sup> Within each of the projects listed in the table, each building in the project has a discrete system; for the Glen Valley Project, each townhouse has a discrete system						



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 231

## Transfer of Assets and Contracts from TES Inc. to FEI

### 69.0 Reference: Issue 1 Scope (b)

**Exhibit B-2, Evidence of FEU, Section 6.4.1.4, p. 118; TU 2010 LTRP  
Exhibit B-10: BCUC IR2 6.1 p. 13**

#### **Transfer of assets from Terasen Energy Services (TES Inc.) to FEI**

FEI in the November 8, 2010 LTRP IR2 6.1 p. 13 states: "[w]ith the exception of Dockside Green Energy in which TES is a minority partner, TES' alternative energy services have never been actively regulated by the Commission, and TES has been, in effect, treated as an NRB. The Terasen Utilities now believe that some of these assets should actually be subject to regulation. With the approval of the rate structures within TGI, one logical approach would be to transfer ownership of the appropriate assets to TGI. This is being actively considered, but would not occur until the Commission has had the opportunity to consider the matter in the context of an application dealing with the issue." [emphasis added]

In Section 6.4.1.4 p.118: "FAES has not applied to the Commission for approval of the rates for the contracts that were in place prior to January 1, 2010".

Under footnote 76 on page 118 FEU says that it "...has stated in the regulatory proceeding for the 2010 Long Term Resource Plan (Exhibit B-10, Response to BCUC IR 2.6.1, included in Appendix F of this Submission) that it is actively considering bringing the pre-2010 FAES contracts into FEI and filing them with the Commission for acceptance as a rate. It is FEI's intention to file these with the Commission in due course."

69.1 Please confirm that the TES referred to in the 2010 LTRP IR2 6.1 p. 13 response is the same entity as Terasen Energy Services Inc. (TES Inc.).

#### **Response:**

Yes. The "TES" referred to in the response to 2010 LTRP BCUC IR 2.6.1, p. 13, is the same entity as Terasen Energy Services Inc. (TES Inc.).

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 232

- 69.2 Please clarify which TES Inc. assets the FEU believe should actually be subject to regulation, and provide reasons why they should be transferred to FEU.

**Response:**

The TES Inc. (FAES) assets that FEI intends to transfer to FEI and file with the Commission are the FAES owned and operated assets shown in the table to the response to BCUC IR 1.57.1.

As noted in the FEU's Evidence, Section 6.4.1.4 (Prior Regulatory Treatment of Discrete Systems within FortisBC Alternative Energy Services Inc), FEI is now of the view that the FAES projects established before 2010 have been public utility service under the *UCA*. Further, these FAES projects are very similar to the FEI discrete geo-exchange projects that FEI expects to file with the Commission in 2011 in accordance with the FEI 2010-2011 RRA NSA (BCUC Order No. G-141-09).

- 69.3 Have the FEU initiated any applications to the Commission to transfer these assets? If yes, please specify the relevant applications. If not, when do the FEU intend to do so?

**Response:**

The FEU have not, as yet, initiated any applications to the Commission to transfer these assets. As noted in the Evidence, the FEU plan to file the FAES agreements and an application to transfer them into FEI in due course. While exact dates have not yet been determined, the FEU anticipate filing these applications in 2012 after the completion of the AES Inquiry.

- 69.4 In an interview with the manager of business development and customer relations at TES (interview report included in Exhibit A2-22), the report describes TES Inc.'s potential to go beyond B.C. and its plans to also do retrofits of existing projects in addition to new developments. It also describes TES's views that DES rates were regulated by the BCUC while those for stand-alone geoexchange systems were not.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 233

69.4.1 Has FAES Inc. developed projects beyond B.C.?

**Response:**

No, FAES Inc. has not developed any projects outside of BC.

69.4.2 Has FAES Inc. been involved in retrofits of existing projects in addition to new developments?

**Response:**

No.

69.4.3 What assets have been transferred from TES Inc. to FEI? Which have remained with FAES Inc.? Please describe those assets and/or projects in detail and provide your reasons as to why certain assets and/or projects should remain in FAES Inc.

**Response:**

At present, no assets have been transferred from TES Inc. (FAES Inc.) to FEI. The assets listed in the response to BCUC IR 1.57.1 will be transferred from FAES Inc. to FEI in due course (after this Inquiry is resolved) and will be described in the applications when submitted. Not all assets of FAES are related to TES and as an unregulated company information about any assets that may remain in FAES will not be made public.

69.4.4 Please provide the number of DES and stand-alone geoexchange systems currently in the FAES Inc. portfolio? Does FAES Inc. still believe that TES rates are regulated by the BCUC while those for stand-alone geoexchange systems are not? If no, please explain why and when the change in position took place.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 234

**Response:**

This response also addresses questions in the BCUC IR 1.84 series; ESAC IR 1.7 series and the ESAC IR 1.8 series of questions.

Details of the DES and stand-alone geo-exchange systems currently in the FAES Inc. portfolio are provided in the response to BCUC IR 1.57.1.

The opinions of FAES and FEI on this subject are the same. The rationale for why the FEU and FAES have changed their views on these matters is as follows.

When TES/FAES entered the thermal service market in 2006, the *UCA*, then as now, stated such service should be regulated. However, in contrast to the *UCA*, FAES (formerly TES Inc.) was aware of existing discrete systems which were not under active regulation. Since the discrete thermal market was in infancy, and FAES was attempting small scale initial market entry and its business model metrics and feasibility were in large part unknown, FAES followed the established market practice and did not solicit regulation in advance. FAES had believed that ultimately this service would be subject to regulation and had included a clause in all contracts for discrete thermal energy systems regarding the possibility of future regulation of the systems.

Subsequently, through the development and operation of the initial discrete FAES assets, FAES established business models, technical scope and customer understandings sufficient to present defensible models to the Commission. The associated initial development costs of this initial market entry were a shareholder expense and did not burden any ratepayers, gas or thermal. Once it became clear that this business would become a significant part of the future thermal energy market, the proven FAES models and knowledge were given to the FEU at no cost and these models were used as the basis for FEI's 2010-2011 RRA submissions. One of the knowledge items is that an integrated view of the building HVAC systems and utility level service (high quality & low cost) is essential for "as-advertised" performance of geo-exchanges systems in particular. This knowledge gain, combined with proven models and the changes in provincial policy and legislation, particularly in regard to aggressive greenhouse gas emission reduction targets as well as public driven demand for low carbon solutions and customer interest in having regulatory oversight, made it abundantly clear to FAES and the FEU that it was appropriate and essential to advocate the shift to active regulation of discrete thermal assets as legislated by the *UCA*.

The FEU's conclusions with regard to the regulation of TES and the inclusion in FEI's 2010-2011 RRA led ultimately to the BCUC approval by Order No. G-141-09 according to the terms of the NSA. The FEU believe that the NSA provided a way forward for the thermal energy business and that this service offering within FEI has benefits to natural gas and Thermal Energy Service customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 235

In summary, as TES market grows and the FEU's involvement in this sector increases it is appropriate that the Commission's regulation of this class of service becomes more active and formalized.

- 69.5 FEI mentions "one logical approach" to transfer ownership from FAES Inc. to FEU. Please explore other options including transferring all FEU thermal energy service assets to FAES Inc. What would be the benefits and challenges of the various options?

**Response:**

The FEU's position is that the FAES assets should be subject to regulation and that these assets should be transferred to FEI in the time frame stated in the response to BCUC IR 1.69.3. Given the FEU's position related to the regulatory status of the AES assets of both FEI and FAES we have not considered transferring or holding such assets in a non-regulated entity. See the response to BCUC IR 1.24.1.

The FEU outlined the benefits of the Single Utility/Multiple Classes of Service Approach in Section 6.4.2.2 of the Evidence. Holding the AES assets in a separate regulated entity would add cost and regulatory inefficiencies resulting in added customer costs.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 236

**70.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1.4, p. 118; TU 2010 LTRP  
Exhibit B-10: BCUC IR2 6.1 p. 13**

**Transfer of contracts from Terasen Energy Services (TES Inc.) to FEI**

On page 119, Section 6.4.1.4 FEU state:

"As discussed in Section 2.2, as government policy has shifted strongly in the direction of energy efficiency and conservation and towards reducing GHG emissions in BC the market is now beginning to advance for thermal energy service. In this context it is appropriate for the Commission to now take a more active role in the regulation and oversight of this service. As such, FEI will be filing each of its new contracts (i.e. those established in 2010 and after) with the Commission for acceptance as a rate, irrespective of their size." [emphasis added]

Under footnote 76 on page 118 FEU states that "in the regulatory proceeding for the 2010 Long Term Resource Plan (Exhibit B-10, Response to BCUC IR 2.6.1, included in Appendix F of this Submission) that it is actively considering bringing the pre-2010 FAES contracts into FEI and filing them with the Commission for acceptance as a rate. It is FEI's intention to file these with the Commission in due course." [emphasis added]

70.1 In general terms what is the nature of the contracts established pre-2010 contracts and contracts established in 2010 and after?

**Response:**

The terms and conditions of pre-2010 FAES contracts and post-Jan. 1, 2010 FEI contracts are not materially different. All geo-exchange contracts are designed to fully recover the projects' costs over the contract term. While the contracts to date have had fixed fees over the contract term with an annual adjustment for inflation, in the future and in response to customer demand, it is possible that fees will be based on thermal energy consumption. Both forms of contracts are designed to fully recover all capital-related costs, O&M, taxes and any other expenses directly attributable to the project, and an allowance for overheads over their contract terms.

70.2 Please clarify which pre 2010 FAES Inc. (TES Inc.) contracts FEI intends to file with the Commission. When will they be filed?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 237

**Response:**

FEI intends to file all pre-2010 FAES contracts for geo-exchange projects with the Commission after the issues in this Inquiry have been settled. Please see the response to BCUC IR 1.69.3.

70.3 Have there been problems with any of these pre-2010 projects that would require Commission intervention?

**Response:**

To date, FAES has not had any problems with the pre-2010 projects that would require Commission intervention. There have been some operating challenges outside of FAES specific contract scope that FAES has worked proactively with customers to resolve, which does reinforce that a public utility approach to these assets is appropriate and necessary.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 238

**71.0 Reference: Issue 1 Scope (b)**

**Exhibit A2-13 FortisBC Presentation at CDEA-IDEA Conference on  
Integrated Energy Solutions in BC, June 2011 p. 21 of pdf.**

**Transfer of assets from Terasen Energy Services (TES Inc.) to FEI**

A FortisBC presentation to the CDEA-IDEA conference in Toronto in June 2011 referred to "approx 60 geo-exchange systems...operating since 2007" (Slide 21 of Exhibit A2-13).

71.1 Please confirm that all of these assets are included among those assets FEI now believes should be subject to regulation.

**Response:**

Yes, all geo-exchange assets that FAES owns are those FEI now believes should be subject to regulation.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 239

## Use of Utility Resources by Thermal Energy Services Activities

**72.0 Reference: Issue 3 Scope (a); Issue 2 Scope (c); Issue 1 Scope (b)**

**Exhibit B-2 6.4.1.4 , Evidence of FEU, Section 6.4.1.4, p. 118;**

**Use of utility resources by the thermal energy class of service and  
FAES Inc.**

Section 6.4.1.4 p. 118 states: "Prior to 2010 a number of [thermal energy services] projects were developed by FortisBC Alternative Energy Services Inc. (FAES , formerly Terasen Energy Services). These projects have not been actively regulated by the Commission up to now. Since January 1, 2010, the [thermal energy services] previously offered by FAES are now being done through FEI as approved by the FEI 2010-2011 RRA NSA75. FAES has not applied to the Commission for approval of the rates for the contracts that were in place prior to January 1, 2010."

72.1 Please complete the table provided below, providing information on the provision of gas utility resources to the non-regulated TES Inc. activities:

	2007	2008	2009	2010	2011
Utility employees shared with NRB (number of people)					
Position titles	Eg. Accountant VP Energy solutions Etc...				
Total cost of resources (\$)					
FTE allocated to NRB AES					

### **Response:**

Attachment 72.1 provides the information for FAES.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 240

72.2 Please complete the table provided below, providing information on the provision of gas utility resources to regulated TES activities:

	2007	2008	2009	2010	2011
Total cost of resources (\$)					
FTE allocated to TES					

**Response:**

Please see the response to BCUC IR 1.72.1.

72.3 Please provide an organizational chart of the current relationships between Fortis companies beneath the parent Fortis Inc.

**Response:**

Please see Attachment 72.3 for the organization chart of the Fortis Inc companies.

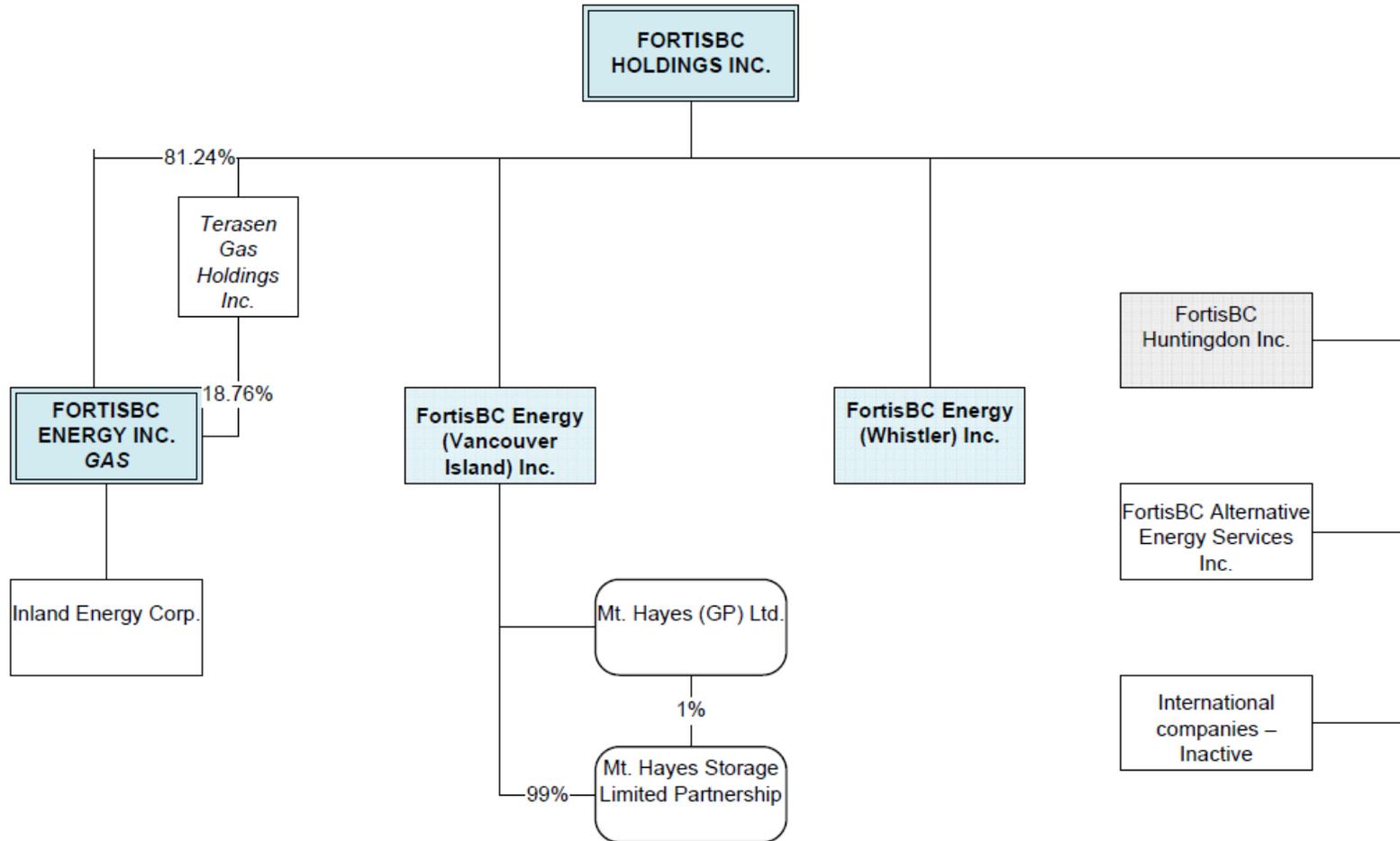
72.4 In a separate organizational chart please show the relationships between those operating within British Columbia including TGI (now FEI) and TES Inc. (now FAES Inc.) for the 5 years annually from 2007 to 2011.

**Response:**

Below is a current organization chart showing the relationship between FEI and FAES and the other affiliated companies under the common ownership of FortisBC Holdings Inc. The organization (common ownership) relationship between the two entities has not changed since 2007. As indicated in the response to BCUC IR 1.72.1, FEI has provided services to FAES (formerly TES) under a similar corporate structure since 2007.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 241





An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 242

72.4.1 Please show the companies or the divisions within the company that offer AES.

**Response:**

Only FortisBC Energy Inc. ("FEI") currently offers TES. FortisBC Alternative Energy Services Inc ("FAES") offered TES such as geo-exchange and district energy prior to the Order No. G-141-09. Pre-existing projects remain within FAES, but FAES is no longer actively marketing these products.

72.5 Please provide diagrams showing the number of gas utility employees (headcount, not FTEs) provided to TES Inc. by business division, annually since 2007.

**Response:**

Please see the response to BCUC IR 1.72.1, which summarizes this information for 2007, 2008, 2009, 2010 and 2011.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 243

**73.0 Reference: Issue 3 Scope (a); Issue 2 Scope (c); Issue 1 Scope (b)**

**Exhibit A2-18 TES Inc. Waterstone Pier Case-study ; Exhibit A2-13 FortisBC Presentation at CDEA-IDEA Conference on Integrated Energy Solutions in BC, June 2011; Exhibit A2-17 CPUC Affiliates Rulemaking 97-04-011 pp.61-64; Exhibit A2-12 CPUC Affiliate Transaction Rules p. 13**

**Sharing of utility staff by the thermal energy class of service and FAES Inc.**

- 73.1 According to a June 2007 case-study of the Waterstone Pier project (Exhibit A2-18, [www.terasenenergyservices.com/Documents/TES\\_Case\\_studies\\_Waterstone.pdf](http://www.terasenenergyservices.com/Documents/TES_Case_studies_Waterstone.pdf)) Gareth Jones is referenced in the document as "TES vice president Gareth Jones".

According to a presentation made at the CDEA/IDEA District Energy Conference in June 2011 in Toronto (Exhibit A2-13), Gareth Jones introduced himself as "Director, Business Development, FortisBC."

- 73.1.1 What process does FEI follow when sharing employees between the utility and its affiliates?

**Response:**

The process governing the sharing of employees between the utility and its affiliates varies depending on the affiliate and the particular circumstances of the sharing. If the affiliate is a non-regulated business then the sharing of utility resources and personnel is governed by the NRB Code of Conduct and Transfer Pricing Policy. In the case of sister utilities such as FEI, FEVI or FEW sharing resources these costs are applied between the utilities according to a Shared Services Management Agreement (costs include human resources, distribution and marketing) that is filed with the Commission. The two references cited in the question do not relate to an employee being shared between the natural gas class of service and TES class of service. Rather the differences pertain to the structuring of TES business activities before and after the approval in the 2010 - 2011 RRA NSA (BCUC Order No. G-141-09) of conducting the TES business within FEI. The individual in question, Mr. Gareth Jones, was employed from 2006 through 2009 with Terasen Inc., as an officer of Terasen Energy Services Inc., and since January 1, 2010, with FEI developing the TES class of service within FEI while continuing to serve as an officer for the ongoing operations of FAES.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 244

73.2 On December 16, 1997, as a result of Rulemaking 97-04-011 (Exhibit A2-17) the California Public Utility Commission adopted Affiliate Transaction Rules regarding the sharing of utility employees under Rule V G (p. 13 of Exhibit A2-12). The rules address the length of the transfer period, payment guidelines by the affiliate to the utility for use of utility employees, in addition to other issues. Some of the rules include the following:

According to Rule V G. 2 (a) "A utility shall track and report to the Commission all employee movement between the utility and affiliates.

b) Once an employee of a utility becomes an employee of an affiliate, the employee may not return to the utility for a period of one year. ... In the event that such employee returns to the utility, such employee cannot be retransferred, reassigned, or otherwise employed by the affiliate for a period of two years. ...

(c) When an employee of a utility is transferred, assigned, or otherwise employed by the affiliate, the affiliate shall make a one-time payment to the utility in an amount equivalent to 25% of the employee's base annual compensation, unless the utility can demonstrate that some lesser percentage (equal to at least 15%) is appropriate for the class of employee included. ...

(e) A utility shall not make temporary or intermittent assignments, or rotations to its energy marketing affiliates. ..."

Based on the history with TES Inc., if at some point in the future thermal energy activities are spun-out into a separate affiliate or FAES Inc., should the Commission consider similar rules regarding the transfer of staff between the utility and its affiliates? Please elaborate.

**Response:**

The FEU find it difficult to comment on the Affiliate Transaction Rules when the context of this directive, the legislative background and historical precedents to the California Public Utility Commission's ruling are not known. Since FEI's TES activities are all and will all be regulated, as shown in Business Model #1, page 115, of the Evidence, if this service was to be separated out into an independent entity from FEI's TES class of service, it would still remain a regulated utility. As a regulated utility, it would be open to scrutiny of the Commission in all facets of its operation, including the initial spin-off from FEI, which makes its activities more transparent and held to a higher standard of review than if it were a non-regulated business.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 245

The FEU do not believe it is appropriate or productive in this Inquiry to try to specify rules for employee sharing to deal with a hypothetical future separation that may or may not occur. The particular facts and circumstances surrounding such a change in the future would need to be given due consideration and to try now to anticipate those would be speculative at best.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 246

**74.0 Reference: Issue 2 Scope (d); Issue 3, Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.3.1, p. 111 and Section 6.4.5,  
pp. 127-128**

**Sharing of Customer Information and Transparency**

On page 111 of its evidence, FEI states that:

"FEI sales staff (termed Energy Solutions staff) serve as the primary contact for customers and potential customers. If through discussions with customers or in the development of an energy opportunity energy sources other than natural gas are or will be required, the Thermal Energy Solutions Staff are engaged."

- 74.1 Please show how the Energy Solutions staff differ from the Thermal Energy Solutions staff in terms of organizational reporting structure, job description, access to customer information or any other fundamental distinctions.

**Response:**

Energy Solutions staff are sales and account management oriented staff. The group is split into Residential and Commercial Energy Solutions, Commercial and Industrial Energy Solutions, and Community Energy Solutions. These groups report to the Director of Energy Solutions who in turn reports to the VP Energy Solutions and External Relations. Their role as Energy Solutions Managers is to work directly with the customer, primarily with natural gas solutions but also to provide integrated energy offerings to the customer to meet that customer's energy requirements. In most cases, this is a natural gas solution; however, the solution may include a thermal component. Customer communication and contact is the responsibility of the Energy Solutions staff. Their costs are largely associated with the natural gas class of service, and any time spent on TES is charged to TES.

The staff responsible for the development and implementation of the TES class of service are different from those Energy Solutions staff described above. The TES development staff, currently 12, are located in Burnaby and Victoria, and report to the Director, Business Development who in turn reports to the VP Energy Solutions and External Relations. Their costs are charged directly to the TES class of service.

After the Energy Solutions staff has initiated contact with a potential customer, and if that customer wants a thermal energy solution, the potential sale is brought to the Thermal Energy Solutions staff by the Energy Solutions staff. Thermal Energy Solutions staff then develop and implement the thermal component of the project including technical and financial assessment and design and construction management. Thermal Energy Solutions staff job descriptions are delineated by the separate functions of business development, engineering, project management, and operations.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 247

- 74.2 Are there any limitations on the information that can be passed between the Energy Solutions staff and the Thermal Energy Solutions staff, and if so, how are these limitations codified? Please provide any excerpts from a code of conduct or other document that codifies such limitations.

**Response:**

No, there are no formal limitations on the information that can be passed between the Energy Solutions staff and the Thermal Energy Solutions staff. Thermal Energy Solutions staff are FEI staff engaged in delivering a separate class of service. As such they have direct or indirect access to corporate and customer information. TES customers are most likely gas customers and therefore sharing of information will only help to provide the customer with the level of service that they require.

As the Thermal Energy solutions staff are not part of a non-regulated business, a code of conduct is not required. A Code of Conduct adds complexity to how information is shared and will only add cost to both natural gas and TES customers. In the response to ESAC IR 2.3.1 of the 2012-2013 RRA, the FEU stated in part:

*"In the event that FEI is the thermal energy service provider and the natural gas service provider, no formal request is necessary on behalf of the customer for FEI personnel to utilize the historical billing data in the evaluation of the project. This is because the thermal energy service is simply another class of service within the public utility, not a separate entity."*

FEI staff must abide by the Corporate Privacy Policy (provided below) and the provision of the *Personal Information and Protection Act*.

**Gas Privacy Policy**

***Context***

The Personal Information Protection Act (B.C.) (the "Act") governing the collection, use and disclosure of personal information applies to all British Columbia businesses as of January 1, 2004. FortisBC Inc. and all of its British Columbia based operations fall under this legislation. Operations and companies headquartered in locations outside of British Columbia fall under either comparable provincial or federal privacy law. This policy establishes compliance with the Act by all B.C. companies within the FortisBC Inc. group which are covered by the Act.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 248

### ***FortisBC's commitment to protecting your privacy***

Technological growth has revolutionized the way individuals, corporations, and governments gather, use and disclose information. Emerging technologies require heightened vigilance in the collection, use and disclosure of personal information. FortisBC Inc. and its group of companies are committed to protecting the confidentiality and privacy of personal information FortisBC holds about its customers and other individuals with whom FortisBC does business. This policy reflects that commitment.

### ***What is personal information?***

Personal information includes a wide variety of data. It is information that could be used to identify a specific individual. Examples include: name, address, gender, age, family status and social insurance and other personal identification numbers.

### ***How does FortisBC use personal information?***

In the course of carrying out its business, FortisBC holds personal information about its customers and other individuals. The way this information is used varies depending on the nature and sensitivity of the particular information. Recognizing that some of that information is personal, FortisBC is committed to collecting, using and disclosing such information only for the appropriate purposes for which it was gathered.

### ***Collecting and using personal information***

FortisBC collects and uses personal information for purposes reasonably required in order for it to carry on business, including:

1. **To create and maintain an effective business relationship** FortisBC will collect basic information from its customers and other individuals with whom FortisBC carries on business to confirm identity and related contact information. Additional information required is situation specific. For example, FortisBC may collect bank and credit information for customers to set up accounts and facilitate billing, collections and customer service. Customers might also wish to take advantage of pre-authorized payments, in which case specific bank account information will be required. Next-of-kin contact information might also be collected for the purposes of bill collection and dealing with emergencies.
2. **To further develop, enhance and market products and services** FortisBC may collect personal information regarding use of FortisBC's services and products in order to understand how to improve them. From time to time, FortisBC may review and analyze customer use of FortisBC's services and products to assist in developing



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 249

improvements. FortisBC may also periodically use personal information to market new service and product offers to customers.

3. **To understand customer needs and preferences** FortisBC keeps some personal information for the purpose of providing personalized service. For example, if a customer wishes to pay his/her bills electronically, FortisBC will ask for sufficient information to identify the customer's online identity (e.g., e-mail address).
4. **To meet legal and regulatory requirements** FortisBC may collect personal information from customers to support reporting of interest on security deposits for tax purposes. In this case Social Insurance Numbers are required.
5. **To manage FortisBC's business and operations** FortisBC analyzes customer usage of its services and products to better understand future customer requirements and assist in forecasting activities. This information may also be used to assist FortisBC in planning future system and rate changes.

### ***Disclosing personal information***

Situations where FortisBC may be required to disclose personal information about its customers or other individuals with whom FortisBC does business are varied. Some examples include:

1. FortisBC may disclose customer information to a related company, or third party agent, for the purpose of providing services to customers. One example is the disclosure of customer information to a third party for the purpose of administering FortisBC's billing, collections and customer service. Such disclosure is done on a confidential basis, and FortisBC requires the third party to which the information is disclosed to use that information only for the purposes for which it was initially collected and disclosed by FortisBC. To the extent that FortisBC discloses customer information to a related company or third party that is physically located outside Canada, that entity may also be required to comply with privacy or other laws that differ from those in Canada.
2. FortisBC may disclose an individual's personal information to a person whom FortisBC reasonably believes to be acting as the individual's agent for the purpose of gathering that information. For example, FortisBC may disclose information to an individual's legal counsel if FortisBC is satisfied that that person is seeking the information at the request of the individual.
3. FortisBC may disclose information for the purpose of collecting on a debt obligation owing to FortisBC.
4. FortisBC may disclose personal information to a public authority, or its agent, if FortisBC reasonably believes that the disclosure is required to preserve life or property from



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 250

imminent danger, and it appears that the danger could be minimized or avoided by disclosing the information.

5. FortisBC may disclose a customer's personal information to a third party to perform research on FortisBC's behalf for customer service and business planning activities. Such disclosure is done on a confidential basis, and FortisBC requires the third party to which the information is disclosed to use that information only for the purposes for which it was initially disclosed.
6. FortisBC may disclose a customer's personal information to related companies within the FortisBC group of companies, its partners or third party agents in order to ensure proper administration of special offers and programs. Such disclosure is done on a confidential basis, and FortisBC requires the third party to which the information is disclosed to use that information only for the purposes for which it was initially disclosed. To the extent that FortisBC discloses customer information to a related company or third party that is physically located outside Canada, that entity may also be required to comply with privacy or other laws that differ from those in Canada.
7. FortisBC may disclose personal information to third parties in connection with a proposed sale of part or all of its business. In such case, FortisBC will obtain the agreement of the third parties to protect the confidentiality of that information.
8. FortisBC may disclose personal information for law enforcement purposes and to the extent required to comply with legal requirements or regulatory orders.

### ***FortisBC's commitment to personal information security***

FortisBC carries out its commitment to personal information security in several ways:

1. FortisBC will limit the collection, use and disclosure of personal information to that reasonably required in order for FortisBC to carry on its business. Some of the specific purposes for which FortisBC will collect, use and disclose personal information are set out in this Privacy Policy. Other instances of permitted collection, use and disclosure of personal information are set out in the Act.
2. FortisBC will ensure appropriate safeguards are in place to protect the personal information it has in its custody or control. This ranges from ensuring areas and documents are only accessible by authorized personnel on a need-to-know basis, to requiring employees to act according to the FortisBC Code of Business Conduct to respect the privacy of the personal information they are exposed to in the work place.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 251

3. FortisBC will protect the confidential nature of personal information when dealing with other organizations, and FortisBC will require them to meet the same standard as it does when dealing with information it has placed in their trust.
4. FortisBC will honour any reasonable requests made to review and update your own personal information, and FortisBC will take reasonable steps to process these requests in a timely manner. You can help in this respect, by keeping the personal information FortisBC has about you as up to date as necessary, and by letting FortisBC know about your requests and concerns in a prompt fashion. FortisBC may charge you a nominal fee for processing your information requests.
5. Upon request, FortisBC will provide a description of the security measures applicable to personal information within its custody or control along with a summary of FortisBC's privacy complaint procedure.

### ***Your options regarding personal information***

FortisBC will assume, unless we hear from you otherwise, that you wish FortisBC to continue to collect, use and disclose your personal information in accordance with this Privacy Policy. Please note that you may withdraw or limit your consent to FortisBC's collection, use, or disclosure of your personal information at any time, subject to any legal or contractual restrictions. FortisBC will process and implement such requests within a reasonable amount of time. Note, however, that such requests may limit FortisBC's ability to provide you with the optimal level of service or any service. FortisBC will advise you if this is the case.

To request the personal information we have on file for you, please complete the Customer Personal Information Request form either in Microsoft Word or Adobe PDF.

74.3 Also on page 111, the FEU state that:

"Throughout this process, the FEU will often be in partnership with, and/or employ the expertise of, Energy Service Companies (often called "ESCOs"), Heating, Ventilation and Air Conditioning ("HVAC") providers, and engineering companies in the development of thermal energy systems, and following their implementation, in the operation of these systems. The FEU have used and are using many different engineering consulting firms, ESCOs and HVAC industry organizations in the development of TES projects. The FEU have worked with several member companies of ESAC (which are ESCOs) and are currently partnering with ESAC members on school district projects and DES projects."

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 252

- 74.3.1 Are there any limitations on the information that can be passed between the FEU employees and ESCO, HVAC or other partner or consulting employees, and if so, how are these limitations codified? Please provide any excerpts from a code of conduct or other document that codifies such limitations.

**Response:**

Yes. Any contractor that works for the FEU, that requires access to customer or corporate information, must sign a non-disclosure/confidentiality agreement with the FEU. Once signed, and in accordance with the Corporate Privacy Policy and the provisions of the *Personal Information Protection Act*, the FEU may provide customer information to the contractor if required for business purposes. See also the response to BCUC IR 1.74.2.

- 74.4 On page 127, the FEU state: "Since the FEU's TES offerings will all be regulated business Issue 2(d) is not relevant to sharing gas consumption information between two classes of service within the FEU."

And on page 128 the FEU state: "In the event that FEI is not the TES service provider, but is the natural gas service provider, a simple request by the customer to FEI to share the historical natural gas billing data at their site with the proponent to assist in their technical evaluation is all that is required."

- 74.4.1 Please confirm that prior to FEU securing a contract with a TES the natural gas class of service will treat the FEU TES class of service the same as other service providers and not provide customer gas information without approval from the potential TES customer(s).

**Response:**

Not confirmed. Please see the response to BCUC IR 1.74.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 253

- 74.4.2 If a natural gas customer requests that FEI share historical natural gas billing information at their site with a proponent, is the request shared with FEU personnel that are involved in providing TES? What is the FEU protocol for sharing such information? Is it codified in a code of conduct or elsewhere? If so, please provide the relevant section(s).

**Response:**

FEI do not typically receive requests to share residential consumption information as average residential consumption information is already available via other channels. Further, residential consumption information does not vary enough to require individual information.

If the customer is a commercial or industrial customer, the information request will come to the Commercial and Industrial Energy Solutions staff. These staff will provide the requested data to the customer or their representative. An information request by a third party for consumption history does not result in or trigger a discussion with Thermal Energy Solutions staff.

There is no formal protocol in place regarding whether the information is shared to the FEU staff involved in promoting the TES business, just as there is no formal protocol in place (nor any reason for one) for information requests of non-TES proponents. For example, requests could relate to third parties analyzing historical billing information for the calculation of savings being promoted by a direct marketer of natural gas. As it is unlikely that any entity requesting information would share the reason for their request, other than that the customer has authorized them to request the information, it is questionable what value knowledge of the request would have for any FEU staff. In addition, as discussed in section 6.4.5 of the FEU AES Inquiry Evidence, having a customer's historical natural gas consumption information is of minimal value in the development of a TES energy solution for that customer. The FEU's ability to access historical natural gas consumption information provides no meaningful advantage to the FEU over other potential TES project proponents.

Staff must also abide by the Corporate Privacy Policy regarding the sharing of customer information and the Personal Information Protection Act.

- 74.5 Also on page 127 the FEU state that: "Historical natural gas billing data is general information of limited value in assessing and developing a thermal energy system. First, historical information does not exist for new construction."

- 74.5.1 Do FEU ever consider historical information of comparable construction projects as relevant to the evaluation of a new construction projects?

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 254

**Response:**

As noted, historical information is not available for new construction. With the exception of publicly available data on average energy use provided by the FEU in other proceedings, comparing new projects to historical projects is also of limited value and is generally not done. When reviewing a potential project, it is not possible to know what the developer will build, the efficiency of buildings, or the type of energy source of the different appliances proposed for the development. The FEU staff must therefore speak with the developer directly to determine the anticipated load and energy requirements for the planned building types and configurations before determining an energy solution for the customer.

- 74.5.2 Have FEU ever provided or used historical billing information from similar customer classes in similar residential or commercial units within the same service area to make decisions regarding the type of service offering to provide (i.e.: natural gas or TES)?

**Response:**

No. The FEU do not presume to know what the customer wants prior to speaking with that customer, therefore, the FEU do not make the decision on what type of energy solution the customer will take. It is only after discussing energy options with the customer that a proposal would be made to the customer regarding an energy solution.

- 74.5.3 If yes to the above questions please describe in detail the form of the analysis and/or the model used to carry out the analysis.

**Response:**

Please see the response to BCUC IR 1.74.5.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 255

## Thermal Energy Service Business Models

### 75.0 Reference: Issue 1 Scope (b)

#### Exhibit B-2, Evidence of FEU, Section 6.3.2, p. 112

#### Thermal Energy Service business models

Pages 112-113 of the FEU Evidence presents 6 possible business models for Thermal Energy Services.

75.1 For each of the TES contracts under FAES Inc. and the FEI TES projects currently in development, please clarify which of the business models they fit under. In particular please clarify:

- which of these models the Delta School District project fits into.
- which of these models the Waterstone Pier project fits into.

#### **Response:**

##### **Waterstone Pier**

FEI owns and maintains the geothermal loop field system and charges the strata council a monthly fee for access to the loop field.

##### **Delta School District**

FEI will own, operate and maintain the thermal energy plant at 19 SD37 sites. The Delta School District pays for the thermal energy consumed.

Both the Delta School District project and Waterstone Pier fit into Business Model #1 as described on pages 112-113 of the Evidence. This business model is described as:

1. Utility or ESCO ownership of thermal energy system (the FEU Model)
  - utility or ESCO owns, operates and maintains the thermal energy system;
  - customer purchases thermal energy for own use;
  - customer pays for thermal energy;

This business model falls within the scope of the definition of —"public utility" as defined in the *Utilities Commission Act* as follows:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 256

*"public utility means a person, or the person's lessee, trustee, receiver or liquidator, who owns or operates in British Columbia, equipment or facilities" for*

*(a) the production, generation, storage, transmission, sale, delivery or provision of electricity, natural gas, steam or any other agent for the production of light, heat, cold or power to or for the public or corporation for compensation,"*

75.1.1 Please provide a detailed description of the Waterstone Pier project, including the services provided by FEU or FAES Inc. in this project.

**Response:**

The geo-exchange system at Waterstone Pier located in Richmond provides 100% of the heating and cooling requirements. This geo-exchange system has been in operation since 2007 and also provides the domestic hot water for the development. FAES owns, operates and maintains the Waterstone Pier loop field system, which serves one strata comprised of 3 buildings (144 suites in total). The loop field system, which is part of the overall geo-exchange system, is comprised of 72 boreholes of 300' depth.

75.2 In Table 6.1 on p. 115 of the Evidence FEU indicates that model "1. Utility or ESCO ownership of thermal energy system (the FEU Model)" is applicable to FEU, while Model 5: "Operating and Maintenance Contract Only", is "generally not an FEU service". Models 2, 3, 4 and 6 are described as not being applicable to FEU.

75.2.1 Are FEU currently using any of the other models?

**Response:**

The first model is the model that the FEU will be providing to customers. It is described as follows:

*"Utility or ESCO ownership of thermal energy system (the FEU Model)*

- *utility or ESCO owns, operates and maintains the thermal energy system;*



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 257

- *customer purchases thermal energy for own use;*
- *customer pays for thermal energy;"*

In some TES projects, the FEU will employ the expertise of ESCOs in the development of TES and in the operation of these systems.

Please see the response to BCUC IR 1.75.1.

75.2.2 Are FEU considering any of the other business models at this time?

**Response:**

Currently, the FEU is using Model 1, which includes retaining qualified service providers from the competitive marketplace to provide design and build service, as well as preventative maintenance and repair services from qualified suppliers. We are not considering any of the other business models at this time.

75.2.3 Would FEU consider model 5: "Utility or ESCO provides operation and maintenance"?

**Response:**

Please see the response to BCUC IR 1.75.2.2.

75.2.4 Does any FortisBC affiliate plan to use any of these models?

**Response:**

While at any time a FortisBC affiliate may determine it is appropriate to employ any one of the models not currently being actively marketed or another new business model not yet developed, at this time no FortisBC affiliate is pursuing new business under the Models 2, 3, 4, and 6 as described in the Evidence of FEU.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 258

**76.0 Reference: Issue 2 Scope (d)**

**Exhibit B-2, Evidence of FEU, Section 6.1.1, p.102; Discrete Thermal Energy Systems, & pp. 102-103 District Energy Systems.**

**Exhibit B-2, Evidence of FEU, Section 6.4.1.1, p.115; Table 6-1 Regulatory Treatment of TES Business Models**

- 76.1 Could Table 6-1 provide be used as guideline to establish the types of business that the FEU will be permitted to consider as part of its TES line of business within the utility?

**Response:**

The FEU believe a guideline to establish what the FEU will be permitted to consider as part of the TES line of business is not required or appropriate. A guideline in this context may set parameters for how the Commission intends to protect the public interest or exercise its regulatory oversight powers in certain circumstances but it cannot prevent a utility from conducting business that it is lawfully allowed to do under the *Act*.

- 76.2 Does Table 6-1 provide appropriate guidance on the separation of regulated and non-regulated TES lines of business to address this Inquiry Scope, Issue 2(a)?

**Response:**

The Scope and Issues list (attached to Order No. G-118-11) indicated the following:

***"ISSUE 2 Regulated versus Non-regulated Activities***

- a) *What are the principles that should be applied to determine whether an AES or other new initiatives activity can or should be pursued as a regulated business?"*

The FEU confirm that Table 6-1 on page 115 of the Evidence provides a summary of the FEU's view of how the definition of "public utility" applies to various models. Please see the response to BCUC IR 1.76.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 259

76.3 If Table 6-1 does not provide the appropriate guidance for Issue 2(a), how can it be modified to provide such guidance in order to develop principles for assessing what type of TES Business Model can or should be pursued as a regulated business?

**Response:**

Please refer to the response to BCUC IR 1.76.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 260

**77.0 Reference: Issue 2 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1.1, p.114**

**Application of Definition of Public Utility to TES**

The FEU evidence states:

"Table 6-1 below outlines different business models for the provision of TES, and explains which of the models are regulated on the basis of the application of the definition of "public utility" from the Act. The first model in the table below is the one under which the FEU intend to provide TES. The Commission must apply the definition of "public utility", and look to the straightforward application of that provision to determine the scope of its jurisdiction over TES. Table 6-1 should be read in conjunction with the analysis of the definition of "public utility" that is provided in Section 3." [emphasis added]

- 77.1 If the situation were to arise that a viable TES project were to come forward either through the first or second scenarios described in Section 6.3.1, p.110 would that project be rejected for review as a development opportunity by FEU's TES line of business?

**Response:**

Whether or not a TES project is viable is determined through an assessment process outlined in Section 6.3.1 as follows:

1. develop opportunities through customer contact or RFP responses;
2. sign initial agreements with customer;
3. determine feasibility of project;
4. negotiate/sign binding agreements;
5. apply to the BCUC for project and/or rate approval;
6. build the energy system; and
7. deliver thermal energy.

If the project is determined to be feasible / viable as in Step 3, FEI's TES line of business will not reject the project for review as a development opportunity. Rather, FEI will commence the negotiating and signing of binding agreements to advance the project.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 261

77.1.1 If yes, would that viable project be sent to or identified as a project that would be evaluated by a non-regulated affiliate such as Fortis BC Alternative Energy Services Inc.?

**Response:**

A viable project is evaluated by FEI TES line of business. The types of TES projects previously offered by Fortis BC Alternative Energy Services Inc. (FAES) are now being done through FEI as approved by the FEI's 2010-2011 RRA NSA (BCUC Order No.G-141-09).

77.2 What are the considerations that need to be addressed when a viable project outside of Business Model 1 is taken away from or rejected by the regulated utility and what guidelines should the FEU follow to assure that the interest of each class of customer (both gas customers and thermal customers) is protected?

**Response:**

The interests of customers are protected as a project will only be rejected if it is not viable. While FEI is utilizing Business Model #1 for the provision of TES, FEI or other companies could employ other business models that fall within a regulated framework. Currently, Business Model #1 is consistent with FEI's investor expectations for the provision of public utility service whereas the other business models may have differing success drivers and business risks than what FEI shareholders expect. The FEU do not believe it must employ every possible regulated business model that may be of interest to customers. For the business model(s) the FEU do employ, all viable projects will be developed. In addition, the FEU follow the guidelines provided by the *UCA* and responds to any concerns raised by the Commission regarding customer interests.

FEI's TES class of service considers only projects that meet the definition of "public utility as defined in the *UCA*. Those projects that may be viable but don't meet this definition may be considered by a non-regulated affiliate. The natural gas service customers are protected from cross subsidization from another class of service by Section 60(c)(i) and (iii) of the *UCA*, which requires that setting a rate for TES must consider TES as a self-contained unit which does not consider rates for other units.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 262

## Business Plan for the Thermal Energy System Activities

### 78.0 Reference: Issue 2 Scope (d)

**Exhibit B-2, Evidence from FEU, Section 6.3.1, p.110; Appendix F-4 2012-2013 FEU RRA Excerpts; Appendix G-1, p.2, Section 2.4 Thermal Energy Services, Table G-1**

#### **Development of Thermal Energy Systems**

The FEU evidence states:

"In the second approach, the energy provider develops a product from scratch in the hope that there will be interest in the product in the marketplace. Typically this will occur by an energy provider speaking to their customers, and by researching demographic, development and economic trends or opportunities in a particular region. Through these efforts the energy provider may be able to establish an opportunity to build a discrete or DES that it thinks will have market uptake. Delta Schools and the Kelowna District Energy System developed by FEI are examples of this type of approach." [emphasis added]

The FEU evidence states on page 2 of Appendix G-1:

"The market interest for Thermal Energy solutions is considerable. FEI currently has over 20 projects in development with a total estimated value exceeding \$250 million."

78.1 Describe the nature of the research conducted to identify the projects mentioned.

#### **Response:**

The project opportunities pursued by the FEU typically emerge from conversations held with potential customers. Customer discussions provide the FEU with a better understanding of their specific challenges. Our customer discussions are supplemented with research to facilitate the development of effective sales strategies. The FEU conducted both empirical research such as identifying the number of government bodies affected, the distribution of their facilities, and the anticipated growth in regions where communities were actively undertaking their own research (such as Kelowna where the City had a district energy study commissioned). Much of this research was project specific, whereas some was broad-based. Some of the broad research included analyzing the largest 25 municipalities in the province to determine the likelihood for DES development. See also the response to BCUC IR 1.78.6.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 263

78.2 What are the specific sources of information used to conduct the marketplace research and where was this information obtained?

**Response:**

Information was obtained both from customers directly and from publically available information. For example, information on school districts was obtained from the BC Government website<sup>42</sup>, in addition to face-to-face discussions with school districts.

Based upon a prior ranking of opportunities in municipalities, the FEU researched 25 BC municipalities using publicly accessible information. From this research, profiles of each community were compiled. The profiles include information on: demographics, elected officials, committees, municipal bylaws, sustainability policies, financial capabilities, society (employment statistics, built infrastructure), elections and party politics, and major projects. The primary sources of the information were provincial and municipal government websites.

Other groups also provide information that helps to validate market initiatives such as the Canadian District Energy Association<sup>43</sup>.

Please also see the response to BCUC IR 1.79.3.

78.3 Is the information used to conduct market research readily available to all TES market competitors?

**Response:**

Yes, the information used to conduct market research is readily available to all TES market competitors. As noted in the response to BCUC IR 1.78.2 information was accessed directly from customers and publicly available Internet sources. Any competitor could undertake similar research.

<sup>42</sup> <http://www.bced.gov.bc.ca/apps/imcl/imclWeb/Home.do>

<sup>43</sup> <https://www.cdea.ca/resources/action-plan-growing-district-energy-systems-across-canada>

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 264

78.4 If the information used is not readily available to all TES market competitors what part of that information is proprietary to FEU.

**Response:**

Please see the responses to BCUC IRs 1.78.2 and 1.78.3.

78.5 How many of the 20 projects indicated in the above statement were identified using the second approach described above?

**Response:**

Approximately 75% of the projects currently under development were identified using the second approach as noted above.

78.6 Has FEU undertaken a complete market analysis for the TES marketplace?

**Response:**

The FEU have not undertaken a "complete analysis" of the TES marketplace in the traditional sense as the term is used for mature markets. Given the early stage of the market and its evolving state, we are continually reassessing the market. The Companies' current assessment of the TES opportunities reflects our evaluation of many elements, ranging from the effect of changing government policy to assessing customer demand. Our discussions with customers allow the FEU to develop customized energy solutions that accommodate each organization's environmental considerations while meeting their thermal energy demands at the lowest reasonable cost. Influencing our analysis are a variety of publicly accessible reports as noted in the response to BCUC IR 1.72.2, as well as our own internal assessments of customer preference, municipal profiles and business opportunities.

What each of these assessments of government policies etc. and customer discussions demonstrated was that there was an interest in pursuing a thermal-energy delivery product line. However, each of these elements has sufficient variability that a complete market analysis at this early stage in the development of the market would not yield results that could reliably indicate a long-term trend for any given aspect. As the market matures, it is reasonable to

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 265

expect that the FEU or some other organization will undertake a comprehensive market analysis.

78.7 If yes, what is the total value of potential projects over and above the \$250 million identified?

**Response:**

The FEU have not specifically identified or validated the total value of projects above the \$250 million. The \$250 million figure is a high level estimate of the projects that are currently being evaluated by FEI. This value changes on a regular basis as new projects are identified and projects under evaluation do not have sufficient viability to proceed. Based upon some of the research noted in the response to BCUC IR 1.78.8, the FEU believe that there is a potential market greater than \$250 million over a period of time. However, due to the early stage of the market transformation, the FEU have not put a firm value on the total projects available. As a result, the expected value of projects that will reach the stage of development where regulatory approval is sought may be higher or lower than \$250 million.

78.8 Do FEU competitors have access to the same information in order to identify projects "from scratch"?

**Response:**

All competitors have access to the same information the FEU uses, including the ability to discuss potential projects with potential customers and research that is readily available on the Internet. Competitors can use these same approaches to assess the potential influence of government policy changes, determine potential sales opportunities, and to identify and participate in TES related RFQs.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 266

**79.0 Reference: Issue 1 Scope (b)**

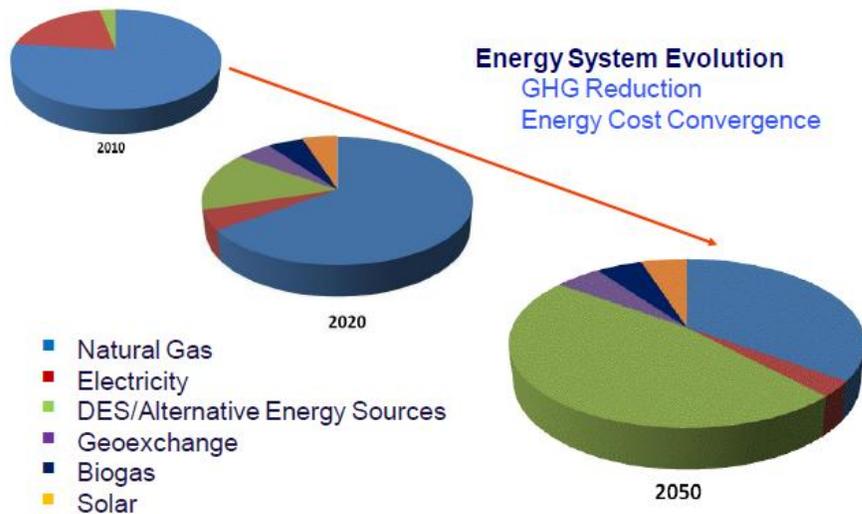
**Exhibit A2-13, FortisBC Presentation at CDEA-IDEA Conference on Integrated Energy Solutions in BC, June 2011 pp.11, 21 and 24; FEU RRA 2012-2013 Appendix G p.2**

**Thermal Energy Service business models and plans**

On p. 2 of Appendix G of the 2012-2013 RRA, FEU states that "[t]he market interest for Thermal Energy solutions is considerable. FEI currently has over 20 projects in development with a total estimated value exceeding \$250 million. Several of these projects are anticipated to be submitted to the BCUC for approval in the near term. "

The following slide was presented at the CDEA-IDEA Conference in Toronto in June 2011 (see p. 11 of Exhibit A2-13):

**Transforming Thermal Energy Delivery in BC**



79.1 Please provide a copy of FEU's business plan for the thermal energy class of service, similar to Con Edison's long range plan for district energy shown in Exhibit A2-7.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 267

**Response:**

Exhibit A2-7, which is Con Edison's Steam Long Range Plan 2010 – 2030 (dated December, 2010), addresses the supply resources, demand forecasts, costs projections and economic viability of the steam system. It is not a business plan since it does not include various components that would normally be included in a business plan, such as strategies to retain customers and methods to collect revenue in a competitive environment. The Con Edison document is closer to being a "Long Term Resource Plan" than a business plan. Excerpts from the FEU's most recent Long Term Resource Plan that describe the TES class of service was included in Appendix F of the Evidence to provide information in this regard.

- 79.2 What proportion of the thermal market in BC shown in slide 11 of the FortisBC presentation at the CDEA-IDEA in June 2011 does FEI plan to capture by 2050, and what is your plan to do so?

**Response:**

The slide included in the presentation is for illustrative purposes only to highlight the evolution in energy use that includes GHG emissions reduction and energy cost convergence. The same figure was included in the 2010 Long Term Resource Plan (see the excerpt included in Appendix F of the Evidence). The slide shows conceptually the important role that integrated energy will play in meeting the thermal energy needs of our customers and GHG emissions reduction objectives of the Province.

The main message is that "Integrated energy systems are a key part of the Terasen Utilities (now FEU) low carbon strategy to help existing and future customers effectively reduce the carbon footprint for their energy needs, and help meet B.C.'s overall GHG emission reduction targets". A second concept meant to be illustrated by the picture is that the pies are growing over time as population of the Province and the provincial economy expand.

As the slide is conceptual only the proportions represented by the energy sources should not be interpreted as if they are forecasts. The FEU do not have a plan to capture a particular percentage of the thermal energy market. As TES is an emerging market there is a significant amount of uncertainty regarding how big it will become over time.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 268

- 79.3 Pages 21 and 24 of the Toronto presentation (Exhibit A2-13) refers to district and discrete energy projects in development totaling \$412 million, while the RRA refers to thermal projects "exceeding \$250 million". Please reconcile the two amounts.

**Response:**

The \$412 million in the Toronto presentation was a forecast based on the total number of active development opportunities at that time. The total is in flux as some opportunities drop off and others emerge and it is improbable that all will proceed to construction. The FEU believe the RRA reference to an amount "exceeding \$250 million" is more appropriate for filing with the Commission as it excludes some low probability opportunities and is therefore a somewhat more conservative assessment of scope. The FEU do not believe there is any value in reconciling the two amounts –one is simply a more measured estimate for a regulatory filing and the other a more optimistic outlook presented at an industry conference.

- 79.4 The EES Report (Appendix F-6) says on page 1 that FEU have over 20 projects in development. What is the time-frame of these developments? Please list the current and contemplated initiatives of FEI in the geo-thermal and solar-thermal markets.

**Response:**

Due to the competitive nature of the business, the requested listing and information is being filed confidentially with the Commission. It is not appropriate for the FEU to provide additional detail on the public record in this proceeding. Under the terms and conditions of the Negotiated Settlement Agreement that was approved by the Commission for FEI for 2010-2011 RRA, FEI is to bring forward signed TES contracts for acceptance by the BCUC.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 269

**80.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.3.2, p. 112**

**Business plan**

The Evidence describes the FEU model as an arrangement where FEU or ESCO owns, operates and maintains the thermal energy system; the customer purchases thermal energy for own use; and customer pays for thermal energy.

- 80.1 FEU have discussed in section 6.1 the opportunities in implementing renewable thermal energy solutions for (i) multi-family condominium and apartment buildings; (ii) residential single family homes and townhouses, and (iii) district energy systems. What is the likely market share of these three market sectors for FEI over a 10 year horizon?

**Response:**

The market for thermal energy is still in its early stages of development. While every energy consumer requires thermal energy to some extent, that energy can be supplied by electricity, gas, wood, steam and other thermal sources. Due the mature nature of the gas and electric marketplace, it is possible to provide a reasonably accurate forecast for customer growth and use rates in the short term. However, due to the relative infancy of the thermal energy solutions marketplace, a 10 year forecast has not been completed. As noted in the response to BCUC IR 1.78.6, FEI have completed a number of analyses and studies to validate the market. From these it was determined that the market potential was large enough for FEI to enter as a provider of TES. FEI has focused its resources and the efforts of staff on acquiring customers and implementing TES.

As such a market share for TES in the three market sectors is not available.

- 80.2 Under the FEU Model, how do these three different types of alternative energy solutions differ in cost and benefits as well as changing the business risk profile for FEI?

**Response:**

Please note that the solution noted in the preamble to the question is one solution, with three steps to the process rather than three solutions.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 270

Please refer to the response to BCUC IR 1.4.2 for a more comprehensive discussion of business risk profile.

- 80.3 To the best of FEI's knowledge, what is the market potential in B.C. of: (a) geo-exchange and solar-thermal systems serving single- and multi- family homes and other discrete systems serving commercial, industrial sites and school districts versus (b) district energy systems (DES)?

**Response:**

The FEU are not targeting detached single family homes served by standalone TES systems and therefore have limited knowledge of that marketplace. On a broad scale, any new or existing home is a potential customer for thermal energy (whether that thermal energy is derived from either solar, geo-exchange, biomass, natural gas or other energy source) either in a discrete form (one or more buildings on a discrete property) or via a district system (more than one customer on multiple properties). Note that the use of the words "district" or "discrete" systems are a useful way to describe systems but are not hard and fast definitions. In many cases the two terms are used interchangeably and/or the two types of systems may overlap. Further, systems could be discrete by infrastructure but district through financial or rate base definition. From a customer standpoint, the key is that the customer is receiving thermal energy from the utility provider.

As noted in the response to BCUC IR 1.80.1, the FEU have not undertaken a formal market potential study. However, we do believe that there is a market for thermal energy delivery. Examples of TES market potential are described below.

Schools - Over the past 10 years, 13 of the 84 new or replaced schools in BC have used geo-exchange for its thermal energy. Gas consumption drops by approximately 80% when a school converts to geo-exchange. We are actively working with a number of other schools (confidentially) to provide the same solution as the Delta School Board. We believe that of the over 50 school districts, many of these districts may seek a thermal energy solution similar to the Delta School offering (which includes both gas and geo-exchange).

Hospitals – Hospitals often serve as great anchors for a district energy system. We are currently working with a number of hospitals to provide them with thermal energy (derived from a variety of energy sources), which can be then used to provide district energy. We believe there are between 5 and 15 thermal energy possibilities with hospitals in BC.

Community Energy Systems – (either discrete or district)





<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 272</p>

**Response:**

Please see the response to BCUC IR 1.80.1.

80.5 Please complete the following table providing annual projected totals for each calendar year from 2011 to 2021 including the total BTUs (or other thermal measurement) projected to be provided per year, and projected annual revenues by year.

	Unit	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Volume of thermal units sold	BTU's											
Projected annual revenues	\$ mill											
Projected capital expenditure	\$ mill											
Projected operating expenditure	\$ mill											

**Response:**

Please see the response to BCUC IR 1.80.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 273

**81.0 Reference: Issue 3 Scope (a)**

**Exhibit B-2, Evidence from FEI, Section 6.2, pp. 109, 110; Section 6.4.2.3, p. 124**

**Forecasting Demand for Thermal Energy beyond Natural Gas**

FEU are of the view that energy choices from Residential and Commercial Developers are dependent upon the marketplace and the end use customer demographic; municipalities seek larger solutions such as DES to serve a large group of end use customers; and institutional entities such as hospitals and schools are driven by energy efficiency and by the provincial GHG emissions reduction mandates.

The FEI 2010-2011 RRA NSA stipulates that the costs of developing thermal energy systems will be recovered from thermal energy customers.

81.1 In order to properly allocate all associated costs in the development of alternative energy projects, will FEI need to improve its information database by including forecasts of future energy demands in both its traditional gas markets and its new alternative energy developments? Why or why not?

**Response:**

This response addresses all of the IRs in the 81 series.

With respect to BCUC IRs 1.81.2-1.81.4, FEI plans to develop forecasts of future energy demands from alternative energy developments. However, FEI has not yet started forecasting the long term:

- demand from TES projects
- impact on traditional gas demand as a result of TES projects
- demand from LNG or CNG projects
- impact on peak demands as a result of TES developments

The total thermal energy requirement is currently mostly met by gas and electricity. Our current forecast methodology is based on an understanding of the relative capture rates for these two sources. In the future as various TES projects come online we will need to account for this new source in the capture rates of traditional energy sources. An increase in TES projects, whether from FEI or others, will have an effect on the traditional gas use rates and customer additions. These effects will also need to be modeled and accounted for in the traditional natural gas demand forecast.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 274

The 2012-2013 RRA requests additional resources for the Demand Forecasting group and these resources would be involved in developing and maintaining these new forecasting activities.

With respect to this IR, FEI does not anticipate needing to allocate costs based on long-term overall demand for TES in the Province. If TES demand is to be used as an allocator as between natural gas and TES classes of service, the relevant demand would be the demand to be served by FEI in the test period. The FEU are already capable of forecasting the demand of the TES business during the test period. Since the TES demand served is currently zero, and will remain minimal compared to natural gas demand for the foreseeable future, it would result in very little being allocated to TES. Hence, the FEI adopted a methodology of allocating costs that recognized there is some time spent on TES.

- 81.2 Has FEI begun separately forecasting energy demands in the separate markets – the traditional as well as the thermal energy services for the long term?

**Response:**

Please see the response to BCUC IR 1.81.1.

- 81.3 Has FEI begun forecasting natural gas demands based on its LNG/CNG initiatives for the long term?

**Response:**

Please see the response to BCUC IR 1.81.1.

- 81.4 As a result of FEI's plan to use natural gas as a back-up energy source and during periods of peak energy requirements (Evidence, page 109), has FEI begun forecasting peak demand for the long term?

**Response:**

Please see the response to BCUC IR 1.81.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 275

## Regulatory Framework for Thermal Energy Services

### 82.0 Reference: Issue 1 Scope (a) Issue 2 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 6.4.1.4p. 118

#### Regulation of Current Thermal Energy Systems

FEU states in Section 6.4.1.4 on page 118:

"Prior to 2010 a number of TES projects were developed by FortisBC Alternative Energy Services Inc. ("FAES", formerly Terasen Energy Services). These projects have not been actively regulated by the Commission up to now. Since January 1, 2010, the TES previously offered by FAES are now being done through FEI as approved by the FEI 2010-2011 RRA NSA<sup>75</sup>. FAES has not applied to the Commission for approval of the rates for the contracts that were in place prior to January 1, 2010<sup>76</sup>. The degree of regulation of these systems is not unreasonable given the relatively small scale of the services to date. However, the absence of active regulation does not in any way mean that the service is not and has not been public utility service under the *UCA*."

FEU also state on page 39:

"While FEI is already operating some discrete geo-exchange systems, development work is currently in progress to evaluate DES systems in many municipalities and packages of thermal energy systems in discrete sites throughout many school districts."

82.1 Please define the meaning of "active regulation" and what it entails.

#### **Response:**

In the BCUC document "Understanding Utility Regulation – A Participants' Guide to the British Columbia Utilities Commission" dated February 1999, the Commission's main functions are set out as follows:

- setting utility rates
- extensions
- assessing utility proposals to extend existing facilities or build new facilities
- deciding whether utilities should be permitted to issue new shares in their corporate entities



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 276

- supervising the consolidation, amalgamation, and mergers of utility corporations and
- supervising contracts between the utilities and large customers or other electricity and natural gas suppliers

The FEU believe the definition of "active regulation" would involve the above activities. The opposite model would be a complaints-based model, which would involve the filing of rate schedules with the Commission without further Commission intervention unless asked to intervene through a customer or stakeholder complaint. Please see the response to BCUC IR 1.69.4.4 for further discussion of the circumstances of the TES projects that were developed prior to 2010 by Terasen Energy Services Inc. now called FortisBC Alternative Energy Services Inc. (FAES).

82.2 Please provide a list with description of these "operating" discrete geo-exchange systems.

**Response:**

Please see the response to BCUC IR 1.57.1 for the list of current FAES and FEI geo-exchange systems.

82.2.1 In a table provide by year and the detailed itemized costs that went into the AES Deferral account.

**Response:**

The response to BCUC IR 1.157.1 (Confidential) in the 2012-2013 RRA provides a breakdown of the 2010 actual and 2011 projected direct costs by year, thermal energy solutions project and resource. The 2011 forecast provided in the RRA response differs from the 2012-2013 RRA, Exhibit B-1, Appendix G, Table G-2 due to updated information and timing for the anticipated construction of projects. Please also see the response to BCUC IR 1.82.3.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 277

82.3 Please provide a table of the itemized costs that are in the AES Deferral account from 2009 to forecast 2013. Include information by year, by opening balance, by additions, by ending balance, by project, by type of cost, and any other informative detail.

**Response:**

The FEU respectfully submit that this information is irrelevant in the context of this proceeding, which is concerned with establishing principles not the assessment of costs. The information, which is commercially sensitive, was filed confidentially in response to BCUC IR 1.157.1 in the 2012-2013 RRA proceeding, and is being filed here, also confidentially under Confidential Attachment 82.3.

82.4 Prior to the change to the FEI GT&C, why did FortisBC Alternative Energy Services Inc. not apply to the Commission for regulation of its rates for its operating projects?

**Response:**

Please see the response to BCUC IR 1.69.4.4.

82.5 How long has FAES Inc. been charging and continuing to charge customers without an approved rate by the Commission?

**Response:**

The first FAES discrete geo-exchange system began operation in 2006. FEI has stated in the regulatory proceeding for the 2010 Long Term Resource Plan (Exhibit B-10, Response to BCUC IR 2.6.1, also included in Appendix F of the Evidence) that it is actively considering bringing the pre-2010 FAES contracts into FEI and filing them with the Commission for acceptance as a rate. It is FEI's intention to file these with the Commission in 2012 after the completion of the Inquiry.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 278

82.5.1 Were these thermal customers aware that they were agreeing to a charge for service that was to be regulated? Please provide the documents confirming or not confirming this.

**Response:**

These customer agreements have similar terms and conditions included in the agreement:

*"the customer acknowledge and agree that in the event that the Utilities Commission Act applies all obligations of the parties to this Agreement and the rates and terms and conditions set out in this Agreement are subject to approval by the British Columbia Utilities Commission".*

As stated in the regulatory proceeding for the 2010 Long Term Resource Plan (Exhibit B-10, Response to BCUC IR 2.6.1, also included in Appendix F of the Evidence), FEI is actively considering bringing the pre-2010 FAES contracts into FEI and filing them with the Commission for acceptance as a rate. It is currently FEI's intention to file these with the Commission in 2012 once the Inquiry is resolved.

82.6 How long has FAES Inc. been aware that it was operating an activity that it believes is subject to public utility regulation?

**Response:**

Please refer to the response in BCUC IR 1.69.4.4.

82.7 Has FAES Inc. or FEI advised the Commission that FAES Inc. or FEI was owning and operating thermal projects and charging customers without an approved rate? If so, please provide that document.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 279

**Response:**

Please refer to the response to BCUC IR 1.64.4.4. The Commission is aware of thermal projects being operated by FAES through disclosure of this information in several past regulatory proceedings including the FEI's 2010-2011 RRA filed in 2009, the FEU's 2010 Long Term Resource Plan filed in 2010, the FEU's 2012-2013 RRA filed in 2011 and presently ongoing, and in this Inquiry.

82.8 With regard to these "transferred projects", did FAES Inc. at any time consider that it owned and operated unregulated activities?

**Response:**

Please refer to the response to BCUC IR 1.69.4.4.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 280

**83.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1.2, p. 116**

**Standalone Entities**

The FEU identify the Dockside Green, Corix UniverCity and Central Heat as TES regulated projects.

83.1 Would FEU agree that each of these projects is standalone entity thereby reducing the Commission concerns for cross subsidy? If no, then why?

**Response:**

The FEU would not agree. Central Heat is a standalone utility where that utility does not own any other assets. Dockside Green is owned by Corix, FEI, and Vancity. Both FEI and Corix each have many utilities operating under one corporate entity. Corix's UniverCity project is similar to FEU in that the utility, Corix Multi-Utilities Inc. ("CMUS") is a regulated utility with a number of regulated assets within the CMUS regulated entity. Since these utility operations are in many jurisdictions and in business areas such as water and wastewater that are not under the Commission's jurisdiction there is a lack of transparency for the Commission on Corix operations that are BCUC-regulated on matters such as allocations of corporate overheads and common costs. Some of these regulated assets/offering are noted in the SFU UniverCity CPCN:

*"Corix and its predecessor companies have 70 years of combined experience designing, building, financing and managing utility infrastructure systems. Corix owns and operates multi-utility services in Panorama, Sun Rivers, and Sonoma Pines. We are investors and operators of: the Dockside Green biomass-based district energy system and community tertiary wastewater treatment plant in Victoria, the electric, gas and district energy systems at Fort Wainwright, Fort Richardson and Fort Greely in Alaska, a GeoExchange-based district energy system in Ottawa, a community-based district energy system in Toronto and the Lonsdale District Energy system in partnership with the City of North Vancouver.*

*Other projects include a long-term contract to own and operate the GeoExchange community at Wills Creek in Surrey, BC and the Rise in Vernon, BC. Corix also has an agreement with the City of Langford to own, operate and expand the City of Langford municipal wastewater system. In addition to these operations, Corix operates regulated and non-regulated utility systems throughout Western Canada, Ontario, and the US.*

*Corix Utilities has long-term "exclusive right to operate" and/or ownership positions in 19 regulated water and/or wastewater and energy systems in British*



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 281

*Columbia, Alberta and Alaska. These systems are regulated directly by Provincial or State Regulatory Commissions or by Municipalities under contractual arrangements that benchmark against regulated utilities."*

It is clear from the above excerpt that the CMUS SFU UniverCity project is similar in structure to the model that the FEU are proposing, but that there is likely greater transparency in the case of FEI.

Further, the FEU note that there was only one BCUC IR asked of CMUS in the SFU UniverCity regarding corporate structure and cross subsidization. This question is copied below:

**2.0 Reference: Exhibit B-1, Section 2 Applicant, p. 8 and Commission Order C-1-08**

*"CMUS will be responsible for development and ownership of the UniverCity Neighbourhood Utility Service ("NUS")..." (p. 8) Recital D and E in Order C-1-08 for Dockside Green states: "DGE, the proposed utility, ...is jointly owned*

*by...Vancity, Windmill, Corix Utilities Inc. ("Corix") and Terasen Energy Services..."*

*2.1 Similar to Dockside Green, has CMUS considered establishing a separate utility company for the proposed NUS? Why or why not? Please elaborate on the pros and cons.*

**Response:**

*Dockside Green was a partnership between several entities and therefore required the establishment of a separate utility. As a small utility operation, Corix believes that CMUS is the appropriate ownership structure for the UniverCity NUS because this will allow the utility to use established resources for both administration and operations (emphasis added).*

Further, there was no discussion of corporate structure or cross subsidization in the Commission decision.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 282

**84.0 Reference: Issue 1 Scope (b); Issue 3 Scope(b)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1.4, p.118, Footnote 76;  
Exhibit A2-15, FortisAlberta Inter-Affiliate Code of Conduct**

**Prior Regulatory Treatment of Discrete Systems within FortisBC  
Alternative Energy Services Inc.**

According to Footnote 76 on page 118 of the evidence:

"FEI has stated in the regulatory proceeding for the 2010 Long Term Resource Plan (Exhibit B-10, Response to BCUC IR 2.6.1, included in Appendix F of this Submission) that it is actively considering bringing the pre-2010 FAES contracts into FEI and filing them with the Commission for acceptance as a rate. It is FEI's intention to file these with the Commission in due course." [emphasis added]

84.1 What is meant by "actively considering" in relation to bringing pre-2010 contracts into FEI?

**Response:**

FEI is currently preparing filings of FEI TES contracts to be submitted in Q4 2011 for acceptance as a regulated rate. Once FEI has filed and received responses regarding acceptance of those contracts, FEI will be able to determine the appropriate timing for bringing FAES contracts into FEI and filing them with the BCUC.

84.2 In this process of "actively considering" has FEU given any consideration to the following issues?

**Response:**

Please see the responses to BCUC IRs 1.84.2.1 and 1.84.2.2.

84.2.1 Is there a clear accounting between non-regulated TES and regulated TES?

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 283

**Response:**

The FEU no longer believe it is correct to characterize the FAES pre-2010 TES projects as non-regulated. They are providing public utility service but have not been actively regulated to this point. The correct characterization is one of the issues in this Inquiry.

The foregoing being said, there is a clear accounting between FAES TES projects and TES projects of FEI after Jan 1, 2010 as each set of assets and their associated costs of service are recorded within the companies in which the assets reside.

84.2.2 What method will be used to transfer assets from FAES Inc. to FEU?

**Response:**

The assets that meet the definition of "public utility" in the *UCA* will be transferred to FEI's TES class of service.

The means to transfer assets and obligations from FEAS to FEI ranges from the assignment of contracts and the conveyance of the underlying assets to the amalgamation or absorption of FAES by FEI. The FEU have not yet determined the most appropriate means to transfer assets and obligations from FAES to FEI.

Under Section 61 of the *UCA*, a public utility must file rate schedules with the Commission; therefore, a rate application will be made to the Commission for approval. The regulatory process will also have to approve the transfer or amalgamation, whichever form the transaction eventually takes.

84.3 Does the FortisAlberta Inc. Inter-Affiliate Code of Conduct (Exhibit A2-15, <http://www.auc.ab.ca/rule-development/rule-0xx-inter-affiliate-code-of-conduct/Pages/default.aspx>) provide any guidance to FEU in relation to Transfer Pricing?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 284

**Response:**

The FEU believe that the BCUC policies with respect to transfer pricing and code of conduct as between a utility in BC and affiliated non-regulated business ("NRB") are perfectly adequate to cover transactions and sharing of resources between British Columbia utilities and their affiliated NRBs. As noted in the response to BCUC IR 1.17.3 the Alberta inter-affiliate code of conduct also deals with utility and affiliated NRB relationships. The *Alberta Utilities Commission Act* differs from the *Utilities Commission Act* in many respects.

The "Retail Markets Downstream of the Utility Meter Guidelines" ("RMDM"), dated April 1997, includes the findings of the Commission with respect to the participation of utilities and their non-regulated businesses in the retail markets downstream of the utility meter. By Commission Letter L-20-97, dated May 15, 1997, the Commission requested each utility subject to its jurisdiction to report upon the then current non-regulated activities undertaken by the utility. The letter requested details of relationships with NRBs and sought the filing of draft transfer pricing and code of conduct policies for each utility. FEI (then BC Gas Utility Ltd.) filed its NRB Transfer Pricing Policy ("TPP") and Code of Conduct ("CoC") in August 1997 and received Commission approval of these documents by BCUC Letter No. L-64-97. FEI has implemented internal policies and practices to ensure that employees are complying with these policies (such as, for example, a mandatory check box on weekly timesheets to confirm the employee's compliance).

Of central importance in this discussion is that the FEU are dealing with two regulated classes of service within one utility and not the utility /affiliated NRB relationship. It is also abundantly clear that ratepayers in the natural gas class of service will not be paying for the costs of the TES class of service, and vice versa. The TES class of service will cover its own direct costs and a fair and reasonable allocation of common corporate costs and overheads. There may be some value in considering the costing principles in the RMDM Guidelines and the AUC Inter-affiliate Code of Conduct in determining the fair and reasonable allocations but they would not be determinative. The Commission must consider the interests of all utility customers, i.e. both natural gas and TES customers, and both present and future customers, in its decisions and not display bias for one group over the other.

- 84.3.1 Please comment on the applicability of FortisAlberta Inc. Inter-Affiliate Code of Conduct Section 4.2 in relation to the transfer of assets from a non regulated affiliate to a regulated affiliate?

**Response:**

FortisAlberta Inc. Inter-Affiliate Code of Conduct, Section 4.2.1 states the following:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 285

*"Utility Acquires for Profit Affiliate Services*

*When a Utility acquires For Profit Affiliate Services it shall pay no more than the Fair Market Value of such service. The onus is on the Utility to demonstrate that for the For Profit Affiliate Services have been acquired at a price that is no more than the Fair Market Value of such service."*

The FEU would consider fair market value, tax considerations and other financial considerations in any transfer of the assets of FAES to FEI. The transfer would be subject to the review of the Commission which will ensure that the public interest and the interests of natural gas ratepayers and other TES ratepayers are protected.

- 84.4 Could the FortisAlberta Inc. Inter-Affiliate Code of Conduct, modified to fit within the constructs of the *UCA*, provide appropriate guidance for FEU in relation to the FAES Inc. contracts FEU is "actively considering" bringing into FEU or contracts going from FAES Inc. to FEU? Please explain why or why not.

**Response:**

The FEU do not believe that adapting FortisAlberta Inc. Inter-Affiliate Code of Conduct to fit within the constructs of the *UCA* is necessary or particularly useful to find guidance for bringing the FAES contracts and assets into the FEU. As has been stated in a number of IRs, the FAES assets and contracts that are under consideration for transferring into FEI are public utility business so the principles that apply to asset transfers and transactions between a utility and non-regulated business, as contemplated in the FortisAlberta Inter-Affiliate Code of Conduct, are not directly applicable. Secondly, the Commission reviews applications involving regulated asset purchases or dispositions on a frequent basis, as well as many other types of transactions. The FEU have brought numerous applications themselves to the Commission involving the purchase, sale or construction of regulated assets, often far more complex than the transfer of FAES assets to FEI would be.

- 84.5 Could the FortisAlberta Inc. Inter-Affiliate Code of Conduct be modified to be used as a guideline for the relationship between the natural gas utility and the

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 286

lines of business in relation to the optimal corporate structure recommended above, and if so, how?

**Response:**

The FEU are not sure of what the question is referring to as the "optimal corporate structure recommended above". Nevertheless, the FEU do not believe developing guidelines in regard to "optimal corporate structure" should be pursued in this Inquiry. The determination of corporate organization and structure is the prerogative of corporate management so guidelines of this nature are not necessary.

84.6 Has FEI, Terasen Gas Inc., and/or BC Gas Utility Ltd. filed non-regulated business (NRB) reports with the Commission in the past?

**Response:**

An FEI audit report including results of a review of the Code of Conduct and the Transfer Pricing Policy is filed annually on a confidential basis with the Commission. The last filing was October 2010 and a report is currently being prepared for filing in the Fall of 2011.

84.6.1 If so, when was the last filing? If the reports are no longer filed please explain the discontinuance.

**Response:**

Please see the response to BCUC IR 1.84.6.

84.7 Has Terasen Energy Services Inc. filed any reports with the Commission within the last five years explaining its regulated activities? If so, please provide a copy of those reports.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 287

**Response:**

Terasen Energy Services Inc. changed its name to FortisBC Alternative Energy Services Inc. (FAES) on March 1, 2011. FAES has not filed reports with the Commission regarding its operations.

84.8 Has FEI or Terasen Gas Inc. filed any reports with the Commission within the last five years explaining its relationship and affiliate transactions with Terasen Energy Services Inc.?

**Response:**

Yes, FEI has filed information with the Commission confidentially on an annual basis regarding affiliate transactions with Terasen Energy Services Inc.

Please see the response to BCUC IR 1.84.6.

84.8.1 If so, please provide those reports.

**Response:**

Please see the response to BCUC IR 1.84.6.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 288

**85.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.1.1, p.102,  
Discrete Thermal Energy Systems**

The FEU evidence states:

"The characteristics of a typical discrete TES contemplated by the FEU are as follows:

There is usually only one class of customer and one charge or rate to the customer for energy. The target customers of this offering would be charged rates that would recover the FEU's cost of service, although the high upfront capital costs of these systems may necessitate the use of rate management techniques such as levelized rates to avoid prohibitively high rates for the initial customers joining the system. In these cases the rates would recover the cost of service over a longer time period such as the life of the assets or the term of the service contract. The rate includes cost recovery for capital, O&M (including energy inputs), taxes, depreciation, etc." [emphasis added]

- 85.1 Are any rate management techniques other than levelized rates contemplated for single customer buildings? If so, please describe them.

**Response:**

Yes, other rate management techniques are being considered. For example, an approach using cost of service rates with an initial period of rates being capped by comparable market energy rates is being contemplated as another rate management technique.

Any alternative rate management approaches developed will be structured to meet the underlying objective of collecting the full cost of service for a project over the useful life. All rate management techniques that are either being or planned to be employed for current prospective projects or that may arise in the future will be detailed in the applications to the Commission and will include appropriate evidence and reasons for doing so.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 289

**86.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence from FEU, Section 6.3.1, p.111; and Section 8.2 p.167**

**Development of Thermal Energy Systems**

The FEU evidence states that from a process standpoint, the following steps are followed when developing or responding to an energy opportunity:

1. develop opportunities through customer contact or RFP responses (the two approaches described above);
2. sign initial agreements (MOU) with customer;
3. determine feasibility of project;
4. negotiate/sign binding agreements;
5. apply to the BCUC for project and/or rate approval;
6. build the energy system; and
7. deliver thermal energy.

On p. 167 of the Evidence FEU state:

"4. In order to maximize regulatory efficiency while maintaining appropriate oversight commensurate with the nature of the investment, it is appropriate to adopt different processes depending on the size of the investment contemplated. For projects that are estimated to cost between \$1M and the CPCN threshold (currently \$5M), irrespective of whether the FEU are seeking an expenditure schedule or just approval of a rate, the FEU will be expected to file together with a tariff supplement (i.e. the customer's service agreement) based on Section 12A of the GT&Cs."

- 86.1 Given the order of the steps to respond to an energy opportunity would it not be prudent to delay signing binding agreements until after an application for project and/or rate approval has been granted by the Commission?

**Response:**

The FEU do not agree. The signed agreements demonstrate customer commitment to the project so that the Commission may have greater assurance that project costs will be recovered. As such, agreements are conditional on the Commission granting approval. If Commission approval was sought before having a signed agreement with the customer there

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 290

would be the potential for regulatory inefficiency and wasting the Commission's time in that a customer might decide not to proceed with the TES project even though Commission approval had been granted, or if the terms and conditions changed in a material way from the version brought forward for review.

- 86.2 Given the order of the steps, what are the risks to FEU if projects do not receive project or rate approval by the Commission?

**Response:**

The "agreements" noted above are conditional on the Commission granting approval for the project. As all projects submitted to the Commission will follow the provisions of the FEI's 2010-2011 RRA NSA (BCUC Order No. G-141-09) and any applicable guidelines regarding the Commission's filing format and information requirements, we anticipate that the main risk is potential adjustment to rates based on the Commission review.

However, there is always a risk that a denial or lengthy delays in receiving approval could put the FEI's client relationships at risk as well. This risk exists regardless of whether the agreement is signed before going to the Commission.

After moving a few of these projects through the regulatory process the FEU are optimistic that the Commission review process will become more streamlined.

- 86.3 Please comment on the implications to FEU and its potential TES customers of switching the process where step 4 and step 5 are reversed and indicate what implications that would have to the Item 4 referenced?

**Response:**

The main implications to FEI its potential TES customers of reversing step 4 and step 5 are discussed below.

First, time is of the essence for the customer and as such having a level of certainty related to the contract terms ensures that they can move forward with the necessary steps to complete



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 291

their development (in the case of a new building(s)) or plan for upgrades (in the case of existing building(s)). The reversal of these steps delays that certainty.

Second, the reason for having step 4 before step 5 is to provide evidence of customer commitment to the project so that the BCUC in review of the application may have greater assurance that project costs will be recovered and that customers find the proposed rates acceptable. Contrary to what appears to be assumed in the question, not having the signed agreement in hand when the FEU apply for approval may, in fact, be an impediment to the process rather than assisting the process.

Please also see the response to BCUC IR 1.86.1.

86.4 Is the negotiated and signed binding agreement mentioned on Page 111 the same as the customers' service agreement mentioned in Item 4 on Page 167?

**Response:**

Yes, the negotiated and signed binding agreement mentioned on Page 111 is the same as the customers' service agreement mentioned in Item 4 on Page 167.

86.5 Will the initial agreements with the customer (Step 2) also be submitted to the Commission for review as part of Item 4?

**Response:**

No, the initial agreements with the customer (step 2) will not be submitted to the Commission since the negotiated and binding agreements in step 4 would supersede all previous agreements.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 292

- 86.6 If FEU or other utility/ESCO "develops a product from scratch", then markets the idea to a customer/s what initial agreements or MOUs need to be in place for the project to proceed?

**Response:**

For each project the agreements that FEI puts in place reflect the complexity of the project. For example, in order for a district energy project to proceed in the initial feasibility phases, an agreement outlining expectations of each party such as a Memorandum of Understanding ("MOU") would normally need to be in place with potential customers and heat suppliers (where applicable). These agreements, although they may not be binding, ensure that all parties involved understand the scope and implications of proceeding with the project and that all parties are working towards a mutually beneficial goal. For a project to proceed to construction, binding definitive agreements need to be in place. While the FEU do not have details of what agreements other utility/ESCOs would deem necessary to proceed with a project, it is reasonable to expect they would be similar.

- 86.7 Will these initial agreements or MOUs include any exit clauses or events that would trigger a cancellation of the contract or other termination clauses?

**Response:**

Yes, the initial agreements (MOUs) being referred to here are not binding agreements for service since they are signed prior to determining project feasibility. As such, the MOUs include provisions whereby participation in the project either automatically ceases or can be requested to cease.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 293

**87.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.1, p. 114, 116 and 118**

**Regulation of TES and Exemption from Regulation**

The FEU evidence states that:

"Regulation of TES is both appropriate and necessary because TES are generally complex and costly to operate and maintain, and once installed, the owner or operator has a measure of monopoly power over the customers because there will only be one thermal energy services provider within a certain area, and it is also costly to switch to another energy source."

And: "The FEU are also aware of a number of Commission orders involving the sale of thermal energy, which further confirm that the sale of thermal energy in BC as proposed by the FEU is public utility activity. The circumstances in each of these cases involved the sale of thermal energy from an owner of thermal energy producing equipment to another party, and an application by the seller to be exempt from active regulation under the *UCA*. In each case the seller sought and obtained advance approval of the Lieutenant Governor in Council for exemption, and the Commission approved the exemption request. The necessary implication of having to obtain an exemption from regulation is that the sale of thermal energy from one party to another is otherwise regulated."

And: "Once a customer has selected a particular thermal energy source, however, that customer is essentially captive to the service provider because of high costs of conversion to another energy source."

- 87.1 Does the measure of monopoly power decrease where there is more than one utility/ESCO providing a thermal energy services project within close proximity to that of another utility/ESCO?

**Response:**

As noted in the quote in the preamble, the measure of monopoly power occurs after the TES service provider has been selected and the system has been installed and is operating. At that point the customer will generally be under a long term obligation to take thermal energy service from the utility/ ESCO. Therefore, monopoly power is not significantly decreased where there is more than one utility/ESCO providing TES within close proximity since the customers will not be at liberty to leave without incurring a penalty. However, the existence of more than one utility/ESCO and the regulation of rates provide customers with both choice when initially

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 294

deciding upon an energy system provider and assurance that the rates offered will be fair as the rates of both providers of TES will be reviewed by the BCUC.

For TES, the cost of conversion is mainly comprised of the cost of new equipment and delivery systems such as piping that will properly interface with a building system. Since systems require a minimum amount of load to be able to recover the cost of service, multiple market participants would not be able to achieve sufficient loads if more than one company was pursuing the same customers required to make a system financially viable.

- 87.2 What is the likelihood (given that the contracts allow this event) that a TES customer will switch TES providers if there is more than one provider in close proximity?

**Response:**

It is highly unlikely that a customer would switch TES providers even if another TES supplier existed in close proximity. The cost barriers associated with switching makes switching highly unlikely. The fact that TES is provided for space heating to residential and commercial customers places the level of stranded asset risk at a similar level to customers solely on natural gas or electricity for a similar purpose.

Please see the response to BCUC IR 1.87.1.

- 87.3 What are the economic and business conditions that would trigger customers to switch TES providers?

**Response:**

A customer may want to switch TES providers if in so doing they can save money either within the short term or over an extended period. They may also want to switch TES providers if they believe the level of service from their current provider is unacceptable. For example, if they have had repeated service interruptions due to poor operation and maintenance of the system. The customer may have options to convert to conventional energy sources such as installing their own boilers so switching TES providers is not the only possibility if the customer has come to the decision to make a change. However, there are obstacles that may prevent such actions,

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 295

making it important for the customer to have recourse to the Commission in the event that issues arise. Please see the response to BCUC IR 1.87.1.

- 87.4 Is the monopoly power diminished if, through contractual arrangements, the TES customer can terminate service agreements and operate and maintain the TES facility on its own or contract with another utility/ESCO to provide operation and maintenance through a service contract?

**Response:**

The FEU do not believe that having contractual provisions as contemplated in the question would materially impact the monopoly power that the TES provider has over the TES customer. Since the TES provider has invested time and money in developing the TES system contract termination provisions, if any, would include penalties and charges for undepreciated capital costs so that the TES provider can protect its investment and its business.

TES systems are inextricably linked to the TES energy source, so extracting the service aspect would not completely diminish the monopoly power since the incumbent utility would still control the energy source. Unlike conventional energy options, for TES a substantial portion of the energy rate is related to recovery of the capital costs of the equipment and as such it is in the best interest of both the TES provider and the TES customer for the company that owns the equipment to be responsible for the service aspects that will protect that asset and its ability to provide the service over the lifetime of the contract.

- 87.5 Would the "complex and costly" nature of these projects not raise greater concerns that some costs could become stranded over time? What is FEU proposing to ensure this doesn't happen?

**Response:**

Costly and complex is a relative term and these qualities are the same no matter who the owner of the thermal energy system is. TES systems are more complex and costly to maintain than a baseline gas boiler which would be considered the reference point for TES. However, the systems are no more complex and likely less complex than other FEI-owned systems such as compressor stations and LNG facilities. Therefore, given FEI's proven experience managing the



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 296

operation of complex systems, the relative complexity should not raise any concerns over the prospect of stranded assets.

- 87.6 Couldn't the monopoly concerns of FEU be overcome by long term contracts to offset the monopoly power that would otherwise be a concern? Several entities have received limited exemptions from the Commission by entering long term contracts and wouldn't this be preferable to Commission oversight of many small projects?

**Response:**

No, long term contracts do not remove the monopoly concern because the high cost barriers associated with switching TES providers would still exist.

The FEU agree that Commission oversight of many small projects with unique attributes will require greater effort on the part of the FEU and to the Commission. Exemptions on a project by project basis may be appropriate if the above concern regarding market power can be truly addressed. Alternatively, light handed regulation may be appropriate. Finally, the FEU expect that as the market develops an overall TES tariff and pooling of TES assets may be appropriate. The FEU are working to develop consistencies and therefore efficiencies over the inventory of projects under development. Such an overall TES tariff would provide consistent rates, and terms and conditions for projects in order to facilitate efficient oversight while maintaining transparency. At this early stage of the TES market development, however, any regulatory efficiencies that can be adopted while maintaining transparency and timely review processes are welcome.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 297

**88.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence of the FEU, Section 6.4.1.2, pp. 116-117**

**Lieutenant Governor in Council Exemptions**

FEU states in Section 6.4.1.2 on pages 116 to 117:

"The FEU are also aware of a number of Commission orders involving the sale of thermal energy, which further confirm that the sale of thermal energy in BC as proposed by the FEU is public utility activity. The circumstances in each of these cases involved the sale of thermal energy from an owner of thermal energy producing equipment to another party, and an application by the seller to be exempt from active regulation under the *UCA*. In each case the seller sought and obtained advance approval of the Lieutenant Governor in Council for exemption, and the Commission approved the exemption request. The necessary implication of having to obtain an exemption from regulation is that the sale of thermal energy from one party to another is otherwise regulated."

FEU go on to name three examples of such exemptions being granted on page 117.

88.1 For the three named examples that have exemptions, please explain the nature of regulation and how customers may have recourse in the case of a dispute with the company?

**Response:**

The three exemptions are as follows:

1. Canadian Forest Products ("CFP") owns and operates pulp and paper mills in Prince George. It provides steam to an adjacent facility, Chemtrade Pulp Chemicals Limited partnership and therefore qualifies as a public utility. As a result of the Lieutenant Governor in Council ("LGIC") exemption (Order in Council ("OIC") No. 1096, dated November 18, 2004), the Commission exempted CFP from Section 71 and Part 3 of the *UCA* with the exception of Section 22 (Commission Order No. G-104-04).
2. Al Stober Construction ("ASC") owns the Landmark Buildings in Kelowna, which have geothermal heating and cooling systems. Mode Properties, developer of Strata Corporation adjacent to the Landmark Buildings, negotiated a heat supply agreement with ASC. As a result of the LGIC exemption (OIC No. 230, dated April 16, 2008), the Commission exempted ASC from Part 3 of the *UCA* (Commission Order No. G-81-08). As noted in the footnote on page 117 of the Evidence, the ASC exemption was later rescinded by BCUC Order No. G-139-08 after Al Stober Construction notified the Commission that it did not intend to proceed with the proposed sale of thermal energy.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 298

3. Canada Place Corporation ("Canada Place") entered into an agreement to provide chilled water for cooling to Westbank Projects Corporation. Canada Place applied to the Commission pursuant to Section 88(3) of the *UCA* for an order exempting Canada Place from regulation as a public utility. As a result of OIC 731, dated October 9, 2008, the Commission exempted Canada Place from Part 3 of the *Act* (Order No. G-151-08).

In each case outlined above, an exemption from Part 3 of the *UCA* removes these entities from regulation by the Commission. However, the exemption orders indicate that the Commission will still respond to complaints regarding these exemptions and may issue a further order to revoke the exemption. Orders G-81-08 and G-151-08 both include the following language in the order:

*"This exemption, granted pursuant to this Order, shall remain in effect until the Commission orders otherwise following the determination of any complaint it receives from a person whose interests are affected."*

A "person whose interests are affected" could include the parties in the thermal energy sale contract as well as other third parties whose interests are affected. Finally, in the event of a dispute over the negotiated commercial contracts, parties to the agreements would have recourse to courts for resolution.

- 88.2 Are FEU aware of how has the Commission regulated other legal entities such as pipelines, ski hills, and steam providers that depart from traditional cost of service ratemaking?

**Response:**

The FEU are generally aware of how the Commission has regulated the various public utilities that the Commission oversees. The listing of regulated utilities is provided on the Commission's website. The history of regulation in each case can be determined by researching the Commission Orders (also listed in the website) that are applicable to that utility.

The FEU are aware that the Commission has discretion under the *UCA* to determine the manner in which it regulates the various utilities and that in various instances the form of regulation adopted may be characterized as light-handed or complaints-based. The Commission has the same discretion afforded by the *Act* to determine the manner in which it regulates utilities providing TES. However, the Commission does not have the discretion to determine that activities that fall under the public utility definition are not regulated.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 299

88.2.1 If so, please explain the nature of the regulation (e.g. complaint basis, negotiation, etc.).

**Response:**

Please see the response to BCUC IR 1.88.2.

88.3 In the regulation of thermal energy services by FEI or FAES Inc., is it possible that some entities that would otherwise be public utilities, (e.g. qualifying thermal projects) have Lieutenant Governor in Council exemptions?

**Response:**

Neither FEI nor FAES have TES projects that have been granted exemptions from public utility regulation by the Lieutenant Governor in Council.

88.3.1 Is there anything that would prevent FEI or FAES Inc. from obtaining an exemption from the Lieutenant Governor in Council and, if so, what?

**Response:**

Nothing is preventing FEI or FAES from seeking an LGIC exemption from regulation for some or all of its TES projects. However, the LGIC exemption order requires approval of the provincial cabinet and the FEU cannot speak for the government in terms of what it will approve. Further, even if an LGIC order is granted the Commission still makes the final determination under section 88 of the *UCA* to grant an exemption. The Commission would have to agree that exempting a public utility is in the public interest. Please see the response to BCUC IR 1.35.1 for FEU's views on this issue.

The Commission also has the power to determine the form of regulation it applies to regulated services.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 300

88.3.2 If not, what legal entity changes or regulatory changes would facilitate such exemptions?

**Response:**

As stated in the response to BCUC IR 1.88.3.1, the FEU do not believe using an LGIC exemption process would be an efficient means to establish the appropriate degree of regulation of TES. However, assuming that granting exemptions was considered desirable the exemptions could be obtained by FEI while still using the regulatory framework already in use (allocation as between classes of service). It would also be possible to use a separate legal entity, but the FEU believe that operating two classes of service is appropriate.

88.3.3 From an operational standpoint for FEI or FAES Inc., what challenges might arise from obtaining a Lieutenant Governor in Council exemption?

**Response:**

Assuming the Commission has granted the exemption(s) set out in the LGIC order(s) there would be no changes from an operational point of view but there would be changes with respect to regulatory applications and regulatory reporting.

88.4 Would two separate legal entities with separate operations and management more easily allow for different and transparent approaches to regulating the gas utility and thermal utility? Please explain.

**Response:**

The FEU do not believe that separation of natural gas and TES operations into two separate companies would more easily allow for more transparent approaches to regulating the gas utility and thermal utility. There is full capability within the existing regulatory and financial reporting constructs to provide transparent oversight of the two classes of service. Establishing two separate legal entities would not provide any more capability to regulate transparently - it would only add costs and introduce inefficiencies to the delivery of these services to customers relative to the FEU's approach of having the two classes of service within a single legal entity. See the response to BCUC IR 1.24.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 301

This issue was canvassed in the Evidence. As stated on page 122 of the Evidence:

*"Cost efficiencies and regulatory efficiency are two reasons why the single utility/multiple classes of service model is the FEU's preferred approach and why it is in the public interest to make utility investments in TES in this manner.*

*First, there are cost efficiencies that benefit both natural gas customers and TES customers. On the gas side, customers benefit from shared overhead costs. Having the TES class of service within the same utility as the natural gas class of service results in sharing of overhead costs in the same way as is done among FEI, FEVI and FEW. In the long-run, the more successful the TES business becomes, the greater the potential benefit for the FEU's natural gas customers in terms of the recovery of overheads and common costs from the TES customers.*

*Efficiencies benefit the TES customers as well. FEU staffing efficiencies can be realized in finance, accounting and administration as employees have the training and expertise to administer the TES class of service efficiently within a single regulated entity. There are also efficiencies in terms of fewer contracts to establish and administer if all the necessary operating services are within the utility so that outside services do not have to be contracted for independently. Ultimately, the TES customers benefit from these efficiencies, where rates are cost of service based."*

Corix also recognized the cost efficiencies to be gained when multi utility operations are provided through one corporate entity and the same logic would apply to the FEU (see page Exhibit B-2, page 123). Corix stated that the UniverCity's Neighbourhood Utility Service ("NUS") received services from Corix and this was a decided advantage.

*"Dockside Green was a partnership between several entities and therefore required the establishment of a separate utility. As a small utility operation, Corix believes that CMUS is the appropriate ownership structure for the UniverCity NUS because this will allow the utility to use established resources for both administration and operations."*

In addition, the Commission noted the regulatory efficiencies to be realized in the Gateway Lakeview Estates CPCN Decision (dated December 14, 2006), in which the Commission stated that:

*"Certainly, it is likely to be less efficient and more costly from the Commission's perspective to regulate a number of small utilities, rather than one larger utility serving the same customers. Going forward, the Commission expects TES and TGI to consider and address this concern when they are developing plans to serve new developments and groups of customers that are in or near TGI's service area. The Commission is not*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 302

*certain that a proliferation of small, but related utilities, all under the same parent, TI or KMI [Kinder Morgan Inc., which at the time was the ultimate owner of the Terasen Utilities], is necessarily in the public interest."*

- 88.5 Would separate legal entities with separate management operations allow the Commission to regulate all similar thermal energy service providers in a similar manner thus allowing all potential regulated providers equal, transparent, and fair regulatory treatment? Please explain.

**Response:**

The FEU do not believe that having separate legal entities with separate management operations for the FEU's natural gas and TES classes of service would provide any basis for the Commission looking at all similar thermal energy providers in a similar manner or improve the Commission's ability to provide equal, transparent and fair regulatory treatment to all potential regulated providers of thermal energy. There is no uniformity in the corporate or regulatory structures of other thermal energy service providers in BC that would support the proposition in the question. UniverCity at SFU, other Corix regulated utility operations, Dockside Green Energy, Central Heat, TerraSource and River District Energy (Parklane Homes) are all examples of TES operations, all of which are part of organizations with different portfolios of businesses and corporate structures.

TES meets the definition of a public utility and must conform to all the regulatory requirements regardless if it is a class of service or an independent regulated entity. This provides transparency. Further, all providers of such services would meet the definition of public utility and therefore would be regulated by the Commission. The standard is that the requirements of a public utility must be met and this establishes a level playing field for all participants and not that each entity must have the same corporate structure.

In fact, the FEU offer the most complete cost transparency as all utility services reside in one jurisdiction where all shared service costs between affiliated utilities and within each regulated utility can be tracked so the allocation percentage of overhead costs for example can be easily determined. The problem occurs when the corporate parent company controls district energy systems in a number of provinces and the method of cost allocation (such as overhead) from the parent to each TES utility would be unknown to the Commission.

Corix, which operates utilities in a number of provinces, would be an example of this issue. The Commission must determine the appropriate amount of overhead to allocate to each project in this jurisdiction. However, with respect to FEU, the total overhead costs are available to the



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 303

Commission and allocations are easily traceable. In fact, the FEU been through very significant processes in its 2012-2013 RRA to deal with these allocations, and it is being revisited again here in the Inquiry.

The FEU have noted in the response to BCUC IR 1.88.4 and in the Evidence that the class of service model is being done to provide cost efficiencies relative to a two corporation model that are in the best interests of both classes of customer. The FEU believe that the premise in the question involves putting the interest of competitors over the interests of the FEU's own customers, which the FEU consider to be contrary to the public interest.

See also the response to BCUC IR 1.24.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 304

**89.0 Reference: Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.3, p. 125**

**TES Rate Design**

The FEU state on p. 125:

“One of the hurdles of adopting low carbon emitting alternative energy systems is the high up- front capital costs. Typically the full costs of a new DES or alternative energy system occur right after the system comes into service. However, the customers that will use the system are added over time. In the absence of rate smoothing or deferral mechanisms the initial customers will have very high energy bills, and subsidize the customers who attach in later years.

Levelizing the rate and allowing inflation-based rate increases over a longer period, such as twenty years, provides a balanced solution to this issue and will promote adoption of TES.”

- 89.1 Levelized pricing creates risk that attachments may be less than or more than expected and costs may vary from original projections. Who should bear this risk – TES customers, utility shareholders or other customers? Why?

**Response:**

The FEU do not agree with the statement in the question that levelized pricing creates risk that attachments may be less than or more than expected and costs may vary from original projections. Levelizing rates is a rate management technique that is intended to make attaching to the system more attractive. Whether or not rates are levelized isn't going to determine the level of risk associated with cost variances because levelized rates are still premised on cost recovery. Other terms of a service agreement that deal with cost of service and forecasting, for example, are likely going to be more relevant provisions for determining risk associated with these factors to the customer.

As with any investment by a regulated utility the Commission has the ability to alter rates that are no longer just and reasonable. The FEU cannot speculate on what facts would lead to a previously-approved rate becoming unjust and unreasonable, but prudently incurred costs of service related to TES facilities will be at the risk of TES customers, while imprudently incurred costs will be at the risk of shareholders. As with any regulated service, TES rate design determines how prudently incurred costs are allocated among TES customers.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 305

**90.0 Reference: Issue 2 Scope (c)**

**Exhibit B-2, Evidence of the FEU, section 6.4.4, p. 126**

**Regulatory Approaches in Other Jurisdictions**

The FEU state on p. 126:

"With respect to the scope of regulation, there have been, for instance, information requests in the 2012-2013 RRA about the scope of regulation in Ontario. However, the Ontario Energy Board Act ("OEBA") and the *UCA* are decidedly different in how they regulate thermal energy services. The OEBA sets out defined regulation for electricity producers and natural gas transmitters and distributors, but does not cover thermal energy service. In contrast, as discussed above, the definition of "public utility" in the *UCA* captures thermal energy service. The Ontario Energy Board ("OEB") considers "green energy initiatives" that involve the production of "renewable energy", such as TES, to be unregulated and allowed to develop in a competitive market environment. The important fact, however, is that the Ontario legislative framework permits the OEB to take that view. The FEU understand that TES are not actively regulated in certain other jurisdictions in Canada as well, such as Alberta and Quebec."

- 90.1 Would it not be appropriate for this Inquiry to consider whether the *UCA* should be changed to either streamline regulation of TES or to remove it from regulation, as done in these other provinces? If not, why not?

**Response:**

Please refer to the response to BCUC IR 1.35.1.

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 306</p>

## Thermal Energy Services as a Separate Class of Service

### 91.0 Reference: Issue 3 Scope (b)

#### Exhibit B-2, Evidence of FEU, Section 6.4.2.2, p.122

#### Benefits of the Single Utility/Multiple Classes of Service Approach

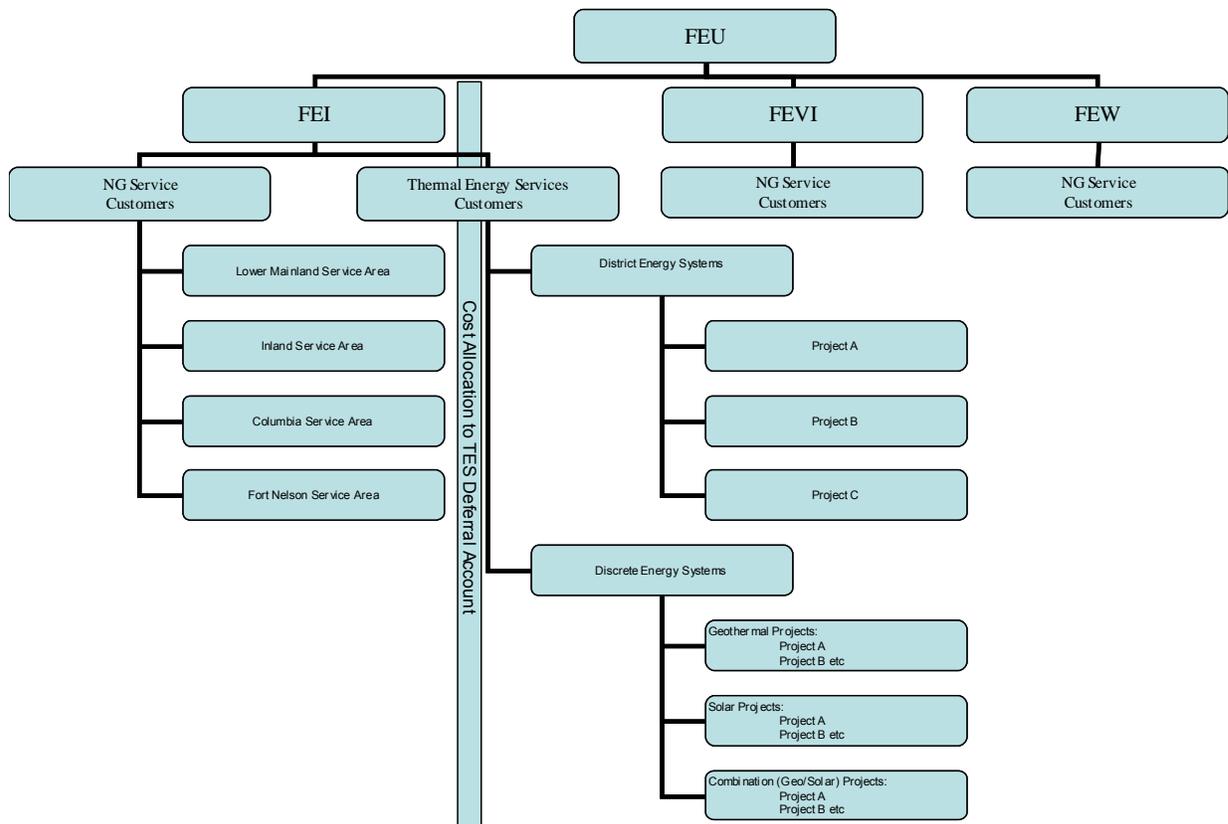
The FEU evidence states:

"Cost efficiencies and regulatory efficiency are two reasons why the single utility/multiple classes of service model is the FEU's preferred approach and why it is in the public interest to make utility investments in TES in this manner."

91.1 Please comment if the following Organizational Chart is representative of the structure proposed by FEU as a single utility/multiple class of service and where cost allocation methodology is applied.

## FEU Structure— Integrated Utility

Single Utility Multiple Classes of Customers



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 307

**Response:**

Please see the response to BCUC IR 1.24.1, which includes the FEU's current and preferred utility structure. It should also be noted that TES class of service will include a combination of district or discrete energy systems, and that each TES project (both district energy systems and discrete systems) may include different forms of energy and technologies to deliver energy, such as natural gas, electricity, geo-exchange, solar, biomass, etc. To be correct and consistent, the representation on the chart under Discrete Energy Systems could read "Project A, B, and C" in the same manner as District Energy Systems are portrayed or even better not bother with a project listing as this is likely to be quite dynamic. See also the response to BCUC IR 1.58.1.

- 91.2 If the above structure is not representative, please provide a similar chart that shows the structure that is currently in place and what types of cost allocation methodologies are in use.

**Response:**

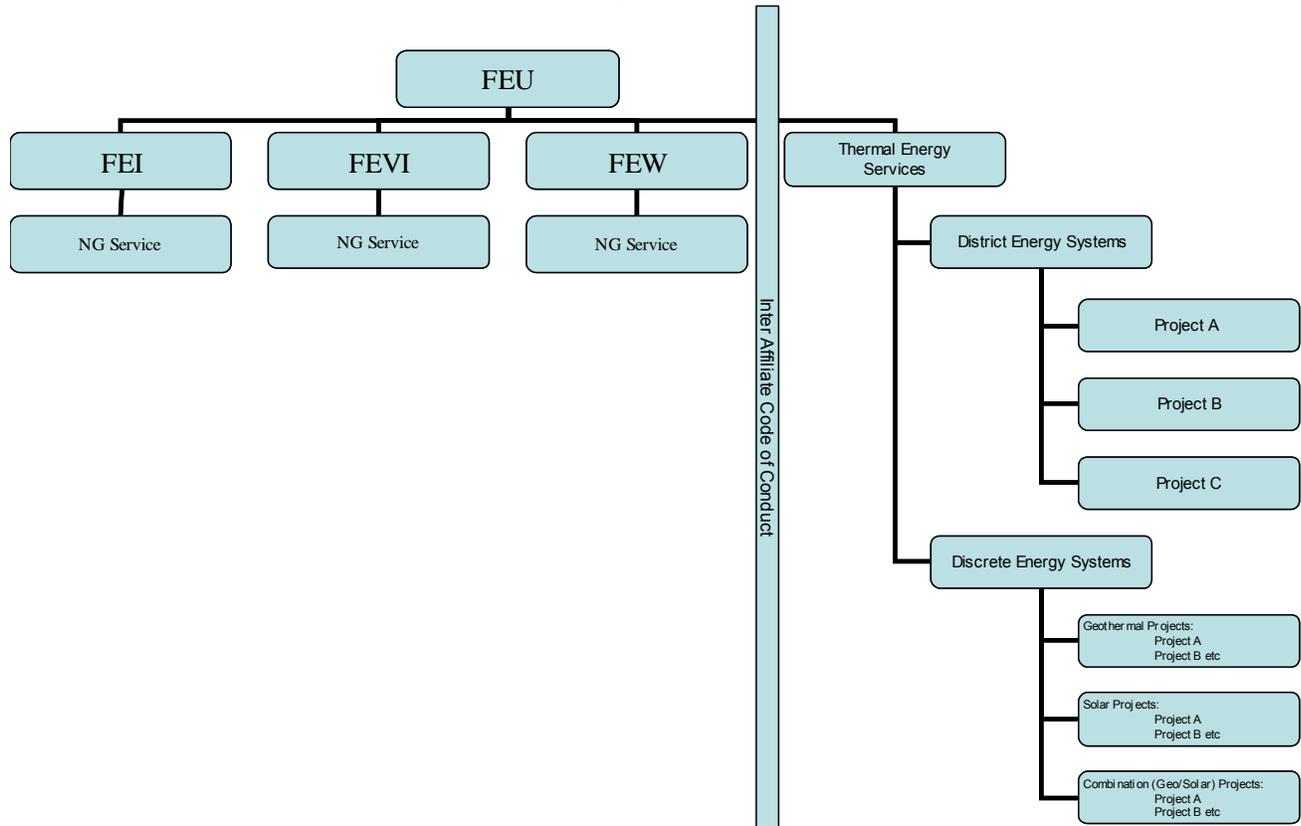
Please see the response to BCUC IR 1.24.1, which includes the FEU's current and preferred utility structure.

- 91.3 Please comment on the advantages and disadvantages in relation to cost efficiencies and regulatory efficiencies of the following Organizational Structure.

<p>An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives</p>	<p>Submission Date: November 3, 2011</p>
<p>Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1</p>	<p>Page 308</p>

## FEU – Integrated Utility

with Thermal Energy Services Affiliate



**Response:**

The FEU are not carrying out their TES business in the corporate organization presented in the picture above so this response is provided only for discussion purposes in this Inquiry. The FEU have provided a modified version of the utility structure pictured above, as the “Alternative Approach”, in the response to BCUC IR 1.24.1. It should also be noted that TES class of service may include a combination of district or discrete energy systems, and that each TES project may include different forms of energy and technologies to deliver energy, such as natural gas, electricity, geo-exchange, solar, biomass, etc.

The only potential advantage that the FEU see in the structure pictured above (and as modified in BCUC IR 1.24.1) is a delineation of the classes of service along corporate legal entity lines. This delineation, however, would come with both extra costs and inefficiencies for both natural gas and TES customers. Should the TES class of service be offered by a separate legal entity (a separate entity than FEI), then there will be additional administrative, legal, accounting and



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 309

incorporation costs which may be onerous, particularly when the TES line of business is small. Ultimately, these costs must be recovered by customers. Customers will not have to incur these costs with TES being conducted within FEI as the Companies are doing.

The rationale for having separate legal entities within the FEU for FEVI and FEW are historical and geographical in nature. Amalgamation of the gas utilities will reduce these entities to one legal entity.

- 91.4 If the above organizational structure is not optimal, please provide a similar chart that shows a structure that would be optimal with TES as an affiliate of FEU.

**Response:**

Please see the discussion of the FEU's preferred approach in the response to BCUC IR 1.24.1.

- 91.5 Could FEU use FAES Inc. as the Thermal Energy Service company in the affiliate model?

**Response:**

Yes. As noted in the response to BCUC IR 1.24.1, TES services could be provided to customers under different utility structures, including having a separate legal entity (such as FAES Inc.) as an affiliate of the FEU to provide the TES class of service.

However, the optimal approach needs to consider the customers' and the Company's interests. The FEU believe that the adopted structure, as presented in the response to BCUC IR 1.24.1, is the preferred and optimal model, which provides an adequate and efficient model for the FEU to do its business and provides the transparency for the Commission to assess that proper cost allocation is maintained within the regulated utility model, serving the best interests of ratepayers in both classes of service and the Company.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 310

**92.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.2.3, p.124; Exhibit B-17,  
FEU 2012-13 RRA , IR 2.79.4**

**Cost Allocation**

The FEU evidence states:

In Paragraph 1 "The proper allocation of costs is key to the effective offering and regulation of multiple classes of service."

In Paragraph 3 "In meeting the requirements of UCA section 60 (1) (c) the FEU's approach will be to fairly allocate cost among classes of service in a transparent manner that is subject to review in regulatory proceedings."

FEU's response to IR2 Question 79.4 of the FEU 2012-13 RRA stated that:

There is no documented policy within the FEU that governs cost allocation between classes of service (such as thermal energy services) within the regulated public utility, nor does the FEU believe one is needed. The cost allocation methodology for thermal energy activities that already exists is similar to the transfer pricing methodology except that the transfer pricing methodology applies to services provided by a regulated utility to a non-regulated affiliated company; thermal energy activities are regulated activities. The Thermal Energy Services Deferral Account and overhead cost allocation methodology described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU's employee timesheet completion practices are in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. Timesheet completion practices did not have to change to accommodate thermal energy services within the FEU for direct charges." [emphasis added]

92.1 Given the responses to question in the 2012-13 RRA Exhibit B17 IR 2.79.4 cited above, how can FEU reasonably assure the Commission that cost allocation between classes of service within the utility is transparent?

**Response:**

The quoted passage is only part of the evidence on this subject from the RRA, and the premise of the question that there is no documented policy is incorrect. The complete evidence on the record in the RRA proceeding with regard to the allocation of costs between the natural gas class of service and the TES class of service as identified in the reference to the series of information requests in BCUC IR 2.79 in the 2012-2013 RRA proceeding is included as Attachment 92.1 to this response.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 311

While there is no written policy specifically governing the allocation of costs between classes of service within the regulated utility, the FEU do have and follow related existing policies that ensure transparent allocation of costs. As noted in the response to BCUC IR 2.79.4 in the 2012-2013 RRA proceeding, the FEU have had a timesheet policy which captures charges not only to TES but also to non-regulated affiliates. The FEU's code of conduct policy is a documented policy that has been in place for many years and has specific BCUC approval for its use. Every time an employee of the FEU submits a timesheet, the employee acknowledges the code of conduct. The timesheet process allowed an employee to allocate to different classes of service and/or non-regulated entities. As the existing code of conduct has been in place for many years to capture time which would then be charged to non-regulated affiliates, it is the FEU's view that no additional documented policy is required to capture time to the TES class of service.

The process by which time spent on the TES class of service is allocated to that class of service was more fully explained in the responses to Corix IRs 2.4.1 through 2.4.5 in the FEU's 2012-2013 RRA Proceeding. These Corix IRs and responses are also included in Attachment 92.1 to this response as further evidence of how these costs are allocated in a transparent manner.

- 92.2 Please describe FEU's internal controls processes and explain why FEU consider it appropriate not to have a documented policy of cost allocation.

**Response:**

Please see the response to BCUC IR 1.92.1.

- 92.3 Is it appropriate under existing FEU internal controls processes to apply an undocumented policy of cost allocation? If so, please explain why this is appropriate.

**Response:**

The premise in the question that there is no documented policy is incorrect; rather, there is a documented policy, but it applies to all cost allocations including the TES allocation.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 312

The FEU use common industry practice and documented policies in allocating costs between classes of services. These policies have been documented for use in allocating time on employee time sheets and allocating costs between regulated and non-regulated businesses (FEU's code of conduct policy). As these policies are effective, the FEU believe that a separate policy specific to allocation of costs between classes of service is unnecessary. Please see the response to BCUC IR 1.92.1.

- 92.4 Are all board members of each FEU entity aware that there are no documented policies for cost allocation between classes of services?

**Response:**

The premise in the question that there is no documented policy is incorrect; rather, there is a documented policy, but it applies to all cost allocations including the TES allocation. Please see the response to BCUC IR 1.92.1.

On an annual basis, the Internal Audit group at FEI reviews compliance with the code of conduct and transfer pricing. A summary of the report prepared by Internal Audit is provided to the Audit Committee of FEI, which is a sub-committee of the Board of Directors, each year.

- 92.5 Does FEU believe it is appropriate to recover from natural gas ratepayers all incremental cost directly associated with the provision of TES? If not, what formal, documented and monitored internal controls exist to prevent or detect the misclassification of costs between various costs of service?

**Response:**

The FEU are not recovering incremental costs associated with providing TES from natural gas customers. FEI is using a deferral account to track such costs for later recovery from TES customers. FEI captures all direct charges related to TES in that deferral account and the FEU have provided an appropriate allocation for those overhead administrative services which have been utilized by TES.

Please see the response to BCUC IR 1.92.1 for a discussion of the transparent nature of the FEU's practices regarding cost allocation between classes of service.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 313

- 92.6 At what point in time in the future would FEU consider it appropriate to implement formal, documented internal policies and procedures that provide for transparency in the cost allocation methodology?

**Response:**

The premise of the question that there is no written policy is incorrect. Please see the responses to BCUC IRs 1.92.1-1.92.4. The FEU do not believe that a separate policy specifically for the allocation of costs between classes of service is necessary. The FEU believe that it is appropriate for the Commission to approve allocation methods, and current accounting and auditing practices are appropriate for this purpose.

- 92.7 Given that FEU state that proper cost allocation is "key to effective offering and regulation of multiple classes of service", other than that proposed in the evidence, what are other transfer pricing or cost allocation methodologies could be used between different classes of services within the utility?

**Response:**

The FEU employ a number of cost allocation methodologies to allocate costs between different utilities. The Massachusetts method has been used since 2004 to allocate corporate costs between each of the utilities and other non-regulated affiliates. The cost drivers for the Massachusetts method are operating revenues, tangible capital assets and gross payroll. Additionally, the FEU utilize a shared services model to allocate costs between each of the FEU. Depending on the shared services, different allocators are used. For instance, customer count is used for most functions, with human resources and information technology costs being allocated using headcount.

While FEU considered these options as part of the review of the allocation of overhead costs to the TES class of service, both methods had cost allocators which would be zero. Under the Massachusetts method, operating revenues and tangible capital assets are both zero at the end of 2010 so this was not considered to be a desirable allocator since two of the three allocators were zero. Alternatively, under the shared services model, the customer count for TES was zero at the end of 2010 so this method was also not considered to be desirable. As both of these allocator models do not work in a similar manner to how they allocate costs to FEU or within FEU, neither were considered, given the stage of development for TES



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 314

92.8 What are the risks to either the natural gas customers or the TES customers if a cost allocation methodology does not adequately assign costs to the proper classes of service?

**Response:**

If a cost allocation model does not adequately assign costs to a proper class of service, both natural gas and TES customers risk under or over paying for the service that has been provided. As outlined in the response to BCUC IR 1.92.7, the FEU considered currently employed allocation methods and concluded that the adopted methodology is the most appropriate to allocate costs between natural gas and TES classes of service at this time.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 315

**93.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.2.3, p. 124**

**Distinct Class of Service – Self-contained unit**

On page 124 FEU explains cost allocation and quotes from section 60 (1) (c) (ii) of the *UCA* which the Commission must "in setting a rate to be charged for the particular service provided consider each distinct class of service as a self-contained unit." [emphasis added]

93.1 Please explain what is a "self-contained unit" in terms of business structure and operations for the distinct class of service?

**Response:**

There is no operational or business structure aspect of this Section 60(c)(ii) of the *UCA*; rather, it only dictates a particular *consideration for ratemaking purposes*. Please see the response to BCUC IR 1.93.2.

93.2 When the Commission considers the distinct class of service as a self-contained unit does the Commission have the ability to require that the distinct class of service operate as a self-contained unit such as through a division of the utility? Please elaborate.

**Response:**

The relevant provision of the *Act* for the purposes of this question is section 60(c)(ii), which provides that:

(ii) *in setting a rate to be charged for the particular service provided, consider each distinct class of service as a self-contained unit...* [Emphasis added.]

As highlighted above, the requirement under section 60 is for the Commission to "consider" each distinct class of service as a self-contained unit *for ratemaking purposes*. The *Act* does not permit the Commission to *direct* that a public utility operate in this manner. Moreover, binding legal decisions make clear that the Commission's jurisdiction does not extend into the realm of management or the operations of a public utility, which would preclude the Commission making decisions regarding whether a public utility conducts its business in specific units or divisions.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 316

The Commission has powers to ensure that rates are just and reasonable, which gives the Commission power to determine the proper allocation of costs. The rate setting provisions of the *Act* are supplemented by other provisions, such as section 49, which provide the Commission with the jurisdiction to order a public utility to keep record and accounts of its business in a specified manner, adopt a uniform system of accounting, and provide financial and operational reports as specified. These kinds of powers are more than sufficient for the Commission to ensure that classes of service within a utility do not cross-subsidize.

The FEU believe that, even if it were within the Commission's power to direct a corporate re-organization in this manner, it is an inefficient management model and would be less beneficial to customers. The model being pursued by the FEU is the most efficient and prudent model. Please see the response to BCUC IR 1.24.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 317

**94.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.2.3, p. 124**

**Transfer Pricing Policy**

The FEU evidence states:

"Since the FEU's TES initiatives will all be regulated activities the use of a transfer pricing policy approach based on NRB use of utility resources is not appropriate."

- 94.1 Why is transfer pricing not appropriate within an integrated utility with separate and distinct classes of service?

**Response:**

The current transfer pricing policy is specifically designed to deal with charges between FEI and non-regulated affiliates such as FortisBC Holdings Inc and other non-regulated affiliated companies within the FHI family of companies. The current transfer pricing policy does not contemplate or have specific mechanisms to allow for transactions between two regulated affiliates or two classes of service within a single entity.

Historically, where a large bundle of services was provided by one regulated utility to another regulated utility, allocation models such as the shared services models have been employed to allocate costs between the entities. As an example, the shared services model between FEI and FEVI allocates costs of a large number of functions and use customers and headcount as cost allocators. As TES is still in a development stage and does not have any customers, using such an allocator would result in nothing being allocated to TES. The model proposed in the FEI RRA allocates costs based on the expected use of a limited number of services between the gas utility and the TES services area, and is thus a better solution at present that is more fair to natural gas customers.

While Transfer Pricing Policy could be applied, the FEU do not believe it appropriate, as it includes a non-specific additional overhead loading charged within the same legal entity which is not necessary to have one regulated class of service charge to another regulated class of service. As well, Transfer Pricing Policy in and of itself does not necessarily result in a higher cost being incurred or charged. As an example, if the Transfer Pricing Policy methodology had been applied to the allocation of the overhead costs proposed to be charged to TES in 2012 and 2013, the net charge from the natural gas class of service to the TES class of service would be \$170,000 lower in 2012 and \$175,000 lower in 2013 than that proposed in the RRA. The decrease is mainly due to the removal of the facility charge and replacing the facilities allocation with a \$100/day facility charge, which the Transfer Pricing Policy requires.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 318

94.2 If FEU will not use transfer pricing then shouldn't the Commission require a fully allocated costing approach to demonstrate transparency and fair pricing? Please explain your answer.

**Response:**

Please see the response to BCUC IR 1.94.1 for the reason why Transfer Pricing Policy is not appropriate. The FEU have considered the costs to be fully allocated as it includes the employee's salary, benefits and space but does not include any profit margin.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 319

**95.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.2.3, p. 124**

**Cost Allocation**

The FEU state: "In meeting the requirements of *UCA* section 60 (1) (c) the FEU's approach will be to fairly allocate cost among classes of service in a transparent manner that is subject to review in regulatory proceedings. The cost allocation process for TES is described in detail in FEU's 2012-2013 RRA (Appendix G), included in Appendix F of this Submission. There are three main categories of costs that are allocated to the TES class of service: (1) the direct costs of projects, (2) sales, marketing and business development O&M costs, and (3) an overhead allocation, which is currently \$0.5 million annually (which reduces rates for natural gas service). The standard allocation approaches between regulated activities such as the Massachusetts model would yield very little allocation to TES class of service at this early point in its development, and therefore the methodology adopted by the FEU is most appropriate."

- 95.1 EPCOR has a corporate structure that allocates corporate costs to its various entities including energy and water utilities. Would that model not provide a fairer allocation of costs than that proposed by FEU? If not, why not?

**Response:**

The FEU do not believe the fact the EPCOR has a corporate structure that allocates corporate costs to all of these entities says anything about the fairness of those allocations. The methodology of making those allocations would have to be assessed to make a determination of its fairness. The possibility of having a fair allocation of corporate costs is equally available to FEI in its structure of having two classes of service within one utility. Further, the Commission's oversight of both FEI classes of service means that FEI's allocations are more transparent to the Commission.

EPCOR has utilities in both British Columbia and Alberta therefore some overhead costs will be outside jurisdiction. This presents an issue with respect to the Commission's analysis of the appropriate allocation of overhead costs to EPCOR's utilities within this province since the Commission will see a direct assignment of costs and will not be able to confirm the allocation method.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 320

**96.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.4.4, p.127; Appendix F-6, p.10**

**Cost Allocation is Key to Offering Multiple Classes of Service**

The FEU evidence states on p. 127:

"The FEU have attached a report on TES in other jurisdictions prepared by EES Consulting. This report is found in Appendix F. The EES Consulting report demonstrates that the model adopted by the FEU of having two regulated classes of service is within the range of models adopted elsewhere. EES Consulting is of the view, as experts in rate design and cost allocation, that the regulatory mechanisms in place to allocate costs are appropriate." [emphasis added]

The EEC Consultant on p. 10 of Appendix F-6 states:

"In the case of the Fortis companies, there is a shared services agreement in place that allocates costs among the various utilities on the basis of number of customers, energy use and rate base. Because the TES product class does not yet have any of these factors in place, it cannot be included in the current agreement. However, the FEU has proposed an assigned share of \$500,000 of shared service costs to the TES product, based on factors such as estimates of time and work effort. This appears to be a reasonable level given the order of magnitude of effort relative to an entity such as TGI Whistler, that we are advised receives a \$260,000 assigned share based on the standard agreement." [emphasis added]

96.1 At what point does FEU anticipate changing the current practice of assigning a specific amount for overhead?

**Response:**

The FEU are unable to determine at what point it would be able to change from its current practice to a shared services model. Until the TES business is sufficiently developed with multiple customers, it would be difficult to determine when a shared services model would be appropriate.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 321

- 96.2 What types of guidelines need to be in place to assure that appropriate cost allocation is maintained when the order of magnitude grows to an anticipated \$250 million in projects?

**Response:**

The FEU believe that specific guidelines are unnecessary. The decision for the FEU's 2012-2013 RRA can be expected to provide some guidance in this respect as the \$500,000 allocation was reviewed at length in the RRA proceeding. The allocation methodology determined in the RRA will be revisited in future revenue requirements proceedings for the natural gas class of service, as a proper allocation is necessary for the Commission to determine just and reasonable natural gas rates. As such, the Commission will have ongoing oversight and will ensure the correct methodology is in place over time as the business grows.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 322

**97.0 Reference: Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.5.4, p. 131**

**Business Risk**

On page 131 of its evidence, FEI states that:

"...the FEU's pursuit of TES is a positive contribution to managing long term business risks that arise from declining throughput levels on the natural gas system. New Initiatives mitigate such business risks and ensure that the FEU will be able to recover its investments in rate base over time and achieve its allowed return."

- 97.1 Does FEI agree that if New Initiatives mitigate long term business risk, then forecast long term business risk will be lower if TES is approved as part of the regulated utility? If forecast long term business risk is lower, then would a benefit to customers be a lower ROE for each utility within the FEU, all else being equal?

**Response:**

The FEU agree that customers may experience a cost of capital benefit from the success of these New Initiatives. However, this is not to suggest that the success of these New Initiatives will result in lowering of that risk or cost of capital from what it is today. It suggests that, all else equal, the risk may not be as high as would have been the case, absent the mitigation.

Please see the response to BCUC IR 1.4.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 323

## Thermal Energy Services Guidelines

### 98.0 Reference: Issue 1 Scope (a)

#### Exhibit B-2, Evidence of FEU, Section 6.3.1, p. 111

#### Responding to an energy opportunity

On page 111 FEU state: "The Energy Solutions staff are responsible for the thermal component of the energy proposal/development. Together these staff respond to Requests For Proposal (RFP's) and develop thermal energy proposals and solutions that result in discrete or district energy systems."

98.1 To ensure cost-effective service provision and fair process, should all of FEUs regulated Thermal Energy Systems, CNG/LNG service, and biomethane service projects over a certain threshold (e.g. \$1 million) be required to have undergone an RFP process? Under the process, if FEU's proposal was successful, FEU could then initiate a process for Commission approval for the project and rates.

#### **Response:**

No.

In the case of NGV fueling service and TES, the customer has made the selection of its preferred partner, and has negotiated a rate with the FEU that falls within the models contemplated in FEU's rate structures. The question of whether or not a potential customer who wishes to obtain thermal energy services should issue an RFP is a matter for the customer to decide, not FEU, and - respectfully - is a decision that lies well beyond the Commission's jurisdiction to regulate. The Commission's role is to determine whether the rate brought forward is in all respects just and reasonable.

In the case of a Biomethane upgrading project, the Commission will be reviewing the supply contract to ensure that it is in the public interest. The Commission will, as a part of that process, have to consider the cost of the supply delivered to the FEU system. Currently, there is a threshold price in place to assist in making that determination. While an RFP process is one way to support the cost effectiveness of the upgrading process, the FEU believe that it should not be necessary in all cases to justify the price paid and the Commission should not establish a guideline to require one.

Two concerns immediately come to mind with a mandatory RFP:

- First, the majority of the costs of a Biomethane upgrading project are going to be the equipment purchase, and there is very little room for that to change. Operating costs are very modest, and the FEU do not mark them up. The level of savings that might



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 324

conceivably be achieved by going out to market with an RFP is thus very modest on a \$1 million project. There is a cost associated with an RFP process, and the costs of holding that process could very easily exceed the potential benefits of doing so.

- Second, involving another third party in the relationship between FEU and the biogas project owner only adds complexity to the relationship, and complexity brings with it the potential for transactional costs.

In summary, the FEU believe that the Commission should show flexibility on this point, and a guideline mandating an RFP would be ill-advised.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 325

**99.0 Reference: Issue 2 Scope (a); Issue 3 Scope (a)**

**Exhibit B-2, Evidence of FEU, Section 6.5.5, p. 131; Exhibit B-1, Tab 17 RMDM Proposed Guidelines for TES**

On page 131 of its evidence, FEI states that:

"The FEU's rates for TES are cost of service based, which necessarily precludes so-called "predatory" or below-cost pricing. Just and reasonable rates can support fair competition *indirectly* by ensuring that the FEU's services reflect the true costs of providing the service."

The Commission's 1997 Guidelines for RMDM established a set of mechanisms to protect the ratepayer when a utility wished to enter such markets that were not part of the traditional utility offerings. In summary, the mechanisms included:

- A related NRB corporate structure for activities that did were not natural monopolies;
- A transfer pricing policy;
- A code of conduct for the relationship between the utility and its NRBs or the utility and any division within the utility which offers unregulated goods or services, at the time the utility brings forward any application to use utility assets or services in the provision of unregulated goods and services.

99.1 Does FEI consider the RMDM guidelines to apply to any or all New Initiatives? If not, to which activities should the RMDM Guidelines apply and which activities should not fall under the Guidelines? Please identify the characteristics that place activities within the purview of the RMDM guidelines. To what extent should guidelines for New Initiatives incorporate provisions similar to those in the RMDM guidelines?

**Response:**

As FEI stated in its scoping submissions, the RMDM guidelines address the relationship between regulated and non-regulated services, and consequently, whether or not the RMDM guidelines are applicable in a given situation turns on whether or not the service being provided is regulated under the *Act*. The applicability of RMDM does not turn on the physical location of the meter, as "downstream of the meter" was simply shorthand for non-regulated activities, which made sense in the context of the activities being examined in 1997. As set out in sections 4.3.2, 5.2, and 6.4.1 of the Evidence, when provided by the FEU, NGV, Biomethane

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 326

upgrading and TES services are regulated, and therefore the RMDM guidelines do not apply to these initiatives.

In terms of guidelines "similar to those in the RMDM guidelines", the FEU have proposed the guidelines that are believed to be necessary and in the public interest for the provision of these regulated services in section 8 of the Evidence, and do not believe that further guidelines are necessary.

- 99.2 Irrespective of the corporate structure (or structures) for offering New Initiatives such as Biomethane projects, NGV and TES, should a transfer pricing policy and a code of conduct similar to those contemplated by the RMDM Guidelines be adopted by the FEU to apply to those New Initiatives? If not, why not? Also, if not, at minimum should separate accounting structures be used to ensure that natural gas system ratepayers are not cross-subsidizing New Initiatives customers?

**Response:**

The FEU have addressed these issues in response to several other information request. With respect to a Code of Conduct and/or Transfer Pricing Policy between the natural gas and TES classes of service, see for example, the responses to BCUC IR 1.74.2 and 1.94.1. With respect to accounting structures, the FEU already employ appropriate accounting structures to ensure the natural gas class of service is not cross-subsidizing the TES class of service: see, for example, the responses to BCUC IR 1.17.1 and 1.17.2, .

- 99.3 If the TES business is held within the existing utilities, what restrictions, if any, will there be on the transfer of customer billing information from the core natural gas distribution business to other business units or separate, affiliated companies offering TES?

**Response:**

See the response to BCUC IR 1.74.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 327

**100.0 Reference: Issue 1 Scope (a); Issue 2 Scope (a) (b);**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 132**

**Proposed Guidelines for TES**

On page 132 of its evidence, FEI sets out item 2 of its proposed guidelines "With respect to the interests of natural gas customers".

100.1 To what extent are these either statements of fact [items (a) and (b)] that the FEU are asking the Inquiry Panel to adopt, or a specific procedural proposal for dealing with a statement of fact?

**Response:**

The FEU set out items 2 of the proposed guidelines "With respect to the interests of natural gas customers on page 132 as follows:

*"2. With respect to the interests of natural gas customers:*

*(a) The interests of natural gas customers are protected through the application of appropriate cost allocation methodologies and through the segregation of the two classes of service (i.e. natural gas and TES) as required by the UCA, with TES costs of service being recovered from TES customers.*

*(b) Natural gas customers benefit from an allocation of indirect/overhead costs to TES, which would otherwise be recovered in natural gas rates."*

These are statements of fact under current conditions in the present application, but also reflect principles that should be recognized in guidelines to ensure that there is clarity about the appropriate measures that should remain in place for protecting the interests of natural gas customers.

100.2 Please explain the concept and mechanics of the Thermal Energy Services (AES) Deferral Account in regard to additions and subtractions, AFUDC, ROE, other transfers, and the ability of detailed cost reporting that can in the future be transferred to appropriate "traditional" plant and operating accounts by project and cost type.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 328

**Response:**

The Thermal Energy Services Deferral Account was approved by Commission Order No. G-141-09 to capture and record revenues and costs and to remain in effect pending a future rate design application at an unspecified future date<sup>44</sup>. In the 2012 – 2013 RRA (Exhibit B-1, Appendix G, page 13 – 15), the FEU proposed to continue segregating all costs and recoveries in this manner through the continuation of the Thermal Energy Service Deferral Account. Revenues received from customers for all TES projects based on contracts approved by the Commission will be recorded in the Thermal Energy Services Deferral Account. The recovery of the balance will be considered in FEI's future applications regarding individual contracts for approval by the BCUC.

Consistent with the terms of the NSA, there are three components of costs charged to this deferral account and include:

1. Direct costs - The direct costs include feasibility assessment, design, equipment and construction of the various thermal energy solutions. These costs vary with the number, nature and development stage of projects. As such, an approved spending amount was not specified for 2010 and 2011 and a variance is therefore not reported. The increase in 2011 over 2010 is attributable to increased market interest in certain sectors such as schools and hospitals, with some projects beginning construction in 2011. These projects will be brought forward for BCUC approval.
2. Sales and marketing, O&M and business development costs - Sales and marketing along with O&M includes the labour of the 12 employees in Thermal Energy Services in 2011 as well as the direct labour charged through timesheets from individuals in other areas of the Companies. The costs also include contributions to industry associations of \$15 thousand in 2011. As agreed to in the NSA, these costs were budgeted at \$1 million in 2010 and \$1.5 million in 2011. As shown in Table G-2 of the 2012-2013 RRA (Exhibit B-1), the O&M and Business Development costs captured in the Thermal Energy Services Deferral Account were \$1.4 million in 2010 and are projected to be \$1.6 million in 2011.
3. An overhead allocation from FEI - In Commission Order No. G-141-09, FEI agreed to charge TES customers \$0.5 million for 2010 and \$0.5 million for 2011 for administrative services provided by the natural gas utility to the TES customers. As part of 2012-2013 RRA, FEI undertook a review of which services that should be included in this administrative charge and determined that the same charge should be applied to 2012 and 2013.

---

<sup>44</sup> FEI 2010-2011 Revenue Requirements Application Negotiated Settlement Agreement, Item 13, pages 7-9



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 329

The rates for TES projects will include an allowance over and above the direct costs of the project to account for non-direct costs (sales and marketing costs and allocation of overhead from the natural gas service class of service) as well as the recovery of the Thermal Energy Services Deferral Account balance.

The deferral account mechanism allows for the tracking of costs on a project specific basis and has been designed so that any potential and future transition to traditional plant and operating account reporting is transparent. The accounting treatment for the costs and recoveries captured in the Thermal Energy Services Deferral Account is as follows:

- All direct costs associated with Thermal Energy Services, both capital and O&M, will be tracked on a project specific basis;
- The capital costs for each project, including AFUDC, will be captured in work-in-progress and transferred to the appropriate plant account(s) when the project goes into service. The cost of service associated with the plant additions (depreciation and amortization, earned return and tax expense) will be a debit to the Thermal Energy Services Deferral Account;<sup>45</sup>
- Although debited directly to the Thermal Energy Services Deferral Account on a net-of-tax basis, the O&M costs (direct costs and sales and marketing) will be tracked using the BCUC-approved resource and activity views for operation and maintenance expense as well as on a project by project basis;
- The overhead allocation from the natural gas service line will be a debit (net-of-tax) to the Thermal Energy Services Deferral Account;
- The recoveries from Thermal Energy Services customers will be a credit to the Thermal Energy Services Deferral Account (net-of-tax) and will be tracked on a project specific basis;
- Consistent with FEI's treatment of other deferral accounts, AFUDC will be recorded on a monthly basis using the approved AFUDC rate applied to the previous month's closing net-of-tax balance. The AFUDC rate includes an implicit component for the return on equity so there is no separate calculation of ROE.

<sup>45</sup> The cost of service may be a credit due to tax expense; the CCA benefit of the plant additions may result in a "negative" cost of service in the early years of the project



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 330

100.3 What is the appropriate transition period to transfer all the amounts in the Thermal Energy Services (AES) Deferral Account to properly detailed plant and operating accounts? Please outline an action plan.

**Response:**

The recovery of the balance of the Thermal Energy Services Deferral Account will be considered in FEI's future TES applications regarding individual contracts for approval by the BCUC. The capital costs of projects will be taken out of the Thermal Energy Services Deferral Account and placed in the appropriate plant accounts when those projects go into service. It is expected that the cost of service rates paid by project customers will incorporate a portion of the balance in the deferral account.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 331

**101.0 Reference: Issue 1 Scope (a); Issue 2 Scope (a);**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 133**

**Proposed Guidelines for TES**

On page 133 of its evidence, FEI states that:

"4. With respect to the interests of the customers of the TES class of service generally:

(a) TES customers generally should contribute through their rates to the recovery of the balance in the Thermal Energy Services Deferral Account, which reflects common costs, overhead and sales/marketing costs, business development costs of providing TES service."

101.1 To what extent may specific deferral accounts and other circumstances change over time? Would the FEU's Guideline 4 (a) above then be better framed as a specific request for the Inquiry Panel to make a specific direction at the time a project is brought forward for approval rather than a guideline?

**Response:**

The components of the Thermal Energy Services Deferral Account have been agreed to in FEI's 2010 – 2011 RRA NSA (and further elaborated in 2012-2013 RRA proceeding) with the intent of preventing a cross subsidization of TES by natural gas ratepayers. Please see the response to BCUC IR 1.100.2. The Companies do not anticipate applying to change the deferral accounts at this time, but the Commission ultimately has the ability to determine such rate structures.

The guideline reflects the principle inherent in the development of cost of service studies that costs should be assigned back to the customer class that is responsible for generating them. It is intentionally generic. It is implicit in the Commission approving individual contracts that they will be reviewing the cost of service components of the rate, including the amount allocated from the Deferral Account. The guideline should be accepted as proposed.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 332

**102.0 Reference: Issue 1 Scope (a) (b); Issue 2 Scope (a) (b);  
Exhibit B-2, Evidence of FEU, Section 6.6, p. 133**

**Proposed Guidelines for TES**

On page 133 of its evidence, in Guideline 5, FEI asks the Commission to approve certain findings about rates when those rates are "...properly applied by FEI...."

102.1 Does not such a guideline simply reframe the debate as to whether the rates are properly applied or not? If not, why not?

**Response:**

Guideline 5 states the following:

*"When properly applied by FEI, rates for TES service based on FEI's GT&Cs section 12A, and other rate constructs established in the 2010 – 2011 RRA proceeding:*

- (a) adequately protect the interests of customers of FEU's natural gas class of service;*
- (b) generate cost of service based rates for TES; and*
- (c) allow for a TES project rate to recover a portion of costs from the Thermal Energy Services Deferral Account."*

The Guideline is intended to obtain confirmation and build a common understanding in this proceeding that the principles established are appropriate, and the real issue going forward should be how they have been applied in the facts of a particular case. In that respect, the Guideline is reframing the debate. Having such a Guideline will facilitate more efficient proceedings going forward because the Guideline should eliminate the need to revisit the principles each time FEI comes forward with a project. Since the costs of regulatory proceedings are ultimately recovered from the TES customer, it is critical that the proceeding be as efficient and cost effective as possible.

102.2 Does such a Guideline remove any debate about whether the circumstances surrounding a future TES service are similar to those contemplated when FEI's GT&C's and other rate constructs were established in the 2010-2011 RRA proceeding? Please explain your answer.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 333

**Response:**

It would be more accurate to state that the effect of the Guideline is to address the issue in this Inquiry, rather than leaving the principles uncertain going forward and having to revisit them every time a TES project is brought forward.

Guideline 5 outlines the general parameters for the development of rate levels and structures and supports the notion that appropriate principles were set out in the FEI's 2010-2011 RRA NSA and Section 12A of the FEI GT&Cs to protect the interests of natural gas ratepayers. Guideline 5(a) requires that the rate level does not allow for cross subsidization between the TES class and natural gas customers. Guideline 5(b) indicates that the overall rate level is still subject to the normal cost of service determination methods. Once the cost components are known, they may be grouped into a fixed and variable rate structure that was approved by the Commission for UniverCity and Dockside Green district energy projects and is included in the current CPCN application for River District Energy. Guideline 5(c) requires that the rate level be sufficiently high enough to pay down a portion of the Thermal Energy Deferral Account. The FEU believe that all of these principles are reasonable, and the focus should be on how they are applied in a given instance. This will help permit TES contracts to be reviewed cost effectively, which is in the interests of the TES customer that ultimately has to foot the bill of the regulatory process associated with the contract approval.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 334

**103.0 Reference: Issue 1 Scope (a); Issue 2 Scope (d); Issue 3 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 134**

**Proposed Guidelines for TES**

On page 134 of its evidence, in Guideline 8, the FEU state that:

"The FEU are entitled to use their own corporate strengths to compete for TES customers to the extent lawfully permitted by competition and consumer protection legislation."

103.1 What are the "corporate strengths to which the FEU refer? Please provide a complete description of the things that are contemplated by this phrase?

**Response:**

Key corporate strengths of the FEU are described as follows:

- Canadian owned company headquartered in BC.
- Customer focus and long term vision
- Strong relationships and proven ability to collaborate with customers, stakeholders and outside contractors.
- Efficient operations and a proven track record over many decades in BC of delivering safe, reliable and reasonably-priced energy service.
- Highly trained staff that has expertise in utility operations including thermal energy.
- Highly developed end-to-end information systems and technology to meet the evolving needs of customers and other stakeholders in the provision of utility energy service.
- The capacity to attract highly skilled individuals to add to existing staff.
- FEU is part of the largest investor owned distribution utility in Canada and is able to share expertise among these businesses.
- The financial capability to finance large projects at reasonable cost.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 335

**104.0 Reference: Issue 1 Scope (a)**

[www.fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/default.aspx](http://www.fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/default.aspx);

**Customer awareness**

On the current FortisBC website, the District Energy page directs interested parties to the FortisBC Burnaby offices, and provides a tes@fortisbc.com email address. The contact information provided is shown below:

---

**Find out more**

We're ready to help you develop an alternative energy plan and then put that plan into action. It is our experience and passion that sets us apart from other energy solution providers. Contact us today to find out more.

FortisBC  
3700 - 2nd Avenue  
Burnaby, BC V5C 6S4

Phone: 604-592-7969  
Toll free: 1-866-792-7969

Email: tes@fortisbc.com

» [Contact an Energy Solutions manager](#)

Source: [www.fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/default.aspx](http://www.fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/default.aspx)

104.1 The contact is only listed as FortisBC. Which regulated corporate entity within FortisBC is being referred to?

**Response:**

The corporate entity being referred to is FortisBC Energy Inc.

104.1.1 Please provide a list of all legal entities using the "FortisBC" name. Also include if it is regulated by the Commission.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 336

**Response:**

The following is a list of all legal entities using the "FortisBC" name:

1. FortisBC Holdings Inc. - Non-regulated
2. FortisBC Energy Inc. - Regulated
3. FortisBC Energy (Vancouver Island) Inc. - Regulated
4. FortisBC Energy (Whistler) Inc. - Regulated
5. FortisBC Alternative Energy Services Inc. – Currently contains geothermal projects that have not been regulated, but FEI intends to transfer to the regulated business of FEI after this Inquiry is resolved
6. FortisBC Storage Inc. – Non-Regulated
7. FortisBC Huntingdon Inc. – Regulated - National Energy Board

**Electric**

8. FortisBC Inc. – Regulated
9. FortisBC Pacific Holdings Ltd. – Non-regulated

104.2 Are District Energy customers currently dealing with FortisBC AES Inc. or FEI?

**Response:**

Prospective District Energy customers are dealing with FEI.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 337

104.3 Is the address cited as 3700 - 2nd Avenue a FEI owned facility known as Burnaby Operations?

**Response:**

Yes, the FEI facility located at 3700 – 2<sup>nd</sup> Avenue in Burnaby is sometimes referred to as Burnaby Operations.

104.4 How do consumers know if they dealing with FEI or an FEI affiliate?

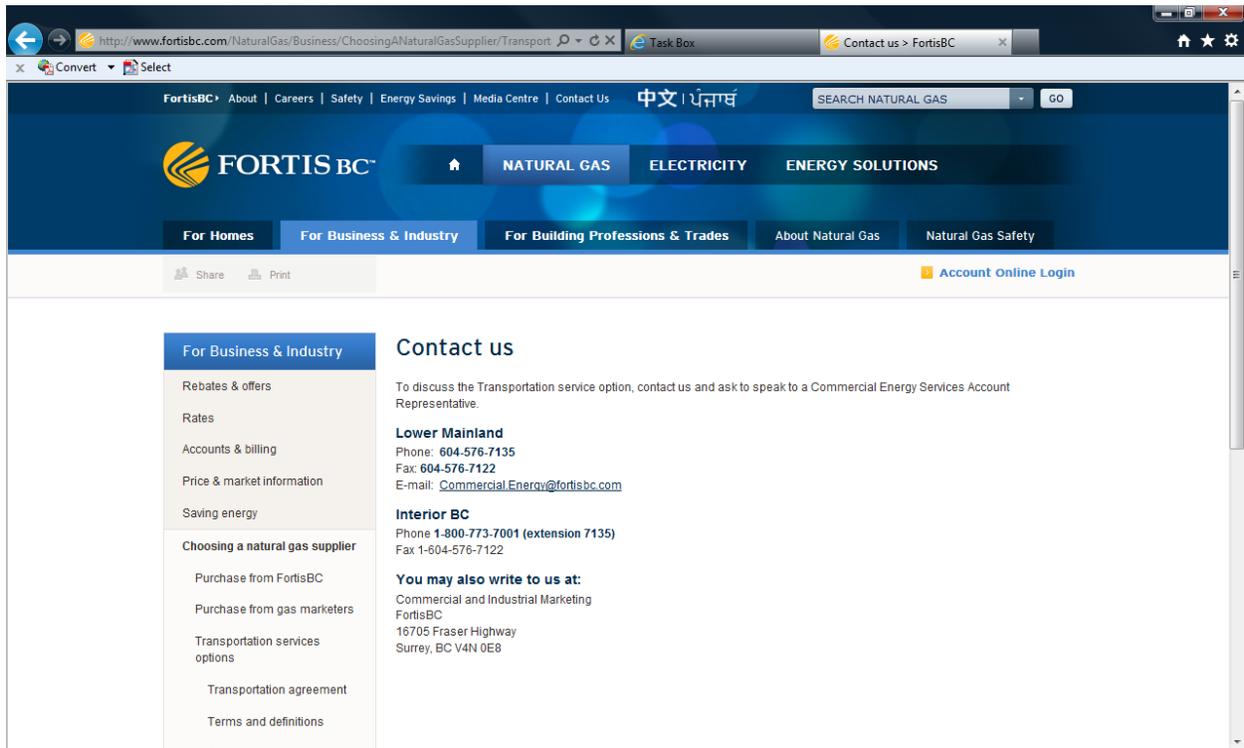
**Response:**

The screen shot of the contact information for FEI Thermal Energy Services is similar to the contact information in the FEI Industrial portion of the FortisBC website (shown below). The contact information includes the specific office address as well as phone and email contact. The contact information above is a way for customers to reach staff involved in either Industrial transportation service or integrated energy, district energy, and geexchange (more commonly referred to as "Thermal Energy").

In both of these instances (contacting either the FEI Industrial group or the FEI TES group), customers understand that they are dealing with FortisBC, the name which encompasses the entire suite of Fortis companies in British Columbia. Discussions and documentation with the customer establish and confirm that the customer is dealing with FEI.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 338



104.5 Does FortisBC AES Inc. have a separate website?

**Response:**

FortisBC Alternative Energy Services Inc. ("FAES") does not maintain a separate website since FortisBC is not currently marketing energy solutions under the FAES entity.

104.6 Please explain the history of the terasen.com website and its separation into both terasengas.com and terasen.com, which separated the utility and non-utility businesses.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 339

**Response:**

Prior to 2003, FEI had one website landing page "Terasen.com" which customers could then click on any of the Terasen entities including Terasen Gas Inc., Terasen International Inc., Terasen Pipelines Inc., and Terasen Utilities Inc. In the 2003 RRA Hearing Decision (Order No. G-7-03), direction was given to the utility to have separate web sites for utility and non-utility businesses. In Order No. G-7-03, pages 42-45, there is discussion about the NRBs using the website with the Commission's Determination on pages 44-45.

In the subsequent RRA application in 2003 for the 2004-2007 Multi-year PBR Decision and Order No. G-51-03, Appendix A at page 44 of 47, the Commission indicated that the utility was not in compliance with Order No. G-7-03 with respect to separate websites. Additional work was completed in 2003 to become compliant. At that time, FEI changed the website so that there were separate websites for Terasen Inc., Terasen Gas Inc, Terasen Utilities Services Inc., Terasen International Inc., Terasen Pipelines Inc. and later Terasen Energy Services Inc. After 2003, Terasen Inc. was sold to Kinder Morgan, Inc. ("Kinder Morgan") who later sold off the Terasen Utilities Services Inc. business. Terasen International was also closed. Terasen Energy Services Inc. was established as a new line of business which had a separate website.

Kinder Morgan subsequently sold Terasen Inc. to Fortis Inc., while retaining ownership of Terasen Pipelines Inc. Terasen Gas Inc. and Terasen Energy Services Inc. maintained separate websites at that time. As a result of the 2010-2011 RRA (then Terasen Gas Inc.), new regulated thermal (at that time called "alternative") energy activities were being developed via the regulated Terasen Gas Inc. utility under the Tariff GT&C 12A. Terasen Gas Inc. added information on energy services (including alternative and thermal energy) to its website at that time. The existing Terasen Energy Services Inc. website was maintained for existing business that was established prior to January 1, 2010.

In 2011 as a result of the legal name change of the Terasen companies, the Terasen Gas Inc. website, terasengas.com, was renamed to fortisbc.com and as part of the renaming, an initial page with access to all regulated businesses was implemented. The Terasen.com website was eliminated with the non-utility content moved to reside on the fortis.com website. The terasenenergyservices.com website has been discontinued.

As such, the FEU are in full compliance with the previous Commission orders separating regulated and non-regulated services on the website. The existing website at fortisbc.com provides a single point of access for all of FortisBC's regulated services, thus facilitating interaction with customers. Please see the response to BCUC IR 1.104.7.1 for further discussion in this regard.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 340

104.7 In Alberta AtcoGas and AtcoElectric maintain separate websites and names, although they share a head office location in Edmonton.

([www.atcoelectric.com/About\\_us/ATCO\\_Electric\\_Tearsheet\\_Web.pdf](http://www.atcoelectric.com/About_us/ATCO_Electric_Tearsheet_Web.pdf) and  
[www.atcogas.com/About\\_Us/Profile/ATCO\\_Gas\\_Tearsheet\\_Web.pdf](http://www.atcogas.com/About_Us/Profile/ATCO_Gas_Tearsheet_Web.pdf))

104.7.1 Would it be clearer for customers to know which legal entity they were dealing with if there was a similar differentiation between FortisBC Inc., FortisBC Energy Inc. and FortisBC Alternative Energy Services Inc.?

**Response:**

FortisBC Alternative Energy Services Inc. is not developing or marketing new initiatives and does not have a website at this time.

From a communication standpoint, the current FortisBC website is designed with the customer in mind and the type of energy service they are seeking, as opposed to being designed around specific corporate entities. The website serves customers of FortisBC Energy Inc., FortisBC Energy (Vancouver Island) Inc., FortisBC Energy (Whistler) Inc. and FortisBC Inc. We believe having one website is clearer for customers and leads to more positive interaction with customers.

Having a single domain for our customers addresses key objectives for effective communication with our customers:

- **match between system and the real world** – By having one website tied to the brand we are publically known for, we are “speaking the customer’s language” instead of directing customers to sites that are different from the company name with which they are familiar.
- **consistency and standards** – Customers know there is one place to go for information from their utility: fortisbc.com. Information is easily updated on a consistent basis, at a single point in time with the same standards because it only has to be uploaded to one point, rather than multiple pieces of content at multiple points.
- **error prevention** – Editing and tailoring content to multiple company names to multiple points decreases efficiency and increases the likelihood that errors will occur. Maintaining a single point that content exists improves the accuracy of information available for customers.
- **recognition rather than recall** – Fortisbc.com is a single recognizable URL and a recognizable name. Customers are not forced to recall whether they are a customer of FortisBC Inc., FortisBC Energy Inc., FortisBC Vancouver Island Inc., FortisBC Whistler



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 341

Inc., or FortisBC Alternative Energy Services Inc. or need to remember a specific website they need to use. If a website for each company was required, customers receiving service from more than one of the FortisBC companies would be required to know and use multiple websites.

- **flexibility and efficiency of use** – Customers who receive electricity or natural gas service from one or more of the FortisBC companies, and in the future TES customers of FEI, do not have to visit multiple websites to get the information they need. One domain allows ease of cross-linking and efficient management of common content. Multiple websites would not provide customers with the convenience of having common content on a single page. With multiple websites, each piece of common content would have to be duplicated. The additional costs and inefficiencies resulting from maintaining a structure of multiple websites would result in higher costs for all customers in all classes of service.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 342

**105.0 Reference: Issue 1 Scope (a) (b); Issue 3 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 134**

**Proposed Guidelines for TES**

On page 134 of its evidence, in Guideline 9, the FEU state that: "...evidence of the existence of another third party alternative provider of TES would only be given weight in the public interest assessment if the FEU's TES project..." in specific circumstances and under certain conditions.

105.1 To what extent does such a guideline limit the Commission's ability to give weight to evidence in circumstances or conditions that may arise in the future that are not contemplated now?

**Response:**

The proposed guideline does not limit the Commission's ability to give weight to evidence in circumstances or conditions that may arise in the future that are not contemplated now, but does reinforce the point that the Commission's determinations must be based on evidence, and that the Commission will need some evidence to be put forward to justify second-guessing the customer's choice of provider. The FEU have proposed a guideline that affirms that the Commission always retains the discretion to determine its own process and depart from the guidelines in appropriate circumstances (see proposed General Guideline 1 as described in the Evidence, pp. 157-158).



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 343

**106.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 134**

**Proposed Guidelines for TES**

106.1 On page 134 of its evidence, the FEU provide guidelines 10 through 13. To what extent are these guidelines statements of fact that the FEU are asking the Inquiry Panel to adopt?

**Response:**

The proposed guidelines 10 through 13, on page 134 of the Evidence, are statements of fact that the FEU are asking the Commission to find in this Inquiry on the basis of the Inquiry Evidence, and embody in the proposed guidelines. The FEU believe that these facts are supported by the evidence in this Inquiry.

The effect of adopting these guidelines going forward is to acknowledge that the determination of the public interest in particular instances going forward will normally turn on other considerations (e.g. customer benefits and impacts), rather than on the issues of fact set out in these proposed guidelines. Adopting these principles as an outcome of this Inquiry will avoid the need for FEI to re-file extensive general policy evidence in each future proceeding where FEI is requesting public interest approval relating to TES. The outcome will be a more focused public interest examination of proposed projects and expenditures and ultimately more efficient processes.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 344

**107.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 135**

**Proposed Guidelines for TES**

On page 135 of its evidence, in Guideline 14, the FEU state that:

"Under the *UCA*, the shareholder's interest is in earning a fair return on, and return of, *its* invested capital. To that end, as recognized in the Commission's past cost of capital decisions, TES rates must provide the FEU with an opportunity to earn a fair return on, and return of, its invested capital in TES projects.

107.1 To what extent does this Guideline simply ask the Commission to either reconfirm past decisions or to adopt, for future proceedings, a particular legal interpretation of the *UCA*?

**Response:**

This guideline asks the Commission to reconfirm past decisions of the Commission, the British Columbia Court of Appeal, and the Supreme Court of Canada. Refer to the response to BCUC IR 1.106.1 regarding the rationale for proposing this kind of guideline as developing a common understanding among stakeholders.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 345

**108.0 Reference: Issue 1 Scope (a) (b)**

**Exhibit B-2, Evidence of FEU, Section 6.6, p. 135**

**Proposed Guidelines for TES**

On page 135 of its evidence, in Guideline 15, the FEU state:

"The shareholder has an interest in finding ways to combat declining natural gas use rates, which represents a challenge to its ability to recover its capital invested in natural gas assets over time. TES that incorporate a natural gas component assists in this regard to the extent that the customer might otherwise adopt a thermal energy solution that does not incorporate natural gas."

108.1 To what extent does this Guideline ask the Inquiry Panel to make a general finding of fact about the shareholders' interests now and the future, when those interests may change and when the shareholder is able to convey its interests to the Commission in any application?

**Response:**

This guideline asks the Commission to make a finding of fact that is supported by the evidence in this Inquiry. The FEU do not believe that this interest will change in the future, and that if it does, there is no harm in having this kind of guideline, which can always be amended going forward. Please refer to the response to BCUC IR 1.106.1 regarding the rationale for proposing this kind of guideline as building a common understanding among stakeholders.

108.2 To what extent does this Guideline ask the Inquiry Panel to make a general finding of fact about TES in the future than may or may not be true or, in the alternative, to make a finding of fact that is too broad to be useful?

**Response:**

Please refer to the response to BCUC IR 1.108.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 346

108.3 Hypothetically, can the FEU envisage a future TES that involves a cost of infrastructure and operation greater than the additional natural gas demand warrants?

**Response:**

The FEU are not clear on the question. The FEU envisage planning the TES and natural gas systems to system and load requirements.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 347

## EEC and Conservation Incentives

### 109.0 Reference: Issue 1 Scope (a)

**Exhibit B-2, Evidence of FEU, pp. 137-138; Appendix G- 5, Response to Corix IR 2.5.1; *Clean Energy Act*, s. 1(1)**

#### **Use of EEC Incentive Funding**

"Simply defined, EEC activity refers to activities designed to affect customers' use of energy – either through reducing their consumption of natural gas, or through promotion of load management, fuel switching, or demand response. The term EEC is intended to be synonymous with "demand-side measures", which is a defined term in the *UCA*." (Exhibit B-2, p. 137)

"EEC programs provide incentives to customers to alter their behaviour or adopt more efficient technologies in order to reduce the customers' natural gas consumption... EEC activity is within the natural gas class of service, even where the funds are being applied to a thermal energy project, because the EEC funding is promoting conservation and/or the efficient use of energy." (Exhibit B-2, p. 138)

"Demand-side measures and thermal energy services projects are two distinct concepts. A demand-side measure is "a rate, measure, action or program" designed to meet one of the criteria set out in the *Clean Energy Act*...DSM/EEC funding includes monetary incentives to customers who meet the specific DSM/EEC program criteria, and non-incentive costs such as the funding for the development of a DSM/EEC program. By contrast, thermal energy services projects are FEU-owned assets that deliver thermal energy to customers." (Corix IR 2.5.1)

"**"demand-side measure"** means a rate, measure, action or program undertaken

- (a) to conserve energy or promote energy efficiency,
- (b) to reduce the energy demand a public utility must serve, or
- (c) to shift the use of energy to periods of lower demand,

but does not include

- (d) a rate, measure, action or program the main purpose of which is to encourage a switch from the use of one kind of energy to another such that the switch would increase greenhouse gas emissions in British Columbia, or
- (e) any rate, measure, action or program prescribed". (*Clean Energy Act*)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 348

109.1 Given that thermal energy services projects are a distinct concept from demand-side measures and that EEC is intended to be synonymous with demand-side measures, why is it appropriate for thermal energy services to access EEC incentives?

**Response:**

This response covers BCUC IRs 1.109.1, 1.109.2, 1.109.4 and 1.109.4.1.

The definition of "demand-side measure" invokes concepts of efficiency and conservation. Energy efficiency is defined as "doing more with less. The goal is to accomplish the same tasks and functions as before while using less energy."<sup>46</sup>

Incentive and non-incentive funding in support of a customer adopting a District Energy System may or may not be demand-side measures as defined in the *Clean Energy Act*. "District Energy System" is the name for the situation where heat and/or electricity is produced in a central plant and distributed to multiple facilities rather than each facility producing its own heat. A District Energy System is not necessarily inherently efficient; the efficiency of a District Energy System is determined by the efficiency of the central plant supplying a District Energy System. It is conceivable that a District Energy System may be operated using old, inefficient boilers that consume natural gas, in which case a District Energy System might not qualify as a demand side measure on the basis of promoting efficiency. However, TES projects generally reduce the amount of natural gas consumed by 60 – 90%. Solar thermal projects can use 30 to 80 per cent less natural gas to provide that same level of service.

Both solar thermal and geo-exchange technologies are widely considered to be energy efficient technologies. Natural Resources Canada states:

*"As with air-source heat pumps, earth-energy systems are available with widely varying efficiency ratings. Earth-energy systems intended for ground-water or open-system applications have heating COP ratings ranging from 3.0 to 4.0, and cooling EER ratings between 11.0 and 17.0. Those intended for closed-loop applications have heating COP ratings between 2.5 and 4.0, while EER ratings range from 10.5 to 20.0."*<sup>47</sup>

"COP" stands for co-efficient of performance, and it is the way in which the efficiency of geo-exchange systems are measured. The U.S. Department of Energy states,

<sup>46</sup> Source: <http://energycenter.org/index.php/technical-assistance/energy-efficiency/energy-efficiency-definition>

<sup>47</sup> Source: [http://oee.nrcan.gc.ca/publications/infosource/pub/home/Heating\\_and\\_Cooling\\_with\\_a\\_Heat\\_Pump\\_Section4.cfm](http://oee.nrcan.gc.ca/publications/infosource/pub/home/Heating_and_Cooling_with_a_Heat_Pump_Section4.cfm)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 349

*"Geothermal heat pumps (GHPs) use the constant temperature of the earth as the exchange medium instead of the outside air temperature. This allows the system to reach fairly high efficiencies (300%-600%) on the coldest of winter nights..."*<sup>48</sup>

In the case of solar thermal technology, the U.S. Department of Energy states,

*"For a solar water heating system, use the solar energy factor (SEF) and solar fraction (SF) to determine its energy efficiency. The solar energy factor is defined as the energy delivered by the system divided by the electrical or gas energy put into the system. The higher the number, the more energy efficient. Solar energy factors range from 1.0 to 11. Systems with solar energy factors of 2 or 3 are the most common. Another solar water heater performance metric is the solar fraction. The solar fraction is the portion of the total conventional hot water heating load (delivered energy and tank standby losses). The higher the solar fraction, the greater the solar contribution to water heating, which reduces the energy required by the backup water heater. The solar fraction varies from 0 to 1.0. Typical solar factors are 0.5–0.75."*<sup>49</sup>

A study conducted on behalf of Natural Resources Canada found that the solar fraction for Canada averaged 50 to 75 per cent.<sup>50</sup>

In other words, the use of geothermal and solar energy is highly efficient, and incentive and non-incentive funding that is directed at promoting the adoption of these technologies is promoting energy efficiency within the meaning of the "demand- side measure" definition.

Please also see the response to BCUC IR 1.118.1, which discusses similar programs at other utilities.

109.2 Please explain how the installation of a thermal energy service with natural gas backup fit the definition of a demand-side measure?

**Response:**

Please also see the response to BCUC IR 1.109.1.

<sup>48</sup> Source: [http://www.energysavers.gov/your\\_home/space\\_heating\\_cooling/index.cfm/mytopic=12640](http://www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12640)

<sup>49</sup> Source: [http://www.energysavers.gov/your\\_home/water\\_heating/index.cfm/mytopic=12900](http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=12900)

<sup>50</sup> Source: [http://canmetenergy-canmetenergie.nrcan-mcan.gc.ca/fichier/81316/STC-survey-2008\\_en.pdf](http://canmetenergy-canmetenergie.nrcan-mcan.gc.ca/fichier/81316/STC-survey-2008_en.pdf)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 350

109.3 In new construction how does FEI know that the thermal energy service installation is not replacing electric heat and cooling?

**Response:**

New construction, by its nature is not replacing anything at all. For EEC purposes, in its Commercial Custom Design program for new construction, the FEU are planning to follow the baseline procedure outlined in ASHRAE 90.1, Appendix G: the customer first proposes a building type, and the fuel choice for the building and Appendix G then defines what the baseline building HVAC system should be, for the purpose of modeling and comparison to the higher efficiency alternative (This is aligned with BC Hydro's practice for its New Construction Program). Thus, it is the customer's intent and choice of fuel that determines the baseline and there could be instances in which a customer's initial intent is to install electric heating and cooling, in which case such a building would not be eligible for an EEC incentive.

109.4 What does FEU understand to be the meaning of energy efficiency in the *Clean Energy Act* demand-side measures definition?

**Response:**

Please see the response to BCUC IR 1.109.1.

109.4.1 Are Solar-thermal projects and District Energy Systems demand-side measures?

**Response:**

Please see the response to BCUC IR 1.109.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 351

**110.0 Reference: Issue 1 Scope (a) (c)**

**Exhibit B-2, Evidence of FEU, p. 139**

**Principles and Guidelines to Protect the Public Interest**

"Government policy and direction has responded to climate change concerns and utilities are being encouraged and directed to invest more resources into energy efficiency and conservation activities in order to meet GHG emissions reduction objectives. EEC activities are, in part, a response to direction signalled by government in, notably, the 2007 BC Energy Plan, the *CEA* and the *UCA*. These policies reinforce the concept that utilities such as the FEU should take a leading role in these activities."

110.1 Does FEI interpret government policy to be that *all* ratepayers should fund EEC incentives for energy efficiency and conservation activities?

**Response:**

The FEU are not aware that government has established any policy regarding the funding of EEC incentives for energy efficiency and conservation activities. The excerpted text is intended to indicate that the Companies' interpretation is that utilities are being encouraged by government policy to increase energy efficiency and conservation activity to the level of "all cost-effective demand-side management" as outlined in the 2007 BC Energy Plan.

In practice, the nature of DSM activity as undertaken by all utilities in the Province, so far as the FEU are aware, is such that it involves collecting incentive funding from customers generally and then making EEC programs including incentive funding available to particular customers, who qualify for the program offering. It is not, for instance, done on a customer class-by-customer class basis. The latter approach would have the effect of limiting the availability and effectiveness of programs as it would (a) reduce the utility's flexibility to target funding at areas that provide the greatest benefits and (b) in smaller classes would result in significantly reducing the value of the incentive if the incentive had to be recovered from the same small pool of customers that was taking advantage of the incentive

110.1.1 Does this interpretation change under any condition, such as when the recipient of the EEC incentive has a payback period of less than 5 years for the cost of the measure or thermal energy solution?

**Response:**

Please see the response to BCUC IR 1.110.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 352

**111.0 Reference: Issue 1 Scope (a) (c)**

**Appendix A to Order G-141-09, Item 13**

**Principles and Guidelines to Protect the Public Interest**

"The Parties agree that the costs incurred by TGI to provide AES should not be recovered as part of natural gas service rates, and vice versa. The Parties agree that TGI's proposed New Energy Solutions Deferral Account, attracting AFUDC, is an appropriate mechanism to address allocation issues as between TGI's gas customers and TGI's AES customers....The risk of non-recovery of amounts in the New Energy Solutions Deferral Account will not be borne by natural gas ratepayers. The Parties agree that any debit balance in the New Energy Solutions Deferral Account will not be recovered through natural gas rates and any credit balance will not be applied to reduce natural gas rates." (Appendix A to Order G-141-09)

111.1 Given that the parties in the negotiated settlement for TGI and TGVI's 2010/2011 RRA agreed that the costs for TES should not be recovered as part of natural gas service rates, why is it appropriate to provide EEC incentives, which are funded through natural gas service rates, for TES projects?

**Response:**

The fundamental reason why EEC is recovered from natural gas customers is that the FEU's EEC programs are intended to decrease the volume of natural gas consumed by customers through enhanced conservation or energy efficiency. TES generally, regardless of the customers' choice of service provider, are likely to achieve these goals. Thus, the case of a residential customer who decreases natural gas usage by replacing an inefficient water heater with an efficient water heater, and the case of the customer who decreases natural gas usage by implementing an efficient thermal energy system regardless of service provider, are essentially the same. The principle is the same – customers are being incented to reduce natural gas usage.

As long as the customer who is applying for an EEC program meets the criteria of that program, they are eligible for incentives. So long as the program does not specifically restrict a TES project (no matter the provider of the TES) from receiving EEC, the customer can apply for and receive the incentive.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 353

**112.0 Reference: Issue 1 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7, pp. 136, 148, 152**

**Access to EEC Incentives**

Page 136 states: "To date, however, the only thermal energy customer to have also applied for an EEC incentive (via the provincial governments PSECA program) is the Delta School District."

Page 152 states: "...to date, [Delta School District] is the only customer to have applied for an EEC incentive in addition to engaging the services of TES class of service within FEI."

112.1 Please confirm that Delta School Board is the only customer to date for whom FEI will own, operate and maintain the equipment and charge a rate for the energy delivery, and who has also received an EEC incentive.

**Response:**

As indicated in Section 7, page 136 of the Evidence, the FEU have corresponded with the Central Okanagan School District on the installation of a geo-exchange system in the Helen Gorman School. The FEU have committed to provide EEC funding towards this limited scale pilot study upon the successful completion of the HVAC system. This project also falls within the TES class of service.

112.2 Please list the other potential thermal energy systems where FEU intends to own, operate and maintain equipment, and where FEU has discussed the possibility of providing an EEC incentive with the customer?

**Response:**

The FEU, when speaking to customers, may often discuss the broad subject of EEC incentives. It is reasonable to assume that there are a large number of customers with whom FEI have discussed EEC programs. Some of these customers with whom FEI has spoken will have been interested in TES. Other than Delta School Board, who will receive EEC incentives via the PSECA program, and Helen Gorman School, there are no customers that FEI is actively engaging in TES, where EEC incentive have been discussed at anything more than at a high level. Applications for EEC must be made through the EEC group, which is a separate group within FEI that operates independently of the business development employees involved in promoting service offerings like TES.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 354

112.3 In TGI's 2010/2011 RRA Alternative Energy Systems was defined as Geo-exchange, Solar-thermal and District Energy Systems. Has FEU provided EEC incentives for Solar-thermal and District Energy Systems to date? If so, please provide the list of projects, the incentive amounts provided, and the technologies installed.

**Response:**

In the context of this Information Request in the Alternative Energy Services Inquiry, which references the Delta School District incentive provided under the PSECA initiative, the incentive being provided is specifically for highly efficient natural gas boilers. As part of a limited scale pilot study, the FEU also intend to provide an incentive towards the installation of a geo-exchange HVAC system in a school operated by the Central Okanagan school district, upon successful completion of the project.

The FEU have contributed EEC funding towards the installation of solar thermal technologies in projects, where the FEU are not the provider of the TES service to the customer. These incentives have been delivered via the FEU's involvement with the provincial government's Solar PSECA program, SolarBC for Schools and FEU's solar residential pilot program. Please refer to the response to BCUC IR 1.115.2 for a list of projects and committed incentive amounts pertaining to these activities.

112.4 Has the FEU installed and retained ownership of any TES systems to which an EEC grant was applied. If so, please provide the list of projects, the incentive amounts provided, and the technologies installed.

**Response:**

As indicated throughout section 7 of the Evidence, the only Thermal Energy Services customer to have also applied for an EEC incentive, via the provincial governments PSECA program, is the Delta School District. The FEU have committed approximately \$110,000 for high efficiency boiler upgrades at seven (7) schools.

In addition to this, and as also indicated in section 7 of the Evidence, the FEU have corresponded with the Central Okanagan School District specific to one school about the provision of an EEC incentive as a pilot towards a geo-exchange based HVAC system, owned and operated by FEI.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 355

**113.0 Reference: Issue 1 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7, p. 136**

**Access to EEC Incentives**

"The existing principles and procedures applied by the FEU in the dispensing of EEC funds are consistent with industry practice. They ensure that once a program is developed that contemplates the provision of incentives to customers interested in implementing high-efficiency thermal systems, all customers interested in adopting high-efficiency thermal energy systems have equal access to EEC funds, regardless of whether the customer decides to engage the FEU or a third party, such as Corix, to own and operate the thermal energy infrastructure."

113.1 In a case where FEI is not the thermal energy service provider, but is the natural gas service provider, what benefit accrues to the ratepayer to counter the cost of the EEC incentive?

**Response:**

For any EEC program, the benefits to the specific customer receiving the incentive is the ability to use the incentive to install equipment that will lower its ongoing energy costs. The benefits to the natural gas customers as a whole are the same as all other EEC programs such as the reduction in natural gas consumption and associated GHG emissions reduction.

Customers may achieve the desired EEC result via a TES program or any other means, so long as program guidelines have been met. In order for a TES project to qualify, it would have to meet the applicable test for assessing cost effectiveness.

In delivering EEC programs, the FEU do not distinguish between a TES provided by FEI or Corix or an ESCO.

Please also see the response to BCUC IR 1.109.1.

113.2 In a third-party ownership scenario, what is the energy avoided in the calculation of the EEC incentive?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 356

**Response:**

It should first be re-stated that EEC incentives are provided to customers that comply with the terms and conditions of established EEC programs, regardless of their choice of ownership model, whether that be self-owned, third party owned, or owned by the FEU's Thermal Energy Services. One of the aspects of program terms and conditions is the amount of FEU EEC incentive available, which amount is based on the amount of natural gas avoided by the activity, equipment or solution being incented by the program.

113.2.1 In this case would the thermal energy service with natural gas backup be considered a demand-side measure?

**Response:**

Please see the response to BCUC IR 1.109.1.

113.3 How would a customer find out EEC incentives are available for thermal energy services? Please provide all public information or marketing materials that have been published or sent out in 2010 and 2011 informing customers of the availability of EEC incentives for thermal energy services.

**Response:**

Note that, as indicated in Section 7.3 of the Evidence, "there are currently no EEC programs intended specifically to support the thermal energy projects that are the subject of this current proceeding." As such, no marketing materials or public information specific to the provision of EEC incentives for TES has been produced or distributed. It should further be clarified that the FEU do not intend to provide incentives towards TES, but rather towards the implementation of cost effective measures designed to reduce natural gas consumption within customer's buildings. This principle underlies the commitment of funding under the PSECA initiative for the implementation of cost effective boiler upgrades by the Delta School District.

Currently, customers have several options to determine what incentives are available for a given project. All currently available incentive programs are posted for customers or their



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 357

representatives or partners to review on the FEU website<sup>51</sup>. EEC program representatives are also available to discuss EEC programs via the phone at 1.866.884.8833. In addition, the FEU's Energy Solutions Managers are available to meet with commercial customers directly to explain program options and requirements and to assist with the application process. Furthermore, the FEU are piloting a program to place Energy Specialists within commercial/institutional organizations, one of the primary goals of which is to ensure that such customers are fully aware of all available incentive opportunities. The Companies also actively participate in tradeshow and forums, and advertise currently available programs in targeted publications such as Office Space, InnFocus Magazine and Douglas Magazine. As the FEU roll out additional EEC programs, some of which being potentially applicable to the types of measures envisioned under the TES class of service, these communication methods are likely to remain, and may be enhanced should the context of particular customer segments warrant. Energy service providers can also inquire on behalf of their customers to determine if any incentive funding is available and/or applicable to their projects. For example Corix made inquiries in May of 2010 on behalf of a customer relative to a geo-exchange system. This system was assessed for eligibility under the potential Commercial Custom Design Program.

113.3.1 Please confirm the FortisBC website does not have information in its Natural Gas Rebates section on EEC incentives for TES.

**Response:**

The FortisBC website contains all pertinent information on currently available incentives, including incentives for boiler and water heater upgrades, which may be of interest to customers of Thermal Energy Service providers. As indicated in Section 7.3 of the Evidence, however, the FEU do not currently have programs in market designed specifically to support the TES projects that are the subject of this current Inquiry. As such, the FortisBC website does not have information in the Natural Gas Rebates section on EEC incentives specifically for TES.

113.4 How would a customer find out that a third party could own and operate a thermal energy system and that an EEC incentive may still be available?

<sup>51</sup> <http://www.fortisbc.com/EnergySavings/Pages/default.aspx>



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 358

**Response:**

All EEC incentives are available and provided directly to customers regardless of their chosen service provider. There are currently no eligibility criteria, terms or conditions which would prevent a customer from receiving an incentive to which they would otherwise be entitled, based on their selection of service provider. Furthermore there are no plans to impose any such restrictions on future program offerings. There are several ways customers can inform themselves about available incentives. Please refer to the response to BCUC IR 1.113.3 for further details.

In addition, it may be expected that if or when programs become available which provide incentives for the system types that are the subject of this proceeding, third party TES providers will no doubt become knowledgeable of the available incentive offerings and able to speak with potential customers about applicable incentives. The customer also has a role to play in that they must communicate what they want and/or are contemplating applying for an EEC incentive. This will help Energy Solutions staff ensure that the customer has all the necessary information and direction regarding EEC programs. In such a situation, the FEU's Energy Solutions staff and EEC program staff are available to speak with the potential customer and the third party TES provider to provide additional assistance as required.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 359

**114.0 Reference: Issue 1 Scope (c)**

**Exhibit B-2, Evidence of FEI, Section 7.1, p. 139**

**Access to EEC Incentives**

"The FEU believe that when the logic of [the Commission's NGV-EEC Decision attached to Order G-145-11] is applied to incentives directed at thermal energy, the outcome is that the initiatives should result in either conservation or reduced energy requirements to meet the same load requirements in order to meet the definition of 'demand-side measure'. The 'green' attributes of thermal energy, which are referenced in 'British Columbia's energy objectives', are considered only once the incentive has qualified under the definition of 'demand-side measure' and do not themselves form the primary justification for the incentive programs. The FEU intend to apply this analysis in developing programs directed at thermal energy and in determining the eligibility requirements for such programs."

114.1 Please explain how FEI will apply this analysis in developing programs directed at thermal energy. For example, will the incentives under the Thermal Energy for Schools program, if approved, be designed to "result in either conservation or reduced energy requirements to meet the same load requirements"?

**Response:**

The FEU's EEC incentive programs are generally designed to encourage customers to implement or install measures, equipment, systems, building designs or behaviours that result in either conservation or energy efficiency. Energy efficiency is defined by the FEU as the provision of the same level of service using less natural gas. Any incentives provided will be based upon an analysis of the amount of natural gas that a conservation or energy efficiency activity avoids. Please see the response to BCUC IR 1.109.1 for further explanation of why geothermal and solar thermal, for instance, are considered more efficient than natural gas.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 360

**115.0 Reference: Issue 1 Scope (c)**

**FEU 2012-2013 RRA Exhibit B-1, Appendix K-4, EEC 2010 Annual Report, pp. 76-77**

**Access to EEC Incentives – PSECA Initiative**

**Table 4-13: PSECA Initiative Program Actuals**

	Utility	Participants	Incentive Expenditure (\$000s)	Non-Incentive Expenditure (\$000s)	Annual Energy Savings (GJ/yr)	NPV Energy Savings (GJ)	Free Rider Rate	TRC
New Const	FEI	-	-	-	-	-	-	-
	FEVI	-	-	-	-	-	-	-
Retrofit	FEI	15	531	11	18,222	163,420	0%	2.4
	FEVI	13	297	5	11,706	107,935	0%	2.2
<b>TOTALS</b>		<b>28</b>	<b>827</b>	<b>15</b>	<b>29,928</b>	<b>271,355</b>	<b>0%</b>	<b>2.3</b>

“In 2011 the Companies expect to provide additional EEC incentive dollars to successful participants in a second round of PSECA funding. This second tranche consists of projects designed to reduce natural gas consumption and greenhouse gas emissions of K through 12 schools.”

**Table 4-14: PSECA Initiative Program Forecast**

	Utility	Participants	Incentive Expenditure (\$000s)	Non-Incentive Expenditure (\$000s)	Annual Energy Savings (GJ/yr)	NPV Energy Savings (GJ)	Free Rider Rate	TRC
New Const	FEI	-	-	-	-	-	-	-
	FEVI	-	-	-	-	-	-	-
Retrofit	FEI	12	800	24	30,830	322,840	0%	0.7
	FEVI	2	208	9	5,497	58,745	0%	1.0
<b>TOTALS</b>		<b>14</b>	<b>1,008</b>	<b>33</b>	<b>36,327</b>	<b>381,585</b>	<b>0%</b>	<b>0.7</b>

Among this second group of projects are 12 central thermal plant upgrade projects, 4 of which consist of conversions to open loop type geexchange heat pump systems with gas boiler backup. These will significantly reduce natural gas consumption and greenhouse gas emissions at each of the affected facilities.

115.1 Table 4-13 above shows FEI and FEVI provided EEC incentives under the PSECA program to 28 participants in 2010. But on page 147 of Exhibit B-2, FEU Evidence, FEI states “[i]ncluding Delta School District, the FEU’s PSECA initiative issued funding commitments to 10 different organizations for energy efficiency upgrades at 35 different public sector building locations. To date, Delta



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 361

School District is the only customer to have applied for an EEC incentive in addition to engaging the services of the TES class of service within FEI." Please reconcile these participant numbers.

**Response:**

The FEU would like to amend the statement. Please note that funding commitments were made to 11 different organizations for energy efficiency upgrades at 35 different public sector building locations.

Participants are here recorded as discrete projects, submitted, reviewed and found eligible for funding under the PSECA initiative. Some public sector organizations made several submissions to PSECA each recorded as a 'participant', while others made only one submission addressing multiple locations. For example, the Vancouver Island Health Authority submitted multiple projects to PSECA, of which ten were found eligible for EEC funding. This would be recorded as ten (10) participants, though it represents only one (1) organization. Conversely, the Delta school district made only one (1) submission to PSECA, proposing energy upgrades at multiple schools, seven (7) of which were found to be eligible for an incentive. This would be recorded as one (1) participant, and would represent one (1) organization, but seven (7) buildings. Please refer to the response to BCUC IR 1.115.2 for a detailed list of participants and incentives.

Recording participants to correspond with applications received is consistent with the manner in which participation in other programs is tracked. For example, a hospital authority is recorded as a participant in the Efficient Boiler program each time it applies for and receives an incentive via the program.

115.2 Please provide a list of all the participants in the PSECA program who received EEC incentive grants in 2010, the measures installed and the amount of the grant.

**Response:**

Please refer to Attachment 115.2.

Notes:

1. The 2010 participants are those listed under the 3<sup>rd</sup> Open Call tranche while the 2011 participants are those listed under the K to 12 tranche.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 362

2. In the tables provided above the 2010 participant count for FEI should be 13, and total 2010 should be 26. Expenditures and Savings values are correct as noted.
3. The 2011 forecast for FEI indicated 12 participants based on 12 potential locations for the Delta School District under review at that time. The DSD project was submitted as 1 application covering multiple locations however (7 of which were found eligible for an incentive) and is thus recorded in attachment 115.2.1 as 1 participant.

Additional information is also provided in Attachment 115.2.

115.3 Please confirm that if the Thermal Energy for Schools program proposed in the 2012-2013 RRA is approved, thermal energy customers could apply for an EEC grant under the PSECA program, the Custom Design Program, the Thermal Energy for Schools Program and the Efficient Boiler Program. Please list all other EEC programs under which a thermal energy customer may be eligible to receive a grant.

**Response:**

Irrespective of any approval vis-à-vis the Thermal Energy for Schools program, any customer wishing to install energy conserving or efficiency measures within the scope of the TES class of service, may apply for incentives under one of the applicable 'in-market' programs so long as all program rules and criteria are adhered to. Customers cannot apply for multiple incentives from more than one FEU program for the implementation of any particular energy conserving measure(s). Only one incentive is provided per energy conserving measure or stream of GJ savings. Refer to the response to BCUC IR 1.115.3.1 for additional details.

Customers may, on the other hand, apply to multiple organizations for incentive funding. Where partnerships exist between the FEU and another organization, information is shared to ensure that the total incentive provided does not exceed some prescribed proportion of the relevant measure cost. Where partnerships do not exist no such adjustment can be made; however, this is not an issue in practice because there aren't any organizations providing incentives within the Province towards the natural gas measures that our current programs incent.

For clarity, it should be noted that the PSECA initiative was established to collaborate with the provincial government to fund energy efficiency upgrades in public sector buildings, under the Climate Action Secretariat's PSECA program. As the government's PSECA program is now closed, the FEU's PSECA initiative is no longer accepting new participants.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 363

115.3.1 What prevents customers from receiving grants from more than one EEC program?

**Response:**

Commercial customers necessarily and regularly receive grants from more than one EEC program. This is to be expected as commercial EEC programs provide grants for different applications/end uses, and commercial customers often have multiple on-going projects. The FEU strive to ensure that customers receive only one grant per energy conserving measure. For the moment this is assured primarily by the design of programs that are presently in market. Each program targets a different end use, technology or size of equipment. It is, therefore, not possible for a customer, who having installed a new 500 MBH boiler for space and domestic water heating, to receive a rebate through the Efficient Boiler Program and the Efficient Commercial Water Heater Program; the water heater program is simply not applicable to this customer's particular project. Moreover, EEC program staff monitor applications on a daily basis and are trained to seek out any questionable items.

In relatively short order, the implementation of the new Demand Side Management tracking system will provide a powerful new means of ensuring that customers cannot apply for multiple incentives for any particular energy conserving measure. Please refer to 2010 Energy Efficiency and Conservation Annual Report, section 14.2 DSM System Project: update; for a further description of the Demand Side Management tracking system. Within the new system each grant will be associated with customer accounts and premises. Therefore whenever a given customer requests another grant EEC program staff will have a list of all 'in-process' or paid grants displayed for that customer. This will ensure that customers do not receive multiple incentives for any particular energy conserving measure as the FEU's EEC program offering is broadened.

115.4 Under what EEC programs may other TES customers, such as Solar-Thermal and District Energy Systems receive an EEC incentive?

**Response:**

At present, the FEU do not have EEC programs available that provide incentives for the systems specifically described above. Please refer to the response to BCUC IR 1.113.3. On the other hand, should a TES customer install high efficiency boilers or water heaters in



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 364

accordance with program eligibility criteria, terms and conditions, they would be entitled to receive an EEC incentive via:

1. The Efficient Boiler Program
2. The Light Commercial Energy Star Boiler Program
3. The Efficient Commercial Water Heater Program

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 365

**116.0 Reference: Issue 1 Scope (c)**

**FEU 2012-2013 RRA Exhibit B-1, Appendix K-4, EEC 2010 Annual Report, pp. 86-89**

**Access to EEC Incentives – Custom Design Program**

“[The Custom Design Program] may include measures that will:

- Make use of alternative energies, with gas backup
- improve building envelope performance;
- use more efficient gas burning equipment or systems;
- recover and reuse energy that is currently lost;
- capture and use solar energy for heating air or water;
- reduce the rate of energy consumption by systems or equipment in low occupancy periods; and
- eliminate unnecessary energy usage by shutting off idling or unneeded equipment...

Promotion of the custom program will be driven primarily via direct contact with target participants by the Companies' staff or the program's qualified consultants. Target customers should include:

- Health care administrators;
- Education administrators;
- Large institutional property managers (i.e. Nexacor, Profac, and so on);
- Municipalities – facilities and/or energy managers as well as municipal planners;
- Provincial government - facilities and/or energy managers; and
- Builders and developers.”

116.1 Please explain how the Custom Design Program is different from the PSECA program.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 366

**Response:**

The PSECA Initiative was a response to a partnership the FEU entered into with the provincial government: the Public Sector Energy Conservation Agreement (PSECA)<sup>52</sup>. PSECA, which leveraged the funding of all partners to encourage greater energy efficiency, was aimed at reducing natural gas consumption in public sector buildings only. In contrast the Commercial Custom Design Program will be operated independently of the provincial government and will deliver incentives to private sector customers in addition to the public sector customers that were the focus of PSECA.

116.2 Why did FEU design the Custom Design Program when the PSECA program exists?

**Response:**

The Commercial Custom Design Program was in development before the FEU became a signatory to the PSECA. Conversely, the PSECA Initiative was established in response to the Companies' involvement with PSECA, which was a government operated program of limited duration and focused entirely on public sector organizations. The PSECA Initiative made use of the Commercial Custom Design Program's proposed funding model and a significant portion of its eligibility criteria, terms, conditions and operating mechanisms. This provided the Companies with invaluable insight into how the Commercial Custom Design Program will ultimately function. The PSECA Initiative was intended to be a transitory program of limited scope, allowing the FEU to work collaborative with all PSECA partners<sup>53</sup>. The Commercial Custom Design Program on the other hand is intended to be available to a broad range of commercial/institutional customers and to remain in market on an indefinite basis.

<sup>52</sup> Refer to: <http://www.env.gov.bc.ca/cas/mitigation/pseca.html>

<sup>53</sup> PSECA Partners are: Government of British Columbia (Climate Action Secretariat), FortisBC Inc, FortisBC (Vancouver Island) Inc, British Columbia Hydro and Power Authority, SolarBC



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 367

**117.0 Reference: Issue 1 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7.4, p. 152; FEU 2012-2013  
RRA Exhibit B-1, Appendix K-4, EEC 2010 Annual Report, pp. 88**

**Access to EEC Incentives – Custom Design Program**

"The FEU have also corresponded with the Central Okanagan School District with reference to one school about the provision of an EEC incentive under the Commercial Custom Design program, which is described on pages 86 – 89 of the 2010 EEC Annual Report, and included in Appendix G to this Submission. The Companies expect the School District to apply for the incentive." (Footnote 100, p. 152)

"The Companies have worked throughout 2010 on the development of the Commercial Custom Design program, in preparation for a phased roll out of the program in 2011. The Companies have completed the following items:

- Business case development and approval;
- Development of qualified consultant eligibility criteria and application;
- Development of joint Energy Study Guide for retrofit projects with program partner BC Hydro; and
- Development of Capital Cost Agreement, including approval letter, application form, and program general terms and conditions.
- Collaboration with School District No 23 (Central Okanagan) on a pilot study of a geo exchange heating system in a school setting."

117.1 Please provide the details of the project discussed with the Central Okanagan School District including project cost, technologies installed, ownership of the technologies, EEC grant amount, and any other pertinent information.

**Response:**

According to Order No. G-118-11:

*"This inquiry will address the issues at a principles level. The Terms of Reference are set out in Appendix B to this Order."*

Projects, such as this one, will be subject to Commission review as part of the regular course of regulation subject to the General Terms and Conditions 12A for TES and the 2012-2013 RRA proceedings. As such, the Companies have not provided project details apart from the EEC incentive.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 368

The EEC Incentive amount is \$100,000 towards the implementation of a geo-exchange based HVAC system in a region requiring both heating and cooling. This is a pilot project only, and experience developed with this project will allow the Companies to better assess the energy saving merits of such systems and share lessons learned with the thermal energy marketplace, through the EEC Annual Report. The EEC Incentive amount was determined by the FEU as being an appropriate amount for a pilot project – it is an amount that the Companies in their professional judgment felt would induce the customer to install the measure in question and the incentive came about through discussions between the Companies' senior management and the customer.

117.2 Please provide a breakdown of the full project costs including the EEC incentive available for the Central Okanagan project.

**Response:**

Please refer to the response to BCUC IR 1.117.1.

117.3 Who initiated correspondence, Central Okanagan School District or FEU? If the School District, how did they hear about potential EEC incentives?

**Response:**

Please see the response to BCUC IR 1.117.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 369

**118.0 Reference: Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7, p. 136; Appendix G-5, FEU  
Response to ESAC IR 2.4.2**

**EEC Practices in Other Jurisdictions**

"The existing principles and procedures applied by the FEU in the dispensing of EEC funds are consistent with industry practice. They ensure that once a program is developed that contemplates the provision of incentives to customers interested in implementing high-efficiency thermal systems, all customers interested in adopting high-efficiency thermal energy systems have equal access to EEC funds, regardless of whether the customer decides to engage the FEU or a third party, such as Corix, to own and operate the thermal energy infrastructure." (p. 136)

"There are no rules that would preclude thermal energy services staff from discussing EEC funding that may be available for customers on FEI thermal energy services projects. However, as described in the responses to Corix IRs 2.4.6 and 2.5.13, there are different groups of employees that are typically involved in EEC and thermal energy services projects. In any case, EEC funds are provided to customers, not FEI. Competitors of FEI for thermal energy service are also free to discuss any EEC funding that may be available to their customers as well." (Appendix G-5)

118.1 Where FEU is aware of or able to obtain, please list all jurisdictions in North America where the provision of DSM grants for thermal energy systems has been approved by the regulatory board or Commission.

**Response:**

This response addresses BCUC IRs 1.118.1 through 1.118.1.3. At the outset, the FEU note that there are a large number of regulatory boards in North America that regulate thousands of public utilities, and the FEU do not have the resources within the time constraints of answering information requests to do a comprehensive review of the issues raised in these information requests. With that caveat, the FEU have approached these requests as follows:

- In response to BCUC IR 1.118.1, the FEU interpret "grants for thermal energy systems" to mean grants for high efficiency thermal energy systems that utilize natural gas fuel, electric energy, renewable thermal energy or a combination of these three types of energy equipment. A number of examples are discussed below.
- In response to BCUC IRs 1.118.1.1 and 1.118.1.2, the FEU provide information about the various utility commission approvals and guidelines governing these programs where it has been made available for the examples provided.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 370

- In response to BCUC IR 1.118.3, the FEU provide information about utility ownership of the energy equipment used to deliver the energy involved in these programs; however, such information is not typically publicly available as the issue of ownership is not part of any DSM program design.

High efficiency, thermal energy systems include a full range of technologies from high efficiency natural gas furnaces, boilers and water heaters through to more complex, integrated energy systems for communities (district energy systems) that can include high efficiency natural gas heating technology in combination with renewable thermal energy technology such as geo-exchange, waste heat recovery or solar thermal solutions. Most, if not all, natural gas utilities in North America that have DSM programs will have incentive programs that assist customers in purchasing high efficiency equipment that help them reduce their natural gas load, thus meeting the description of grants for thermal energy systems as per this request. Many of the FEU's existing EEC programs fit this description.

Due to the large number of programs that are likely to fit into the Commission's description of grants for thermal energy systems, the FEU have not canvassed all North American utilities, but rather provides a number of relevant examples. The first example is an electric to natural gas fuel switching program being offered by Puget Sound Energy ("PSE") for home heating systems. PSE is incenting its electric customers to switch from electric home and water heating to natural gas heating in order to reduce their electricity consumption and reduce the system impacts of growing seasonal peak demand. Incentive amounts are up to \$3,950<sup>54</sup>.

In some areas, PSE owns the natural gas infrastructure while in other areas a different utility owns the natural gas infrastructure that delivers the energy to customers. This example is relevant to an FEU program that would incent customers to switch from natural gas usage to another thermal energy system (potentially a renewable thermal system) in order to reduce their natural gas demand. In some cases, the FEU may own the other energy system and in other cases another company might own the other system that customers are switching to. This PSE program was added to their approved DSM plan in 2008, by the Washington State Utilities Commission under docket number UE-082241<sup>55</sup> and continues to be part of the PSE DSM portfolio today.

The FEU have also examined programs that offer incentives that specifically help customers purchase renewable thermal energy equipment that help reduce their heating energy demand delivered by conventional natural gas or electricity service. One example of such a program is FortisBC's PowerSense program for Ground or Air Source Heat Pump rebates or loans which incents customers to install equipment that captures and utilizes renewable thermal energy from the earth or the atmosphere to reduce their electricity usage and cost. This program has a

<sup>54</sup> <http://pse.com/savingsandenergycenter/ForHomes/Pages/Choosing-Natural-Gas.aspx>

<sup>55</sup> <http://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=082241>



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 371

regulatory approval history with the BCUC dating back to 1993, but its continuation was most recently approved as part of the ForticBC 2011 electric capital plan by BCUC order No. G-195-10.

Another BC example is BC Hydro's District Energy Systems Funding offer, which according to their web site offers incentives for undertaking feasibility studies as well as for capital equipment purchases where the equipment may be using biomass, waste heat or geo-exchange heat pumps to reduce the energy use for customers and the community. The FEU do not have the details regarding BCUC approval of this program. In each of these cases the objectives of the program are to help reduce customers energy demand while still meeting their overall energy needs, keep energy costs down and reduce their GHG emissions, while providing a solution that has overall benefits for the energy delivery systems.

In response to this Inquiry, the FEU requested an ESource inquiry into Utilities across North America that have DSM programs to incent customers to utilize renewable thermal energy sources within their energy solutions. The ESource survey identified 15 programs that include thermal energy solutions within the DSM portfolios of various utilities and organizations in both Canada and the U.S. In some cases the renewable energy equipment displaces the customer's electricity usage, in other cases it displaces natural gas usage. Some programs appear to apply to the displacement of either electricity or natural gas usage. The renewable energy equipment identified within the ESource survey results include air source heat pumps, ground source heat pumps, solar thermal, waste heat recovery, solar voltaic and fuel cell solutions. The ESource survey results are included as Attachment 118.1.

Of note among the ESource survey results, are the following:

- South Carolina Energy Office reports offering incentives for Cogeneration systems that produce electricity and process steam heat for use primarily within a building or complex of buildings – essentially a district energy system type application.
- Omaha Public Power District offers a program for equipment incentives as well as a full range of turn key services including geothermal well field design options as well as testing, design, procurement, installation, construction management and financing.
- ESource survey responses indicate a wide range of incentive and financing amounts and models for a wide range of customer types in programs specifically designed to encourage the adoption of renewable thermal energy technologies.

In summary, the purpose of any natural gas service EEC incentives for high efficiency thermal energy services is to reduce customer's natural gas consumption. A range of technologies can be used to accomplish such reductions and new technologies that utilize renewable energy sources continue to be developed and/or commercialized. Examples of high efficiency thermal



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 372

energy programs can be found all across North America. Examples that incent the use of renewable thermal energy are expanding.

The FEU's EEC programs do not differentiate in regard to the ownership of the energy equipment. EEC programs are available to all FEU customers who qualify and meet program requirements regardless of what third party service providers they might be working with. Incentive amounts available as part of the FEU's EEC programs are provided to the customer and not to the third party service provider. As such, the FEU's ownership of any high efficiency or renewable thermal equipment is irrelevant to the issuing of any EEC incentives.

118.1.1 Please provide the appropriate Commission or Board Order, Docket or Decision that approved the use of the DSM funds.

**Response:**

Please refer to the response to BCUC IR 1.118.1.

118.1.2 Please provide all utility or regulatory guidelines governing the provision of these grants for thermal energy systems.

**Response:**

Please refer to the response to BCUC IR 1.118.1.

118.1.3 Please list all known instances where a thermal energy system is owned by the utility and a DSM grant has been provided to the customer.

**Response:**

Please refer to the response to BCUC IR 1.118.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 373

118.2 Do customers have access to EEC incentive calculation formulas or methodology? Do competitors?

**Response:**

This depends on the program. Most programs are prescriptive, meaning that incentives are set and are disbursed when a qualifying piece of equipment is installed, so no calculations formulae or methodology are involved. In the case of complex non-prescriptive programs, such as the Commercial Custom Design program which is launching prior to the end of 2011, the Companies anticipate that customers would contact the FEU's EEC department for an estimation of EEC incentives. In the case of both prescriptive and non-prescriptive programs, once program details have been established, it is the practice of the Companies to have all program details including incentive details, available on the Companies' external website, or on program partners' websites if a program is being delivered with a partner.

118.2.1 If not, how would the customer or a competitor know the amount of EEC funding a project might be eligible for, especially early on in negotiations?

**Response:**

Please see the response to BCUC IR 1.118.2. In the case of complex, non-prescriptive programs, customers would contact the FEU's EEC team to determine what established EEC program their project would qualify for, and for an estimation of EEC incentives in accordance with that program's terms and conditions. For prescriptive programs, program details including incentive amounts are available on the Companies' external website.

118.2.2 If not, does the customer's or competitor's lack of access to EEC incentive calculation formulas or methodology pose an impediment to fair access to EEC funding?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 374

**Response:**

Please see the responses to BCUC IRs 1.118.2 and 1.118.2.1. The FEU do not anticipate any impediments to fair access to EEC funding as all customers, regardless of their choice of supplier, would need to contact the Companies' EEC department for an estimation of EEC incentive funding that a project might receive under the terms and conditions of a complex, non-prescriptive incentive program. Details of prescriptive programs are readily available from the Companies' external website. While the FEU has a role to play in ensuring that program terms and conditions are readily available, both customers and other market players such as other energy service providers, engineering firms and other consultants also have a role to play in ensuring that their customers are accessing any established programs. Since most customers are generally very interested in accessing incentive funds, the Companies do not anticipate any impediments to fair access to EEC funding.

118.2.2.1 Does it pose an impediment to competition in the TES industry?

**Response:**

Please see the responses to BCUC IRs 1.118.2, 1.118.2.1, and 1.118.2.2. All customers will be treated equally in complex, non-prescriptive programs and will need to contact the Companies' EEC team for an estimation of EEC incentive amounts. Details of prescriptive programs are readily available from the Companies' external website.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 375

**119.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7.3, p. 146**

**Guidelines for EEC Incentives**

"Funding approval for a 'Thermal Energy for Schools' program has been requested in the FEU's 2012-2013 RRA, but has not yet been approved, therefore program design, which would include the determination of program terms and conditions to which a customer would have to conform in order to receive an incentive under a future program, has not yet been completed. The PSECA initiative, the EBP, the CDP, and the potential future Thermal Energy for Schools program are described below."

119.1 Please provide: a) the terms and conditions to which a customer would have to conform in order to receive an incentive; and b) the methodology used to calculate the EEC incentive grant available, under the following programs:

- i. the PSECA initiative;
- ii. the Efficient Boiler Program (EBP); and
- iii. the Custom Design Program (CDP).

In the case where multiple methods have been used, please provide all methods and examples of their implementation.

**Response:**

This information is provided below and further details in Attachment 119.1.

**a) TERMS & CONDITIONS:**

- a. PSECA Initiative: Please refer to Attachment 119.1a for the FEU's PSECA Initiative eligibility criteria, terms and conditions.
- b. Efficient Boiler Program: Please refer to Attachment 119.1b.
- c. Commercial Custom Design Program: Note that these are draft terms and conditions and additional feedback and changes have yet to be incorporated. Please refer to Attachment 119.1c for the Energy Study terms and conditions for retrofit participants, Attachment 119.1d for the Capital Incentive terms and conditions for new construction participants, and Attachment 119.1e for the Capital Incentive terms and conditions for retrofit participants.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 376

b) **CALCULATION METHODOLOGY:**

a. PSECA Initiative:

- i. Individual energy conserving measure potential incentive:
  1. Incentive = the lesser of:
    - a.  $5 \times Y$  where:
      - i. Y: The net present value of the stream of gigajoule savings over one half the estimated measure life, to a maximum of 10 years.
      - b. 100% of the measure cost (Incremental of full depending on measure type)
  - ii. Participant's overall incentive:
    1. Submit each proposed energy saving measure to a TRC analysis. All measures where  $TRC \geq 1.0$  receive an incentive as identified above.
    2. If possible bundle measures with  $TRC < 1.0$ , while maintaining an overall  $TRC \geq 1.0$ , to encourage additional natural gas savings. If a bundle is possible wherein overall  $TRC \geq 1.0$  all measures included in the bundle receive an incentive as identified above.

b. Efficient Boiler Program:

- i. Customer determines the total building heating loads (BTU/hr) including Total weather sensitive loads of building (space heating), total non-weather sensitive loads of building which include domestic hot water, pool heating, snow melting, etc.
- ii. Determine the total plant input rating (BTU/hr) of selected boilers by summing up the input rating of each boiler.
- iii. Determine the program system efficiency rating as follows:
  1. The efficiency of a boiler refers to a manufacturer's combustion efficiency rating. The required program minimum combustion efficiency is 85% for a near-condensing type boiler and 88% for a condensing type boiler
  2. The system efficiency rating (near-condensing or condensing type) of the building heating system is based on the installed terminal heating equipment. Condensing heating system must not exceed a system return

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 377

water temperature to the boiler of 49°C during winter season. If the system return water temperature to the boiler exceeds 49°C during winter season then it will be considered as a near-condensing system type

3. The program efficiency rating is based on the combination of the boiler efficiency rating and building heating system efficiency. If the boiler and building system efficiencies are both condensing then the program efficiency will be qualified as condensing type otherwise it will be considered as near-condensing type.
- iv. Determine the total plant output rating in BTU/hr as follows:
    1. The total plant output rating is equal to the total plant input rating multiplied by the program efficiency rating.
  - v. Determine the boiler premium price amount as follows:
    1. The actual price of the proposed new efficient boiler is equal to the submitted price by the applicant (excluding taxes and installation).
  - vi. Determine the boiler output required for weather sensitive loads and non-weather sensitive loads as follows:
    1. The boiler output required for weather sensitive loads is equal to the total building heating loads
    2. The boiler output required for non-weather sensitive loads is equal to the difference between the total plant output and the boiler output required for weather sensitive loads or the remaining total plant output capacity.
  - vii. Determine the boiler load distribution ratio based on weather and non-weather sensitive loads such as follows:
    1. The non-weather sensitive ratio is equal to the total non-weather sensitive loads divided by the total plant output capacity
    2. The weather sensitive ratio is the remaining proportion of the total plant output capacity.
    3. The capacity available for weather sensitive (WS) load is equal to the total weather sensitive loads multiply by the calculated weather sensitive ratio.
  - viii. Determine the percentage of boiler oversizing such as follows:
    1. The maximum allowable boiler oversizing is 125%

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 378

2. The percentage of boiler oversizing is equal to the capacity available for weather sensitive load divided by the total weather sensitive loads
  3. The percentage of allowable boiler oversizing is equal to the calculated percentage of boiler oversizing minus the allowable boiler oversizing. If the calculated result is below zero then percentage of oversizing is zero which means the boiler capacity is within the allowable oversizing limit.
- ix. Determine the adjusted boiler cost, de-rated due to non-weather sensitive loads and boiler oversizing as follows:
1. The adjusted boiler cost, de-rated due to non-weather sensitive loads is equal to the actual price of the proposed new efficient boiler multiply by the calculated weather sensitive ratio
  2. The adjusted boiler cost, de-rated due to boiler oversizing is equal to the actual price of the new efficient boiler multiply by the calculated percentage of boiler oversizing
  3. The final adjusted boiler cost is equal to the difference between the adjusted boiler cost (de-rated due to non-weather sensitive loads) and boiler oversizing.
- x. Determine the adjusted boiler cost according to the base boiler price of the standard efficiency boiler such as follows:
1. The base boiler price is equal to \$7.00 per MBH (thousands of BTU/hr) of total weather sensitive loads.
  2. Determine the adjusted total plant input rating, de-rated due to non-weather sensitive loads and boiler oversizing such as follows:
    - a. The adjusted plant input rating, de-rated due to non-weather sensitive loads is equal to the total plant input rating multiply by the calculated weather sensitive ratio.
    - b. The adjusted plant input rating, de-rated due to boiler oversizing is equal to the total plant input rating multiply by the calculated percentage boiler oversizing.
    - c. The adjusted total plant input rating is equal to the difference between the adjusted plant input rating, de-rated due to non-weather sensitive loads and boiler oversizing.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 379

- d. The adjusted base boiler cost is equal to the base boiler price multiplied by the adjusted total plant input rating divided by one thousand.
  - e. Determine the premium cost difference between the efficient and standard boiler by deducting adjusted base boiler price from adjusted boiler cost derated for non-weather sensitive and oversizing.
- xi. Determine the boiler cost allowance for existing and new construction applications as follows:
1. For existing building applications, the boiler cost allowance is equal to 50% of the calculated premium cost difference between the efficient and standard boiler.
  2. For new construction applications, the boiler cost allowance is equal to 75% of the calculated premium cost difference between the efficient and standard boiler.
- xii. Determine the boiler input incentive calculation amount as follows:
1. For near-condensing system, incentive calculation amount is equal to the sum of \$4000.00 per boiler and \$3 per MBH of adjusted weather sensitive input load
  2. For condensing system, incentive calculation amount is equal to the sum of \$6000.00 per boiler and \$9 per MBH of adjusted weather sensitive input load
  3. The boiler incentive amount is equal to lower of boiler input calculation amount and cost difference allowance for replacement boilers.
- xiii. Additionally, we provide incentive for accurately estimating the buildings space heating load and venting material cost as follows:
1. For new construction, the maximum incentive amount for accurately estimating the design space heating load (design fee) is equal to \$1500.00.
  2. For existing buildings, the maximum incentive amount for accurately estimating the design space heating load (design fee) is equal to \$400.00.
  3. For existing buildings, the maximum incentive amount for the cost of venting material upgrade is equal to \$2000.00. There is no venting amount for new construction.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 380

- xiv. The final incentive grant is equal to the sum of the boiler incentive, design fee, and the venting material upgrade.
- c. Commercial Custom Design Program:
- i. Energy Study – New Construction (Partnership with BC Hydro):
    - 1. Potential participant submits a proposal outlining the scope and proposed cost of the energy study. BC Hydro reviews, requests modifications and/or approves a funding amount. The FEU pays for ½ of the approved amount, to a maximum of \$50,000.
  - ii. Energy Study – Retrofits:
    - 1. Potential participant submits a proposal outlining the scope and proposed cost of the energy study. The FEU reviews, requests modifications and/or approves a funding amount, generally 100% of the proposed cost, to a maximum of \$50,000.
  - iii. Capital Incentive – New Construction and Retrofits:
    - 1. Individual energy conserving measure potential incentive:
      - a. Incentive = the lesser of:
        - i.  $5 \times Y$  where:
          - 1.  $Y$  = the net present value of the stream of gigajoule savings over one half the estimated measure life, to a maximum of 10 years.
        - ii. An amount which leaves the participant with a residual measure cost (Incremental of full depending on measure type) having a one (1) year payback.
    - 2. Participant's overall capital incentive:
      - a. Submit each proposed energy saving measure to a TRC analysis. All measures where  $TRC \geq 1.0$  receive an incentive as identified above.
      - b. If possible bundle measures with  $TRC < 1.0$ , while maintaining an overall  $TRC \geq 1.0$ , to encourage additional natural gas savings. If a bundle is possible wherein overall  $TRC \geq 1.0$  all measures included in the bundle receive an incentive as identified above.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 381

**120.0 Reference: Issue 1 Scope (a)**

**Exhibit B-2, Evidence of FEU, Appendix G-5, Response to Corix IR  
2.5.13**

**Principles and Guidelines to Protect the Public Interest**

"Within FEI there are dedicated employees for each of these activities and hence they charge the majority, if not all, of their time to their respective departments. EEC staff are responsible for developing, designing and operating the FEU's Energy Efficiency and Conservation programs within the FEU's overall EEC initiative. Thermal energy services staff conduct business development and project development activities for the thermal energy class of service. Employees who may work on projects outside their primary line of service allocate their time according to the effort spent on each area of the Companies business on their weekly timesheets."

120.1 Please provide samples of FEU's sales and marketing information for EEC incentives for TES including website content, newspaper inserts and any other marketing information.

**Response:**

See the responses to BCUC IRs 1.113.3 and 1.113.3.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 382

**121.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7.4, p. 151**

**Guidelines for EEC Incentives**

"BC Housing, for example, has used Amaresco (an ESAC member) as their energy services company and has received many thousands of dollars in Efficient Boiler Program incentives in recent years."

121.1 What specific activities has Amaresco taken on for BC Housing? Do they install, operate and maintain the efficient boilers? Do they own the new efficient boilers?

**Response:**

Please refer to Attachment 121.1. The FEU do not have further written information on the relationship between BC Housing and Ameresco.

121.2 Please confirm that the customer, BC Housing, received the EEC incentives in this example.

**Response:**

BC Housing received the EEC incentives. This is consistent with standard EEC program procedures.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 383

**122.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7.6, p. 155**

**Guidelines for EEC Incentives**

122.1 Please discuss how FEU's proposed guidelines are appropriate when FEU owns and operates the TES equipment.

**Response:**

The party owning and operating the TES equipment is irrelevant from the perspective of EEC funding.

As noted in the guidelines:

*"2 (g) Incentives are distributed to customers, and not to the third party project partner (whether that is Corix, ESAC member, or the FEU); and*

*(h) Customer selects the TES project partner that it sees fit, applying its incentive dollars towards the project cost, if they so choose to use the incentive to reduce their rate for the TES project"*

In this manner, the customer may choose to apply their EEC dollars towards the project as a Contribution in Aid of Construction ("CIAC") that reduces the capital investment that the TES provider makes. If FEI is the TES provider that owns the equipment, and the customer chooses to provide their EEC dollars to FEI as a CIAC, then the capital investment FEI makes to provide the TES and associated return for FEI is lower than it would be absent the contribution. Alternatively, the customer may choose to keep their EEC dollars and not to provide a CIAC, which would increase the capital investment of FEI necessary to provide TES.

As can be seen in the example, the EEC program and its incentive is independent of the TES ownership model. Ultimately, whether the customer keeps the EEC dollars, or uses them as a CIAC to reduce rates for thermal energy, the customer is the beneficiary of the EEC program funds.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 384

**123.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 7.6, p. 155**

**Guidelines for EEC Incentives**

"(g) Incentives are distributed to customers, and not to the third party project partner (whether that is Corix, ESAC member, or the FEU); and

(h) Customer selects the TES project partner that it sees fit, applying its incentive dollars towards the project cost, if they so choose to use the incentive to reduce their rate for the TES project."

123.1 Please confirm that under the proposed guidelines customers are free to use any EEC incentive dollars as they wish.

**Response:**

The Companies make the incentive payment to the customer, and in a case where a customer is dealing with a third party, or self-financing a thermal energy project, the Companies are not able to ensure that the customer applies any EEC incentive provided toward project cost. However, regardless of how the funds are spent, the effect of providing the incentive to the customer is the same, i.e. it makes the equipment more affordable than it otherwise would have been.

123.1.1 If so, please justify why all ratepayers should fund EEC incentives when, in the case of (g) and (h) of the proposed guidelines that customer can apply the incentive dollars towards the project cost if they so choose.

**Response:**

Please see the response to BCUC IR 1.123.1. As with any incentive provided by either the FEU or other utilities, customers receive the incentive based upon the criteria of the program, with the desired outcome being reduced energy usage and increased energy efficiency. All rate payers should fund this incentive as it results in the same outcome as other incentive programs and meets the same threshold test. As with any other incentive, the customer can use the money as they see fit and for what makes the most sense for their own business requirements.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 385

123.2 Given that FEI recognizes it competes with the various ESCOs, would it be appropriate for the utility to assess whether a project has been competitively tendered?

**Response:**

No, it is not appropriate for FEI to assess whether a project has been competitively tendered when evaluating a customer application for EEC funds. EEC is provided on an equal access basis to customers, who may apply their incentive dollars as they see fit, provided that the program requirements are met, which are results oriented.

The Commission should also be indifferent as to the tendering process provided that the program requirements are met.

123.2.1 Would it be appropriate for the Commission to assess whether a project has been competitively tendered?

**Response:**

Please see the response to BCUC IR 1.123.2, as the same principles apply.

123.3 Please discuss possible additions to the Proposed Guidelines for EEC that would protect the competitive nature of the TES industry. For example, when another company is in competition with FEU for a TES project, what guidelines are necessary to ensure any EEC incentive is calculated fairly?

**Response:**

The FEU believe that no further Guidelines are necessary to ensure that EEC incentives are calculated fairly in such circumstances of competition as (a) the incentive isn't provided to the FEU or competing providers, but rather the customer itself; (b) there are already appropriate mechanisms in place to assess EEC funding compliance.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 386

### **Funding Provided to Customer, not Partner**

The EEC incentives are provided to customers, and the customer makes the decision about both which TES provider they will choose and also how to utilize their EEC dollars, provided that the results that the program is based upon occur. If a customer applies their EEC incentive dollars to reduce the rates that they will pay via a Contribution in Aid of Construction, then that reduces the capital investment and return that the TES service provider receives for the TES.

### **Transparency and Audit**

Information about incentives available is provided to customers. Presumably, in instances where a customer has entered into a competitive procurement process, that customer would start to ask questions if they were provided a different incentive estimate for exactly the same energy solution. It is conceivable that a customer would receive two different incentive estimates from the Companies' EEC team if the energy solutions being provided by the different TES service providers result in different levels of natural gas savings, as incentives are based upon the volume of natural gas avoided.

The FEU have proposed mechanisms for transparency and accountability that ensure that incentives provided through the Companies' EEC incentive are calculated fairly. The Companies have established an EEC Stakeholder group, to whom program plans and results are presented, and to which both Corix and members of ESAC were invited at the outset of the FEU's expanded EEC initiative. Further, the Companies file with the Commission a comprehensive EEC Annual Report, which is available to all participants in the Thermal Energy Service industry as it is posted online on the BCUC website, and also on the Companies' external website. All established EEC programs (with the exception of the occasional very limited pilot) have established terms and conditions which outline incentive amounts and which are posted publicly on either the Companies' website or on a program partners' website in cases where a program is being delivered in a partnership. Finally, the Companies' own Internal Audit department reviews the EEC activity every year to ensure that incentives are provided to program applicants that conform to the program terms and conditions for any given program.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 387

#### **124.0 Reference: Issue 3 Scope (c)**

#### **Exhibit B-2, Evidence of FEU, Appendix G- 6 – Expert Evidence of Habart and Associates Regarding Incentives**

#### **Guidelines for EEC Incentives**

124.1 Has Mr. Habart reviewed and provided an opinion on FEU's Proposed Guidelines for EEC on pages 155-156 of the FEI Evidence? If not, please provide his opinion.

#### **Response:**

Mr. Habart has reviewed the FEU proposed guidelines for EEC as referenced. His comments are below.

As noted in the "opinion letter" included in Appendix G of the Evidence, this general process is consistent with industry practices.

The guideline has four components:

- The first guideline confirms that programs are open equally to all customers. This is necessary both to encourage the widest participation in the programs and also to ensure that programs do not introduce distortions into the marketplace by excluding some customers.
- The second guideline provides an overview of the program development and application process that is followed by the EEC group. This guideline states that the program relationship is between the EEC group and the customer in terms of both the application and the incentive payment. If any third party is retained by the customer to facilitate the process, the relationship with the third party is strictly by the customer, not by the EEC group.
- The third guideline recognizes that EEC incentives are a useful marketing tool for third parties, but places the onus on the third parties to determine what incentive programs may be of value to them. While the FEU should make program information available to third parties, EEC does not have any responsibility to market the programs to third parties. This guideline recognizes that third parties are an important delivery channel for EEC/thermal energy services programs, but places the responsibility on the third party to participate as their business interests dictate.
- The fourth guideline provides a mechanism for third parties to provide feedback on the proposed guidelines, as the third parties are an important element in delivering EEC and they may be able to provide input to FEU to increase program effectiveness."



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 388

124.2 If the response to the above question is yes, has Mr. Habart assessed the Proposed Guidelines in the context of FEI owning, operating and maintaining the equipment as well as providing the EEC incentive?

**Response:**

Mr. Habart has considered the Proposed Guidelines in the context of FEI owning, operating and maintaining the equipment as well as providing the EEC incentive and believes that they are appropriate. His comments are below.

*"As noted in the response to the previous IR, there are two relationships in the EEC / TES ["thermal energy systems"] process, the relationship between [the] EEC [group] and the customer, which focuses on the EEC programs, participation criteria and incentives, and the relationship between the customer and a possible third party regarding the design and implementation of the project. However there is no relationship between the EEC [group] and the third party in this process. It is the responsibility of the customer to initiate and manage the relationship with the third party, regardless of whether the third party is FEI or a separate entity."*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 389

**125.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix G-5, FEU Response to ESAC  
IR 2.4.1**

**Guidelines for EEC Incentives**

"Moreover, as the proposed Thermal Energy for Schools Program has not yet been approved, the Companies' EEC team has not yet commenced program design for Thermal Energy for Schools, which would include the development of the terms and conditions for a Thermal Energy for Schools Program."

125.1 If the Commission approves TES for Schools in the 2012-2013 RRA, where will the terms and conditions for the Thermal Energy for Schools Program be reviewed and approved?

**Response:**

The program design for Thermal Energy for Schools and the development of its terms and conditions would be reviewed and approved by the FEU management. Should there be any program funding partners (such as other utilities or government) for the Companies Thermal Energy for Schools program once it is developed, terms and conditions would also need to be reviewed and approved by those partners. As is the case for all EEC programs, the FEU are open to having the terms and conditions reviewed by its EEC Stakeholder Group or by the Commission, should the Commission desire that degree of oversight, but wish to emphasize the importance of any review not delaying program launch to the detriment of customer participation in programs.

All program details of a Thermal Energy for Schools program, should the expenditure be approved by the Commission, and once the program is developed, including the program terms and conditions, would be publicly available through communication channels and program results listed in the Annual Report as is the Companies' practice for its other EEC programs today.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 390

**126.0 Reference: Issue 3 Scope (c)**

**FEU 2012-2013 RRA, Exhibit B-16, FEU Response to ESAC IR 2.4.4**

**Guidelines for EEC Incentives**

"Since the EEC funds being requested in this 2012-2013 RRA proceeding for Thermal Energy for Schools Program have not yet been approved by the Commission, program design for a Thermal Energy for Schools Program has not yet commenced and there is no program for Thermal Energy for Schools as yet. Therefore, there is nothing to be communicated to School Districts and other market actors. It is the Companies' practice, that once a program is developed, such as the Efficient Boiler Program (in which BC Housing, who is a customer of a member of ESAC, participated) various communications channels are used to make program details available:

- Information about all programs, with all terms and conditions, is placed upon the Companies' website;
- Program collateral, including information brochures, is produced and made available to customers and others through the FEU website;
- The FEU staff provide program briefings to industry groups through inclusion of material in industry group newsletters and presentations to meetings of industry groups; and
- The FEU staff participate in such trade shows as the School Plant Officials' Association, Buildex, Union of British Columbia Municipalities etc. at which program information is shared."

126.1 Has FEU presented information on EEC incentives for any TES projects, including Thermal Energy for Schools and Commercial Custom Design, at any trade shows or through briefings to any industry groups? If so, please specify the dates information was presented or provided, and provide copies of the information presented.

**Response:**

As noted in the response to ESAC IR 1.11.1, to the best of the FEU's knowledge, the FEU staff have not discussed the Thermal Energy for Schools program with any customers at this point in time. Conversely, independent of any discussion of or in relation to TES projects, the Commercial Custom Design Program has been presented at various times and venues while it has been in development. Some of these venues (the PowerSmart Forum, the Canadian Health Care Engineering Society convention and the Council of Education Facility Planners International Convention) are open industry forums that are typically attended by a wide range



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 391

of parties, such as customers and potential customers, and current and prospective suppliers to those customers, including suppliers of thermal energy services. These include:

1. BC Hydro PowerSmart Forum 2010. October 26, 2010.
2. Four (4) FEU sponsored and organized Architects Engineers & Developers information events:
  - a. Whistler, September 25, 2010
  - b. Parksville, April 16, 2011
  - c. Kelowna, June 11, 2011
  - d. Nelson, May 7, 2011
3. Canadian Health Care Engineering Society BC Convention. June 14, 2011
4. Council of Education Facility Planners International BC Convention. October 8, 2010

Please refer to Attachment 126.1 for copies of the information presented.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 392

**127.0 Reference: Issue 3 Scope (c)**

**FEU 2012-2013 RRA, Exhibit B-16, FEU Response to ESAC IR 2.5.7**

**Guidelines for EEC Incentives**

"The FEU staff that develop the thermal energy solution projects are in the Thermal Energy Solutions group, reporting to the Director, Business Development. The FEU staff responsible for administering the Efficient Boiler Program are in the EEC group, and in the Energy Products and Services group, reporting to the Director, Resource Planning and Market Development. Once an application for participation in the Efficient Boiler Program is received from a customer, it is reviewed by the Energy Products and Services Group. Then the application is forwarded to the EEC group, which ensures that all terms and conditions for the program are met, including that qualifying equipment has been installed, and issues the rebate cheque to the customer based on the program funding formula. All program details for all programs are available on the FEU's website, [www.fortisbc.com](http://www.fortisbc.com). The Thermal Energy Solutions group staff that might be involved in developing the actual thermal energy projects with a customer that would be a potential recipient of EEC incentive program funds, should that customer choose to work with the FEU, are not involved in the process of designing EEC programs including program terms and conditions, nor are they involved in approving customer incentive funding applications to EEC programs."

127.1 Who in the EEC group ensures that all terms and conditions for the program are met, including that the qualifying equipment has been installed, and who issues the rebate cheque?

**Response:**

This varies by program. In the case of mass-market residential programs, where a program could have many thousands of participants, the Companies have outsourced rebate processing to a third party service provider, and perform spot checks on compliance with terms and conditions. For the more complex programs, such as the Efficient Boiler Program, applications are reviewed by the Companies' Energy Products and Service staff (technical review), then by the Commercial EEC Program Area team (Marketing Program Specialist and EEC Program Manager) who ensure that all terms and conditions are met prior to preparing the rebate cheque requisition, and the rebate cheque requisition is signed off by the Manager, Energy Efficiency and Conservation, or by the Director, Market and Business Development, or potentially by the Vice-President, Energy Solutions and External Relations in accordance with the dollar thresholds outlined in the Companies' Expenditure Authority Policy.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 393

127.2 FEI asserts that the terms and conditions of the Thermal Energy for Schools program have not been developed, yet a rebate has been calculated and approved for the Delta School Board. Please reconcile these issues.

**Response:**

The rebate provided for the Delta Schools projects was delivered via the FEU's PSECA Initiative. The rebate was determined, as with all other PSECA participants, according to the method described in the response to BCUC IR 1.119.1.

127.3 Please comment on whether the following approval process would be feasible for FEU. The customer issues a Request for Proposal for a thermal energy system, the customer selects its preferred installer, owner and/or operator, and the customer applies for the EEC grant with the condition that the grant offsets the cost of the thermal energy system. If this is not feasible, please explain why.

**Response:**

This is feasible. When considering options, however, if a customer has not specified the specific energy solution in which they are interested, and receives different solutions from companies responding to the customer's RFP that result in different natural gas savings levels, the customer would need to contact the Companies' EEC team to who will determine the incentive amount for each solution received based on the amount of natural gas being avoided, and based on the established terms and conditions for the applicable program(s), and communicate that incentive back to the customer.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 394

**128.0 Reference: Issue 3 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix G-5, FEU Response to ESAC IR 2.6.5; FEU 2012-2013 RRA, Exhibit B-16, Response to ESAC IR 2.6.1**

**Guidelines for EEC Incentives**

"The EEC funding becomes available for PSECA applicants such as DSD [Delta School District] in the following manner: DSD first submitted an application and detailed energy study to the Climate Action Secretariat ("CAS") for internal CAS review and prioritization. The CAS then forwarded the energy study to the utility PSECA partners (FEI and BC Hydro). FEI reviewed the study to ensure reasonableness of the conclusions, and subsequently submitted each of the proposed energy conserving measures (i.e. the proposed thermal upgrade at each school) to the PSECA Initiative's screening and funding models. Each proposed upgrade was first subjected to a Total Resource Cost (TRC) screening. A portfolio of projects which maintain a TRC score of approximately 1.0 was then selected and incentives for each project developed. Incentives were determined based on the expected stream of natural gas savings. More specifically the incentives were calculated as 5 \$/GJ, on the discounted stream of the expected natural gas savings, over 50% of the measure life, up to a maximum of 10 years. This funding model also underlies the upcoming Commercial Custom Design Program, detailed on pages 86 – 89 of Appendix K-4 to Exhibit B-1, and is conceptually similar to other such dollars / GJ saved incentive programs found throughout the country."

128.1 Please provide details of the provision of EEC funding to Delta School Board including the amount of the incentive, the measures installed, the ownership of the equipment, other bidders for the work and all other pertinent information.

**Response:**

EEC funds have not yet been provided to Delta School District ("DSD") as the project is in development at this stage. The expected EEC funds that may be available to the DSD if the project proceeds based on assessments of the boiler upgrade projects as a whole are provided below:

School/Building	Energy Conserving Measure	Expected Savings (GJ)	EEC Incentive	TRC	SCT	PCT	UC	RIM
Annieville Elementary	High Efficiency Boiler	711.00	\$ 25,095.00	1.2	2.9	2.1	3.4	0.8
Heath Elementary	High Efficiency Boiler	317.00	\$ 24,000.00	1.1	2.5	1.7	3.4	0.8
Ladner Elementary	High Efficiency Boiler	242.00	\$ 15,000.00	0.7	1.6	0.9	3.4	0.8
Tilbury Facilities building	High Efficiency Boiler	680.00	\$ 18,635.00	0.8	2.0	1.2	3.4	0.8
Chalmers Elementary	High Efficiency Boiler	406.00	\$ 11,190.00	2.1	5.0	6.4	3.3	0.8
Cliff Drive Elementary	High Efficiency Boiler	425.00	\$ 8,540.00	1.3	3.2	2.5	3.3	0.8
Holly Elementary	High Efficiency Boiler	528.00	\$ 14,330.00	0.6	1.5	0.9	3.4	0.8
Portfolio	High Efficiency Boiler	3309.00	\$ 116,790.00	1.0	3.0	1.5	3.4	0.8

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 395

These amounts are for the DSD and FEI does not require the DSD to provide them to FEI as a Contribution in Aid of Construction or in any other fashion. The DSD qualifies for these incentives regardless of the ownership of the thermal energy systems, on the basis that the results described above will occur. Since the EEC funds are not dependent on ownership, the selection process that the DSD went through to choose a thermal energy provider is not relevant to this program. Further, the FEI is only aware of its own role and the discussions that it had with the DSD in the development of a thermal energy solution, and is not in a position to provide any insight into the selection criteria and process that the DSD engaged in.

DSD did not conduct a bidding process for thermal energy partners, as after developing the initial project concept, the FEU further refined the concept in conjunction with the DSD and Johnson Controls (who is now FEU's design build contractor on the project).

128.1.1 For each of the measures installed, please provide the expected savings and the associated calculated EEC incentive.

**Response:**

Please refer to the response to BCUC IR 1.128.1.

128.2 How do FEU calculate the project or capital cost of the project? Would it include the EEC incentive? For example if the utility spent \$1 million to purchase and install the equipment and the utility provided a \$100,000 EEC incentive, what would FEU calculate to be the project or capital cost of the project? Please provide the exact accounting treatment in this scenario.

**Response:**

For the purpose of TRC screening to determine if a project is eligible to receive an incentive, the FEU do not use potential EEC incentives to reduce or otherwise modify a given project's capital cost. The full cost of a proposed energy conserving measure is included in the TRC analysis. Similarly, in the determination of the magnitude of an EEC incentive, the FEU do not use potential incentives to reduce a given project's capital cost; the full cost of a proposed energy conserving measure is used. Refer to the response to BCUC IR 1.119.1 for additional details on how the incentives were determined under the PSECA Initiative.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 396

In reference to the example provided in the question, were a customer to spend \$1 million on an eligible project to which a \$100,000 EEC could be applied, the full \$1 million is used by the FEU in the assessment and determination of an incentive as the project's capital cost. Should the customer choose to use the \$100,000 EEC incentive as a contribution in aid of construction, the capital cost of the TES investment is correspondingly reduced and the customer would benefit from a lower service rate. There is no obligation on the part of the customer to make such a contribution however, and so long as they successfully implement the approved energy conserving measure(s) they may elect to use the incentive elsewhere, and in turn pay a higher rate.

128.2.1 Please provide a breakdown of the full project cost of the Delta School District Project including the EEC Incentive.

**Response:**

Please see the response to BCUC IR 1.128.2 for details on how EEC incentives are treated versus project costs, and the response to BCUC IR 1.128.1 for details on the EEC incentives that the DSD is eligible to receive based on expectations for natural gas savings. Any EEC that the DSD receives as a result of the installation of the boilers at those sites belongs to the DSD who will not provide the funds back to the FEU as a Contribution in Aid of Construction against the project costs.

For the project, the DSD did receive \$1.357 million from the PSECA third call and the DSD is choosing to provide this capital towards the project as a Contribution in Aid of Construction upon successful completion of the project. Consistent with standard regulatory practice, CIAC reduces the capital investment of the utility (reducing the return for the utility as well).

Projects, such as this one, will be subject to Commission review as part of the regular course of regulation subject to the General Terms and Conditions 12A for TES.

128.2.2 Please provide the accounting treatment of the purchase and installation of the project and the provision of the EEC grant within the Companies.

**Response:**

Please refer to the responses to BCUC IRs 1.128.1 and 1.128.2.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 397

128.3 Did the Delta School District put the project out for competitive tender?

**Response:**

No.

128.4 What is the estimated annual utility bill savings for the DSD?

**Response:**

Projects, such as this one, will be subject to Commission review as part of the regular course of regulation subject to the General Terms and Conditions 12A for TES. The FEU believe that the AES Inquiry should be focused on general principles, rather than project details.

128.4.1 What is the estimated payback period for DSD for the cost of the project based on their estimated utility bill savings?

**Response:**

Please see the response to BCUC IR 1.128.4.

128.5 Did BC Hydro review the energy study and reject the project? If not, why did FEI and not BC Hydro undertake the project?

**Response:**

To the best of the FEU's knowledge BC Hydro was offered the project but did not perform a detailed review due to the nature of the proposed upgrades which, while significantly reducing natural gas consumption, increase electricity consumption versus the existing condition. As

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 398

such the project ran counter to the objectives of BC Hydro Power Smart, preventing its participation from the outset. Similarly, upon detailed review the FEU found that funding could not be provided for the proposed heat pump based HVAC upgrades as these systems did not produce an acceptable TRC score. The FEU's incentive funding is limited to boiler upgrade projects alone.

128.6 Has BC Hydro reviewed and accepted other PSECA projects for DSM incentives? Please list the projects, the incentives provided, and under which BC Hydro DSM program they have been funded.

**Response:**

BC Hydro was a signatory to Public Sector Energy Conservation Agreement and contributed to numerous energy efficiency projects submitted via the PSECA program, operated by the Climate Action Secretariat. The FEU are not, however, in possession of a detailed list of all incentives BC Hydro provided to PSECA participants.

128.6.1 By what methodology does BC Hydro calculate its DSM incentive grants for PSECA projects?

**Response:**

The FEU are not aware of the specific methodologies employed by BC Hydro in the determination of the incentive grants it made available pursuant to its involvement with PSECA.

128.7 Please provide the working EEC spreadsheets for the Societal Cost Test and the Total Resource Cost Test for the Delta School District Project.

**Response:**

Please refer to Attachments 128.7a and 128.7b.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 399

Note that the Utility Cost Test, Participant Cost Test and Ratepayer Impact Measure scores provided in Attachment 128.7b do not match those of Attachment 128.7a, as the former spreadsheet has been adapted to suit the Societal cost test. The reader should refer to Attachment 128.7a for the correct values for the Utility Cost test, Participant Cost test and Ratepayer Impact Measure.

128.8 Please provide the results of the Participant Cost Test, the Utility Cost Test and the Ratepayer Impact Test for the Delta School District Project.

**Response:**

Please refer to the response to BCUC IR 1.128.1.

128.9 Please provide the TRC score for each of the separate measures installed as part of the DSD project.

**Response:**

Please refer to the response to BCUC IR 1.128.1.

128.10 In the materials provided by ESAC in IR 2.6.1, the Project Cost is listed as \$4.9 million and the EEC Incentive is listed as \$800,000. Please update all figures if these are no longer accurate.

**Response:**

Please see the responses to BCUC IRs 1.128.1 and 1.128.4.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 400

128.11 Is the \$800,000 EEC incentive comprised of \$100,000 from the Efficient Boiler program and \$700,000 from the PSECA program? If not, under which EEC Programs is the incentive provided?

**Response:**

Note that the total EEC incentive provided to the Delta School District is not \$800,000. Please refer to the response to BCUC IR 1.128.1 for additional details including a breakout of the provided EEC incentive. The entirety of the incentive is provided via the FEU's PSECA Initiative.

128.12 Was the \$700,000 calculated by the funding formula \$5/GJ saved? If not, what formula was used to estimate the incentive funding?

**Response:**

Note that the total EEC incentive provided to the Delta School District is not \$800,000. Please refer to the response to BCUC IR 1.128.1 for additional details including a breakout of the provided EEC incentive. The incentive was determined based on the formula described in the excerpt above and in the response to BCUC IR 1.119.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 401

## Section 8 Guidelines

**129.0 Reference: Issue 1 Scope (a) (b), Issue 2 Scope (a)**

**Exhibit B-1 FEU Submission dated June 19, 2011, pp. 2, 3; Tab 5**

**Order G-141-09, 2010/11 Negotiated Settlement, Section 13, pp. 7-9**

**Exhibit B-2, Evidence of FEU, Sections 3.4, p. 69 and Section 8, pp. 160, 162, 167**

### **Regulatory Process for Approving AES**

129.1 The 2010/11 Negotiated Settlement approved by Order G-141-09 at page 8 states that the CPCN threshold of \$5 million applies to AES projects brought forward in 2010 and 2011. Does this threshold criterion apply only to extensions of a public utility plant or system, or also to the construction of a public utility plant or system that is not an extension. Please explain your response in the context of section 45 of the *UCA*.

### **Response:**

In the FEU's view, the provision under which the Commission has, to date, issued CPCN thresholds is section 45(5), which provides:

*(5) If it appears to the commission that a public utility should, before constructing or operating an extension to a utility plant or system, apply for a separate certificate of public convenience and necessity, the commission may, not later than 30 days after construction of the extension is begun, order that subsection (2) does not apply in respect of the construction or operation of the extension.*

This provision operates in tandem with section 45(2), which provides that a public utility has a deemed CPCN to construct and operate *extensions* to a public utility plant or system, so long as the public utility was operating the system on September 11, 2008. What section 45(5) allows the Commission to do is to order that the deemed CPCN in subsection (2) does not apply in respect of certain *extensions*. A CPCN threshold is just an order, pursuant to section 45(5), that extensions that exceed a cost threshold require CPCNs notwithstanding the deemed CPCN that is conferred by section 45(2).

Since section 45(5) only applies to extensions to a utility plant or system, CPCN thresholds established under this provision only apply to utility plant or system *extensions*. As FEI made clear in the 2010-2011 RRA, TES are normally going to incorporate natural gas as part of the energy solution (see p. 261 of FEI's 2010-2011 RRA), and are therefore attached to, or an extension to, the existing system.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 402

In order to exempt TES that are not extensions of the natural gas distribution system through a threshold provision that excludes CPCN review for projects under a certain dollar amount, the Commission would need to rely on section 45(4), which requires that the Commission effect the exemption through "regulation".

129.2 FEU propose a CPCN threshold of \$5 million apply for TES, NGV and biomethane projects commencing 2012. Please explain the basis for this amount, particularly considering the relatively small size and unique nature of these projects. Please specifically address the use of this amount for TES projects, considering that "TES Service is a different class of service within FEI."

**Response:**

The rationale for a CPCN threshold for a large public utility is that such companies typically undertake a large number of capital projects in any given year, and the threshold is meant to manage the regulatory burden that would arise if all such projects were subject to CPCN applications. Requiring the utilities to pursue CPCNs for all new construction and extensions is impractical and not cost effective. The CPCN threshold thus results in direct benefits to customers, who would otherwise absorb the regulatory costs. At the same time, customers remain protected from imprudently incurred costs, as the costs associated with ongoing capital projects below the threshold are transparent to the regulator and interveners through revenue requirement proceedings.

The FEU have proposed the use of a \$5 million threshold on the basis that this amount is consistent with present practice. The FEU believe that the CPCN process would overly burden the development of smaller projects with administrative expenses related to filing CPCN's and result in unnecessarily higher rates for TES customers. For projects between \$1 million and \$5 million, the FEU have proposed guidelines that establish that the FEU will file a project description, estimated project costs, and information to facilitate the assessment of the proposed thermal energy charge and rate design. The FEU submit that this approach ensures the appropriate level of regulatory oversight for smaller and less complex projects, and ensures that more complex projects requiring larger utility investments receive the regulatory scrutiny that comes with CPCN review.

Significant public interest issues that would be raised in a CPCN application are being addressed in this Inquiry, and the FEU are hopeful that appropriate determinations in this Inquiry will avoid the need to continually revisit some of these broader issues for each TES project application.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 403

129.3 In the opinion of FEU, would a service provider who does not operate a gas distribution system in the area be able to claim that its TES, NGV or biomethane project is an extension of a public utility plant or system and hence be eligible for a deemed CPCN? Please identify any circumstances where they likely could demonstrate such a project is an extension.

**Response:**

The FEU submit that the answer to this question is "no". The "deemed CPCN" provision is section 45(2), which reads as follows:

*(2) For the purposes of subsection (1), a public utility that is operating a public utility plant or system on September 11, 1980 is deemed to have received a certificate of public convenience and necessity, authorizing it*

*(a) to operate the plant or system, and*

*(b) subject to subsection (5), to construct and operate extensions to the plant or system.*

As FEU understand the scenario described in this information request, the "service provider" does not own or operate the distribution system that it is connecting to. In this scenario, based on the language of section 45(2), it is the operator of the natural gas distribution system that has a deemed CPCN for extensions to its system, not the third party "service provider" who is described in this example. In other words, it is only the "public utility that is operating a public utility plant or system on September 11, 1980" that is deemed to have a CPCN authorizing the construction of extensions. Other parties who wish to construct extensions to the public utility's distribution system do not have deemed CPCNs.

129.4 Where a service provider cannot demonstrate that a TES, NGV or biomethane project is an extension, is the provider obliged to obtain a CPCN before beginning construction or operation of the facilities?

**Response:**

Yes. Please refer to the response to BCUC IR 1.129.3. Only a "public utility that is operating a public utility plant or system on September 11, 1980" has a deemed CPCN to construct



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 404

extensions to existing utility plant or system, and consequently service providers who do not meet this criterion who wish to construct or operate TES, NGV or Biomethane projects require CPCNs, subject to any thresholds or exemptions established by the Commission. Section 45(4) permits the Commission to make an order exempting a project or type of project, and give it the power of a regulation by depositing it as a regulation.

Regardless of whether the Commission determines to require a CPCN to such "non-extension" projects, the FEU believe that the review process should be adapted and flexibly applied depending on the size of the project. Undertaking a significant process for a small project will not be cost effective for the customer.

- 129.5 Please discuss whether the utility that operates a gas distribution system has a competitive advantage for the construction and operation of a TES, NGV or biomethane project, relative to other service providers.

**Response:**

The FEU assume that this question is asking about whether the FEU have a competitive advantage by virtue of the fact that it operates a gas distribution system, as opposed to whether the FEU generally speaking has a competitive advantage in these markets. To draw out this distinction, the FEU believe that it has various competitive strengths that are the result of prudent management, experience and other attributes that are not inherently tied to the fact that the FEU operates a gas distribution system. The FEU's competitors, such as Corix, have their own competitive strengths. The FEU assumes that this question is not asking about these kinds of attributes, but rather any specific advantages the FEU may enjoy as operator of the gas system. The FEU do not believe that any such competitive advantages exist, as the regulation of the natural gas class of service, and all of the New Initiatives, ensure that the FEU charges just and reasonable rates on a level regulatory playing field with other market players. The FEU believes that the greatest potential for an unfair competitive advantage would be the potential for the FEU, as operator of the natural gas system, to create barriers to entry into these markets by denying competitors access to the natural gas system, or unduly discriminating against competitors in providing access to the system. This is not occurring.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 405

129.6 Please identify any material reason that would warrant more extensive requirements for other providers of TES, NGV and biomethane projects, relative to the requirements for FEU, under section 45 of the *UCA*.

**Response:**

On the basis of BCUC IRs 1.129.3 and 1.129.4, the FEU assume that this question is based on the premise that the FEU have a deemed CPCN for extensions to its utility plant and system under section 45(2) of the *UCA*, and that the Commission wants to understand why those persons who do not have deemed CPCNs should be subjected to more rigorous regulatory review. The FEU do not propose that other providers be subjected to more extensive requirements than would be applied to the FEU. On the contrary, the FEU believe that regulatory process relating to these initiatives should be cost effective no matter who the applicant is or what approvals are sought. Ultimately customers will benefit from efficient processes that minimize the impact on their rates.

129.7 Is one way to equally apply the requirements under section 45 of the *UCA* to require all service providers to obtain a CPCN for all TES, NGV and biomethane projects?

**Response:**

The FEU note that, unlike third-party providers of NGV fueling service are not regulated, the FEU are regulated. Thus, to apply the requirements equally for NGV Service, it would involve exempting the FEU from the requirements.

With respect to Biomethane and TES projects, one way to "level the playing field" with third parties that do not have a deemed CPCN would be to impose CPCN requirements on the FEU as well. However, the approach in the question appears to place "leveling the playing field" above cost effectiveness considerations for the customers of any of these projects regardless of the provider. These are relatively small projects, and the costs associated with regulatory processes relating to those projects (regardless of the provider) are typically going to be captured in cost of service rates charged to the customer. The FEU submit that customers of all providers will benefit from processes, applicable to all providers, that are commensurate with the smaller size of the projects, rather than apply more onerous regulatory process uniformly vis a vis all possible providers with the objective of "leveling the playing field." In this Inquiry, the FEU have recommended guidelines that only apply to the FEU, as this is what the Commission has asked for. This should not be confused with the FEU seeking different or preferential treatment under the *Act*. Please see the response to BCUC IR 1.129.6.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 406

129.8 Considering that FEU must apply for approval of a service contract and rate for each TES, NGV and biomethane project that typically will be unique to the project, how much additional burden would it be for FEU to obtain a CPCN for each project? In the response, please include an outline of the material that would need to be added to a typical service contract and rate application in order to expand it so that it also requests a CPCN, and the amount of effort and cost to develop this information.

**Response:**

Generally speaking, the additional "material" that is prescribed by the Commission's CPCN guidelines would be information about project need, justification, consultation, project description (beyond that proposed in the FEU's guidelines), provincial energy policy considerations, and new service areas. As described in the response to BCUC IR 1.54.3, the FEU do not believe that it is necessary to file alternatives analysis in respect of the New Initiatives when the solution has been negotiated with the customer. The amount of cost depends entirely on how much detail the Commission chooses to require for these projects, or whether the Commission would apply the CPCN Guidelines flexibly to reflect the size of these projects. Further, responding to numerous information requests on the areas covered by CPCN Guidelines, combined with PACA funding for intervenors to ask information requests, are a significant contributor to the cost of regulatory review.

The FEU are hopeful that one of the outcomes of this Inquiry will be determinations regarding several of the more substantial issues regarding alternative energy projects. To the extent that these issues are addressed in this Inquiry, and the Commission agrees to streamline the future approval processes accordingly, the corresponding cost burden on customers will be reduced and there could be very little difference in cost relative to filing the contract.

Ultimately, the FEU believe that the most important thing is to ensure that the process is efficient, irrespective of the sections of the *Act* the FEU are applying under. The FEU believe that a CPCN is unnecessary to provide the necessary oversight to protect customers. However, even if the Commission decided to require a CPCN for all such projects, the FEU are hopeful that the Commission would see value in applying the CPCN guidelines flexibly to reflect the size, scope and complexity of the project at issue. That is in the best interests of the customers that pay the costs of the regulatory process.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 407

129.9 Section 45(4) of the *UCA* appears to empower the Commission, by regulation, to exclude TES, NGV and biomethane utility plant from the need for a CPCN. Does FEU believe that the Commission should enact such a regulation for all TES, NGV and biomethane utility plants, whether developed by FEU or other providers? If not, please identify such utility plant that should not be excluded from the need for a CPCN, and explain why not.

**Response:**

As set out in the FEU's proposed guidelines, the FEU believe that it is appropriate to apply the Commission approved threshold to TES, NGV and Biomethane projects as is done today with all natural gas projects. The same regulatory efficiency and cost effectiveness rationale that supports having a streamlined process for the FEU's smaller (under \$5 million) projects would apply to any regulated project brought forward by any other third party. One way to accomplish this is the use of the power under section 45(4) to exempt certain projects from the CPCN requirements regardless of the provider. The other is to leave the CPCN requirements as is and set guidelines that ensure that the Commission review remains cost effective regardless of the type of approval sought or the party seeking it.

Note that, unlike the FEU, a third party would not need any regulatory approvals to provide NGV fueling service as the service is unregulated when provided by a non-utility.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 408

**130.0 Reference: Issue 1 Scope (a) (b), Issue 2 Scope (a)**

**Exhibit B-2, Evidence of FEU, Sections 3, pp. 60-61 and Section 8, pp. 167-8**

**Applications under Sections 44.2 and 45/46 for TES, NGV and Biomethane Projects**

130.1 In Chapter 3, FEU set out the criteria that the Commission must consider when reviewing an application for approval of an expenditure schedule under 44.2 and an application for a CPCN under sections 45 and 46. In Chapter 8, FEU propose that TES projects costing more than \$5 million will follow the normal CPCN process, that for projects estimated to cost between \$1 and \$5 million FEU will file a brief description of the project and its cost, and for projects estimated to cost less than \$1 million it will file an estimate of net project costs to serve the customer. FEU may request approval of an expenditure schedule under section 44.2 for any project that falls below the CPCN threshold. Please confirm or correct the foregoing summary.

**Response:**

Confirmed.

130.2 Please confirm that the Commission may require FEU to obtain a CPCN for a project notwithstanding that FEU has applied for approval of an expenditure schedule for the project.

**Response:**

Confirmed.

130.3 Please compare and contrast the expected differences in the information required in the application and the process to review an application for approval of an expenditure schedule, compared to a CPCN application.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 409

**Response:**

In general, expenditure schedules are required to set out a statement of anticipated expenditures for a given period of time, and apart from that there are no specific requirements apart from what is prescribed in section 44.2(1). The Commission's 2010 CPCN Guidelines require specific information for CPCNs, but it is expected that they will be applied flexibly. The Commission ultimately has control over its process, and there are no hard and fast rules that one type of application will necessarily have more or less process than the other. The process for reviewing either type of application depends on the size of the project (or expenditures), whether there are issues contested by interveners, and the needs of the Commission.

For clarity, the FEU are attempting to take a principled, rather than legalistic approach to the review of these projects. We understand that the Commission can require CPCN's for any project, and will do what the Commission determines is appropriate. When we are saying in proposed guidelines that we will file for a CPCN for projects over \$5 million, we are (1) recognizing that the Commission has expressed a desire to have CPCN's filed for any project over \$5 million, which would presumably also apply to TES projects, (2) conveying our intention to provide the level of information in support of an application over \$5 million that is prescribed by the CPCN guidelines; and (3) advocating that the information requirements and process should be adjusted from that set out in the CPCN Guidelines for projects smaller than \$5 million to ensure that whatever process is undertaken (and pursuant to whatever section under the Act the Commission considers appropriate – sections 45, 44.2 or 59-61), it is efficient and cost effective for customers.

130.4 What criteria do FEU intend to use to determine whether or not to apply for approval of an expenditure schedule under section 44.2?

**Response:**

The FEU have applied for expenditure schedules for the Biomethane, NGV and TES projects to date because these are New Initiatives and section 44.2 engages public interest considerations in a way that a simple rate approval would not. Going forward, the FEU will balance the cost of making such applications against the benefit of doing so. There should be less need to review public interest considerations once some projects have been reviewed, and in depth regulatory processes for relatively small projects can strain the viability of these initiatives. Regardless of the type of approval sought for smaller projects (whether a CPCN, s. 44.2 acceptance, or rate approval), the level of information required by the Commission should account for the desirability of cost effective processes that will achieve reasonable regulatory oversight.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 410

130.5 Please discuss whether it is generally a fair comparison that an expenditure schedule under section 44.2 provides a utility with the same risk reduction as a CPCN under sections 45 and 46, without providing the Commission with jurisdiction to prevent the utility from making the capital expenditure. If FEU believe this not the case, please explain.

**Response:**

The question appears to imply that the course proposed by the FEU is depriving the Commission of the ability to exercise control over these New Initiatives. In fact, the opposite is true.

The Commission has held that EEC expenditures must be subject to an approved expenditure schedule.

With respect to Biomethane, NGV and TES, the Commission has the jurisdiction to require a CPCN for any system extension, but also has the jurisdiction not to do so. The Commission has a long-standing practice of adopting a minimum threshold for requiring CPCN applications from the large utilities it regulates, which for the FEU is \$5 million. This threshold is used out of practical necessity, as requiring public utilities to apply for every system extension, regardless of size, would be very costly for customers and would be unworkable.

The Companies routinely manage significant capital expenditures below the CPCN threshold as part of the capital approved in revenue requirements applications, without seeking expenditure schedules or CPCNs. The FEU have applied for expenditure schedules for the Biomethane, NGV and TES projects to date because these are new initiatives that are less than the CPCN threshold. Since these are new initiatives, the Companies believe that even though these projects were below the existing CPCN threshold it is in the interests of all stakeholders to use section 44.2 as a means of engaging a review of public interest considerations in a way that a simple rate approval would not (rate approvals are subject to the "just and reasonable" test, not "public interest").

Going forward, the FEU will balance the cost of making such applications for expenditure schedule approval against the benefit of doing so. There should be less need to review public interest considerations once some projects have been reviewed, and in depth regulatory processes for relatively small projects can strain the viability of these initiatives. This principle is true regardless of what section of the *Act* that is engaged.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 411

**131.0 Reference: Issue 1 Scope (a); Issue 1 Scope (b)**  
**Exhibit B-2, Evidence of FEU, Section 8.2, p. 164**  
**Current Thermal Energy Systems**

FEU state on page 164:

"2. With respect to the interests of natural gas customers:

(a) The interests of natural gas customers are protected through the application of appropriate cost allocation methodologies, and through the segregation of the two classes of service (i.e. natural gas and TES) as required by the *UCA*, with TES costs of service being recovered from TES customers.

(b) Natural gas customers benefit from an allocation of indirect/overhead costs to TES, which would otherwise be recovered in natural gas rates.

(c) Natural gas customers benefit from additional gas throughput associated with a TES project that incorporates natural gas as part of the energy solution. Considerations relating to the load-factor associated with such natural gas load, and how that drives capital investments in natural gas facilities, should be addressed through FEI's Phase "B" Rate Design Application that will occur in 2012 and other future rate design applications over time."

131.1 If there were no slack or idle resources in the natural gas utility for indirect/overhead costs and any work required from TES was incremental and appropriately charged back to thermal energy system customers, would it be possible to conclude that natural gas customers would experience no or little benefit in cost reduction?

**Response:**

No, FEI does not agree with the statement made in this IR. First, it is not correct to characterize FEI as being or having a separate natural gas utility. Second, FEI does not agree that there are any slack or idle resources involved in its provision of natural gas service. FEI is describing a better utilization of overhead resources, and the beneficial effects for natural gas customers. Overheads are, by their very nature, required for the natural gas business and adding a small TES business is not increasing the overheads. For instance, we still require head office facilities and a member of the executive overseeing business development. Overhead costs are applied to all classes of service and with the addition of TES there is a reduction in the allocation of certain overhead to the natural gas class of service. The higher gas throughput decreases the delivery charge on a per GJ basis for customers that have this component in rates.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 412

131.2 Item (c) indicates that natural gas customers benefit from additional gas throughput associated with a TES project.

**Response:**

Correct. Gas delivery costs are shared over more GJs of natural gas, thus reducing the delivery charge per GJ (Section 5.3.1, page 88, of the Evidence).

131.2.1 If the new thermal customer was an existing natural gas customer, would it be reasonable to conclude the new thermal consumption would reduce the delivery sales of the natural gas consumption?

**Response:**

Customers are seeking new energy solutions in order to improve their energy efficiency and reduce their carbon footprint; it is those customers that are interested in a different energy solution that are typically the target market for TES. If an existing natural gas customer that uses natural gas for space and/or water heating converts to an energy system that utilizes renewable thermal energy in combination with natural gas, that customer would continue use more natural gas than would a customer who converts to an energy system that utilizes renewable thermal energy without incorporating any natural gas for space or water heating.

For more discussion regarding the impacts of TES on natural gas demand and the potential impact on the FEU's delivery margin and customer rates, please see the responses to BCUC IRs 1.63.2 through 1.63.5, and 1.63.9.

131.3 Should setting the appropriate rate for a thermal customer (in the case where the utility passes on the cost of electricity and natural gas to the customer) also include setting an appropriate charge for the natural gas peak demand cost of service so the thermal customer would be priced at the appropriate rate when it first takes thermal service? Please elaborate.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 413

**Response:**

No. As far as a TES project's gas or electricity consumption is concerned, the project is a customer of the natural gas class of service or the electric utility. The rates for natural gas and electricity are the subject of separate rate design processes. Those processes involve consideration about consumption characteristics such as load factors.

Given that TES is in the early stages of development, more time is needed for FEI's TES class of service to grow to a reasonable size to provide enough data on peaking / back-up natural gas usage characteristics that will inform any review of natural gas rates in the future. The issue of peak or backup natural gas rates for customers will be canvassed as part of Phase B of the FEU's upcoming rate design process. While the FEU will examine the issue at that time, it may still be premature to make recommendations on peak period rates, depending on the usage history from TES customers, and the implications of such rates on all of the FEU's customer classes.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 414

**132.0 Reference: Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, pp. 3-7**

**Regulation of Discrete Thermal Energy Systems**

Pages 3 to 7 of the EES Consulting report includes a section on "Background on TES/District Energy Utilities". The EES Consulting report does not appear to mention Discrete Thermal Energy Systems as contemplated by FEU as described in Exhibit B-2, Section 6.1.1, page 102.

132.1 Is EES Consulting aware of any Discrete Thermal Service that is regulated as a public utility in North America? If so, please elaborate and provide details on the regulatory framework and the setting of rates.

**Response:**

The following response is provided by EES Consulting.

In its research EES Consulting did not distinguish between Discrete Thermal Service and other types of services providing steam to customers. While some of the systems do appear to include some discrete systems within a broader steam service offering, EES Consulting does not believe that such a distinction is necessary when considering the regulatory precedent of other regulated steam systems.

132.2 Is EES Consulting aware of any Discrete Thermal Service owned by a third party on a customer's site that is not regulated in North America? If so, please elaborate at a high level on how these business transactions are carried out and how charges are set.

**Response:**

The report lists many examples of non-regulated providers in North America, some of which provide discrete thermal service. Our research did not consider discrete thermal service separately from other thermal service. As stated in the report, the non-regulated utilities generally do not provide a publicly available rate schedule for steam service and we therefore assume that they negotiate rates with each customer in a fashion to maximize profit.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 415

**133.0 Reference: Issue 1 Scope (b)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, p. 9**

**Regulation of Discrete Thermal Energy Systems**

Page 9 of the EES Consulting report states: "In the case of Puget Sound Energy, there is a single legal entity for gas and electricity, and rate cases are filed jointly. However, revenue requirements are distinct for each product class and a separate cost of service is used for gas and electricity."

133.1 Please confirm that Puget Sound Energy has a Natural Gas Tariff and an Electric Tariff for the two product classes.

**Response:**

Puget Sound Energy delivers electric and natural gas services to customers in its service territory and since these service products are different, Puget Sound has electric and natural gas tariffs for billing purposes. The natural gas customers are billed based on the number of therms of energy they consume while electricity customers are billed according to the number of kWh or kW consumed. Customers in the same electric or natural gas tariff class pay the same rate (postage stamp) irrespective of location in the State.

133.2 Prior to the Inland Natural Gas Co. purchase of the Mainland Gas Division from BC Hydro in 1988, did BC Hydro have a Natural Gas Tariff separate from the Electric Tariff?

**Response:**

Yes, when BC Hydro operated its natural gas division it had tariffs for the natural gas sales business and separate tariffs for the electricity sales business.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 416

**134.0 Reference: Issue 1 Scope (a); Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, pp. 10-11**

**Product class rate base and rate of return**

The EES Consulting report on page 10 states:

"Customers within each product class are protected through regulatory oversight in several different ways. Each product class has its own regulatory oversight with approval required for new capital projects, rate of return, rate base, revenue requirements, sales forecasts and rate design."

The EES Consulting report on page 11 states:

"The rate of return is determined separately for each product class, subject to regulatory approval, and depends on the risks and other circumstances of that product class. This means that the natural gas is not penalized by the fact that the FEU is starting the TES product class. Similarly, the TES rate of return and business risk is not lessened by any guarantees from the natural gas or electric product classes. The TES might benefit through a proven management structure and expertise that carries over to the TES product class. However, that does not take anything away from the natural gas product class and therefore will not harm the natural gas customers."

134.1 Can EES Consulting confirm that in a single public utility each product class would have its own rate base?

**Response:**

EES was not asked to look at this particular issue as part of their report that was included in Appendix F-6 of the Evidence.

To answer this particular question, the FEU obtained an opinion from Foster Associates Incorporated. See Attachment 134.1 for the response from Foster Associates and copy of the qualifications of Ms. Kathleen McShane.

134.1.1 If so, within the same product class does the whole product class have the same rate of return? Please elaborate with examples.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 417

**Response:**

The Following response is provided by EES Consulting.

A whole product class would generally have the same rate of return. The EES Consulting did not research the rates of return of the different product classes for various utilities, and as a result we do not have specific examples of rates of return applied to a particular product class.

134.1.2 If so, may a single product class have two rate bases for two different service areas? Please elaborate with examples.

**Response:**

The following response is provided by EES Consulting.

In EES Consulting's experience, a single product class may have separate rate bases for different service areas. These different rate bases would be comprised of some accounts that are directly assigned to each service area and some accounts that are allocated between the different service areas. In fact, within the FEU there are different service areas that have had separate rate bases in the past. For example, Fort Nelson has a separate rate base within FEI and is also providing natural gas service to customers.

134.1.3 Please provide detailed examples of where a single public utility that has separate rate of returns for each product class.

**Response:**

The EES Consulting report did not include specific research as to the rates of return of the different product classes for various utilities. However, please see the response to BCUC IR 1.134.1 where this response is addressed.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 418

134.1.4 Also provide examples of a single public utility with different or same interest rates on its debt for each product class.

**Response:**

EES Consulting report did not research the interest rates of the different product classes. However, please see the response to BCUC IR 1.134.1 where this response is addressed.

134.1.5 Also provide examples of a single public utility with different or same capital structure (debt and equity) for each product class.

**Response:**

The EES Consulting report did not include specific research as to the capital structure of the different product classes for various utilities. However, please see the response to BCUC IR 1.134.1 where this response is addressed.

134.2 Is EES Consulting aware of any utility that sets its tariff rates and cost recovery based on a deferral account (e.g. thermal energy services) instead of utilizing traditional rate base accounts and other operating accounts? If so, please elaborate.

**Response:**

The following response is provided by EES Consulting.

It is not uncommon to have some deferral accounts within a utility rate structure. Deferral accounts are often used for DSM expenditures and large capital projects under construction or on hold. Deferral accounts were also used in the case of FEVI due to the start up nature of the utility. Please see EES Consulting's response to BCUC IR 1.134.3 for the rationale for deferral accounts in the context of a new utility initiative.

To supplement EES findings, the FEU also asked Foster Associates for an additional opinion on this matter. Please see Attachment 134.2.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 419

134.3 Does EES Consulting consider that it would be appropriate to set thermal cost of service based rates based on traditional rate base accounts and revenue requirements instead of a deferral account that would allow for transparency, performance reporting, and proper documentation? Please elaborate.

**Response:**

EES Consulting believes that in this case the use of a deferral account is appropriate due to the immature nature of the utility class of service. This is a unique situation and is unlike the many utilities we work for that are well established and use traditional rate base accounts. As with many start up endeavors, the TES project is cost-effective over the long-term but faces large start up costs and suffers from short term cash flow issues. It is important that time is allowed to establish a sufficient customer and revenue base before setting rates based on a full traditional rate base. The deferral account type mechanism allows for this extra time.

134.4 Order G-51-03 approved for Terasen Gas Inc. a Performance-Based Rate (PBR) Plan to set rates for 2004-2008. The gas utility has had a number of PBRs throughout its history.

134.4.1 How will the establishment of a thermal energy service class of service affect the ability of the gas utility to implement PBR as a rate mechanism to incent the gas utility to operate efficiently and effectively? Please discuss the anticipated challenges that may occur.

**Response:**

It should not affect the ability to implement PBR for the gas class of service.

Section 60 (c) of the *UCA* states that if the public utility provides more than one class of service the commission must segregate the various kinds of service into distinct classes of service.

60 (c)

*If the public utility provides more than one class of service, the commission must*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 420

- (i) *Segregate the various kinds of service into distinct classes of service,*
- (ii) *In setting a rate to be charged for the particular service provided, consider each distinct class of service as a self contained unit, and*
- (iii) *Set a rate for each unit that it considers to be just and reasonable for that unit, without regard to the rates fixed for any other unit.*

In setting a rate to be charged for the particular service, the commission must consider each distinct class of service as a self-contained unit. The rate then is to be just and reasonable for that unit without regard to the rates fixed for other units.

With the foregoing as background it is possible to have a PBR for the natural gas of service while having traditional cost of service regulation for the Thermal Energy Service class of service, since each class of service will have separate rate base and cost of service. FEI previously had an analogous situation within the natural gas class of service in which the PBR approved by Order No. G-51-03 applied to the Lower Mainland, Inland and Columbia service areas but excluded Fort Nelson. A similar PBR process could apply to the current natural gas service and exclude the Thermal Energy Service class of service. Once the TES business is established, a separate PBR could, in theory, be established for that class of service as well.

Any allocation from the natural gas class of service to the TES class of service is simply another line item in the total natural gas revenue requirement (in this case, a cost reduction). A cost item like this can be considered as an input in any regulatory model.

PBR is a very flexible form of regulation and can vary from a narrowly focused PBR that only targets costs in certain categories to a very broadly-based PBR, such as a price cap approach which allows the utility broad latitude in pursuing efficiencies in many or all areas of its cost structure. PBR plans typically include some pass-through elements. For example, FEI's load and revenue forecast was a pass-through in the 2004 – 2009 PBR. In the context of two classes of service, a PBR for FEI in the future would need to give explicit consideration to which areas of the utility cost structure are desired to be incented in one or both classes of service and structure the pass-through elements and other PBR design features to accomplish the desired result.

134.4.2 Is it possible to have a PBR mechanism for the gas revenue requirements if the two classes of services operated as an integrated energy utility? Please elaborate.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 421

**Response:**

The natural gas service is a separate class of service from the Thermal Energy Service and therefore has a separate rate base and separate rates. Therefore, it is possible to have a PBR for the natural gas class of service only, the TES class of service only, or both classes of service. Please also see the response to BCUC IR 1.134.4.1.

134.4.3 Is it possible and/or easier to have a PBR mechanism for the natural gas revenue requirements if the two classes of services operated as two separate operating divisions? Please elaborate.

**Response:**

It is possible to have a PBR in either scenario, and is no easier or more difficult in the case of either model.

The separation by class of service is sufficient to develop a PBR mechanism for the natural gas class of service independently of the TES class of service. The natural gas service would have a separate revenue requirement based on a separate cost of service (operating and maintenance costs, depreciation, taxes and return on rate base). In the TES class of service, the overall revenue requirement and revenues would be comprised of the aggregate cost of service and revenues of the individual TES systems. As indicated in the response to BCUC IR 1.134.4.1, PBR is a very flexible form of regulation.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 422

**135.0 Reference: Issue 1 Scope (a); Issue 3 Scope (d)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, p. 11**

**Burden of proof to provide evidence**

The EES Consulting report on page 11 states: "In all cases, the burden of proof is with the utility to provide evidence that the capital projects, forecasts, revenues and costs are appropriate and for the benefit of the customers in question. There is supporting documentation that accompanies the various applications submitted to for approval by a regulatory body."

135.1 Suppose the utility's evidence are accepted as filed in the case of a long-term fixed (e.g. 25 years) price to a customer in a particular product class and subsequently there are unfavourable achieved forecasts, revenues, and costs. Who (shareholder, fixed price customer, other customers in the product class, and/or other customers in the other product class) bears the risk of the shortfall in revenue that does not recover the actual costs incurred?

**Response:**

The FEU do not have any contracts with a fixed rate nor does it intend to offer this type of contract. At a minimum, contracts include an annual inflationary adjustment to the rates generally based on changes in CPI. See the response to BCUC IR 1.15.1 regarding who bears risk of revenue shortfalls.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 423

**136.0 Reference: Issue 1 Scope (a); Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, p. 11**

**Oversight and cross-subsidization**

The EES Consulting report on page 11 states: "In our opinion regulated utilities with multiple product classes see sufficient regulatory oversight to ensure that there is not cross-subsidization between the various product classes, thereby protecting the customers in each product class."

136.1 Is EES Consulting aware of any utilities with multiple product classes where the new product class is not a "traditional" (electricity, natural gas or steam) product class? If so, please elaborate.

**Response:**

The following is the response of EES Consulting.

We have seen many cases where utilities enter into lines of business that are untraditional. This would include such things as metering technologies, internet service and engineering products.

136.2 What does EES Consulting consider as appropriate policies and guidelines that are required by a regulatory board to ensure sufficient regulatory oversight to ensure that there is no cross-subsidization between product classes?

**Response:**

The following response is provided by EES Consulting.

To avoid cross-subsidization between product classes the regulatory commission would need to consider whether separate accounting is in place for the different product classes, whether any allocations of shared services between the product classes was appropriate and that each product class had its own approved forecast of revenues and revenue requirements when setting rates.

In the case of the FEU currently:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 424

- EES Consulting understands that TES costs are all held in a deferral account to be recovered from customers over time, which is appropriately kept separate from the natural gas class of service.
- There is an overhead cost allocation that affects the natural gas revenue requirement, which is necessary in a proper cost allocation. EES Consulting understands that the amount allocated to TES in 2012 and 2013 is being addressed in the current natural gas revenue requirements application. It is sufficient to continue overseeing the overhead allocation as part of determining the natural gas revenue requirement since an appropriate allocation on the gas side will, by definition, be appropriate on the TES side as well.
- Direct costs of each class of service must also be direct charged to each business as appropriate. In terms of the forum for reviewing these costs, however, the appropriateness of the direct costs charged to the TES deferral account cannot be determined in the context of the natural gas proceeding, and will have to be determined in the context of future proceedings related to TES rates.

136.2.1 Please explain how does the regulatory board measure and verify that the practices of the regulated utility does not cross-subsidize between various product classes. Would this involve independent field audits and verification processes? Please elaborate with specific examples.

**Response:**

EES Consulting advises, and the FEU agree, that the regulatory oversight would be no different from what exists today to ensure that the FEU do not have cross-subsidies across the different utilities. Review occurs at the time rates are set to recover the costs, which is generally in the revenue requirements process.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 425

**137.0 Reference: Issue 1 Scope (a); Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, TES Report, EES Consulting, p. 11**

**Uniform System of Accounts**

The EES Consulting report on page 11 states: "Expense items are tracked under separate accounts that generally follow a standard system of accounts for each product class."

In the 2012-2013 Revenue Requirements the FEU response to BCUC IR No. 2 Q. 131.2 stated:

"At its own discretion the Commission has the power under section 49 (a) of the UCA to require public utilities of the same class to adopt a uniform system of accounting. The Commission has established such uniform systems of accounts for gas utilities and electric utilities but not for other classes of utilities such as thermal energy utilities. As such, the Uniform System of Accounts for Gas Utilities was not specifically developed for use by utilities providing thermal energy services such as geo-exchange, solar and district energy systems. However, since a thermal energy utility makes use of similar infrastructure and equipment as a gas utility does, many of the accounts and account classifications in the Gas Uniform System of Accounts can be used directly or are readily adaptable to a public utility providing thermal energy service. Further, the regulatory accounting principles implicit in the Gas Uniform System of Accounts are equally applicable to a thermal energy service utility."

137.1 Please confirm that FEI for its natural gas class of service does not conform exactly to the Commission's Uniform System of Accounts (USoA) for Gas Utilities.

**Response:**

Confirmed. FEI does not conform exactly to the Commission's USoA for Gas Utilities, which was developed in 1961 and updated in 1980. As approved by the Commission, FEI has made the following departures:

**172 Preliminary Survey and Investigation Costs**

Due to changes to comply with Generally Accepted Accounting Principles, some of the amounts previously captured in this account are now expensed as per Commission Order No. G-141-09.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 426

### 105 Accumulated Depreciation – Gas Plant

As approved through Commission Order No. G-141-09, the removal costs and asset gains and losses for gas plant in service are charged to a deferral account rather than accumulated depreciation for 2010 and 2011.

### 620 through 889 O&M Expenses

As agreed to by the Commission in Order No. G-153-07, Appendix A, pages 3 and 4, FEI has departed from using the USoA for reporting and tracking of O&M expenses.

In addition, there have been some changes to capital vs. expense classification as approved by the Commission (for example training and inspection costs), and some numbering of the accounts in FEI's internal accounting records may be slightly different than the USoA due to current system requirements or numbering conventions; but these accounts have been mapped to the correct USoA numbering system for purposes of reporting to the Commission.

137.1.1 If confirmed, please explain in detail the differences in accounts and the approval for departure.

#### **Response:**

Please see the response to BCUC IR 1.137.1.

137.2 If the Commission prescribes and requires Thermal Energy Service operators to follow a prescribed Uniform System of Accounts that is based on the Electric and Gas accounts, would FEU have any difficulty in complying with that requirement? Please explain any challenges that may arise in meeting conformity to a Uniform System of Accounts for Thermal Services.

#### **Response:**

As discussed in the response to BCUC IR 1.100.2, the capital costs of specific projects recorded in the Thermal Energy Services Deferral Account will be removed from the deferral



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 427

account, along with the related AFUDC, when the project goes into service and moved to the appropriate plant accounts.

An additional step to fully implement a Uniform System of Accounts would require FEI to set up a separate area within its SAP system, associate the required accounts and cost elements to that area, transfer opening balances, and communicate the new coding methodology. Although this will require some work, FEI does not anticipate this will be too difficult or time consuming to accomplish, as long as the accounts are the same or similar to those currently maintained by FEI.

Since Thermal Energy Services is not a separate company, FEI does not believe that a full implementation of the Uniform System of Accounts is required. Currently for the Fort Nelson division of FEI, revenues, expenses and plant accounts are separately maintained, and the remaining rate base and cost of service items are allocated from FEI. FEI believes a similar methodology would work well for Thermal Energy Services.

137.2.1 If there are challenges how difficult would it be to change the utility's budgeting and financial system so that the TES class of service conforms to a USoA for Thermal Services?

**Response:**

Please see the response to BCUC IR 1.137.2.

137.3 Is EES Consulting or FEU aware of any regulated utility that specifically follow a Uniform System of Accounts for Thermal Services prescribed by a regulatory board? If so, please list the utilities.

**Response:**

EES Consulting has not conducted any research as to whether any utilities follow a Uniform System of Accounts prescribed by a regulatory board.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 428

**138.0 Reference: Issue 1 Scope (a) (b);**

**Exhibit B-2, Evidence of FEU, Section 8.2, p. 158**

**On page 158 of its evidence, the FEU state that:**

"The above guidelines only recognize past determinations of the Commission, and will not predetermine whether or not particular expenditures for New Initiatives proposed in the future are in the public interest. Rather, the effect of adopting these policy-related guidelines or principles going forward is to acknowledge that the determination of the public interest in particular instances will normally turn on other considerations (e.g. customer benefits and impact), rather than on whether or not they support provincial policy objectives. Adopting these principles as an outcome of this Inquiry avoids the need for the FEU to re-file extensive general policy evidence in each future proceeding where the FEU is requesting public interest approvals relating to New Initiatives. The outcome will be a more focussed public interest examination of proposed projects and expenditures and ultimately, more efficient Commission processes."

138.1 Do the FEU accept that provincial policy objectives may change over time, and if so, would a general guideline to the effect that future commission panels will give appropriate weight to past determinations of the Commission and provincial policy objectives provide the same benefit and potentially be more long-lasting?

**Response:**

The FEU agree that policies at all levels of government may change over time. The political leadership in the federal, provincial, and local government plays an important role in the energy and climate change policy and therefore views of natural gas and the role of New Initiatives in the energy mix. If the Commission is concerned about whether the two proposed guidelines on p.158 of the Evidence, based on how they have been framed, will remain relevant over time, it would be possible to change those proposed guidelines to specifically identify that the New Initiatives result in GHG emissions reductions and that they promote the efficient use of energy, thereby leaving it open to the Commission to determine whether those objectives still reflect Provincial policy in the years to come.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 429

**139.0 Reference: Issue 1 Scope (a) (b);**

**Exhibit B-2, Evidence of FEU, Section 8.2, pp. 159-160**

On pages 159-160 of its evidence, FEI suggests several guidelines related to issues 1(a) and 1(b) for Biomethane. Guideline 3 states that:

"The FEU should consider proposals from project partners<sup>104</sup> to own and operate the upgrading facilities, and assess whether those partners can demonstrate financial and technical capability to do so."

139.1 If a project partner were to be the sole owner and operator of upgrading facilities in FEI's view would that be a regulated or unregulated activity?

**Response:**

In the FEU's view, this would be regulated activity. The owner and operator of upgrading facilities is:

- owning and operating equipment or facilities;
- for the purpose of the production of;
- an agent (biomethane) for the production of heat and power; and
- would be selling that agent to FEI (a corporation) for compensation.

In this example, there are no circumstances described that would result in one of the exclusions applying and therefore this activity is regulated. Please also see Table 4-1 of the Evidence, and refer to the response to BCUC IR 1.22.1.

139.2 If the FEU were to be a partner or sole owner and operator of upgrading facilities through a subsidiary established for the purpose of owning and operating upgrading facilities would that be a regulated or unregulated activity?

**Response:**

For the same reasons as described in the response to BCUC IR 1.139.1, the activities of such a subsidiary would be regulated activity. Please refer to the response to BCUC IR 1.22.1.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 430

FEI also states that:

"The FEU should also give consideration as to whether the project partner proposing to own and operate the upgrading facilities can provide the upgrading service for the same or lower cost than would be the case were the FEU to own or operate the upgrading facilities." [emphasis added]

139.3 To what extent should such a guideline also provide guidelines as to the factors that the FEU's consideration should include, and the process for reviewing the FEU's consideration if its conclusion is disputed by an affected party?

**Response:**

The FEU have described the factors that it believes are relevant to a determination of whether or not it should own and operate upgrading facilities in guideline 3 of the proposed Biomethane supply-side guidelines. Those factors are:

- financial capability – guideline 3(a);
- technical capability – guideline 3(b); and
- whether the project partner can provide the service for the same or lower costs – guideline 3 (last sentence).

The FEU would expect that, in the event the Commission acknowledged the relevance of these factors, the FEU would employ the same criteria in its own assessment before bringing forward an application.

In terms of the process for reviewing a dispute, the FEU suggest that if there is such a dispute that the particular party would either decline to enter into a supply agreement with the FEU or the parties would present evidence and submissions regarding which type of supply agreement (raw biogas or upgraded biomethane) is in the public interest. There have been examples of competing project concepts being brought forward in the past for public interest review; for instance, Sea Breeze's proposal for a merchant line was considered in the context of BCTC's VITR project application as a project alternative.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 431

139.4 What are the benefits to this approach relative to an approach whereby FEI puts out RFPs for biomethane, similar to the approach BC Hydro does for power from IPPs?

**Response:**

The FEU's goal is to ensure reliability and safety at the lowest possible cost. As long as a project partner can demonstrate the above, the FEU would not be opposed to the partner owning the upgrading facilities. The FEU issued a Request for Expressions of Interest in 2008 and is examining using similar practices in the future which may come in the form of a call, similar to the approach BC Hydro does for power from IPPs. Given the early stages of the program that includes a 2 year test period, a cap on Biomethane purchases and the necessity to also prove market demand for the product at the same time, the FEU have not utilized such an aggressive approach to attracting new supply projects. In addition, the FEU believe that it is too early to develop an RFP similar to BC Hydro due to the lack of reference to compare. Items such as price structure and reasonable rate of return for developers have not been developed because of a lack of existing projects.

Rather, the FEU have employed other techniques to develop supply such as continued work on projects from the initial RFEIOI, targeting specific opportunities that come to light from other contact (such as conferences), reviewing new proposals from vendors as they come in and hosting a recent Biomethane workshop for potential project developers.

The FEU believe that this open, flexible approach will ultimately lead to more successful projects in the short term and will help FEU to better understand future projects which in turn could lead to an RFP process similar to the BC Hydro's in the future.

139.5 Has FEU considered issuing a call for biogas energy, to ensure the best pricing for customers? If not, why not?

**Response:**

Please see the response to BCUC IR 1.139.4.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 432

**140.0 Reference: Issue 1 Scope (a) (b);**

**Order G-50-10 and attached 2010 CPCN Guidelines**

**Exhibit B-2, Evidence of FEU, Section 8.2, pp. 157-175**

**CPCN Application Guidelines for TES, NGV and Biomethane  
Projects**

140.1 Do FEU believe that the Guidelines it proposes in Chapter 8 of Exhibit B-2 relate to FEU applications for TES, NGV and biomethane projects, or would they also apply to others seeking approval of TES, NGV and biomethane projects?

**Response:**

On the basis of the Commission's Order No. G-118-11 and the accompanying reasons for decision, the FEU understood that the focus of the Inquiry is on the activities of the FEU, and in turn, its proposed guidelines are intended as guidelines that apply only to the FEU.

140.2 The 2010 CPCN Guidelines are intended to provide general guidance for CPCN applications, along with flexibility for an application to reflect the specific circumstances of the applicant, the size and nature of the project and the issues it raises. Section 7 requires an application for a new service area to seek approval for a tariff, including terms and conditions of service and rates.

140.3 Starting with the 2010 CPCN Guidelines and assuming both a CPCN and approval of rates are required, please provide key points and principles to be added to the existing CPCN Application Guidelines for TES, NGV and biomethane projects that could apply for applications from FEU and other service providers.

**Response:**

Please refer to the response to BCUC IR 1.54.3.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 433

140.4 On pages 167-169 of its evidence, the FEU offer guidelines 4 and 5 regarding the information to be filed for projects of \$1 million to \$5 million, and of less than \$1 million, respectively. If experience with the first few TES projects suggests that changes are needed to the type of information that is typically required, what process would the FEU see for modification of the guidelines?

**Response:**

The FEU believe that a written process would be suitable for modification to the guidelines going forward. If the Commission determines that substantive changes are needed, the FEU propose that the Commission identify its concerns to the FEU and the parties to this Inquiry (along with a public notice), and provide the FEU with an opportunity to make submissions in response. Interested parties would then file submissions in response, and the FEU would have a right of reply. The FEU believe that such a process would be more than adequate for most changes, but that further process may be required for significant changes.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 434

**141.0 Reference: Issue 1 Scope (a); Issue 3 Scope (b) (d)**

**Exhibit B-2, Evidence of FEU, Section 8.2, p. 170**

On page 170 of its evidence, Guideline 4 states that:

“Alternatively, the FEU propose that the Companies develop these guiding principles in the first instance through the established EEC Stakeholder Group, which is an important forum for the FEU to get feedback in all areas of the overall EEC initiative, and submit the guiding principles for Commission approval.”

141.1 Would such meetings of the Stakeholder group include third party providers of TES? If not, why not?

**Response:**

As stated in Section 7 of the Evidence, the EEC Stakeholder Group members represent a spectrum of different stakeholders, including third party providers of Thermal Energy Services generally. ESAC member Trane is represented on the FEU's EEC Stakeholder Group by the General Manager of National Energy Equipment, Trane's exclusive dealer in British Columbia for residential products.

Furthermore, third party providers of Thermal Energy Services generally, such as Corix and other members of ESAC, were originally invited to participate in the formation of EEC Stakeholder Group. On November 13, 2009, an email and invitation was sent by the FEU to a number of potential participants, notifying those potential participants of the formation of the EEC Stakeholder Group, of its purpose, and inviting them to participate. ESAC member Direct

Energy received this email invitation, as did ESAC member Mr. Ron Cliff and Mr. Ken Donison of Corix.

Appendix B-3 of the Submission includes a copy of invitation email and letter, as well as the current list of EEC Stakeholder Group members.

The FEU are receptive to and encourage participation by various stakeholders in the EEC Stakeholder Group and continue to seek feedback regarding EEC related issues through this group.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 435

**142.0 Reference: Issue 2 Scope (b)**

**Exhibit B-2, Evidence of FEU, Section 8.2, pp. 171-172**

If one accepts FEI's positions regarding the regulated nature of the Biomethane, NGV and TES activities, the question remains about whether the company or companies carrying out those activities should be separate affiliates and the degree of separation of those entities from the natural gas distribution businesses.

142.1 If a New Initiative is developed and undertaken from within the natural gas distribution utility, and after that determines that it should be spun out to a separate regulated utility, what are the principles that should be applied to determine which costs should accrue to the ratepayers of the natural gas distribution utility and which should flow to the separate utility?

**Response:**

The FEU have assumed for the purpose of responding that the question is directed at NGV Service, Biomethane Service or TES, and not EEC. EEC, by its nature, could not be spun out into a separate utility.

The FEU do not consider the scenario posed in the question to be very likely to occur since the general pattern is for utilities to seek to amalgamate regulated entities in order to achieve efficiencies and cost savings. If such a situation was to occur, the transaction would be subject to review by the Commission and the public interest would be preserved through that process. The Commission has extensive experience reviewing asset acquisitions and dispositions, and utility restructurings. The facts and circumstances leading to such a restructuring would likely be unique and would have a material bearing on the review process. For instance, there would be a difference depending on whether the New Initiative proposed to be moved to a separate utility was part of the natural gas class of service or not. However, the FEU expect that the Commission's established practices regarding asset transfers and dispositions would be employed in their determination. In view of the unlikelihood that the situation posed in the question will occur and the difficulty there is in anticipating the future circumstances that might lead to such a restructuring, the FEU do not believe that trying to develop such guidelines in this Inquiry is warranted or feasible.

142.2 Assume a future situation, even after the TES market is fully developed, where political, social and general economic conditions change and the FEU are required to divest or eliminate Thermal Energy Services, either by the company's own volition or by some other external requirement.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 436

142.2.1 How would FEU unwind the Thermal Energy Services from the integrated utility structure proposed by the FEU?

**Response:**

Given that TES is public utility service under the *Utilities Commission Act*, FEI cannot eliminate the service obligations or divest itself of the service obligations without the approval of the BCUC. As the circumstances that would likely accompany such an event are unknown to FEI, it cannot comment on how such a process would unfold.

142.2.2 Who would absorb the gain or loss on each individual TES project?

**Response:**

Please see the response to CEC IR 1.11.2.

142.2.3 What would be the risks to the TES customers if such a divestiture were to take place?

**Response:**

The position of the FEU with respect to the sale of TES assets is as stated in the Evidence, page 172, in that context dealing with assets arising from an approved pilot,

*"In the event the Commission is asking about guidelines for when it can direct the sale of the assets relating to a previously approved pilot, the FEU submit that the Commission does not have the jurisdiction under the UCA".*

Nevertheless, assuming market conditions changed or some external driver created a valid cause for the FEU to have to divest of all its TES class of service or take it out of regulation the FEU would still be obliged under Section 52 of the *UCA* to obtain Commission approval to dispose of the TES assets. Please also see the response to CEC IR 1.11.2.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 437

142.2.4 What would be the risks to the natural gas customer if such a divestiture were to take place?

**Response:**

As TES is a separate class of service, the risk arising from a divestiture is confined to that class. The risk to natural gas customers would potentially be higher cost of service if the overhead allocation of costs to the TES class of service was eliminated. Please also see the response to CEC IR 1.11.2.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 438

**143.0 Reference: Issue 2 Scope (c)**

**Exhibit B-2, Evidence of FEU, Section 8.2, p. 172**

143.1 FEI refers to guidelines (plural) related to issue 2(c) and provides guideline 1 and a place for guideline 2, but without a guideline. Is there a guideline 2 and if so what is it?

**Response:**

The FEU would like to apologize for the grammar error and the placeholder for guideline 2 that was inadvertently placed in the document. The FEU would like to confirm that with respect to issue 2(c), the only guideline proposed by the FEU is:

1. The scope of regulated activity turns on the provisions of the *UCA*, irrespective of what occurs in other jurisdictions.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 439

**144.0 Reference: Issue 2 Scope (d)**

**Exhibit B-2, Evidence of the FEU, section 8.2, pp. 172-173**

FEI provides three guidelines for related to the sharing of information. Guideline 2 states that:

"With respect to related companies within the Fortis Group, the FEU should apply the Commission-approved code of conduct that governs the sharing of information between the FEI and non-regulated businesses approved by L-64-1997."

144.1 Please provide a copy of the code of conduct referred to identifying the specific clauses to which the FEU refer.

**Response:**

The FEU are referring to the Code of Conduct, included in Attachment 144.1. The Code of Conduct governs sharing of information between a regulated and non-regulated business.

144.2 To be clear, is it FEI's intention that the code of conduct should be extended to govern the sharing of information between affiliates or divisions within the FEU that provide 'core' gas or electricity distribution services with affiliates or divisions that provide Biomethane, NGV or TES? If not, should it be so extended?

**Response:**

No. The code of conduct does not currently and should not govern the sharing of information within FEI. See the response to BCUC IR 1.74.2.

NGV and Biomethane are natural gas services and are in the same class of service as all other natural gas offerings, and there is thus no rational distinction that would justify the application of a code of conduct.

Although TES is a different class of service for *ratemaking purposes*, customers (primarily commercial, institutional, and industrial) expect that the FEU are able to answer and provide information on energy, irrespective of its source. The utility is managed as a single business to capture efficiencies, and is only segregated into classes of service for *ratemaking purposes* to ensure that the appropriate customers are assigned costs and revenues.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 440

There is currently no Code of Conduct to govern the sharing of information between FEI, FEVI or FEW as the three utilities are managed under a shared services model. There is no practical benefit to customers of maintaining an artificial distinction among employees with respect to the use of information by company. Similarly, it would not be appropriate for a Code of Conduct to be in place between a TES class of service and a natural gas class of service, simply because the type of energy delivered is different. The services are being offered within a single company and are both regulated services.

Implementing a Code of Conduct adds complexity to how information is shared and will only add cost (administration and auditing costs) to both natural gas and TES customers, without any benefit to the customers in question.

144.3 The TGI 1997 Code of Conduct (filed as Attachment 27.7 to Ex. B-12 of the TGI 2010-11 RRA proceeding) stated that "[Terasen Gas] will not provide to an NRB any information that would inhibit a competitive energy services market from functioning. Is that principle still endorsed and adhered to by FEI? If so, what measures does FEI use to ensure that information flows in contravention of that principle don't occur?"

**Response:**

Yes, that position is still adhered to with respect to NRBs. FEI internal auditors conduct annual audits to ensure that FEI (formerly Terasen Gas) does not provide to an "NRB any information that would inhibit the competitive energy services market from functioning." The FEU have expressed the view elsewhere in this proceeding that competitive concerns are not a valid basis to justify imposing additional costs on customers in the case of offering services within a single utility under a single management structure.

In any event, as set out above in the responses to BCUC IRs 1.74.5.1 and 1.74.5.2, and section 6.4.5 of the Evidence, historical natural gas billing data is of limited value in assessing and developing a TES project, and FEU does not use this data in developing TES projects.

Please also see the response to ESAC IR 2.3.1 of the FEU 2012-2013 RRA (excerpt below), which addresses the information available to the TES business.

*"3.0 Confidential Customer Information*

*Reference: 2012/2013 RRA Response to BCUC IR 157.1 (p. 564)*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 441

*"The FEU are submitting this response on a confidential basis under separate cover as the response reveals confidential customer information related to projects currently under negotiations and would adversely affect commercial negotiations if disclosed."*

*3.1 Please confirm for each project listed that written approval was obtained from each customer before the release or use of the customer's billing information or other confidential information to or by employees in the thermal energy services group developing these projects. Please provide copies of those written approvals, if any.*

**Response:**

*This response also addresses the responses to ESAC IRs 2.3.2 and 2.3.3.*

*Historical natural gas billing data is general information of limited value when developing a thermal energy system. First, historical information does not exist for new construction. Second, the historical natural gas billing data includes the total gas consumption at the meter which may or may not be the natural gas consumption needed only for the production of the thermal energy that will be replaced by the thermal energy service. A customer's gas usage may include consumption for activities unrelated to the requirements of a thermal alternative energy system, such as for example, cooking in restaurants or institutions, or commercial process load. Third, natural gas may not be the only energy source used by a customer in the generation of thermal energy so historical natural gas consumption may be only part of the picture. Consequently, it is not possible to understand whether historical natural gas billing data equals the natural gas consumption that is necessary for thermal energy production or whether energy sources are involved, without an evaluation of the specific equipment and usage requirements of the customer at the site over time. Fourth, the type, nature, and location of the heating and cooling equipment systems in buildings may or may not be compatible with thermal energy solutions. Therefore, the FEI database of historical natural gas billing data alone is not an effective tool for identification of marketing opportunities for thermal energy service in the absence of the accompanying technical evaluation by site. As such, natural gas consumption history is not used by FEI to market thermal energy systems.*

*Evaluation of a thermal energy project usually requires a feasibility analysis that specialists perform. These experts may request and review historical natural gas billing information in the process of performing their technical evaluation.*

*In the event that FEI is not the thermal energy service provider, but is the natural gas service provider, a simple request by the customer to FEI to share the historical natural gas billing data at their site with the proponent to assist in their technical evaluation is all that is required. Alternatively, many customers keep records of their consumption data and may actually provide the information to the proponent on their own, without the assistance of FEI.*



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 442

*In the event that FEI is the thermal energy service provider and the natural gas service provider, no formal request is necessary on behalf of the customer for FEI personnel to utilize the historical billing data in the evaluation of the project. This is because the thermal energy service is simply another class of service within the public utility, not a separate entity. Nonetheless, since this type of information would only be useful in conjunction with the technical evaluation of the project, customers expect FEI to review their historical billing data at that stage. For expediency, many customers actually provide this information to FEI since they often have it readily at hand.*

*At all times, FEI maintains conformance with the Personal Information Protection Act."*

144.4 Recognizing that FEI believes that New Initiatives such as Biomethane, NGV and TES are required to be regulated services, does FEI believe that the principle contained in the 1997 Code of Conduct about the transfer of information to NRBs should be extended to include the transfer of customer information from the gas or electricity distribution business to separate regulated entities or divisions of a regulated entity that provide such New Initiatives? If not, why not?

**Response:**

No, please also see the response to BCUC IR 1.144.2.

Guideline 3 states that:

"With respect to the sharing of customer information within the FEU between regulated classes of service, subject to applicable privacy legislation it is generally appropriate for utility staff with access to information and resources in the possession of the utility to be made available for the benefit of thermal energy services customers."

144.5 To clarify, should this guideline be interpreted to mean that it is generally appropriate for utility staff with access to information and resources in the possession of the utility to be made available to other FEU staff for the benefit of thermal energy services customers?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 443

**Response:**

Yes, so long as information is not being made available to an NRB. The principle is that the resources of the utility should be available to the benefit of all utility customers, provided appropriate cost allocation occurs for ratemaking purposes.

Note that the reference to the privacy legislation is important. The guideline is not contemplating providing information about one customer to another customer; Please see the response to BCUC IR 1.144.2.

144.6 Is the result of the three guidelines proposed by FEI that third party providers of New Initiatives types of activities would not have access to customer information except when the customer requests it, but FEU staff engaged in providing the same types of services would have access to that information whether the customer requests it or not? If not, please explain.

**Response:**

Yes. This is consistent with the Gas Privacy Policy and the *Personal Information and Privacy Act*. Please see the responses to BCUC IRs 1.144.1.to 1.144.3.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 444

**145.0 Reference: Issue 3 Scope (d)**

**Exhibit B-2, Evidence of FEU, Section 8.2, p. 175**

The FEU's evidence states on page 175 that:

"The FEU believe that it is not appropriate to fix criteria in advance for assessing when to end programs, but offer the following general comments. In most cases, the same criteria used in assessing an application made by the FEU for approval of an expenditure related to a New Initiative should also be used to evaluate program success. That is, the applications will state the reasons why the program is in the public interest and should be approved, and those reasons (typically ratepayer benefits, benefits to the broader public, advance BC Energy objectives) will be the appropriate criteria for such an assessment."

- 145.1 To what extent do the FEU believe that the criteria should, to the extent possible, be measurable and quantifiable, with forecasts and timelines for achieving forecasts against which actual performance can be measured? Do the FEU believe that general guidelines establishing that quantifiable and measurable criteria for establishing program success or failure would be a good thing? Please explain your answer.

**Response:**

As stated in the passage quoted as the preamble to this question, the FEU believe that the objectives that have been provided in previous program applications, such as the NGV and Biomethane applications, are the appropriate criteria against which the Commission can assess program success. The FEU submit that the approach taken in the Biomethane proceeding of having a review of the program after a length of time to assess its status is a useful way of reviewing these programs.

However, the approach taken in the Biomethane proceeding may not be applicable to the TES projects. The FEU are open to exploring different approaches to program review for TES through the Inquiry process.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 445

**146.0 Reference: Issue 1 Scope (a) and (b)**

**Exhibit B-2, Evidence of FEU, Section 8.2, p.164; Exhibit A2-16 FEU  
2010 RRA Exhibit B-2 Attachment C27**

**Interests of Rate Payers**

With respect to the interest of natural gas customers, the FEU evidence states on p. 164:

"(c) Natural gas customers benefit from additional gas throughput associated with a TES project that incorporates natural gas as part of the energy solution. Considerations relating to the load-factor associated with such natural gas load, and how that drives capital investments in natural gas facilities, should be addressed through FEI's Phase "B" Rate Design Application that will occur in 2012 and other future rate design applications over time."

146.1 Please indicate where in the economic tests (cost of service models) included in Exhibit A2-16 the natural gas load factor is incorporated into the thermal energy rate?

**Response:**

It appears that the question may be based on an incorrect interpretation of the passage above. TES projects are often going to be natural gas customers. TES projects may be subject to two economic tests depending on whether or not natural gas is part of the project requirements.

Assuming natural gas is required, the following describes the economic tests that a TES project would utilize and how natural gas requirements are incorporated into the thermal energy rate. The process or economic test for the natural gas requirements is no different from the process that is in place today for any new customer that wishes to use natural gas:

- 1. Main Extension ("MX Test") Test:** To assess the natural gas component of the project, a MX Test will be undertaken as required under Section 12 of FEI's General Terms and Conditions ("GT&Cs"). The MX Test is a discounted cash flow analysis of projected revenue and costs associated with the main extension.
  - If the TES Project's natural gas requirements meet the required profitability index ("PI") of 0.8, the natural gas component of the project will proceed.
  - If the PI is below the required threshold, a contribution is required in order for the main extension to proceed. This contribution is 'charged' to the TES economic test (the second economic test) as part of its costs.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 446

- Natural gas load factors are considered within the natural gas rate design that ultimately determine the rates to be charged for the various rate schedules within the natural gas class of service, e.g., residential rate versus small commercial rate versus large commercial rate, etc. To determine the projected revenues for the MX Test, the appropriate natural gas rates are utilized. Therefore, by default, the natural gas load factors are considered at this stage of the assessment.
  - Under future natural gas class of service rate designs, should the load factors change, the resulting flow through, combined with other rate design changes, would be reflected in new natural gas rates that would be used to calculate future MX Test's projected revenues.
- 2. **TES Economic Test:** The appropriate natural gas components flowing out from the MX Test – including, gas costs, capital contribution, etc. – are included as part of a second economic test – the "Alternative Energy Extensions", as determined under Section 12A of the GT&Cs, which was approved by Commission Order No. G-141-09.
  - For each geo-exchange, solar thermal and DES system, FEI conducts an economic assessment using a Cost of Service ("COS") analysis using accepted COS modeling practices in BC and then sets customer rates on a project by project basis to recover each project's cost of service over time. The COS models included in Exhibit A2-16 include the hypothetical projected costs of service, energy consumption and number of customers specific to the alternative energy extension.
  - As discussed above, contained within the COS model are costs associated with natural gas – both capital costs (if required) and the cost of gas (e.g., the revenue input from the MX Test). These costs therefore, form part of the thermal energy rate for the overall project.

TES Projects may be subject to two economic tests depending on whether natural gas is part of the project scope. The natural gas load factors are embedded within the economic tests through the use of the MX Test, which has items that become inputs into the overall TES COS analysis (economic test), and as such, ultimately form part of the thermal energy rate.

The reference to the Phase 'A' rate design application was in respect of only the natural gas consumption, and not the rate design within the TES class of service. Rate design on the natural gas side (such as that contemplated for Phase 'B') that accounts for load factors of TES projects in their capacity as natural gas customers would result in a change to the natural gas input costs for TES projects.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 447

146.2 How can FEU propose economic tests for mixed/combo energy projects be considered a true economic test based on accepted BC cost of service methodology without taking into consideration the appropriate costs attributed to the natural gas system?

**Response:**

As discussed in the response to BCUC IR 1.146.1, the Commission has approved the use of alternative energy extensions as well as gas main extensions. The costs attributed to the natural gas system are incorporated into the natural gas main extension test that form part of the overall thermal energy rate.

146.3 How will this later consideration of load factor affect pre 2010 projects and post 2010 projects coming to the Commission for approval before the issue is addressed in FEI's Phase B Rate Design Application?

**Response:**

Please see the response to BCUC IR 1.146.1.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 448

**147.0 Reference: Issue 1 Scope (a) and (b)**

**Exhibit B-2, Evidence of FEU, Section 8.2, p.173; Appendix F-4**

**Evaluation of Approved Regulated TES and Other New Initiatives**

The FEU evidence states:

"Issue 3(a) asks Inquiry participants to comment on the following issue:

When ratepayers are paying for AES and other new initiatives what standards should the BCUC apply to determine whether the activity is being carried out in the most cost-effective manner?

The Commission has the ability at the time it is assessing an application for a CPCN, for instance, to express concerns about particular options, make directions, or impose conditions. The Commission has previously articulated what is meant by cost-effectiveness.

In assessing cost recovery, however, the FEU believe that the well established prudence standard is appropriate for the review of expenditures related to New Initiatives, just as it is for all other public utility expenditures"

147.1 Other than the general guideline stated in the evidence, what additional guidelines could be set out for individual project applications performance evaluation?

**Response:**

Standard regulatory principles that apply to public utility regulation apply to TES projects. The reasonableness of costs, rates and service levels are among the many considerations that regulation of these services will require on an ongoing basis. The FEU question whether it is feasible or beneficial to try to set performance evaluation targets or guidelines in the abstract.

147.2 How can considerations such as original project objectives, cost effectiveness, and efficiency be measured?



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 449

**Response:**

TES projects meet the definition of public utility and therefore the Commission has all the tools it has applied historically to the regulation of a utility to assess project objectives, cost effectiveness and efficiency. In fact, the Commission has already demonstrated the assessment of these considerations in the decisions for the CPCN applications of Dockside Green (Order No. C-1-08, Reason for Decision) and UniverCity (Decision dated May 6, 2011, Order No. C-7-11).

147.3 Could there be a method established to report to the Commission actual project performance by through post implementation reviews at say 1, 5 and 10 years into the life of the project?

**Response:**

Please see the response to BCUC IR 1.147.1. The Commission has the power to require a utility to conduct post-implementation reviews and has done so in the natural gas class of service in various instances such as, for example, for mains extension projects and CPCN projects. Similar reporting requirements could be applied to TES projects, at the Commission's discretion.

147.4 Would these project reviews be something that the FEU TES group would perform as an internal control and performance measure?

**Response:**

The FEU will be conducting internal reviews of TES projects for the purposes of internal control and performance measurement. Similar to what has occurred with the natural gas class of service over the years the FEU will use the experience gained from individual TES projects as they are added to the portfolio of TES projects to establish standards and inform the development of future TES projects.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 450

## Key Principles

### 148.0 Reference: **Scope 1 Issue (a); Scope 2 Issue (c);**

**Exhibit B-2, Evidence of FEU, Section 6.4.1, p. 114; Exhibit A2- 19, OEB Ruling on Enbridge Gas EB-2009-0172**

#### **Alternative regulatory models and key principles**

A recent OEB Ruling (2009-0172) disallowed the inclusion of costs by Enbridge Gas associated with renewable energy assets in ratebase (Exhibit A2-19). The decision was based on a number of reasons, including the following:

"When assets are allowed in rate base it is generally because those assets are related to the monopoly franchise [emphasis added]. Enbridge does not have a monopoly franchise for the production of renewable energy. Its franchise is related to the distribution of natural gas." (Exhibit A2-19 p. 5)

"Another reason for excluding such costs in rate base is that it significantly increases the risk to the ratepayer" [emphasis added]. (Exhibit A2-19 p. 6)

"The third argument against allowing these costs in rate base is that an alternative funding mechanism has been established by the government [emphasis added]. ...Successful applicants for feedin tariff program ("FIT") contracts will receive 20 year contracts from the OPA for the purchase of that power and some of those costs will be allocated in such a way as to be incorporated in the global adjustment. ... That funding mechanism is open to Enbridge. Moreover, this form of funding recognizes the fact that renewable energy will benefit all the citizens of the province and not just those within Enbridge's territory. If renewable energy costs are in rates, then the costs of projects will be paid by Enbridge's gas ratepayers. But those projects will benefit the people of Ontario regardless of where they are located." (Exhibit A2-19 p. 6)

The fourth reason cited by the OEB for not allowing utilities to include renewable generation assets in rate base was the desirability of "treat(ing) the electricity and gas sectors in a similar fashion [emphasis added]. The same issue has arisen in relation to electricity utilities. To date, generation assets have not been allowed in rate base because under the statutory scheme that applies to electricity a regulation is required and the government has not passed any such regulation." (Exhibit A2-19 p. 7)

148.1 To what extent are the principles applied by the OEB relevant to the BC context, namely:

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 451

- The presence of a natural monopoly activity, with associated economies of scope;
- Risk to the ratepayer from diversified activities.

**Response:**

The FEU do not accept the applicability of this reasoning in the BC context for several reasons.

First, the *Ontario Energy Board Act* and the *Utilities Commission Act* are constructed differently. The *UCA* explicitly defines "public utility" and TES meets this definition. Therefore, whether TES is a class of service or an independent regulated affiliate, it still remains a regulated public utility service. The reasons cited above in the question do not apply to the jurisdiction of the Commission under the *UCA*.

Second, the OEB discussion is referring to assets related to renewable energy production being placed in the natural gas rate base. That would potentially affect the risk to natural gas ratepayers and potentially impact the cost of capital as TES is currently a higher risk business. By contrast, the *UCA* requires TES to be in a separate class of service with a separate rate base and rates established separately from the other classes of service. TES assets are therefore not going into the natural gas rate base, and development or stranding-related risks associated with TES will not affect the risk to natural gas customers or the cost of capital that is recovered in natural gas rates. To the extent that the FEU are able to retain natural gas load by being the provider of the TES solution, rather than a third party provider that provides a non-gas solution, this will benefit natural gas customers directly in terms of delivery rate and helping to manage increases in cost of capital related to rising business risk over the long term.

Third, there is no government sanctioned feed in tariff for TES in BC. But in any event, the *UCA* contemplates that the public interest is to be considered in circumstances where new assets are constructed, and Government has defined the public interest to include BC's energy objectives. Hence, there is a direct link between government policy and execution of that policy by BC public utilities.

Fourth, natural monopoly characteristics do exist for the provision of TES. Please see the response to BCUC IR 1.149.1 as well.

Fifth, if one were to apply the OEB's logic about treating natural gas utilities on the same basis as electricity in this Province, the result would be that the TES assets are regulated and held in the same corporate entity, and within the same class of service, as the distribution assets. BC Hydro and FortisBC Inc. both own generation assets and the costs of those assets are recovered in electricity rates approved by the Commission.

In summary, the FEU believe that the Commission should be considering and applying the legislative framework applicable to this province.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 452

148.2 The FEU evidence states on p. 114 that "Regulation of TES is both appropriate and necessary because TES are generally complex and costly to operate and maintain, and once installed, the owner or operator has a measure of monopoly power over the customers because there will only be one thermal energy services provider within a certain area, and it is also costly to switch to another energy source."

Does TES have a monopoly franchise for the provision of TES in British Columbia, and if so what is the source of that monopoly franchise?

**Response:**

FEI does not have a "monopoly franchise" for TES service in BC in the sense that it has exclusivity on being able to offer TES within BC. There is competition between providers of the service.

However, once a TES is installed the owner or operator has a measure of monopoly power over the customers because there will only be one TES provider for the project, and it is also costly to switch to another energy source (See: page 114 of the Evidence). Further, once a system has been installed in a particular location, there would be a measure of exclusivity in the sense that another thermal energy system in the same location, with the potential to serve the same customers as the existing thermal energy system, is unlikely to be economic or in the public interest. Public utility regulation is thus required to provide recourse to customers after a thermal energy provider has installed a TES system.

Please also see the response to BCUC IR 1.149.1.

148.3 Are there any additional principles which the Commission should consider when reviewing AES activities?

**Response:**

No, the FEU have proposed the guidelines that we feel are appropriate. Please see the response to BCUC IR 1.148.1 for a discussion of the OEB framework.

Please also see the response to BCUC IR 1.149.1 regarding competition.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 453

**149.0 Reference: Issue 1 Scope (a), Issue 2 Scope (c), Issue 3 Scope (b)**

**Exhibit B-2, Evidence of FEU, Appendix F-6, EES Consulting TES Report, p. 9; FEU RRA 2012-2013 Exhibit B-17, FEU Response to BCUC IR2 131.1 p. 461; Exhibit A2-19 Ontario Energy Board, EB-2009-0172, pp.5-7; Bonbright, J.C. Danielsen A.L. and D.R. Kamerschen, (1988), Principles of Public Utility Rates, Public Utilities Reports, Inc., Arlington, Virginia. pp. 29-30**

**Regulatory alternatives for competitive thermal energy services**

EES Consulting states on page 9: "There are instances where companies offer certain regulated products and other products that are unregulated. This is particularly true in jurisdictions where a product has become unregulated. For example, in California San Diego Gas & Electric previously provided full service electricity that included generation, transmission and distribution service on a blended basis to the end user. When the electric market was deregulated, Sempra Energy became the parent company with SDG&E still providing electric transmission and distribution and Sempra Generation being a non-regulated provider of generation." [emphasis added]

FEU's response to Q131.1 p. 461 of the FEU 2012-2013 RRA, confirmed that "the FEU do not have a monopoly franchise for the production of thermal energy services in British Columbia. There is competition in the thermal energy service business since these regulated projects can be developed by other public utilities (such as Corix Multi-Utility Services) as well as Energy Service Companies (ESCOs), but in all cases the owner and operator of projects that provide service to the public for compensation are regulated and considered public utilities in BC."

In the OEB's December 22, 2009 Decision EB-2009-0172 (Exhibit A2-19) they found that "costs associated with renewable energy projects should not be included in rate base. To do so would be a significant departure from the accepted regulatory model. Assets in rate base are typically monopoly assets. These are not monopoly assets. These activities can and will be carried out by a number of entities and are essentially competitive in nature."

According to Bonbright et al (1988: 29-30), in the *Principles of Public Utility Rates*:

"[M]ost economists in the United States prefer competition to regulation based on the normative standard of allocative and internal efficiency... [R]egulation is a questionable substitute for competition under conditions of natural monopoly and is a very poor substitute indeed when an industry is naturally competitive. Regulation carries with it the potential for anticompetitive effects even when there

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 454

is a true natural monopoly, and this is why economists have such a strong bias favoring competition. Wilcox (1966, p.476) put it this way:

'Regulation, at best, is a pallid substitute for competition. It cannot prescribe quality, force efficiency, or require innovation, because such action would invade the sphere of management. But when it leaves these matters to the discretion of industry, it denies consumers the protection that competition would afford. Regulation cannot set prices below an industry's costs however excessive they may be. Competition does so, and the high-cost company is compelled to discover means whereby its costs can be reduced. Regulation does not enlarge consumption by setting prices at the lowest level consistent with a fair return. Competition has this effect. Regulation fails to encourage performance in the public interest by offering rewards and penalties. Competition offers both.'

There are many economists who continue to share Wilcox's preference for competition over regulation, when, and if, it is possible." [emphasis added]

149.1 In light of the presence of a competitive thermal energy market in BC confirmed in FEU's response to Q131.1 p. 461 of the FEU 2012-2013 RRA, how do the FEU intend to ensure "performance in the public interest" for their thermal energy services, at reasonable rates, to their thermal energy customers in light of the efficiency concerns voiced by Bonbright?

**Response:**

The FEU understand the "thermal energy market" referenced in this question to be a reference to the TES market, and not the broader thermal energy market described by in section 6.4.1.3 of the AES Evidence and in Appendix A. Also, with respect to the response to BCUC IR 1.131.1 in the 2012-2013 RRA proceeding, while the Companies acknowledged that there are competitors providing similar TES to those that the FEU are developing, that is not the same thing as saying there is a competitive market in the sense that economic theory would attach to that term.

As the FEU understand the above quote, there are two kinds of "efficiency concerns" raised by Bonbright. The first is the concern that regulation cannot "prescribe quality, force efficiency, or require innovation". The second is Bonbright's concern that regulation does not set rates that are the most favourable to customers. The FEU believe that these concerns are adequately addressed by the regulatory framework for TES in British Columbia. The FEU also believe that a completely unregulated TES market is not desirable.

Before responding to the concerns described above, the FEU reiterate what it has said in response to other information requests that it does not agree that the Commission regulates competition *per se* or that it regulates "markets", and the FEU do not agree that the "public interest" as this phrase is used in the *Act* engages a consideration of whether or not a public

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 455

utility should be permitted to generally participate in a market. With those caveats in mind, the FEU strongly believe that their participation in the TES market is in the "public interest" in the broader sense that is suggested in this question (and others), even if this is not, strictly speaking, a relevant consideration for the Commission. In this response, the FEU address the concerns described above under separate headings, and in doing so explains why its participation in the TES market is in the public interest in the broader sense used in the above question.

### **Quality, Efficiency and Innovation**

The FEU do not agree that regulation of the TES market will prevent the assurance of quality, efficiency and innovation, as referenced by Bonbright. On the contrary, regulation of this service encourages these things through the regulatory framework of the *Act*. Moreover, this regulation will co-exist with competition in the market and this competition will encourage quality, efficiency and innovation; at the very least, there is no basis to conclude the regulation of TES will inhibit "quality, efficiency and innovation".

With respect to quality and efficiency of service, Bonbright's concern is addressed by the provisions of the *Act*. For example, section 38 of the *Act* states that:

*38 A public utility must*

*(a) provide, and*

*(b) maintain its property and equipment in a condition to enable it to provide,*

*a service to the public that the commission considers is in all respects adequate, safe, efficient, just and reasonable.*

In setting rates under section 60 of the *Act*, the Commission must have regard to setting rates that encourage public utilities to increase efficiency, reduce costs, and enhance performance. Furthermore, the Commission has jurisdiction under sections 24 through 26 of the *Act* to conduct inquiries of public utilities, to hear complaints, to set standards, and to order improved service. In short, the *Act* addresses Bonbright's concerns by giving the Commission jurisdiction to address quality and efficiency of service through regulation of public utilities. This kind of oversight is beneficial to customers. The FEU have heard, through its dealings with customers who are interested in TES, that they desire the assurance and comfort that this kind of regulation provides, especially given the long-term nature of these contracts. Absent this kind of regulatory oversight, the parties to TES contracts will have to resolve quality and service issues through arbitration and litigation, which the FEU submit, are poor alternatives to the kind of expertise and understanding that the Commission can provide.

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 456

With respect to innovation, an important feature of TES projects is that they are technologically agnostic. In other words, the FEU's thermal energy service is not dependent upon a single technology and can take full advantage of the competitive market for technology to utilize the most efficient means of producing thermal energy, especially if that technology advances over time – this encourages innovation.

In addition, the *Act* expressly encourages innovation. British Columbia's energy objectives, as defined in the *Clean Energy Act*, include the following:

*(d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;*

The Commission must consider this objective, and others, when approving TES projects.

In summary, the *Act* addresses Bonbright's concerns with quality, efficiency and innovation through the provision of express jurisdiction to regulate these matters in its review of TES projects. Furthermore, as is explained further below, competition exists in the TES market, and this will also encourage quality, efficiency and innovation through market forces.

### **TES Rates Will Be Subject to Competitive Pressure**

There are a number of features of the TES market that will help ensure competitive rates for customers.

First and foremost, competition will co-exist with regulation in the TES market, just as competition has co-existed with regulation of electricity, natural gas and steam service in British Columbia for decades (see section 6.4.1.3 of Exhibit B-2). In particular:

- TES service must compete with the incumbent energy sources for customers, such as electricity, steam, and natural gas, as explained in section 6.4.1.3 of Exhibit B-2. The competitive forces exerted by the incumbent energy sources will drive TES providers to keep their rates competitive.
- The FEU and their competitors will have access to competitive markets for the design, construction and operation of TES assets, which will make up a significant portion of the cost of service in TES rates. As noted above, the FEU's thermal energy service is technology agnostic, and as a result, the FEU will be incented to utilize the most efficient means of producing thermal energy as the technology advances over time. If the FEU fail to do so, the FEU will be left behind in the market. The competition among system providers and design build contractors of TES will encourage quality, efficiency and

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 457

innovation in the products and services they develop. This competition will benefit TES customers.

- The FEU will have to compete with others, notably Corix, for TES customers. If the FEU cannot negotiate rates with customers that are competitive with Corix's, and customers are otherwise indifferent as between the two companies in terms of service provider, then Corix or any other competitor whose rates are favourable to customers will prevail in the market. The FEU's presence as a provider of TES provides the same check on Corix or other providers as their presence does on the FEU. Customers are free to take advantage of this competitive market in selecting a TES provider. They can issue RFPs (or like processes) and select the provider who can give them the best rates. Such processes will occur before the project is brought before the Commission. This competition will benefit TES customers.

By the time a project is brought before the Commission, the rate charged will have been subjected to the pressures of competition with incumbent energy sources such as electricity, steam and natural gas, and the competition that exists (or will exist) in the TES market among TES providers, such as the FEU and Corix. The service provider can choose the lowest cost design build contract (or whatever procurement arrangement it sees fit), and the customer can choose the lowest rate among providers if price is its primary concern. The customer can elect a service provider who brings other attributes to the table if that is what the customer desires. Customers may wish to proceed with the FEU (or others) on the basis of experience, knowledge and strong reputation, or other considerations. Regulation of TES does not constrain the competition that occurs prior to projects being brought before the Commission, and customers will benefit from the competition that occurs to obtain their business. What is important is that the customer has had the opportunity to choose between providers in a competitive market, and the opportunity to benefit from the competition that exists or will exist among them.

At the stage at which the customer has selected a provider and entered into an agreement for service, regulation is both desirable and necessary. As discussed in the next section, regulation is appropriate in order to ensure that the interests of customers are protected over the long term. All TES providers are subject to the same regulatory framework, and this results in a level playing field for all competitors.

### **Regulation is in the Public Interest**

The Commission's excerpt from Bonbright omits an important caveat as follows (p. 29):

*Most economists in the United States prefer competition to regulation based on the normative standard of allocative and internal efficiency. It is generally believed that competition will generally serve to minimize the private and social costs of providing service to consumers who are willing and able to pay the cost*

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 458

*of rendition. However, there are conditions under which private and social costs diverge, and in those instances regulation may be warranted. Thus, regulatory economists probably agree with Shepard (1974), p. 22) that: "Regulation is like growing old: we would rather not do it, but consider the alternative." [Emphasis added.]*

In British Columbia regulation is mandated (not just warranted) by the *Act*, and there is good reason for this regulation in the context of TES. As noted in Section 6.4.1 of Exhibit B-2, and in the response to BCUC IR 1.87.1, a measure of monopoly power over the customer occurs after the thermal energy service provider has been selected and the system has been installed and is operating. At that point the customer will generally be under a long-term obligation to take thermal energy service from the utility/ ESCO, and high costs associated with changing provider and/or technology, and is therefore captive to the provider. It is with this understanding that the need for regulation becomes clear. In particular:

- If the quality of the service is not satisfactory, the customer's recourse is to arbitration or the courts, which is a poor substitute for a specialized utilities commission familiar with these assets. Not only do these forums lack the specialized expertise of the Commission, the costs associated with utilizing arbitration and the courts can be prohibitive.
- Regulation provides TES customers with the assurance that the contracts that they enter into will be scrutinized by the Commission to ensure that they are just and reasonable, and in many cases will be subject to ongoing review the Commission. There is a social benefit to the Commission performing this task as it is well equipped to do so.

Regulation of TES is an effective way of addressing the long-term nature of TES contracts. It is an efficient means of providing both consumers and providers of TES with a framework within which to negotiate these long term contracts.

### **Competition is Not Fostered by Removing Strong Competitors**

The final, and perhaps most significant consideration regarding the FEU's participation in the TES market, is that the FEU are a strong and worthy competitor in this market, and therefore its participation is in the public interest. While the FEU do not agree that the Commission can remove the FEU from the market or otherwise prohibit its participation, even if it could do so, there would be no "public interest" basis for removing the FEU, in the name of fostering competition. It stands to reason that the removal of strongest strong competitor in the TES market would only have the effect of allowing weaker competitors with higher costs to remain in the market, without the competitive pressure exerted by the FEU. While this may well be in the interests of FEI's competitors, it is not in the interests of TES customers.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 459

**150.0 Reference: Issue 1 Scope (a); Issue 3 Scope (b)**  
**Exhibit B-2, Evidence of FEU, Section 2.4, p. 53**  
**Changing Customer Expectations**

On page 53, FEI states that:

"This has led customers to shift investment consumption decisions away from natural gas towards energy efficiency and the consumption of electricity and cleaner, lower carbon, and renewable energy sources (such as Biomethane, solar, geothermal, biomass). This greater choice for customers has created competitiveness in the utility energy sector that was not present as recently as the 1990s."

150.1 Please describe in greater detail the competitiveness that is now present in the utility sector. Please provide as much detail as is reasonable about the number, size and business focus of new players in the sector.

**Response:**

All customers require heat and all customers require electricity. Electricity can both provide heat and meet customer's electrical requirements. It is the only energy source that can do this. All other energy sources must compete against electricity.

During the 1990s, other than the Central Heat thermal service area in downtown Vancouver, the only real choices for customers who required utility or thermal energy were natural gas, propane, electricity, oil and wood. Natural gas was inexpensive relative to electricity and therefore as long as customers were on a gas main, they typically used natural gas for heating and electricity for appliances and lighting. Those not on a gas main often used electricity, oil or wood for heating. There were also differences in heating preferences and in the housing stock being developed depending upon the geographic location (Lower Mainland vs. interior or Vancouver Island) of the customer. During the 1990s there was also much less focus on energy, clean energy and energy sources than there is today. Customers typically did not think too much about what type of energy they received. It was simply an expense.

Electricity prices remained flat until the mid-2000s and natural gas prices spiked in early 2000. This coincided with a greater awareness of how energy is derived and produced. Secondly, customers started looking for perceived "greener" solutions, which coincided with government policy on reducing GHG and climate change.

This has increased the competition amongst energy forms in the energy market. FortisBC must now compete for natural gas customers as well as compete for thermal energy customers. As

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 460

noted in the FEU evidence a review of the BCUC website shows approximately 30 separate utilities that serve thermal, gas or electrical needs in BC.

The following is list of energy sources combined with a list of potential providers of that energy form:

**Electricity** – provided by BC Hydro, FortisBC, municipalities (Nelson, New West etc.) and generation for own use. In addition there is a large number of Independent Power Producers that sell into the BC Hydro grid (a list of IPP members can be found at <http://www.cleanenergybc.org/>).

**Natural Gas** – the FEU, Corix, Star Gas, and PNG. While there have not been a greater number of providers of natural gas in the province, natural gas utilities face the similar competitive pressures. This is outlined in Section 2 of the FEU evidence.

**Thermal Energy Delivery** – Currently there are only a few BCUC regulated thermal energy delivery utilities, which include: Central Heat, Dockside Green, Corix Multi-Utility Services (SFU UniverCity & Sun Rivers), and River District Energy (Parklane Developments, CPCN application in progress). There are a number of other municipal thermal utilities including: Lonsdale Energy Corporation (City of North Vancouver), Revelstoke Community Energy Corporation (Revelstoke), City of Vancouver Southeast False Creek City of Surrey (<http://www.surrey.ca/plans-strategies/3475.aspx>), City of Richmond (<http://www.richmond.ca/news/city/alexandradistrictenergyutility.htm>), District of Gibsons (<http://www.gibsons.ca/geoexchange-district-energy-utility.html>).

Lastly, in addition to those noted in the paragraphs above, there are thermal energy providers all of whom would become regulated utilities if they own or operate equipment that provides thermal energy service to the customer for compensation. These include, but are not limited to:

- Dalkia Canada (<http://www.dalkia.ca/en/>). “Dalkia is a subsidiary of Veolia Environnement and Electricité de France (EDF), Dalkia is Europe's leading provider of energy services to local authorities and businesses”. Veolia is traded on the NYSX and Paris stock exchange with a market capitalization of approximately \$5 billion.
- TerraSource(<http://www.geotility.ca/>) – Small provider of geo-exchange systems and thermal energy utility service in British Columbia.
- Ameresco ([www.ameresco.com](http://www.ameresco.com) )- Multinational traded on the NYSX (symbol:AMRC) with a market capitalization of approximately \$400 million.
  - “Ameresco, Inc. is a provider of energy efficiency solutions for facilities throughout North America. Its solutions enable customers to reduce their energy consumption, lower their operating and maintenance costs and realize environmental benefits.”

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 461

**151.0 Reference: Issue 1 Scope (a)**

**Bonbright, J.C. Danielsen A.L. and D.R. Kamerschen, (1988),  
Principles of Public Utility Rates, Public Utilities Reports, Inc.,  
Arlington, Virginia, pp. 8, 21-22.**

**Definition of a Natural Monopoly**

According to Bonbright et al (1988: 8, 21 -22), in the *Principles of Public Utility Rates*:

"A public utility is a constellation of characteristics, no one of which is entirely unique. In the end, public utilities are public only by law, with limited property rights endowed by their creator. However, the following combination of conditions and concepts are often associated with the regulation of companies that are generally classified as public utilities.

Public utilities are often characterised by technical conditions of production that lead to lower unit costs with increasing levels of output within their legally and /or economically restricted market area. These cost advantages may be due to "economies of scale" and/or "subadditivity of costs". When these conditions prevail, the market is said to be a "natural monopoly", in which case a single firm can supply the entire market at a lower cost than can two or more firms; hence, in the presence of entry barriers, competition can only increase social costs and is undesirable." (Bonbright et al, 1988: 8)

"Economies of scale or increasing returns to scale are a long-run static concept referring to the fact that, with given input prices, as output expands, average costs fall. A firm enjoying such economies of scale throughout its entire range of output has traditionally been called a "natural monopoly." (Bonbright et al, 1988: 21)

"**Subadditivity of costs.** In the past, a natural monopoly was thought to exist if there were decreasing costs or (internal) increasing returns to scale over the demanded range of output. ... (E)conomies of scale can no longer be relied upon as the exclusive determinant of natural monopoly. In fact, economies of scale are neither necessary nor sufficient for the existence of natural monopoly. What is required for natural monopoly to render competition infeasible is subadditivity of costs, which exists when all the industry output (or array of outputs) demanded can be produced most efficiently only by a single firm. An output-specific natural monopoly means that an industry's single-product output can be produced more cheaply by a single firm than for any division of that output among two or more firms. Subadditivity of costs renders competition infeasible and will result in the formation of a natural monopoly." Bonbright et al, 1988: 22)

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 462

151.1 Assuming the product is thermal energy generated via a geo-thermal loop, does FEI have any evidence that they can provide this service more cheaply than their private sector, unregulated counterparts?

**Response:**

The FEU do not believe that providing TES service "more cheaply" than private sector, unregulated counterparts is an appropriate basis upon which to compare FEI's TES services to those of others. While customers are always cost sensitive, TES represents a long-term obligation for customers and cheap is not a substitute for safe, reliable energy service or demonstrated lowest lifecycle costs. FEI believes through success on cost-based competitive bids, it is providing cost-effective solutions and the TES products and services that customers are looking for.

As per the responses to BCUC IR 1.149.1 regarding competition and BCUC IR 1.69.4.4 regarding regulation the FEU believe that TES regulation is necessary to share the benefits of efficiency, and the thermal energy service FEI will provide represents a cost-effective means of producing and delivering thermal energy. FEI will provide ongoing reliable service at reasonable rates in exchange for the opportunity to earn a reasonable rate of return on the capital investment. The FEU also note that if other parties are providing TES on the same basis as FEI, they are also, by definition, regulated under the *UCA*. Further, since FEI is also a private sector company, all parties providing TES in this way would more properly be characterized as private sector, regulated companies.

151.2 With the above preamble definition in mind, are the following activities natural monopolies? If so, please explain why.

151.2.1 District heating, or DES activities.

151.2.2 Discrete energy services.

151.2.3 The upgrading of biogas to biomethane.

151.2.4 The provision of NGV compression services to NGV customers.

**Response:**

The *UCA* is the determining factor to define whether TES (see page 113 of the Evidence), NGV (see page 86 and 87 of the Evidence) or Biomethane (see pages 76 and 77 of the Evidence) lines of business should be regulated by the Commission. Bonbright's definition of "natural

An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 463

monopoly" is not defined in the *UCA* but the protection of customers to prevent the abuses that may result when customers are captive of a "public utility" or the regulated service of a public utility are reflected.

### 151.3 Where do the economies of scale arise in a DES?

**Response:**

Economies of scale arise in DES for very similar reasons as they do in other public utilities. Because the marginal costs of production for a DES are lower than average costs, as output of thermal energy increases, average costs fall. In other words, as load increases, average costs drop. For a DES this can be characterized as averaging the costs of the central energy plant over greater throughput volumes and numbers of customers.

### 151.4 Where do the economies of scale arise in a discrete TES, which is typically built to meet the energy needs of a customer on one piece of land?

**Response:**

Economies of scale arise when one company owns and operates more than one discrete TES. As discrete systems do not require full-time operators, the ongoing operation and maintenance activities can be satisfied by fewer personnel and the costs of remote monitoring of systems can be spread amongst the larger customer base. In some cases new buildings can be added on the same property to obtain TES at lower marginal cost from the same discrete system. The marginal costs of operation of an additional discrete energy system or additional load on existing discrete energy systems are less than the average costs so economies of scale are achieved.

The level of expertise required for these functions is common to utilities and as such provides the customer with greater confidence regarding system operation given that they are captive to the energy supplier.



An Inquiry Into FortisBC Energy Inc. ("FEI" or the "Company") Regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives	Submission Date: November 3, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 1	Page 464

**152.0 Reference: Issue 1 Scope (b)**

**Exhibit B-16, FEU RRA 2012-2013 B-16 FEU Response to ESAC IR2  
5.1 p. 15.**

**District vs Discrete Energy Systems**

According to FEU's response to ESAC IR2 5.1, "The Thermal Energy for Schools Program is also different from the existing High Efficiency Boiler EEC Program in that for the existing Efficient Boiler Program, the applicant submits a request for a boiler replacement based on the requirements of one individual building. In the proposed Thermal Energy for Schools Program the equipment replacements for several schools in the school district are reviewed as a single application to the proposed Thermal Energy for Schools Program and the replacements can be comprised of boilers or other equipment such as geexchange systems." [emphasis added]

152.1 In the case of a single customer like the Delta School District with many different, geographically separate sites, each with its own discrete energy system designed "based on the requirements of one individual building" where do the economies of scale come from?

**Response:**

Please see the responses to BCUC IRs 1.49.1 and 1.151.3.

Respectfully, this proceeding is to address issues at a principles level. Accordingly, the details of the Delta project will be the subject of a separate review process by the Commission. The FEU do believe there are benefits to customers and the Companies by pooling costs within a contractual arrangement that then produce a rate for customers.

**Attachment 3.1**

---

# **RESIDENTIAL NEW CONSTRUCTION RESEARCH**

## **ANALYSIS AND HIGHLIGHTS**

### **FINAL REPORT**

**Prepared for:**

**FortisBC**

**By:**

**Sampson Research Inc.**

**August 31, 2011**

1543 Park Avenue  
Roberts Creek, BC  
V0N 2W2  
Phone: 604.740.0254  
Email: [jsampson@sampsonresearch.com](mailto:jsampson@sampsonresearch.com)  
[www.sampsonresearch.com](http://www.sampsonresearch.com)



#### **Note to Readers:**

This report summarizes quantitative and qualitative research on characteristics and trends in new residential construction in British Columbia commissioned by FortisBC. This research was implemented prior to the change in corporate name from Terasen Gas to FortisBC.

All opinions and analysis presented in this report are the responsibility of the author, Sampson Research and do not necessarily represent the views of FortisBC or its predecessor, Terasen Gas.

#### **Currency Units**

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



# TABLE OF CONTENTS

	Page
<b>1 EXECUTIVE SUMMARY .....</b>	<b>1</b>
1.1 Introduction .....	1
1.2 Methodology.....	1
1.3 Report Organization.....	1
1.4 Study Highlights .....	2
1.5 Gas End-Use Trends Summarized .....	6
<b>2 BACKGROUND &amp; METHODOLOGY .....</b>	<b>9</b>
2.1 Background .....	9
2.2 Research Objectives.....	9
2.3 Methodology.....	10
2.4 Sample Frame .....	10
2.5 Questionnaire Design.....	14
2.6 Survey Implementation.....	15
2.7 Weighting of Results .....	15
2.8 Accuracy of Survey Estimates .....	16
2.9 Gas – Electric Market Shares.....	18
2.10 Definitions & Explanatory Notes.....	18
2.11 Report Organization.....	20
<b>3 BUILDING CHARACTERISTICS.....</b>	<b>21</b>
3.1 New Home Characteristics – Highlights .....	21
3.2 Dwelling Characteristics.....	21
3.3 Access to natural gas.....	24
3.4 Home Sizes (Square Footage) .....	24
3.5 Ceiling Heights .....	25
<b>4 SPACE HEATING .....</b>	<b>27</b>
4.1 Space Heating – Highlights.....	27
4.2 Space Heating Fuels .....	27
4.3 Fuel Switching .....	32
4.4 Space Heating Methods .....	32
4.5 Heat Pumps.....	37
4.6 Space Heating Preferences among New Homebuyers.....	41
<b>5 DOMESTIC WATER HEATING .....</b>	<b>45</b>
5.1 Domestic Water Heating – Highlights .....	45
5.2 Domestic Water Heater Misclassification .....	45
5.3 Saturation & Penetration of Hot Water Heaters .....	46
5.4 Domestic Water Heater Fuels .....	46
5.5 Saturation & Penetration of Gas Domestic Water Heaters .....	48
5.6 Water Heating Equipment (Methods) .....	49
5.7 Water Heating Preferences.....	50
<b>6 FIREPLACES &amp; HEATING STOVES.....</b>	<b>53</b>
6.1 Fireplace and Heater Stoves – Highlights.....	53
6.2 Fireplace and Heating Stove Types .....	53

## TABLE OF CONTENTS

---

6.3	Penetration and Saturation Rates – By Region .....	53
6.4	Penetration and Saturation Rates – By Dwelling Type .....	55
6.5	Fireplace Use .....	56
<b>7</b>	<b>APPLIANCES .....</b>	<b>59</b>
7.1	Appliances – Highlights .....	59
7.2	Cooking Appliances .....	59
7.3	Cleaning Appliances .....	61
7.4	Air Conditioning .....	63
7.5	Miscellaneous Appliances .....	65
<b>8</b>	<b>POOLS AND HOT TUBS.....</b>	<b>67</b>
8.1	Pools and Hot Tubs – Highlights .....	67
8.2	Penetration .....	67
8.3	Pool and Hot Tub Heating.....	68
<b>9</b>	<b>DEMOGRAPHICS.....</b>	<b>69</b>
9.1	Respondent Age.....	69
9.2	Marital Status .....	70
9.3	Number of People in the Household .....	70
9.4	Education .....	71
9.5	Household Income .....	72
9.6	Language.....	73
<b>10</b>	<b>GAS END-USE COMBINATIONS .....</b>	<b>75</b>
10.1	Highlights .....	75
10.2	Gas End-Use Trends – Summary.....	75
10.3	Gas End-Use Combinations.....	77
10.4	Most Common Gas End-Use Combinations.....	80
<b>11</b>	<b>BIBLIOGRAPHY .....</b>	<b>85</b>

## APPENDICES

Residential New Home Survey Questionnaire .....	Appendix A
---	------------

# LIST OF EXHIBITS

Page

Exhibit 2-1: Sample Frame – 2010 Residential New Home Survey .....	11
Exhibit 2-2: RNHS Sample Frame – Distribution by Dwelling Type by Region .....	12
Exhibit 2-3: Distribution of Qualifying Dwellings by Delta Value (%) .....	13
Exhibit 2-4: Survey Response – 2010 Residential New Home Survey .....	15
Exhibit 2-5: RNHS 2010 Weights – Gas Homes .....	16
Exhibit 2-6: RNHS 2010 Weights – Electric-Only Homes.....	16
Exhibit 2-7: Accuracy Levels for Proportional Responses by Region (%) – Gas Homes .....	17
Exhibit 2-8: Estimated Accuracy Levels for Proportional Responses by Building Type (%) – Gas Homes.....	17
Exhibit 2-9: Accuracy Levels for Proportional Responses by Region (%) – All Gas and Electric Homes.....	18
Exhibit 2-10: Accuracy Levels for Proportional Responses by Building Type (%) – All Gas and Electric Homes .....	18
Exhibit 3-1: Home Purchase Characteristics – New versus Previously Owned (%).....	21
Exhibit 3-2: Timing of the New Home Purchase – By Region.....	22
Exhibit 3-3: Timing of the New Home Purchase – By Dwelling Type .....	22
Exhibit 3-4: Choices Offered to New Home Purchasers (%) – By Region.....	23
Exhibit 3-5: Choices Offered to New Home Purchasers (%) – By Dwelling Type .....	24
Exhibit 3-6: Dwelling Square Footage by Region and Dwelling Type (ft <sup>2</sup> ).....	24
Exhibit 3-7: Dwelling Square Footage by Dwelling Vintage (ft <sup>2</sup> ) .....	25
Exhibit 3-8: Ceiling Heights by Dwelling Vintage - Mean Percentages (%) .....	25
Exhibit 4-1: Main Space Heating Fuel by Region (%).....	28
Exhibit 4-2: Main Space Heating Fuel by Dwelling Type (%) .....	28
Exhibit 4-3: Main Space Heating Fuel by Dwelling Vintage (%) .....	29
Exhibit 4-4: Incidence of Secondary Space Heating Fuel by Region and Dwelling Type (%).....	29
Exhibit 4-5: Most Common Secondary Space Heating Fuel by Region (%) .....	30
Exhibit 4-6: Most Commonly Used Secondary Space Heating Fuel by Dwelling Type (%).....	30
Exhibit 4-7: Main Space Heating Fuel Switching (%).....	32
Exhibit 4-8: Main Space Heating Method by Region (%) .....	33
Exhibit 4-9: Main Space Heating Method by Dwelling Type (%).....	34
Exhibit 4-10: Most Used Secondary Space Heating Method by Region (%) .....	35
Exhibit 4-11: Second Most Used Space Heating Method by Dwelling Type (%) .....	36
Exhibit 4-12: Incidence of Gas Furnace or Boiler by Region (%) .....	36
Exhibit 4-13: Incidence of Gas Furnaces or Boilers by Dwelling Type (%).....	37
Exhibit 4-14: Incidence of Gas Furnaces or Boilers by Dwelling Vintage (%) .....	37
Exhibit 4-15: Incidence of ASHPs and GSHPs by Dwelling Type (%).....	38
Exhibit 4-16: Incidence of ASHPs by Dwelling Vintage (%) .....	39
Exhibit 4-17: ASHP Space Heating Pairings (%) .....	39
Exhibit 4-18: Incidence of Air Conditioning Equipment by Region (%) .....	41
Exhibit 4-19: Current versus Preferred Heating Systems (%).....	42
Exhibit 5-1: Domestic Water Heater Penetration and Saturation by Region.....	46
Exhibit 5-2: Domestic Water Heaters by Dwelling Type – Any Fuel.....	46
Exhibit 5-3: Domestic Water Heating Fuels by Region (%) .....	47
Exhibit 5-4: Domestic Water Heating Fuels by Dwelling Type – All DWH Units .....	47
Exhibit 5-5: Domestic Water Heating Fuels by Dwelling Vintage (%) .....	48
Exhibit 5-6: Gas DWH - Penetration & Saturation by Region by Dwelling Vintage.....	48
Exhibit 5-7: Gas DWH - Penetration & Saturation by Dwelling Type by Dwelling Vintage .....	49
Exhibit 5-8: Domestic Water Heater Types by Region .....	49
Exhibit 5-9: Domestic Water Heater Types by Dwelling Type.....	50
Exhibit 6-1: Fireplaces and Heating Stoves by Region .....	53
Exhibit 6-2: Fireplace and Heating Stove Details by Region.....	54
Exhibit 6-3: Fireplaces and Heating Stoves by Dwelling Type – Gas Homes.....	55
Exhibit 6-4: Fireplace and Heating Stove Details by Dwelling Type .....	55

# LIST OF EXHIBITS

---

Exhibit 6-5: Fireplaces and Heating Stoves by Dwelling Vintage ..... 56

Exhibit 7-1: Penetration and Saturation of Cooking Appliances by Region ..... 60

Exhibit 7-2: Penetration and Saturation of Cooking Appliances by Dwelling Type ..... 61

Exhibit 7-3: Penetration and Saturation of Cleaning Appliances by Region ..... 62

Exhibit 7-4: Penetration and Saturation of Cleaning Appliances by Dwelling Type ..... 62

Exhibit 7-5: Penetration and Saturation of Air Conditioning Appliances by Region ..... 64

Exhibit 7-6: Penetration and Saturation of Air Conditioning Appliances by Dwelling Type ..... 65

Exhibit 7-7: Penetration and Saturation of Miscellaneous Appliances by Dwelling Type ..... 66

Exhibit 7-8: Penetration and Saturation of Miscellaneous Appliances by Dwelling Type ..... 66

Exhibit 8-1: Penetration of Pools and Hot Tubs by Region (%) ..... 67

Exhibit 8-2: Penetration of Pools and Hot Tubs by Dwelling Type (%) ..... 68

Exhibit 9-1: Age of Survey Respondents by Region (%) ..... 69

Exhibit 9-2: Age of Survey Respondents by Building Type (%) ..... 69

Exhibit 9-3: Marital Status of Survey Respondents by Region (%) ..... 70

Exhibit 9-4: Marital Status of Survey Respondents by Region (%) ..... 70

Exhibit 9-5: Number of People in the Household by Age Group and Region ..... 71

Exhibit 9-6: Number of People in the Household by Building Type ..... 71

Exhibit 9-7: Highest Level of Education Completed by Region (%) ..... 72

Exhibit 9-8: Highest Level of Education Completed by Building Type (%) ..... 72

Exhibit 9-9: Annual Household Income (2009) by Region (%) ..... 73

Exhibit 9-10: Annual Household Income (2009) by Dwelling Type (%) ..... 73

Exhibit 9-11: Main Language Spoken in the Home by Region (%) ..... 74

Exhibit 9-12: Main Language Spoken in the Home by Dwelling Type (%) ..... 74

Exhibit 10-1: Number Gas End-Use Combinations by Region (%) ..... 77

Exhibit 10-2: Average Number of Gas End-uses by Dwelling Type ..... 78

Exhibit 10-3: Top Ten Gas End-Use Combinations by Region – New Homes ..... 80

Exhibit 10-4: Top Ten Gas End-Use Combinations by Region (%) – Older Homes ..... 81

Exhibit 10-5: Top Ten Gas End-use Combinations by Dwelling Type (%) – New Homes ..... 81

Exhibit 10-6: Top Ten Gas End-Use Combinations by Dwelling Type (%) – REUS 2008 ..... 82

Exhibit 10-7: Gas Space Heat and DWH Combinations by Region and Dwelling Type (%) ..... 83

# LIST OF FIGURES

Page

Figure 1-1: Gas End-Use Trends – Gas Space & Water Heating..... 6

Figure 1-2: Gas End-use Trends – Gas Cooking & Other End-Uses..... 7

Figure 3-1: Residential Ceiling Heights by Dwelling Vintage ..... 26

Figure 4-1: Gas Share of Main Space Heating Fuel ..... 31

Figure 4-2: Gas Share of Most Used Secondary Space Heating Fuel ..... 31

Figure 4-3: Incidence of ASHPs and GSHPs by Region ..... 38

Figure 4-4: Incidence of Central Air Conditioning in Gas Homes (%) ..... 40

Figure 4-5: Space Heating Preferences..... 43

Figure 5-1: Does this Residence have the Water Heating Method You Prefer? ..... 51

Figure 5-2: Preferred Water Heating Method ..... 51

Figure 6-1: Fireplace Usage Behaviours – New Homes ..... 57

Figure 7-1: Central Air Conditioning – Equipment Combinations..... 63

Figure 10-1: Gas End-Use Trends – Gas Space & Water Heating..... 76

Figure 10-2: Gas End-use Trends – Gas Cooking & Other End-Uses..... 76

Figure 10-3: Average Number of Gas End-uses – Gas Homes ..... 78

Figure 10-4: Average Number of Gas End-Uses by Dwelling Value ..... 79

Figure 10-5: Homes with Gas Space Heating and Gas DWH..... 83



# 1 EXECUTIVE SUMMARY

## 1.1 Introduction

This report summarizes the results from FortisBC's 2010 Residential New Home Survey (2010 RNHS), a quantitative survey of residential dwellings constructed between 2006 and 2010. The survey queried homeowners about their dwelling's construction characteristics, space and domestic water heating fuels and equipment, gas and electric appliances, and other natural gas end-uses. The survey targeted single family detached dwellings, duplexes and triplexes (semi-detached), and townhouses and row houses. FortisBC is addressing apartments in a separate body of research.

The 2010 Residential New Home Survey is one component of a larger body of research commissioned by FortisBC on new construction practices for residential dwellings. The objectives of this larger body of research are to understand:

- consumer preferences regarding heating systems and appliances;
- impact of new construction practices and retrofit activity of the thermal energy mix of homes; and
- the influence that developers, builders, architects, engineers, HVAC contractors, and government have on the final selection of heating systems and appliances in new residential construction.

## 1.2 Methodology

The 2010 RNHS surveyed 1,070 households living in homes constructed between 2006 and 2010 across four regions of British Columbia, including Lower Mainland / Fraser Valley, Vancouver Island, South Interior, and North Interior. Both electric and gas homes were included in the sample frame which was prepared using data from the BC Assessment Authority. Electric-only and gas homes were surveyed with the intent to allow FortisBC to estimate fuel shares in new construction. In the end, a lower-than-expected survey response from electric-only households restricted subsequent analyses and reporting to homes with gas service only.

The 2010 RNHS questionnaire was designed to provide data consistent and compatible with data from FortisBC's 2008 Residential End-Use Survey (2008 REUS). This latter survey provided detailed information on the energy and dwelling characteristics of homes with natural gas service constructed prior to 2006.

Understanding new homebuyer preferences for space and water heating, and the influence of developers, builders and other professionals and trades people on equipment choices in new residential construction, was accomplished via a series of focus groups and interviews conducted in the Lower Mainland, Vancouver Island, and the Interior. Eight focus groups were conducted with owners of newer homes. Six groups were held with builders, developers, engineers, architects, and HVAC trades people. Telephone and in-person interviews were conducted with builders, developers, and other influencers unable to attend a focus group session or where confidentiality issues necessitated a more private approach to gathering information.

## 1.3 Report Organization

This report is intended as a resource for FortisBC management and staff. It summarizes key data from the 2010 RNHS, with comparisons made to data from the 2008 REUS. Highlights and insights from the focus groups and interviews are provided throughout the report to provide context and to assist in the

## EXECUTIVE SUMMARY

---

interpretation of survey results. A detailed report summarizing the findings from the qualitative research was provided to FortisBC's market research department in advance of this report. Electronic copies of all reports, datasets, and 2010 RNHS survey cross-tabulations have been provided to FortisBC.

### 1.4 Study Highlights

This section presents highlights from the 2010 RNHS. Additional data and analyses can be found in the main body of the report, including detail by region, dwelling type, and dwelling vintage. Comparisons with the results from the 2008 REUS are made where and when relevant.

#### 1.4.1 Dwelling Characteristics

- One-third of home owners purchased their home prior to completion of construction, meaning that two-thirds (67%) of new homes are purchased after decisions on space and water heating fuels and methods have been made.
- Regardless of whether they were allowed to choose, focus group participants confirmed that fuels and methods used for space and domestic water heating rank well down the list of priorities used when purchasing a home. The home's location, size, price, and other characteristics (e.g., number of bedrooms, garage, layout, etc.) have significantly higher priority in the selection process. Owners of custom-built homes are an exception, as they typically have greater control over the choice of fuels and end-uses.
- Some large developers offer home finishing choices to new home purchasers and occasionally the choice of heating systems and natural gas appliances. Smaller builders of "spec" homes tend to make these decisions based on their knowledge of the market gained from experience. Custom home builders offer the greatest choice to their clients but they represent a small segment of the overall new construction market.
- The average size (floor space) of single family detached (SFD) dwellings constructed in British Columbia is increasing. New gas SFDs (i.e., those built since 2005) are 30% larger than gas SFDs constructed in the mid-1970s to mid-1980s. Townhouses and row houses have not followed this trend.
- Ceiling heights are increasing as well. The majority (70%) of new homes now have ceiling heights of nine feet or higher, compared to only 15% of homes built during 1976-1985. The combination of larger homes with higher ceilings increases the overall volume of interior air space that a space heating system is required to condition.

#### 1.4.2 Space Heating

- Compared to the stock of older gas homes (i.e., those built prior to 2006), new homes are less likely to use gas (either natural gas or piped propane) as their primary heating fuel (73% of new homes versus 91% of older gas homes). New homes are more likely than older homes to use gas as a secondary space heating fuel (33% versus 11%).
- The declining share of natural gas as a main space heating fuel is attributed to (1) the decrease in proportion of gas homes equipped with a gas furnace (65% of new homes versus 80% of homes built prior to 2006), and (2) the growing popularity of air source heat pumps (ASHPs) (18% of new

gas homes versus 4% of older gas homes). These developments were confirmed in discussions held with builders and developers.

- Sixty-five percent (65%) of homes built since 2005 have a gas furnace, down significantly from the 89% of homes built between 1950 and 1975. The decline in penetration of gas furnaces in new construction is a long-run trend.
- The penetration of gas boilers in new gas homes is statistically unchanged from that of the existing stock of homes (13% versus 12% respectively), suggesting a small but relatively stable market for this method of space heating. The popularity of in-floor hot water heating was evident among homebuyers participating in the focus groups, suggesting a continuing role for gas boilers.
- ASHPs have surged in popularity during the past five years. The incidence of ASHPs is highest on Vancouver Island (38% of all new gas homes) and the Interior and Lower Mainland (13% each). New single detached dwellings are considerably more likely than new townhouses and row houses to have an ASHP installed (21% versus 3%).
- Even in the most temperate regions of British Columbia, ASHPs require a back-up or supplementary heating method in order to satisfy the home's space heating load during colder weather. The two most common back-up methods are gas forced air furnaces (46% of new gas homes with an ASHP), and gas fireplaces (33%).
- Geothermal (ground source) heating systems account for 4% of new gas homes compared to less than 1% of the stock of older gas homes.
- Heating system preferences are formed over time. While low on the criteria for choosing a new home, those with defined preferences tend to be older (experienced) homebuyers. When asked, 21% of respondents to the 2010 RNHS said they prefer a space heating method different to what is in their home. Those with electric baseboard heaters were the most likely to want a different system.
- The four space heating methods preferred by homebuyers included geothermal (22% of those who prefer a different space heating system), hot water radiant / under floor heat (21%), air source heat pump (18%), and a central forced air furnace (15%). These results are consistent with focus group discussions, where the popularity of other heating methods (heat pumps, hot water under-floor heating) was clearly evident.

### 1.4.3 Fireplaces and Heating Stoves

- Fireplaces and heating stoves (any fuel, but predominately gas or electric) continue as a popular feature in new home construction, installed in 97% of all gas homes built between 2006 and 2010. Interviews with builders suggest that the popularity of fireplaces in new construction, especially townhouses / row houses, may be on the wane as big screen TVs win out over fireplaces as the predominant living room feature.
- Natural gas remains the most popular fuel choice for fireplaces in new homes (77% of new homes with a fireplace). New SFD homes are significantly more likely to have a gas fireplace compared to new townhouses / row houses (83% versus 51%). Townhouses and row houses are significantly more likely to have an electric fireplace than single family detached homes (38% versus 11%) due to venting location restrictions for gas fireplaces.

## EXECUTIVE SUMMARY

---

- Sixty-three percent (63%) of new homes with a gas fireplace use it to supplement their home's space heating system. A review of data from the 2008 REUS reveals that this is not a new behaviour, with 70% of older gas homes using their gas fireplace as a space heating method.

### 1.4.4 Domestic Water Heating

- Use of natural gas for domestic water heating in new gas homes is down significantly compared to homes constructed prior to 2006 (69% versus 91%). Builders and developers attributed the decline to developments in gas furnaces (i.e., fewer installations, regulations requiring high efficiency units). From the builder's perspective, the cost of adding a B vent to accommodate a gas DWH, the loss of precious interior space to accommodate the vent, and the relative cost disadvantage of a gas DWH relative to an electric tank, makes gas water heaters considerable less desirable than electric models.
- The decline in gas DHW penetration has occurred across all dwelling types surveyed and primarily impacts traditional storage type heaters. In contrast, instantaneous (tankless) gas domestic water heaters are growing in popularity, installed in 7% of new gas homes, compared to 3% of homes built prior to 2006.
- Builders and developers confirm the popularity of instantaneous domestic heaters among a broad range of homeowners. Builders report this interest is tempered once the equipment and installation costs are presented. Builders report that instantaneous domestic water heating is expected by buyers of higher-end homes.
- Focus groups indicated that most homebuyers do not have strong preferences regarding the fuel or method used for domestic water heating.

### 1.4.5 Appliances

- The penetration of gas cooking appliances, including piped gas BBQs, is increasing, with 33% of new homes having a gas range (compared to 18% of gas homes built prior to 2006), 22% having a gas cook top (13%), and 39% having a piped gas BBQ (16%).
- Focus group participants highlighted the superior heat control offered by gas cooking appliances, and the "prestige factor" they added to a kitchen.
- High efficiency clothes washers are now predominant in new homes, with penetration of 71% compared to 27% for older homes. The increased penetration of high efficiency clothes washers means less hot water demand.
- Whether provided by a traditional central air conditioning unit or via a heat pump, 42% of new homes have central air conditioning compared to 19% of older homes.
- Townhouses and row houses are significantly less likely to have central AC compared to SFDs (19% versus 46% respectively).

### 1.4.6 Pools & Hot Tubs

- Two percent (2%) of new gas homes have a pool, and 9% have a hot tub. In comparison, 5% of older gas homes have a pool, and 15% have a hot tub. The somewhat lower penetration of pools and hot

tubs in new homes reflects their status as luxury items that are more likely to be installed after the home is purchased.

- The small number of RNHS respondents with pools or hot tubs means that data on fuels used for heating are not reliable.

### 1.4.7 Socio-Demographics

- Residents of homes built since 2005 are more likely to be younger and better educated than those living in the older stock of gas homes.
- Consistent with feedback provided by builders and developers, buyers of single family detached dwellings are more likely to be older adults moving up the property ladder compared to buyers of townhouses and row houses who tend to be younger, single or newly single (recently divorced, separated, or widowed).
- Large builders design their developments with specific customer segments in mind. They actively commission / use research to understand consumer preferences, and to market their developments.

### 1.4.8 Analysis of Gas End-Use Combinations

Trends in gas end-use combinations (pairings) were analyzed using data from the 2010 RNHS and 2008 REUS surveys.

- More than 200 unique combinations of gas end-uses were identified among gas homes (any vintage) in the four FortisBC regions. The composition and quantity of end-use combinations varies by dwelling vintage, dwelling type, region, and the home's market value.
- The average number of gas end-uses per home has been generally increasing over time. On average, new gas homes have 3.3 gas end-uses, compared to 2.6 end-uses for homes constructed prior to 1950.
- After several decades of gradual decline, the proportion of newly constructed gas homes with only one or two gas end-uses has increased. On average, 9% of new homes have only one gas end-use, although this percentage varies by region. Of note, nearly one in five (19%) of Vancouver Island homes with gas service and built since 2005 have one gas end-use (typically a gas fireplace).
- The most common end-use combinations in new homes, except those on Vancouver Island, include the pairing of a gas furnace or boiler (SH) with a gas fireplaces (FP), and gas domestic water heaters (DWH). Vancouver Island is noteworthy as the two most common gas end-use combinations include fireplaces (FP) alone (no other gas end-uses), and fireplaces paired with BBQs (FP BBQ).
- New homes have greater diversity of gas end-use combinations. The ten most common end-use combinations for new homes account for 61% to 69% of all gas end-use combinations depending upon the dwelling type. By comparison, the ten most common end-use combinations for older homes account for 73% to 87% of all combinations.
- Builder and developers emphasized that end-use equipment decisions (fuel type combinations) were driven, in large part, by the home's price point, and target buyer segment. Survey data confirmed that the number of gas end-uses in the home increases with higher value homes.

## EXECUTIVE SUMMARY

- The traditional pairing of gas space and domestic water heating in newer homes is on the decline. Fifty-six percent (56%) of new SFDs have the traditional pairing of gas space heat and gas DWH, compared to 81% of older gas SFDs. New townhouses and row houses experienced a 19 percentage point decline (54% versus 73%).
- The decline in traditional space and water heating pairings has been partially offset by increased penetration of smaller gas loads such as gas cook tops, gas ranges, and piped gas BBQs.

### 1.5 Gas End-Use Trends Summarized

Figures 1-1 and 1-2 summarize the penetration of gas end-uses by vintage of gas dwellings. Figure 1-1 highlights the declining share of gas furnaces and DWH, and the growth in gas fireplaces. A decline in the latter end-use among new homes is evident.

**Figure 1-1: Gas End-Use Trends – Gas Space & Water Heating**

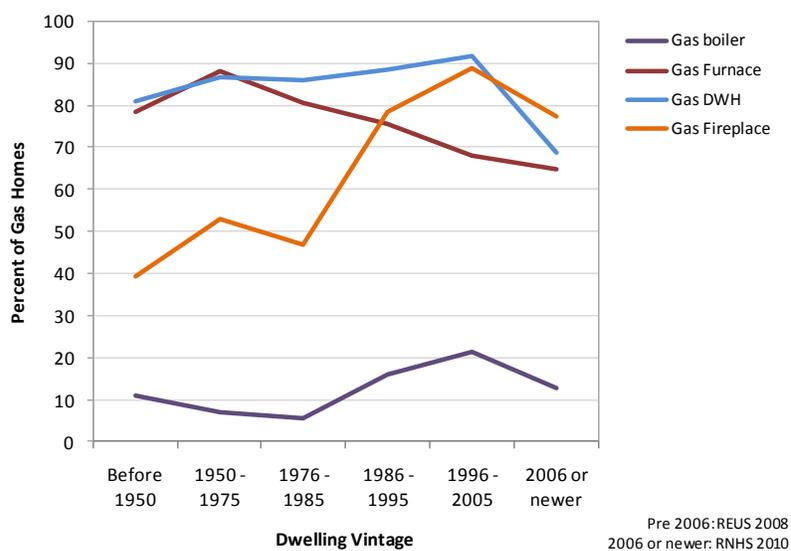
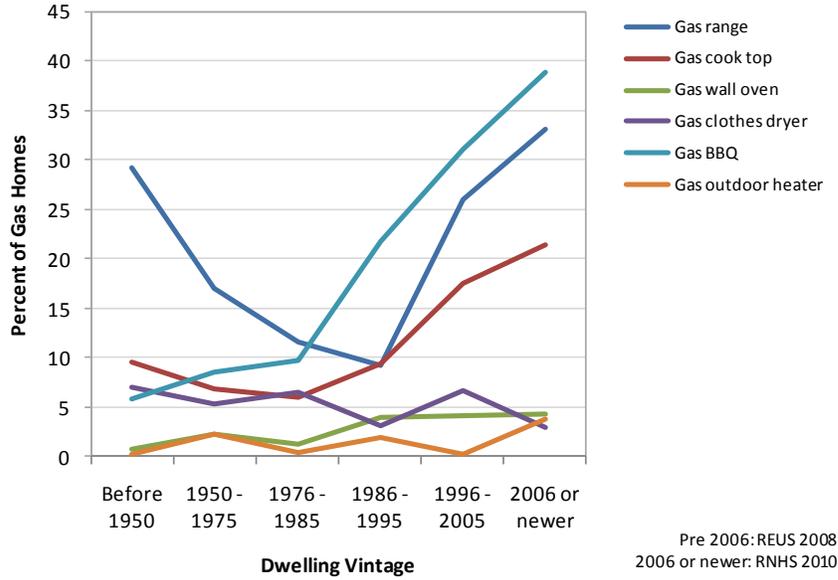


Figure 1-2 (next page) illustrates the steady increase in the penetration of gas cooking appliances, with the penetration of piped gas BBQs in new homes nearly quadruple that of homes constructed in the 1976-85 period. While penetration has been traditionally quite low, the popularity of gas dryers appears to be on a slow long-term decline.

Figure 1-2: Gas End-use Trends – Gas Cooking & Other End-Uses



\* \* \* \* \*



# 2 BACKGROUND & METHODOLOGY

This section summarizes the objectives, background, and methodology for research into residential new home construction, including the survey of residential homes constructed in the 2006 to 2010 period, and qualitative research including focus groups and interviews with new homebuyers, builders, developers, and industry influencers.

## 2.1 Background

Residential demand for natural gas has undergone significant change during the past ten years. Residential use rates (average consumption per household) for FortisBC have been declining during the past ten years, consistent with continent-wide trends.<sup>1</sup> The decline has been attributed to a variety of factors. While not a comprehensive list, they include: efficiency improvements in space and domestic water heating equipment; changes in government regulations and building codes that determine the efficiency of gas end-use appliances installed in new construction; the increasing proportion of townhouses and row housing in new construction; and consumer demand response to increases in the price of natural gas.

In addition to declining use rates, evidence is accumulating that the share of newly constructed homes with natural gas service may also be declining. Both issues are of significant concern to FortisBC, and are the primary reasons for commissioning research to understand the extent and nature of these declines, the implications for FortisBC if these trends continue, and strategic options that FortisBC may take to mitigate the impacts including diversifying its service offerings to include the provision of alternate energies, district energy systems, and the like.

## 2.2 Research Objectives

The objectives of the residential research commissioned by FortisBC include understanding:

- consumer preferences for heating systems and gas appliances;
- the effects of retrofit activity on the thermal energy mix in residential buildings; and
- the influence that developers, builders, architects, engineers, HVAC contractors, and government have on the selection of heating systems for new and retrofit construction.

It was a specific desire of FortisBC to have a quantitative assessment of new residential construction compatible and comparable with results from their most recent residential end-use survey (REUS) conducted in 2008. The two quantitative studies would then be used to quantify how trends in new and retrofit construction are impacting the demand for gas from space heating, water heating, and gas end-uses for FortisBC's overall residential customer base.

Understanding the drivers behind the trends in new and retrofit construction necessitated understanding the perspectives of both homebuyers and major influencers of the new construction industry including builders, developers, architects, equipment suppliers, and HVAC contractors.

---

<sup>1</sup> p 3-1, 2008 Residential End-use Survey, consultant report prepared for FortisBC (formerly Terasen Gas), November 2009.

## BACKGROUND & METHODOLOGY

---

This research was accompanied by similar research on the commercial new construction market. The results of that research are reported in a separate report.

### 2.3 Methodology

Residential research for this project included quantitative and qualitative elements. The primary quantitative methodology consisted of a residential end-use survey of recently constructed housing. The qualitative research portion of the study consisted of focus groups held with homeowners of recently built homes, builders, architects, and HVAC specialists. These were accompanied by interviews with government influencers, large developers, and consulting engineers.

#### 2.3.1 Quantitative Research - Residential New Home Survey

The sample frame for the Residential New Home Survey (RNHS 2010) consisted of single family residential dwellings constructed between 2006 and 2010 for the four regions served by FortisBC:

- Lower Mainland & Fraser Valley (LM)
- Vancouver Island / Sunshine Coast (VI)
- South Interior (SI)
- North Interior (NI)

The survey sample frame included homes with and without natural gas service and included the following dwelling types:

- Single Family Detached (SFD) – single family detached dwellings, including mobile homes.
- Duplexes and Triplexes (Dup/Tri) – single family homes sharing at least one common wall with another unit, to a maximum of three contiguous family homes.
- Townhouses and Row houses – “side by side”, or “over and under” combinations of individual residential units in a multi-unit residential complex.

Low rise and high rise apartments / condominiums were excluded from the RNHS 2010. These dwellings were surveyed under the companion end-use survey of new commercial buildings (NCEUS 2010).

#### 2.3.2 Qualitative Research – Focus Groups & Interviews

Space and domestic water heating preferences of new homebuyers, and the influence of developers, builders and other professionals and trades people on equipment choices in new residential construction, were explored using focus groups and interviews. Eight focus groups were conducted across the Lower Mainland, Vancouver Island, and the Interior regions with recent buyers of newer homes. Another six focus groups were held with builders, developers, engineers, architects, and HVAC trades people. Telephone and in-person interviews were conducted with builders, developers, and other influencers unable to attend a focus group session or where confidentiality issues necessitated a more private approach to gathering information.

### 2.4 Sample Frame

Implementation of the RNHS 2010 required a database which identified single family dwellings (includes single family detached, duplexes, triplexes, townhouses and row houses) constructed in British Columbia

since 2005. Geographic-specific data on new residential dwellings were purchased from Landcor, a private firm that uses tax assessment data from the British Columbia Assessment Authority. Confidentiality considerations prevented access to street addresses or owner names for the new dwellings. However, information on the number of new dwellings by dwelling type was available by six digit postal code. Specifically, the following information was available by six digit postal code:

- Number of residential dwellings that met the build date (2006 to 2010) and dwelling type criteria (Single family detached, Duplex/Triplex, Townhouse / Row house)
- Number of residential dwellings that met the build date criteria regardless of dwelling type (i.e., used to estimate percent of new dwellings that are apartments)
- Number of residential dwellings located in each postal code regardless of vintage or dwelling type (i.e., used to determine the number of non-qualifying households that would receive a survey if the postal code was selected).

The Landcor database provided more than 10,900 postal codes representing more than 58,000 single family homes built in British Columbia since 2005. Due to the lag between new home registrations and when these registrations are available to Landcor via BC Assessment Authority, data representing homes completed in 2010 were limited to homes completed in the first few months of 2010.

The structure of the sample frame allowed the identification of the number of qualified dwellings, and the determination of their shares of the housing market for each postal code throughout the four regions. The database of postal codes would be subsequently used to conduct a “reverse lookup” to obtain addresses for the purpose of delivering the RHNS questionnaire. The primary caveat to using Landcor data was the inability to determine which of the street addresses identified via the reverse look-up represented the target population (dwelling type and vintage). In effect, to reach the residential dwellings in the sample frame meant sending the RNHS survey to all addresses represented by each postal code, and asking that only residents of homes constructed since 2005 respond to the survey.

The sample frame of qualified new dwellings is summarized in Exhibit 2-1.

### Exhibit 2-1: Sample Frame – 2010 Residential New Home Survey

Dwelling Type	Lower Mainland & Fraser Valley (LM)	Vancouver Island / Sunshine Coast (VI)	South Interior (SI)	North Interior (NI)	Total
Single Family Detached (SFD)	16,721	9,892	5,854	5,714	38,181
Duplex & Triplex (Dup/Tri)	1,193	849	427	649	3,118
Townhouse/Row House (TH/RH)	12,950	2,094	1,041	1,027	17,112
Total	30,864	12,835	7,322	7,390	58,411

Exhibit 2-2 (next page) expresses the distribution of the sample frame by dwelling type for each region. The data show that new townhouses / row houses make up a significantly larger proportion of total new homes in the Lower Mainland / Fraser Valley compared to the other three regions (42% versus 14% to 16%). As FortisBC’s 2008 Residential End-use Study (REUS) clearly indicated that fuel and equipment choices for space heating and water heating varied by dwelling type, maintaining the relative distribution of the three dwelling types in the final survey results will be important to correctly interpreting the results from the RNHS.

## BACKGROUND & METHODOLOGY

---

Further analysis of the Landcor dataset revealed that some postal codes included a large number of dwellings which did not meet the qualifying build date or dwelling type criteria. In effect, including these postal codes in the sample frame would mean sending out a large number of surveys to non-qualifying households in an attempt to reach the dwellings that matched our sample frame criteria.

### Exhibit 2-2: RNHS Sample Frame – Distribution by Dwelling Type by Region

Dwelling Type by Region	Lower Mainland & Fraser Valley (LM)	Vancouver Island / Sunshine Coast (VI)	South Interior (SI)	North Interior (NI)	Total
Single Family Detached (SFD)	54%	77%	80%	77%	65%
Duplex & Triplex (Dup/Tri)	4%	7%	6%	9%	5%
Townhouse/Row House (TH/RH)	42%	16%	14%	14%	29%
Total	100%	100%	100%	100%	100%

A number of options were considered as a way to identify the addresses of qualifying dwellings within these postal codes. These included large scale telephone pre-screening or, alternatively, sending researchers to hand deliver the surveys to the homes most likely to be qualifying (i.e., newer homes). Google Street View was used with a number of cases to visually confirm the integrity of the data and to gauge whether a team of researchers would be able to correctly identify qualifying dwellings within existing and new neighbourhoods. Cases of “in-fill” were confirmed<sup>2</sup>, as were large scale residential subdivisions. In some cases, the new homes were photographed while still under construction.<sup>3</sup> Telephone pre-screening and using field researchers were both ruled out as too expensive and/or not sufficiently reliable to justify the effort.<sup>4</sup> As there was no way to cost-effectively determine which dwellings under each postal code met the sample frame criteria, the only way to ensure a qualifying property received a survey questionnaire was to send surveys to all households within the postal code, regardless of build date or dwelling type.

Random sampling within the postal code in cases where only some homes met the qualifying criteria, while reducing the number of surveys sent out to the postal code, significantly reduced the odds of qualifying homes receiving and responding to a survey request. In effect, an unavoidable aspect of using the Landcor dataset was that some survey requests would be directed at non-qualifying dwellings in order to reach qualifying dwellings. Instructions provided on the survey instrument would need to clearly indicate who qualified for the survey.

To minimize the number of surveys going to non-qualifying dwellings (ineligible sample), the number of non-qualifying residences for each postal code was calculated prior to drawing the sample. The difference between the number of all qualifying and non-qualifying dwellings, less qualifying dwellings, was defined as the “delta” value. Delta values were ultimately used to develop the sampling strategy.

---

<sup>2</sup> In-fill housing refers to the construction of a new dwelling within an existing, older neighbourhood. Typically, this includes razing the older structure and building a new home on the lot.

<sup>3</sup> Google Street View for Vancouver went live on October 7, 2009 meaning that some photographic images viewed at the time of this research would have been taken more than a year earlier.

<sup>4</sup> Google Street View clearly illustrated the difficulty that researchers would have in visually identifying homes built since 2005. In in-fill situations involving neighbourhoods with older character homes, some new homes were constructed to be aesthetically similar to existing homes. In many cases, this was done with such effectiveness that it made it very challenging to correctly identify the new home. Alternatively, some new homes were part of a multi-year new housing development where some homes were built prior to 2006 and some after, although their outward appearance gave no indication which were qualifying (2006 or newer).

### Analysis of Delta Values

A broad range of delta values was observed in the dataset, ranging from zero (i.e., every dwelling in the postal code represented a qualifying dwelling), to well over 1,000 for some large rural postal codes (i.e., less than one qualifying dwelling per 1,000 residential properties). Delta values were generally smaller for urban postal codes versus rural postal codes. Established urban neighbourhoods, such as those found in Vancouver, often showed one qualifying dwelling for less than 10 homes (delta values of 9 or less). This was typical of an in-fill situation where (i) the postal code represents one side of a city block, and (ii) an older dwelling was torn down and replaced by a new dwelling. New subdivisions (e.g., Langley or Maple Ridge) were more likely to have delta values approaching zero (every dwelling in the postal code met the sample criteria). These relationships were confirmed using Google Street View.

Exhibit 2-3 summarizes the distribution of qualifying dwellings by delta value, by region. The data show that, on average, 20% of all qualifying dwellings are located in postal codes where all dwellings meet the sample criteria (delta = 0), with the Lower Mainland having the highest proportion (29%) and the South Interior region having the lowest percentage (9%). The percentage of qualifying homes in postal codes with delta values of 15 or higher ranged from a low of 30% of all qualifying dwellings in the Lower Mainland to a high of 62% for postal codes in the North Interior region.

**Exhibit 2-3: Distribution of Qualifying Dwellings by Delta Value (%)**

Delta Values	LM	VI	SI	NI	Total
0	29	11	9	10	20
1 or less	33	15	12	14	24
2 or less	37	17	15	16	27
3 or less	40	18	18	17	30
4 or less	43	20	20	18	32
5 or less	47	23	22	23	35
6 or less	50	26	25	25	39
7 or less	53	29	28	26	41
8 or less	56	31	30	28	44
9 or less	59	35	34	29	47
10 or less	62	37	37	31	49
11 or less	64	39	39	32	51
12 or less	66	40	42	33	53
13 or less	68	42	44	36	55
14 or less	70	44	46	38	57
15 or more	30	56	54	62	43
<b>All Delta</b>	<b>30864</b>	<b>12835</b>	<b>7322</b>	<b>7390</b>	<b>58411</b>

Given the characteristics of the database used for the sample frame, a sampling strategy for the RNHS was designed to address the following criteria:

- Representation by region.<sup>5</sup>
- Representative mix of in-fill housing versus new subdivisions.

<sup>5</sup> Regional differences in new home space heating and water heating fuels and methods were highlighted in focus groups held with owners of new residential dwellings.

## BACKGROUND & METHODOLOGY

---

- Minimize the number of surveys sent to non-qualifying residences.

Maintaining the representation by the three dwelling types in each region was not a specific criterion for choosing the sample. Instead, the relative mix of the three dwelling types would be restored by weighting the survey responses.

For purposes of sampling, the target number of survey completions from households in qualified dwellings was set at 400 per region, for a total of 1,200 completed surveys. To achieve this, postal codes with delta values of 8 or less were used to draw the sample.

Postal codes were converted to street addresses using a reverse look-up database. As some loss of data is expected due to missing data, the sampling strategy was reviewed after the address look-up was complete. The resulting data file contained a number of non-qualifying dwellings that were clearly apartments. These were removed from the sample to improve the ratio of qualifying to non-qualifying homes in the sample. Apartments are to be included in the New Commercial Building End-use Survey (NCEUS). In the end, more than 10,000 surveys were mailed.

### 2.5 Questionnaire Design

Results from the 2010 RNHS and accompanying analyses were to be compared with selected results from the 2008 REUS. To allow this, attention was devoted to ensuring compatibility with the 2008 REUS questionnaire design especially for space and domestic water heating fuels and methods, fireplaces, and appliances saturations. The wording of some questions was refined based on experience gained with 2008 REUS (e.g., wording of questions on methods of domestic hot water heating). This was done to improve the quality of the survey data.

RNHS 2010 topics common to the 2008 REUS included:

- Dwelling characteristics including type, vintage, square footage, and ceiling heights.
- Space heating fuels and methods.
- Fireplace fuels and types, including their primary use characteristics (heating, ambience or a combination of heating and ambience).
- Domestic hot water heater fuels and equipment.
- Ownership of various natural gas and electric appliances.
- Demographics.

These questions were supplemented with attitude and preference questions addressing:

- Views regarding energy and the environment, including opinions on the harm to the environment caused by various energy sources.
- Awareness and knowledge of emerging alternative energy options.
- Expectations regarding the future direction of prices for various residential heating fuels.

The 2010 RNHS questionnaire is included in Appendix A.

## 2.6 Survey Implementation

The Vancouver office of NRG Research was responsible for implementing the survey, data cleaning, tabulating the results, and managing the incentive.

Questionnaires were mailed to households in the first week of January 2011. Reminder cards were mailed out the one week following. Respondents had the choice of completing and returning a paper copy of the survey or completing the survey online. A total of 1,070 useable surveys were received, with 39% being completed online. Exhibit 2-4 summarizes the responses by region and building type.

**Exhibit 2-4: Survey Response – 2010 Residential New Home Survey**

Dwelling Type by Region	Lower Mainland & Fraser Valley (LM)	Vancouver Island / Sunshine Coast (VI)	South Interior (SI)	North Interior (NI)	Total
Single Family Detached (SFD)	163	258	137	151	709
Duplex & Triplex (Dup/Tri)	28	64	14	36	142
Townhouse/Row House (TH/RH)	142	38	17	22	219
Total	333	360	168	209	1070

## 2.7 Weighting of Results

When the ratio of survey responses from gas homes was compared to electric-only homes, the analysis strongly suggested a non-response bias from electric-only homes. An independent analysis of electric-gas shares in new construction by FortisBC confirmed this bias.<sup>6</sup> Commensurately, weighting of the results was needed to accomplish two objectives: (1) restore the mix of dwelling types for both gas homes and electric-only homes, (2) restore the proportion of gas to electric-only homes. The dataset from the independent analysis was used to develop the appropriate weights.

Weights were calculated and applied to restore the relative proportions of each region and building type combination to that of the survey population. Separate sets of dwelling and region weights were developed for gas homes versus electric-only homes.

Weights for each fuel type (electric, gas) were calculated using the formula in equation (1):

$$W^{r,b} = (P^{r,b}/P^{FBC}) / (S^{r,b}/S^{FBC}) \quad (1)$$

W = weight

P = population

S = survey

r = region

b = qualifying building type

FBC = total of all FortisBC regions and building types

<sup>6</sup> FortisBC merged the addresses for residential dwellings constructed between 2007-2010 provided by BC Assessment Authority against their customer records. Records which matched were classified as natural gas customers. Those that did not were assumed to be electric-only households.

## BACKGROUND & METHODOLOGY

---

Exhibit 2-5 presents the weights for gas homes.

### Exhibit 2-5: RNHS 2010 Weights – Gas Homes

Dwelling Type	LM	VI	SI	NI	Total
SFD	2.77108	0.59682	0.70903	0.60718	1.15244
Dup/Tri	0.55560	0.10768	0.55922	0.19524	0.26827
TH/RH	1.09816	0.81427	0.82819	0.81211	0.99173
Total	1.96535	0.52548	0.70780	0.55478	1.00000

The weights applied to RNHS results for electric-only homes are summarized in Exhibit 2-6. As no responses were obtained from owners of electric-only duplexes / triplexes in the Lower Mainland / Fraser Valley and South Interior regions, no weights are calculated.

### Exhibit 2-6: RNHS 2010 Weights – Electric-Only Homes

Dwelling Type	LM	VI	SI	NI	Total
SFD	10.75354	0.93280	0.79034	0.86814	1.09328
Dup/Tri <sup>1</sup>	--	0.51616	--	0.55363	0.52865
TH/RH	0.96848	0.53564	2.35959	0.51092	0.89094
Total	1.22598	0.79115	0.92111	0.76185	0.96216

<sup>1</sup> No survey responses were received for electric-only duplexes / triplexes in the LM region, thus no weights were calculated.

The large weights used with some dwelling-region cells for electric-only homes (e.g., SFDs in the LM), combined with zero survey responses to other cells (e.g., electric only duplexes / triplexes in the LM and SI) means that comparisons between electric-only homes and homes with gas service are questionable, due to low reliability and accuracy of the electric-only estimates. Given this, reporting and analysis presented in this report is limited to homes serviced by natural gas. Commensurately, comparisons between gas and electric-only homes will not be made. Survey responses from electric homes are aggregated those from gas homes for topics where the fuel used for space or domestic water heating is unlikely to influencing the response to the question.

## 2.8 Accuracy of Survey Estimates

The margin of error (accuracy level) for RNHS questions varies by fuel, region, building type, and the degree of consensus.

As the majority of the analysis in this report is specific to gas homes only, the margins of errors are summarized for gas homes in Exhibit 2-7 (next page). Accuracy levels for gas homes at the 95% confidence level are provided for a typical range of “yes-no” type questions in each of the four RNHS regions and for the all- region total. For the total, a typical question with a “50-50” response (e.g., 50% answering yes, 50%

answering no) will have an accuracy of plus or minus 4.1%, 19 times out of 20.<sup>7</sup> The margin of error decreases as the consensus of the estimate increases. Thus, a yes-no type question with 90% answering yes will have an accuracy of plus or minus 2.4%, 19 times out of 20.

**Exhibit 2-7: Accuracy Levels for Proportional Responses by Region (%) – Gas Homes  
Percent Plus or Minus at the 95% Confidence Level**

Proportional Response \ Accuracy	LM +/-	VI +/-	SI +/-	NI +/-	Total +/-
50%	5.7	5.5	7.8	7.1	4.1
40% or 60%	5.6	5.3	7.7	6.9	4.0
30% or 70%	5.2	5.0	7.2	6.5	3.7
20% or 80%	4.6	4.4	6.3	5.6	3.2
10% or 90%	3.4	3.3	4.7	4.2	2.4
Number of respondents (unweighted)	295	323	156	193	967

Exhibit 2-8 provides the information on margin of error for gas homes, differentiated by the three building types.

**Exhibit 2-8: Estimated Accuracy Levels for Proportional Responses by Building Type (%) – Gas Homes  
95% Confidence Level**

Proportional Response \ Accuracy	SFD +/-	Dup/Tri +/-	TH/RH +/-	Total +/-
50%	3.8	8.4	7.5	4.1
40% or 60%	3.7	8.2	7.4	4.0
30% or 70%	3.5	7.7	6.9	3.7
20% or 80%	3.0	6.7	6.0	3.2
10% or 90%	2.3	5.0	4.5	2.4
Number of respondents (unweighted)	662	136	169	967

The margins of error for analysis results which include both gas and electric homes are summarized in the next two exhibits.

<sup>7</sup> Consistent with the disproportionate sampling method used in this study, the formula used to calculate the margin of error for the overall FortisBC sample at the 95% confidence level is defined as:

$$= 1.96 * \text{SQRT} ( \sum_i (W_i^2 * ((1-f) * (s_i^2 / (n_i - 1)))) \text{ for } i = 1 \text{ to } g$$

where:

SQRT = square root

W = stratum population divided by the total population

f = stratum sample divided by stratum population

s = variance in the stratum

n = stratum sample size

i = sample stratum

g = total number of sample strata (12)

## BACKGROUND & METHODOLOGY

**Exhibit 2-9: Accuracy Levels for Proportional Responses by Region (%) – All Gas and Electric Homes Percent Plus or Minus at the 95% Confidence Level**

Proportional Response \ Accuracy	LM +/-	VI +/-	SI +/-	NI +/-	Total +/-
50%	5.4	5.2	7.6	6.8	3.5
40% or 60%	5.3	5.1	7.4	6.6	3.4
30% or 70%	4.9	4.7	6.9	6.2	3.2
20% or 80%	4.3	4.1	6.0	5.4	2.8
10% or 90%	3.2	3.1	4.5	4.1	2.1
Number of respondents (unweighted)	295	323	156	193	967

**Exhibit 2-10: Accuracy Levels for Proportional Responses by Building Type (%) – All Gas and Electric Homes 95% Confidence Level**

Proportional Response \ Accuracy	SFD +/-	Dup/Tri +/-	TH/RH +/-	Total +/-
50%	3.7	8.2	6.6	3.5
40% or 60%	3.6	8.1	6.5	3.4
30% or 70%	3.4	7.5	6.1	3.2
20% or 80%	2.9	6.6	5.3	2.8
10% or 90%	2.2	4.9	4.0	2.1
Number of respondents (unweighted)	662	136	169	967

### 2.9 Gas – Electric Market Shares

As discussed in Section 2.7, research conducted by FortisBC after finalization of the RNHS 2010 survey confirmed a significant non-response to the survey by households not serviced by natural gas or piped propane (i.e., electric only homes). While adjustment for the non-response bias has been taken using weighting, it was decided to focus the reporting and analysis in this report on homes serviced by natural gas, and to avoid comparisons between gas and electric-only homes. Exceptions are made for topics where the type of fuel used for space heating, domestic water heating, cooking or cleaning do not affect the results of the question.

#### 2.10 Definitions & Explanatory Notes

The following definitions and notes are included to aid in the interpretation of survey results, and the general readability of the report.

**Penetration** – Defined as the number of households with a particular appliance or end-use divided by the total number of households with or without the appliance or end-use. Penetration is used to understand the proportion of FortisBC’s residential customer base with the appliance or end-use in question. Penetration does not concern itself with how many of the appliances or end-uses an individual household

has; only the presence of at least one. Commensurately, the upper limit on any penetration estimate is 100%.

**Saturation** – Defined as the number of appliances or end-uses divided by the total number of households with or without the appliance or end-use. Saturation provides an estimate of the average number of specific appliances or end-uses per typical FortisBC residential customer. Saturation estimates are influenced by two factors: (i) the number of appliances or end-uses present in user households, and (ii) the penetration of the appliance or feature in the general population. For example, the saturation of low flow shower heads is a function of how many households use them and the number installed in each of these homes. Since homes may have more than one appliance or end-use, there is no upper limit on saturation estimates.

**REUS 2008** - Data from FortisBC's 2008 residential end-use survey including customers from five regions: including Lower Mainland / Fraser Valley, Vancouver Island / Sunshine Coast, Interior and Columbia, Whistler, and Fort Nelson regions.

**Gas versus Propane** – The 2010 RNHS and 2008 REUS surveys include dwellings currently serviced by piped propane. Unless otherwise stated, all references to “gas” in the report refer to either piped gas or piped propane.

**Unweighted Base** – All tables present the unweighted base for which the statistics were calculated. These numbers reflect the actual number of valid survey responses received, corresponding to each column or row, depending upon the layout of the table. Calculations by region, or by building type are based on weighted data to ensure proportionate representation from the four regions and the three dwelling types. The size of the unweighted base is useful for guiding comparisons with other data and understanding the relative accuracy of the estimate. Unless otherwise indicated, an unweighted base exclude non-responses or missing values (see definition of non-response, below). As the proportion of non-response may vary slightly from question to question, the unweighted base may change somewhat from question to question depending upon the degree of non-response.

**Don't Know (DK) responses** – Some questions on the 2010 RNHS and 2008 REUS include a “don't know” (DK) response category. The relative proportion of respondents who answered DK provides useful information, and often is related to the complexity of question's subject. In some cases, it is legitimate to recalculate the proportions of the other categories without the DK responses. Effectively, this recalculation proportions the DK responses to the remaining categories in the same proportions as those who provided a valid, non-DK response (i.e., assumes the distribution of the DK responses is proportional to those who provided a response). Re-proportioning DK responses is not valid in cases where this “proportionate distribution” assumption does not apply. For example, uncertainty regarding furnace efficiency level may be proportionately higher for households with mid- or standard efficiency furnaces than for those with high efficiency furnaces. In a case such as this, a DK response should be treated as a legitimate response and included in the base for calculating the relative proportions of the other response categories.

**Non-Response (NR)** – Sometimes categorized as missing values, they refer to cases where a respondent did not answer a question, leaving the response categories for the question blank. This action may be as intended by the survey designer (i.e., the respondent is following instructions to skip the question). These are different than in cases where the respondent simply chose not to answer a question for whatever reason. In these latter cases, non-responses are treated differently from don't know (DK) responses as they neither imply uncertainty or certainty of a response. Indeed, they provide no information from which to

## BACKGROUND & METHODOLOGY

---

extrapolate a response. All calculations in this report, unless stated or indicated otherwise, exclude missing values. This is done to avoid distorting the proportions assigned to the response categories based on those who answered the question. The majority of questions on the 2010 RNHS include a small (typically less than 5%) non-response.

**Significant Digit Conventions** – Except where otherwise indicated, all data presented and discussed in the text of this report are rounded to the nearest significant digit to aid readability. To facilitate subsequent analyses and calculations by FortisBC, data presented in exhibits are expressed to one decimal place. This also allows the exhibits to accommodate the occasional small response proportion (i.e., proportions less than 1%).

**Figures** – Refers to a graphic illustration or other form of visual interpretation of data. Figures are used in situations where they are useful for illustrating trends, relationships, or simply facilitating comparisons.

**Exhibits** – Refers to data presented in tabular format.

**Footnotes** – With the exception of footnotes in exhibits, footnotes referenced in the text of the report are found at the bottom of the page.

### 2.11 Report Organization

The primary purpose of this report is to summarize the key findings and results from the 2010 RNHS with comparisons, where relevant and informative, made to the results from the 2008 REUS. Relevant research findings (either supportive or contradictory) from qualitative research conducted with residential homeowners, builders, developers, architects and HVAC contractors are summarized throughout the report in text boxes.

This report is organized as follows:

- Section 1 – Executive Summary
- Section 2 – Background and Methodology
- Section 3 – Building Characteristics
- Section 4 – Space Heating
- Section 5 – Domestic Water Heating
- Section 6 – Fireplaces & Heating Stoves
- Section 7 – Appliances
- Section 8 – Pools and Hot Tubs
- Section 9 – Demographics
- Section 10 – Gas End-use Combinations
- Section 11 – Bibliography
- Appendix A – RNHS 2010 Questionnaire

# 3 BUILDING CHARACTERISTICS

This section summarizes the key characteristics of new homes, including dwelling type, square footage, and ceiling heights. Choices in materials and equipment offered to new home buyers are presented. Comparisons are made to gas homes of earlier vintages using data from FortisBC’s 2008 Residential End-use Survey (2008 REUS).

As mentioned in the previous section, all reporting and analysis presented in this section, and subsequent sections of this report, is limited to homes serviced by natural gas or piped propane. Inclusion of responses from electric-only homes is allowed in the few situations where the type of fuel used for space heating, domestic water heating, cooking or cleaning do not affect the results of the question.

## 3.1 New Home Characteristics – Highlights

### SECTION HIGHLIGHTS

- Trend to higher ceilings continues with the average now 9 feet or higher.
- Single family detached homes continuing to increase in size (square footage) while townhouses and row houses are uncharged.
- Turnover in the housing marketplace is clearly evident with nearly one-quarter of homes built since 2005 already on their second owner.
- Two-thirds of all new homes were purchased after construction was completed and end-use equipment and appliances installed.

## 3.2 Dwelling Characteristics

Exhibit 3-1 shows that slightly more than three quarters (76%) of respondents to the 2010 RNHS purchased their home new (i.e., not previously occupied). Buyers outside the Lower Mainland / Fraser Valley were significantly more likely to have purchased their home new rather than previously owned.

**Exhibit 3-1: Home Purchase Characteristics – New versus Previously Owned (%)**  
**New Gas and Electric Homes**

	LM	VI	SI	NI	RNHS 2010
Unweighted base	333	360	168	209	1070
Purchased new	72.3	78.1	82.3	84.1	75.8
Previously owned	27.3	21.9	17.7	15.9	23.9
DK	0.5	--	--	--	0.3
Total	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

The ability for homebuyers to choose their home’s space and water heating equipment, appliances, and level of finish is typically greatest if the home is purchased prior to completion of construction or if

## BUILDING CHARACTERISTICS

homebuyers have their home custom built. Survey data show that only 33% of purchasers of new homes (i.e., homes not previously owned/occupied) acquired their home prior to completion of construction (Exhibit 3-2). This suggests that at least two-thirds of all new homes are purchased after the decisions on space and domestic water heating fuels and methods has been taken. Regionally, proportionately more new home purchasers in the Lower Mainland and Vancouver Island purchased their new home prior to completion compared to the other two regions.

**Exhibit 3-2: Timing of the New Home Purchase – By Region  
Percent of New Gas and Electric Homes Not Previously Occupied**

	LM	VI	SI	NI	RNHS 2010
Unweighted base	229	276	133	165	803
Dwelling new and construction not complete	35.1	32.7	25.3	27.7	32.6
Dwelling new and construction complete	64.0	67.3	74.7	72.3	66.9
DK	0.9	--	--	--	0.5
Total	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

Exhibit 3-3 shows that purchasers of new duplexes / triplexes were somewhat less likely to purchase their homes prior to completion of construction.

**Exhibit 3-3: Timing of the New Home Purchase – By Dwelling Type  
Percent of New Gas and Electric Homes Not Previously Occupied**

	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	546	112	145	803
Dwelling new and construction not complete	32.2	24.0	36.3	32.6
Dwelling new and construction complete	67.4	76.0	62.9	66.9
DK	0.5	--	0.8	0.5
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

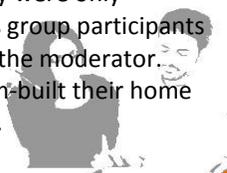
These data suggest the opportunity to influence fuel and equipment choices in new home construction by using incentives and other motivators directed at home buyers is significantly less than if directed to developers / home builders.

### 3.2.1 Options Offered by Builders / Developers

Qualitative research confirmed that some developers offer buyers choices of floor coverings, appliance packages, and other features. Survey respondents were provided with a list of possible space heating and other options, and asked to indicate which, if any, were offered as part of the new home purchase. The options, ranked by most frequently offered to least frequently offered, are summarized by region in Exhibit 3-4 (next page).

#### QUALITATIVE RESEARCH HIGHLIGHTS

- Fuels and methods of space and water heating are far down the priority list of home features sought by new home buyers. Indeed, they were only mentioned by focus group participants after prompting by the moderator. Owners who custom-built their home were the exception.



**Exhibit 3-4: Choices Offered to New Home Purchasers (%) – By Region**  
**Multiple Mentions Allowed – Percent of all New Gas & Electric Homebuyers Offered Choices**

New Construction Options	LM	VI	SI	NI	RNHS 2010
Unweighted base	181	230	117	146	674
Gas fireplace	70.8	69.4	71.8	65.6	70.0
Central forced air furnace	60.9	45.3	78.2	79.1	62.5
Flooring materials	45.2	47.0	54.8	56.7	48.3
Kitchen materials	49.1	44.0	53.7	42.4	47.9
Wired-in electric heater (baseboards)	36.6	35.2	17.8	12.1	30.7
Heat pump - air source	13.1	49.5	31.0	25.7	24.2
Air conditioning (other than heat pump)	14.3	5.5	61.8	38.4	21.9
Hot water radiant in-floor / under floor heat	24.7	16.9	20.8	12.7	21.1
Electric fireplace	19.0	17.7	15.1	10.4	17.1
Gas heater stove	16.2	12.2	13.9	6.4	13.9
Electric radiant heat (floors, walls, and/or ceilings)	9.8	18.7	23.7	9.6	13.3
Heat pump - ground source (geothermal)	8.1	9.1	17.2	11.7	9.9
Hot water baseboards	7.4	5.0	5.2	0.7	5.8
Other (specify)	10.2	11.6	7.6	17.4	11.1

Gas fireplaces and central forced air furnaces were the two most frequently offered choices, followed by kitchen materials, flooring materials, and electric baseboard heaters. Of particular note, air source heat pumps (ASHPs) were the second most commonly mentioned option presented to new homebuyers on Vancouver Island, well above all other regions. The term gas heater stove appears to be interpreted as a gas cook stove rather than a free standing gas fireplace.

When analyzed by dwelling type, purchasers of townhouses / row houses indicated considerably fewer options with their purchase (Exhibit 3-5, next page). Gas fireplaces and central forced air furnaces were the two most frequently offered options for this group of home buyers.

### QUALITATIVE RESEARCH HIGHLIGHTS

- The variety and number of options offered to new home buyers varies depending upon the builder.
- A major Lower Mainland developer of single family detached homes and townhouses interviewed for this project offers an extensive list of options to potential homebuyers, including floor coverings, appliance packages, door and window treatments, electrical panel upgrades, fireplaces, and BBQ connections.



## BUILDING CHARACTERISTICS

**Exhibit 3-5: Choices Offered to New Home Purchasers (%) – By Dwelling Type  
Multiple Mentions Allowed – Percent of all New Gas and Electric Home Buyers**

Home Options	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	462	91	121	674
Gas fireplace	66.8	104.0	58.7	66.8
Central forced air furnace	58.0	92.0	67.2	61.0
Kitchen materials	41.5	76.0	71.5	48.3
Flooring materials	42.7	68.0	58.7	46.6
Wired-in electric heater (baseboards)	21.7	40.0	84.2	33.8
Heat pump - air source	27.2	48.0	6.8	24.3
Air conditioning (other than heat pump)	22.7	40.0	14.5	21.8
Electric fireplace	9.9	20.0	71.5	21.5
Hot water radiant in-floor / under floor heat	19.5	20.0	20.4	19.7
Electric radiant heat (floors, walls, and/or ceilings)	13.3	24.0	9.4	13.0
Gas heater stove	12.5	20.0	12.8	12.9
Heat pump - ground source (geothermal)	10.5	16.0	0.9	9.0
Hot water baseboards	5.8	0.0	1.7	4.8
Other (specify)	10.7	8.0	11.9	10.8

### 3.3 Access to natural gas

Approximately one percent of households with a natural gas connection or access to a gas connection indicated the natural gas connection is currently shut off. There were no statistically significant differences in this proportion between dwelling types or regions.

### 3.4 Home Sizes (Square Footage)

Square footage data for homes constructed since 2005, by dwelling type and region, are summarized in Exhibit 3-6. The average single family detached (SFD) dwelling is 2,855 ft<sup>2</sup>, 71% larger than the average townhouse / row house. SFD dwellings are largest in the Lower Mainland, and smallest on Vancouver Island. There is considerably less variation in dwelling size among the four regions for townhouses / row houses.

**Exhibit 3-6: Dwelling Square Footage by Region and Dwelling Type (ft<sup>2</sup>)  
Gas and Electric Homes**

Dwelling Type	LM	VI	SI	NI	2010 RNHS
Unweighted base <sup>1</sup>	333	360	168	209	1070
<b>Single Family Detached</b>					
Mean	3,140	2,229	2,829	2,590	2,855
Standard Deviation	1,894	662	782	768	1,172
<b>Duplex/Triplex</b>					
Mean	2,160	1,822	2,458	1,892	2,097
Standard Deviation	431	217	435	194	314
<b>Townhouse/Row house</b>					
Mean	1,681	1,640	1,490	1,751	1,666
Standard Deviation	476	329	247	296	426

Data on the stock of gas homes taken from the 2008 REUS confirm that the average size of SFD gas homes constructed in British Columbia has been increasing over time (Exhibit 3-7). New SFD gas homes (those built after 2005) are 30% larger than homes constructed in the mid-1970s and mid-1980s.

### Exhibit 3-7: Dwelling Square Footage by Dwelling Vintage (ft<sup>2</sup>) Single Family Detached Gas Homes

Floor Area (Square Feet)	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	123	276	201	221	230	662
Mean <sup>2</sup>	2,219	2,127	2,246	2,628	2,572	2,915
Standard Deviation	961	906	817	1,057	1,007	1,172

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

### 3.5 Ceiling Heights

The 2008 REUS highlighted the trend towards increasing ceiling heights that effectively began in the mid-1980s. Prior to this time, 8 foot ceilings were most common among residential dwellings. Higher ceilings, everything else held constant, mean the home's space heating and cooling systems are required to condition a larger volume of interior air space.

Exhibit 3-8 summarizes the distribution of ceiling heights of gas dwellings by dwelling type and vintage. Homes with ceilings that are 9 feet or higher represent approximately 70% of all dwellings constructed since 2005. In contrast, only 15% homes built during the 1976-1985 period had ceilings exceeding 8 feet.

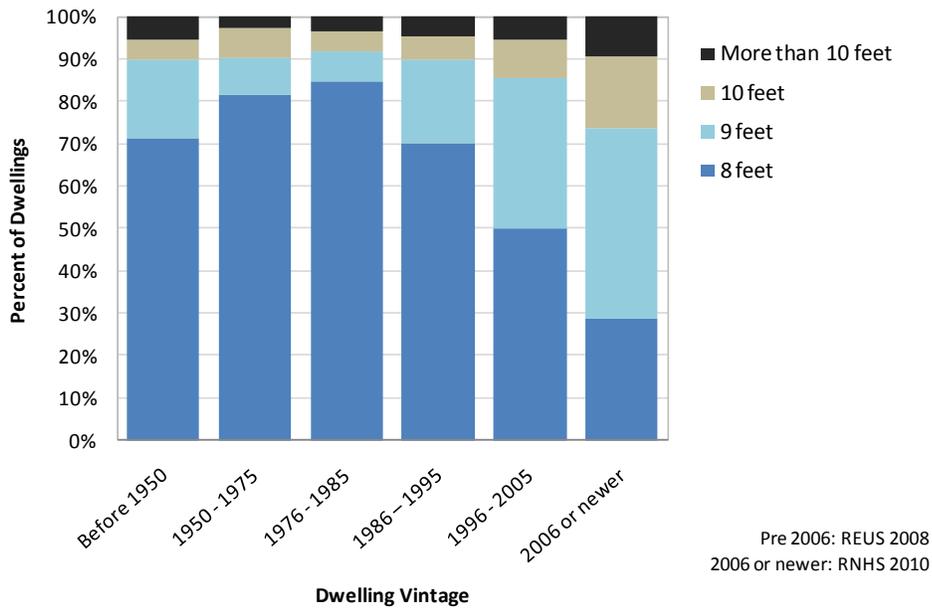
### Exhibit 3-8: Ceiling Heights by Dwelling Vintage - Mean Percentages (%)

Ceiling Height	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or later
Unweighted base <sup>1</sup>	144	340	249	427	630	967
8 feet	71.0	81.1	84.6	70.1	49.9	28.2
9 feet	18.6	8.4	7.0	19.6	35.4	44.2
10 feet	4.4	7.3	5.0	5.7	9.0	16.9
More than 10 feet	5.6	2.6	3.3	4.5	5.4	9.1

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005  
Some homes may have ceilings of different heights. Totals may not sum to 100%.

Figure 3-1 (next page) summarizes these data graphically and clearly shows the trend to higher ceilings.

**Figure 3-1: Residential Ceiling Heights by Dwelling Vintage**



# 4 SPACE HEATING

Fuels and methods used to heat new homes serviced with natural gas or piped propane (herein referred as gas from this point forward unless otherwise noted) are discussed in this section. These are contrasted with data from the earlier studies, and trends discussed where present and relevant. Qualitative research insights provided by developers, builders, and recent new home purchasers are included.

## 4.1 Space Heating – Highlights

### SECTION HIGHLIGHTS

- The proportion of gas homes with a gas furnace continues to decline.
- Air Source Heat Pumps (ASHPs) are installed in 18% of gas homes built since 2005, with the incidence highest on Vancouver Island and in the Interior. As a result, gas is shifting to a secondary space heating role.
- Eight in every ten homes with ASHPs use either a gas furnace or gas fireplace as the other heating method
- Geothermal is making inroads, with 4% of new homes reporting a geothermal heat pump system.
- Baseboard electric heaters are the least desirable method of space heating from a homeowner’s perspective, but despite that, the proportion of new homes using this type of heating system is up significantly.

## 4.2 Space Heating Fuels

This section summarizes the fuels used for space heating in new residential construction, with comparisons made between new gas homes and the existing stock of gas homes. Many homes use more than one fuel for space heating. Whether a fuel is considered the main fuel used for space heating or as a secondary fuel is a matter of interpretation by the survey respondent. Section 4.4 discusses the methods (equipment) used for space heating. Most methods are tied directly to space heating fuel.

### 4.2.1 Main Space Heating Fuel

New homes with gas service are significantly less likely to use natural gas or piped propane as a main space heating fuel and more likely to use electricity compared to the stock of gas homes built prior to 2006 (Exhibit 4-1, next page). Regardless of dwelling type, 22% of gas homes built since 2005 use electricity as their main space heating fuel compared to 6.9% of homes built prior to this date. Gas is the main space heating fuel for 73% of all gas homes built since 2005, with regional variations most notable on Vancouver Island (lowest at 32% of all new homes) and the North Interior region (highest at 91%). In contrast, 92% of all gas homes constructed prior to 2006 use gas as their main space heating fuel.

Four percent (4%) of new homes indicated geothermal was their main space heating fuel. This proportion ranged from 9% of new homes in the South Interior region, to 1% of new homes in the North Interior.

## SPACE HEATING

### Exhibit 4-1: Main Space Heating Fuel by Region (%)

#### Gas Homes

Main Space Heating Fuel	LM	VI	SI	NI	RNHS 2010	REUS 2008
Unweighted base	294	321	155	192	962	2209
Electricity	15.3	62.0	5.8	7.8	21.5	6.9
Natural gas	79.7	31.2	82.2	89.7	72.6	91.1
Piped propane	0.2	0.4	--	0.6	0.2	0.4
Bottled propane	--	0.4	--	0.6	0.1	0.1
Oil	--	0.7	--	--	0.1	0.2
Wood	--	1.1	2.6	0.6	0.5	0.9
Geothermal <sup>1</sup>	4.0	1.4	8.9	0.8	3.8	--
Other	0.5	2.5	0.5	--	0.8	0.2
DK	0.4	0.4	--	--	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Geothermal was not specifically queried as a space heating fuel in the 2008 REUS.

Totals may not sum due to rounding.

Analysis of the data on main and secondary space heating fuels reveals a significant percentage of homes where gas is their main space heating fuel and have no method of gas space heating other than a gas fireplace. These homes consider their fireplace to be the main method of space heating. An analysis of the 2008 REUS dataset confirmed a similar finding among older dwellings.

The proportion of new gas homes that indicate gas was their main space heating fuel does not vary significantly between dwelling types (Exhibit 4-2). Of note, 5% of single family detached and duplexes / triplexes are using a geothermal system for their main space heating fuel.

### Exhibit 4-2: Main Space Heating Fuel by Dwelling Type (%)

#### New Gas Homes

Main Space Heating Fuel	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	659	136	167	962
Electricity	20.2	20.7	27.8	21.5
Natural gas	73.1	72.6	70.2	72.6
Piped propane	0.2	--	0.7	0.2
Bottled propane	0.2	--	--	0.1
Oil	0.2	--	--	0.1
Wood	0.7	--	--	0.5
Geothermal	4.5	5.1	--	3.8
Other	0.9	1.5	--	0.8
DK	0.1	--	1.3	0.3
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

Exhibit 4-3 (next page) summarizes the main space heating fuels for gas homes by vintage of dwelling. The data show a decline in the proportion of gas homes, where gas is the main space heating fuel, first occurring among homes constructed between 1996 and 2005. Prior to this, roughly 91% to 93% of gas serviced homes were using gas as the main space heating fuel. This percentage declined modestly to 87% for homes built between 1996 and 2005, and much more rapidly for homes built since 2005 (73%).

**Exhibit 4-3: Main Space Heating Fuel by Dwelling Vintage (%)**

**Gas Homes**

Main Space Heating Fuel	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	162	377	287	475	714	962
Electricity	7.0	5.0	7.0	7.1	9.9	21.5
Natural gas	91.2	93.7	90.8	91.4	87.3	72.6
Piped propane	0.2	0.8	0.2	0.2	0.4	0.2
Bottled propane	--	--	0.3	--	--	0.1
Oil	0.3	0.2	0.1	--	0.1	0.1
Wood	1.4	0.3	1.3	1.2	0.3	0.5
Geothermal <sup>2</sup>	--	--	0.3	--	0.5	3.8
Other	0.0	--	--	0.0	1.4	0.8
DK	7.0	5.0	7.0	7.1	9.9	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

<sup>2</sup> Geothermal was not specifically queried in the 2008 REUS.

Totals may not sum due to rounding.

**4.2.2 Secondary Space Heating Fuel**

Sixty one percent (61%) of gas homes constructed since 2005 use a secondary or supplemental fuel to heat their home (Exhibit 4-4). This compares to 55% of homes built prior to this date (2008 REUS).

**Exhibit 4-4: Incidence of Secondary Space Heating Fuel by Region and Dwelling Type (%)**

**Gas Homes**

	LM	VI	SI	NI	RNHS 2010	REUS 2008
Unweighted base	295	323	156	193	967	2209
Single Family Detached	58.6	78.6	45.2	52.1	60.0	55.2
Duplex/Triplex	78.6	51.7	57.1	38.2	61.9	51.6
Townhouse / Row House	68.6	62.1	31.3	42.1	62.3	51.3
All Dwelling Types	61.2	75.3	44.4	49.8	60.5	54.7

Regional differences in the percentage of homes using a secondary fuel for space heating were noted for Vancouver Island where SFDs were significantly more likely to use a secondary fuel for space heating compared to SFDs in the other regions. This is consistent with the higher incidence of air source heat pumps on the Island (see Exhibit 4-8, Page 33) which require a backup space heating method/fuel (e.g., gas or electric forced air furnace).

A review of secondary space heating fuels for new and existing homes indicates a trend towards the displacement of natural gas by electricity as the main space heating fuel. For many of the homes affected, this means that gas is now a secondary space heating fuel rather than a main fuel.

Secondary space heating fuels used in gas homes constructed since 2005 are detailed in Exhibit 4-5 (next page). Data are for only those homes that use a secondary space heating fuel.

Regionally, Vancouver Island homes are significantly more likely to use natural gas as their secondary fuel. Again, this is consistent with the proportionately higher incidence of air source heat pumps among new homes on the Island that are backed up by a gas fireplace (see Section 4.5.1, page 39). Other regional

## SPACE HEATING

differences include the significantly higher used of wood in regions outside the Lower Mainland. Overall, 33% of new gas homes use natural gas or piped propane as a secondary fuel compared to 11% of the stock of gas homes constructed prior to 2006.

**Exhibit 4-5: Most Common Secondary Space Heating Fuel by Region (%)  
Gas Homes with a Secondary Space Heating Fuel**

Most Commonly Used Secondary Space Heating Fuel	LM	VI	SI	NI	RNHS 2010	REUS 2008
Unweighted base	189	233	70	94	586	1,293
Electricity	71.6	21.6	67.7	73.1	60.5	67.1
Natural gas	23.6	69.6	24.0	15.2	32.9	11.1
Piped propane	--	0.1	--	--	0.0*	0.1
Bottled propane	--	2.3	1.4	--	0.6	0.4
Oil	--	--	--	--	--	0.5
Wood	--	2.8	2.9	5.7	1.4	14.2
Geothermal <sup>1</sup>	--	--	--	--	--	0.4
Other	0.8	1.4	--	3.4	1.1	6.3
DK	4.1	2.2	4.0	2.7	3.5	100.0
Total	100.0	100.0	100.0	100.0	100.0	67.1

<sup>1</sup> Geothermal was not specifically queried in the 2008 REUS.

\* Less than 0.1%

Totals may not sum due to rounding.

Detail on secondary fuel use for new homes by the three dwelling types is provided in Exhibit 4-6. Electricity is the most used secondary space heating fuel, regardless of dwelling type, ranging from 59% of SFDs using a secondary space heating fuel, to 69% of townhouses and row houses. Townhouses and row houses are significantly less likely to use gas as their secondary fuel compared to the other two dwelling types (27% versus 34% for SFDs and 37% for Duplex/Triplex).

**Exhibit 4-6: Most Commonly Used Secondary Space Heating Fuel by Dwelling Type (%)  
New Gas Homes with a Secondary Space Heating Fuel**

Secondary Space Heating Fuel	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	662	136	169	967
Electricity	58.7	59.4	68.5	60.5
Natural gas	34.1	36.7	26.7	32.9
Piped propane	--	0.5	--	0.0
Bottled propane	0.8	--	--	0.6
Oil	--	--	--	--
Wood	1.8	--	--	1.4
Geothermal <sup>1</sup>	--	--	--	--
Other	1.4	--	--	1.1
DK	3.3	3.4	4.7	3.5
Total	100.0	100.0	100.0	100.0

<sup>1</sup> Geothermal was not specifically queried in the 2008 REUS.

Totals may not sum due to rounding.

The next two figures compare natural gas shares by dwelling type for the stock of gas homes constructed prior to 2006, and new homes constructed since 2005. Figure 4-1 clearly shows the decline in gas as a main space heating fuel for new homes across all three dwelling types.

**Figure 4-1: Gas Share of Main Space Heating Fuel**

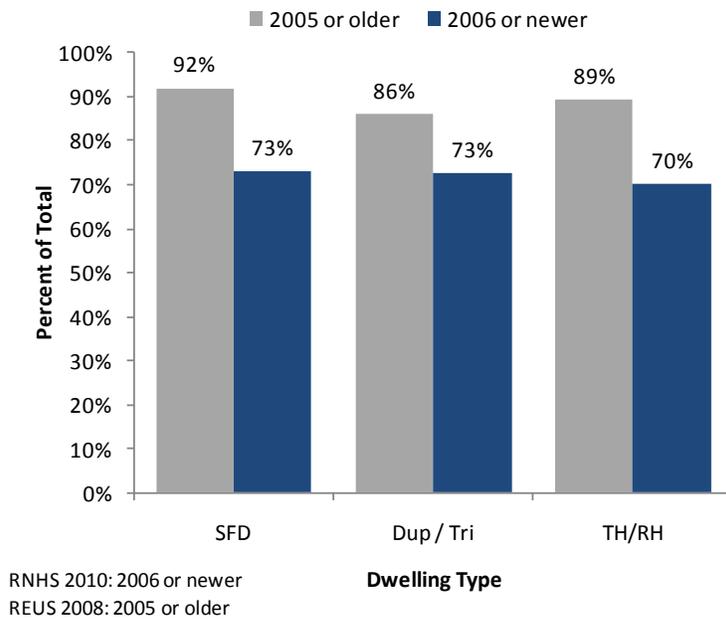
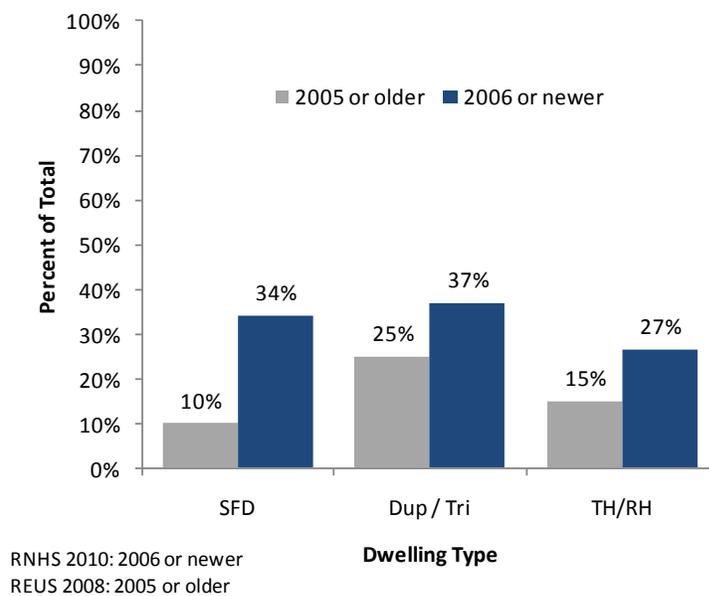


Figure 4-2 confirms the shift of gas as a secondary space heating fuel for newer homes, especially for single family detached dwellings.

**Figure 4-2: Gas Share of Most Used Secondary Space Heating Fuel**



## SPACE HEATING

### 4.3 Fuel Switching

Three percent (3%) of gas and electric homes constructed since 2005 reported changing their main space heating fuel since taking possession of their new home (Exhibit 4-7). Two-thirds (67%) of those who switched did so from natural gas to some other fuel, most notably electricity (50% of all homes who switched fuels). As the sample sizes for space fuel switching is small, results are directional only.

**Exhibit 4-7: Main Space Heating Fuel Switching (%)  
New Gas and Electric Homes Who Switched Fuels**

		Current Main Space Heating Fuel					
		Electricity	Natural Gas	Wood	Geothermal	Other	Total
Previous Main Space Heating Fuel	Electricity	--	9	5	3	--	17
	Natural Gas	50	--	7	--	10	67
	Oil	--	2	--	--	--	2
	Wood	--	4	--	--	--	4
	Other	--	10	--	--	--	10
	Average	50	25	12	3	10	100

Small sample sizes – results are directional only.  
Totals may not sum due to rounding.

Only two respondents to the 2010 RNHS survey switched from gas to some other space heating fuel and disconnected their natural gas service.

### 4.4 Space Heating Methods

This section summarizes the equipment (methods) used in new residential construction, with comparisons made to the existing stock of gas homes. The methods are reported as “main” or “secondary”, indicating their relative importance to overall space heating of the home. Whether a method is considered main, secondary or something other is a matter of interpretation by the survey respondent. While main and secondary methods are discussed individually, it is important to consider both methods when discussing trends in home heating, as many homes have a secondary space heating method.

#### 4.4.1 Main Method

The main methods of space heating for new homes with a natural gas or piped propane connection are summarized by region in Exhibit 4-8 (next page). While gas central forced air furnaces (gas FAFs) represent the most commonly used main space heating method for new gas homes in all regions except Vancouver Island, they are considerably less common in new homes compared to the stock of older homes (53% versus 73%). The proportion for new homes with gas FAFs ranged from 18% on Vancouver Island to 80% for the North Interior.

New homes on Vancouver Island are significantly more likely to use an air source heat pump (37% of homes) as their main method than the other three regions. Electric baseboard heating (i.e., wired-in electric heater) is the next most common main space heating method for new homes on the Island (23%). Additional detail and analysis of air source heat pumps in new homes is provided in Section 4.5, p.37.

**Exhibit 4-8: Main Space Heating Method by Region (%)  
Gas Homes**

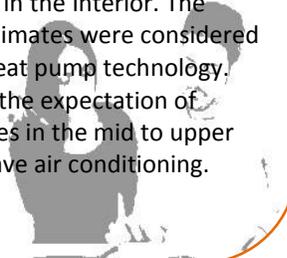
Main Heating Method	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2175
Central forced air furnace – Gas	55.1	17.7	74.9	79.7	53.4	72.5
Central forced air furnace – Electric	4.1	6.8	2.7	2.6	4.3	0.9
Wired-in electric heater	4.6	22.6	1.3	--	6.9	2.6
Wired-in electric wall heater	0.2	1.7	--	--	0.4	0.7
Hot water baseboards	2.0	--	0.8	--	1.3	5.0
Hot water radiant floor heat	17.9	7.1	--	4.8	12.5	7.1
Electric radiant heat	--	0.4	--	--	0.1	1.1
Gas wall heater	0.2	--	0.8	--	0.2	0.5
Portable electric heaters	--	--	--	--	--	0.2
Wood stove	--	1.1	1.3	0.6	0.4	0.7
Gas heater stove	--	1.1	--	--	0.2	0.6
Heat pump - air source	9.2	36.6	7.5	10.0	14.0	3.0
Heat pump - ground source	4.8	1.5	8.6	0.8	4.2	0.2
Wood burning fireplace	--	--	0.7	--	0.1	0.2
Electric fireplace	0.2	0.1	--	--	0.1	0.1
Gas fireplace	1.6	3.3	--	1.4	1.7	3.9
Other	--	--	1.3	--	0.2	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

Main space heating methods by the three dwelling types are summarized in Exhibit 4-9 (next page). Gas forced air furnaces represent the most common main method of space heating for all dwelling types, ranging from 52% of single family detached and semi-detached (duplexes / triplexes), to 62% of townhouses and row houses. ASHPs are now the second most common main space heating method for single and semi-detached dwellings (between 15% and 17%). Air source heat pumps are the second most common main space heating method for SFDs and duplexes /triplexes, followed by hot water radiant in-floor / under floor heat.<sup>8</sup> For townhouses and row houses, electric baseboard heating is the second most common main method (16%), followed by in-floor hot water heating (8%) and electric FAF (7%).

**QUALITATIVE RESEARCH HIGHLIGHTS**

- The popularity of in-floor radiant heating was clearly evident in focus groups held with new home buyers, suggesting a growth opportunity for energy efficient gas boilers.
- The popularity of air source heat pumps was also evident, particularly in groups held on Vancouver Island and in the Interior. The winter and summer climates were considered to be well suited to heat pump technology. Heat pumps satisfied the expectation of buyers that new homes in the mid to upper price ranges would have air conditioning.



<sup>8</sup> As ASHPs are typically paired with a backup heating method such as a forced air furnace, the true incidence of ASHPs in new homes is determined by examining both the main and secondary methods of space heating.

## SPACE HEATING

**Exhibit 4-9: Main Space Heating Method by Dwelling Type (%)**  
**Gas Homes**

Main Heating Method	SFD	Duplex/ Triplex	TH/RH	RNHS 2010
Unweighted base	662	136	169	967
Central forced air furnace – Gas	51.7	52.2	61.7	53.4
Central forced air furnace – Electric	3.9	2.0	6.7	4.3
Wired-in electric heater	4.8	13.5	15.8	6.9
Wired-in electric wall heater	0.2	0.6	1.2	0.4
Hot water baseboards	1.5	--	0.5	1.3
Hot water radiant floor heat	13.6	9.7	7.8	12.5
Electric radiant heat	0.1	--	--	0.1
Gas wall heater	--	--	1.2	0.2
Portable electric heaters	--	--	--	--
Wood stove	0.5	--	--	0.4
Gas heater stove	0.2	--	--	0.2
Heat pump - air source	16.7	14.9	1.1	14.0
Heat pump - ground source	5.0	5.4	--	4.2
Wood burning fireplace	0.1	--	--	0.1
Electric fireplace	--	0.3	0.7	0.1
Gas fireplace	1.4	1.2	3.2	1.7
Other	0.2	--	--	0.2
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

### 4.4.2 Secondary Space Heating Methods

Secondary space heating methods for new gas dwellings are summarized by region in Exhibit 4-10 (next page). Gas fireplaces continue as a popular secondary heating method, ranging from 58% of new gas homes on Vancouver Island to 28% of homes in the North Interior. Overall 39% of newer homes used gas fireplaces as a secondary heating method compared to 29% of homes built prior to 2006. The next most frequently mentioned method of secondary heating was typically electric baseboard heating (15% of all new homes).

**Exhibit 4-10: Most Used Secondary Space Heating Method by Region (%)  
Gas Homes**

Most Used Secondary Space Heating Method	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2175
Central forced air furnace – Gas	6.4	4.0	6.3	7.6	6.1	2.5
Central forced air furnace – Electric	0.5	3.9	0.6	0.6	1.1	0.6
Wired-in electric heater	20.4	6.3	2.6	10.8	14.8	10.7
Wired-in electric wall heater	0.9	2.8	1.9	1.1	1.3	4.2
Hot water baseboards	1.5	--	--	--	0.9	0.9
Hot water radiant floor heat	0.5	0.7	3.2	1.1	0.9	0.3
Electric radiant heat	2.6	1.5	5.6	2.3	2.7	1.6
Gas wall heater	0.2	0.4	--	--	0.2	0.2
Portable electric heaters	4.5	0.5	6.4	5.1	4.1	10.0
Wood stove	--	0.4	0.6	1.7	0.3	2.1
Gas heater stove	--	1.5	0.6	--	0.3	1.1
Heat pump - air source	2.9	1.5	3.8	4.2	2.9	0.8
Heat pump - ground source	0.1	--	--	--	0.1	0.1
Wood burning fireplace	--	1.4	1.3	--	0.4	5.9
Electric fireplace	5.0	5.0	6.2	3.7	5.0	2.2
Gas fireplace	35.4	58.3	40.5	28.1	39.2	28.9
Other	1.8	0.7	1.5	0.6	1.4	0.9
<b>No Secondary Heating Method</b>	<b>17.4</b>	<b>11.3</b>	<b>18.6</b>	<b>33.2</b>	<b>18.2</b>	<b>27.0</b>
Total	100.0	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

Comparable data on secondary space heating methods by the three dwelling types are summarized in Exhibit 4-11 (next page). Of note, new townhouses and row houses are significantly more likely than other dwelling types to use electric baseboard heat as their secondary space heating method, and significantly less likely to use gas fireplaces as a secondary method. Gas fireplaces are still important to 27% of new townhouses and row houses. On average, 18% of new homes did not report a secondary heating method.

## SPACE HEATING

**Exhibit 4-11: Second Most Used Space Heating Method by Dwelling Type (%)  
New Gas Homes**

Most Used Secondary Space Heating Method	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	662	136	169	967
Central forced air furnace – Gas	7.2	3.0	1.6	6.1
Central forced air furnace – Electric	1.4	--	--	1.1
Wired-in electric heater	11.2	11.4	31.9	14.8
Wired-in electric wall heater	1.2	0.3	2.3	1.3
Hot water baseboards	1.1	1.5	--	0.9
Hot water radiant floor heat	1.1	--	--	0.9
Electric radiant heat	3.0	2.9	1.1	2.7
Gas wall heater	0.1	--	0.7	0.2
Portable electric heaters	4.4	2.9	2.9	4.1
Wood stove	0.4	--	--	0.3
Gas heater stove	0.3	--	0.5	0.3
Heat pump - air source	3.4	2.4	0.5	2.9
Heat pump - ground source	--	1.5	--	0.1
Wood burning fireplace	0.5	--	--	0.4
Electric fireplace	2.9	4.8	14.9	5.0
Gas fireplace	41.7	42.6	26.9	39.2
Other	1.3	3.0	1.6	1.4
<b>No Secondary Heating Method</b>	<b>18.6</b>	<b>23.7</b>	<b>15.0</b>	<b>18.2</b>
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

### 4.4.3 Additional Detail: Gas Furnaces and Boilers

Exhibit 4-12 summarizes the incidence of gas furnaces and boilers among gas homes built since 2005. Overall, 65% of new gas homes have a gas furnace, and another 13% have a gas boiler.

The incidence of gas furnaces in new homes is highest in the North and South Interior regions (92% and 86% of gas homes respectively), and lowest on Vancouver Island (27%). The incidence of gas boilers is highest in the Lower Mainland (19% of new gas homes), and lowest in the South Interior (1%). The high incidence of gas boilers in the Lower Mainland is consistent with the proportionately higher incidence of hot water radiant in-floor / under floor heat in the region (Exhibit 4-8, page 33).

**Exhibit 4-12: Incidence of Gas Furnace or Boiler by Region (%)  
Gas Homes**

	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2220
Gas furnace	66.9	27.3	86.1	92.2	64.9	79.7
Gas boiler	18.6	5.7	0.8	3.4	12.6	11.9
Gas furnace or boiler	85.5	33.1	86.9	95.6	77.5	91.6

\* Small sample sizes. Results are directional only.

The incidence of gas furnaces in new dwellings does not vary significantly by dwelling type (Exhibit 4-13). Gas boilers have their highest incidence in SFD (13%) and lowest in townhouses / row houses (9%).

**Exhibit 4-13: Incidence of Gas Furnaces or Boilers by Dwelling Type (%)  
New Gas Homes**

	SFD	Dup/Tri	TH/RH	RNHS 2010
Unweighted base	662	136	169	967
Gas furnace	64.4	65.7	66.8	64.9
Gas boiler	13.4	11.3	9.1	12.6
Gas furnace or boiler	77.8	77.0	75.9	77.5

Exhibit 4-14 shows that the percentage of homes with a gas furnace has been declining since the 1970s. Data suggest this decline accelerated after the mid 1990s. Gas furnaces are present in 64% of homes built since 2005, down from 69% for homes built in the 1996 to 2005 period. Builders and developers indicated the higher capital costs associated with high efficiency gas furnaces and the interior space required for ducting and venting puts forced air systems at a disadvantage relative to alternative space heating methods, particularly electric resistance baseboard heating.

**Exhibit 4-14: Incidence of Gas Furnaces or Boilers by Dwelling Vintage (%)  
Gas Homes**

	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	162	377	287	475	714	967
Gas furnace	80.0	89.4	82.2	75.9	68.5	64.9
Gas boiler	11.2	7.1	5.6	15.9	21.5	12.6
Gas furnace or boiler	91.2	96.4	87.8	91.8	90.0	77.5

Totals may not sum due to rounding.

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

The trend for gas boilers over time is less constant than that observed for furnaces, with only 6% of gas homes built during the mid-1970s to mid-1980s having a gas boiler, peaking among homes built during the 1996 to 2005 period. Since then, incidence of gas boilers has declined by nearly 9 percentage points, with 13% of new homes having these heating units installed.

**4.5 Heat Pumps**

Air source heat pumps (ASHPs) and, to a lesser degree, ground source heat pumps (GSHPs or geothermal) have become popular space heating / cooling options among new home builders, most notably on Vancouver Island and in the Interior. Both offer heating and cooling depending upon the season and have a coefficient of performance<sup>9</sup> of 3 to 4. By comparison, the most energy-efficient gas forced-air furnaces have a coefficient of performance of 0.98.<sup>10</sup>

<sup>9</sup> The coefficient of performance (COP) for a heat pump in heating mode is defined as the number of units of heat energy provided by the heat pump for every unit of energy consumed. COP varies depending upon the manufacturer’s operating efficiency of the unit, and the difference between the outdoor and indoor temperatures. As the outside temperature drops, heat pumps work harder to provide a comfortable indoor room temperature, effectively reducing their COP.

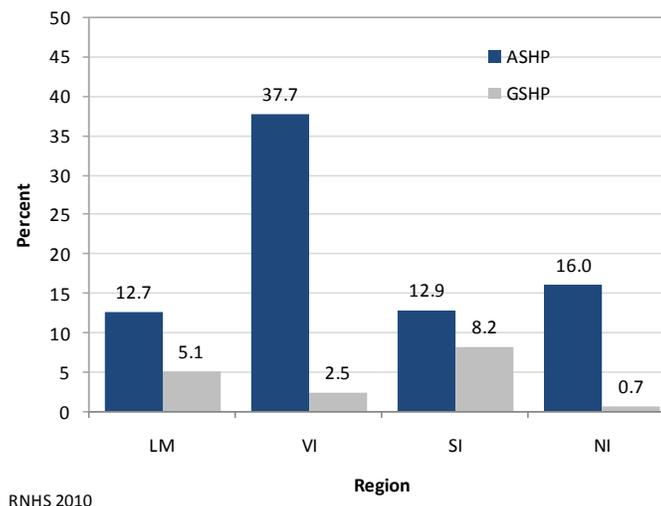
<sup>10</sup> Example: Lennox Signature® Collection, Model SLP98V 98.2 AFUE, ([www.lennox.com/products/furnaces](http://www.lennox.com/products/furnaces)).

## SPACE HEATING

GSHPs have strong appeal among many residential homeowners that participated in focus groups. Many of them perceive geothermal energy as a low cost (if not free) and infinitely renewable (green) source / method of heating and cooling a home. Those holding this opinion tended not to have geothermal in their home, and most had not researched the installation and operating costs associated with GSHPs.<sup>11</sup>

Figure 4-3 (next page) illustrates the incidence of ASHPs and GSHPs in new gas homes by region. New homes on Vancouver Island are the most likely to have an ASHP (38% of homes), followed by those in the North and South Interior regions (16% and 13% respectively). In total, 18% of new homes have an ASHP, and another 5% have a GSHP.

**Figure 4-3: Incidence of ASHPs and GSHPs by Region  
Homes Built Since 2005**



Among homes constructed since 2005, single family detached and semi-detached (duplex / triplex) homes were significantly more likely than townhouses and row houses to have an ASHP (Exhibit 4-15). Only 3% of townhouses and row houses reported having an ASHP compared to 21% of single family dwellings, and 16% of duplexes and triplexes.

**Exhibit 4-15: Incidence of ASHPs and GSHPs by Dwelling Type (%)  
New Gas Homes**

	SFD	Dup/ Tri	TH/RH	RNHS 2010
Unweighted base	662	136	169	967
ASHP	20.8	16.4	2.6	17.5
GSHP	5.4	6.6	--	4.5

Approximately 5% of new gas homes have a geothermal system (GSHP) installed, with penetration highest in the South Interior region (8%). As was the case with ASHPs, geothermal systems were most typically found in single family detached (5%) and semi-detached dwellings (7%) while no GSHPs were reported in townhouses / row houses.

<sup>11</sup> Homeowners that expressed a desire to have geothermal heating in their next home tended to ignore or minimize the installation and operating expenses associated with GSHPs.

Exhibit 4-16 summarizes the incidence of ASHPs by dwelling vintage. Until recently, the incidence of ASHPs in gas homes had peaked at 6% to 7%. A similar vintage-based data series for GSHPs is not available for homes built prior to 2006.

**Exhibit 4-16: Incidence of ASHPs by Dwelling Vintage (%)**

**Gas Homes**

	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	162	377	287	475	714	967
ASHP Present	0.1	1.8	3.6	7.1	6.1	17.5

Totals may not sum due to rounding.

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

**4.5.1 Supplementary Heating Methods Paired with ASHPs**

ASHPs used in British Columbia typically require some other heating method to assist or take over the home’s space heating load during colder weather. Exhibit 4-17 displays the most common space heating method pairings for homes with an ASHP. Some survey respondents consider their ASHP to be the main space heating method, while others consider it to be a secondary method. Consequently, data on ASHP heating method pairings in Exhibit 4-17 is organized by ASHP as either the main or secondary system.

**Exhibit 4-17: ASHP Space Heating Pairings (%)**

**New Gas Homes**

Heating Method Assisting ASHP	ASHP is first or second method
Unweighted base	201
Central forced air furnace - Gas	45.8
Gas fireplace	32.6
Central forced air furnace - Electric	6.8
Wired-in electric heater (baseboards)	2.5
Hot water radiant in-floor / under floor heat	2.2
Electric fireplace	0.9
Wood burning fireplace	0.8
Portable electric heaters	0.5
Other	0.4
<b>No other method specified</b>	<b>7.6</b>
Total	100.0

Totals may not sum due to rounding.

Gas furnaces are the most common heating method paired with ASHPs in gas homes, accounting for 46% of gas homes with ASHPs. The next most common space heating method paired with ASHPs is a gas fireplace (33%). Electric forced air furnaces are used in 7% of gas homes using an ASHP. Eight percent (8%) of gas homes with an ASHP did not specify a secondary space heating method other than the ASHP.

A small percentage (2%) indicated their ASHP was paired with hot water radiant in-floor/under floor heat which suggests separate space heating systems – for example, a gas boiler for the under floor heating and an ASHP with ducting for both heating and cooling. These dual systems are more common to higher end homes.

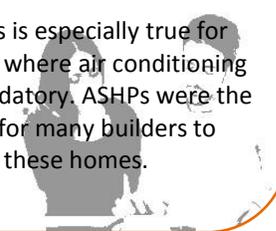
# SPACE HEATING

## 4.5.2 Heat Pumps and Central Air Conditioning Systems

Qualitative and quantitative research conducted for this project confirms the gradual and sustained shift in consumer preferences towards air conditioning in residential construction. Central air conditioning, by definition, includes air conditioning provided by the traditional combination of an air conditioning unit paired with a forced air furnace, self-contained units mounted in a window or through the wall, portable units, or via ASHPs and GSHPs. The 2010 RNHS and 2008 REUS surveys queried the presence of central air conditioning and heat pumps separately. A review of the data found that some respondents with an ASHP or GSHP did not indicate they had central air conditioning. To correctly capture the true incidence of central air conditioning in homes with ASHPs and GSHPs, the data on air conditioning methods were reviewed and restated where necessary to include the air conditioning feature of ASHPs and GSHPs.

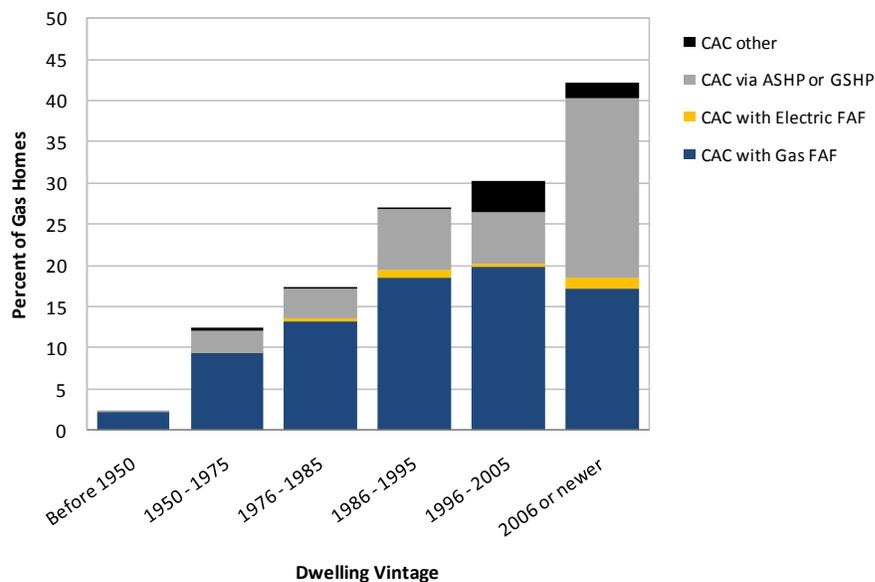
### QUALITATIVE RESEARCH HIGHLIGHTS

- Developers and builders confirmed the growing expectation for air conditioning in new homes, particularly among new homebuyers on Vancouver Island and in the South Interior.
- They indicated this is especially true for higher end homes where air conditioning is considered mandatory. ASHPs were the method of choice for many builders to provide cooling to these homes.



Data on central air conditioning in gas homes, regardless of source (method), are summarized by dwelling vintage in Figure 4-4.

**Figure 4-4: Incidence of Central Air Conditioning in Gas Homes (%)**



Pre 2006: REUS 2008  
2006 or newer: RNHS 2010

The combination of ASHPs, GSHPs, and traditional central air conditioning units now exceeds 40% of all new gas homes, with the incidence of air conditioning clearly rising over time. This figure breaks out the pairing of a forced air furnace with a traditional AC unit by the fuel source for the furnace. The data also suggest that the growing popularity of heat pumps, particularly air source units, is reducing the popularity of traditional stand alone central AC units.

The incidence of air conditioning, organized by region and type (central versus other) is summarized in Exhibit 4-18. The data show that 19% of new homes have traditional central AC units paired with a gas or electric forced air furnace, in contrast to 22% of homes that have central AC via their ASHP or GSHP units. Including other forms of air conditioning (e.g., window units, portable units, etc.), 55% of new gas homes have some form of air conditioning compared to 39% of gas homes built prior to 2006.

**Exhibit 4-18: Incidence of Air Conditioning Equipment by Region (%)  
Gas Homes**

	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2220
Central AC with gas FAF	8.4	0.4	63.8	43.0	17.1	13.2
Central AC with electric FAF	1.0	1.4	2.6	2.4	1.4	0.4
Central AC via ASHP or GSHP	17.8	39.4	21.1	16.8	21.9	4.1
Central AC other	2.1	0.4	1.9	1.7	1.7	1.0
Other air conditioning <sup>1</sup>	17.8	6.2	4.0	4.9	12.8	20.5
Any AC (%)	47.1	47.7	93.4	68.8	54.9	39.1

<sup>1</sup> Includes window units, through the wall units, and portable units  
Totals may not sum due to rounding.

### 4.5.3 Gas Fireplaces and ASHPs

Eighty-four percent (84%) of homes built since 2005 that have an air source heat pump (ASHP) also have a gas fireplace. Of these, 59% reported using their fireplaces for space heating, or a combination of space heating and ambience – essentially, offsetting some of the space heating load required of the ASHP. The proportion of homes with ASHPs built prior to 2006 is considerably smaller than newer homes (4% versus 17%) but they are similar to their newer counterparts in that 87% of them had a gas fireplace and more than half (55%) use the gas fireplace to offset some of the space heating load carried by the ASHP.

While there are no data that quantify or otherwise estimate the amount of space heating load displaced by gas fireplaces, the 2008 REUS survey did provide estimates of the daily usage (hours) of natural gas fireplaces. During winter, gas fireplaces are used an average of 20.6 hours per week, which equates to approximately 3 hours per day.<sup>12</sup>

### 4.6 Space Heating Preferences among New Homebuyers

Qualitative research conducted for this project highlighted that space heating fuels and methods are low on the shopping list for a new home for most buyers. Criteria such as neighbourhood, proximity to schools, number of bedrooms and layout, among other features, typically take precedence. Many homebuyers will choose to live with the home’s space heating system rather than sacrifice the other criteria. Experience with various heating systems over time, however, does help form space heating preferences for many homeowners. These preferences are often revealed via the choice of their next home. This is especially true for those who custom-build their home.

<sup>12</sup> Page 6-4, 2008 Residential End-use Study, FortisBC, November 2009.

## SPACE HEATING

To better understand homebuyer preferences for space heating, the 2010 RNHS survey asked respondents whether their home has the space heating method they prefer. The question did not differentiate between main or secondary space heating systems. Respondents who preferred something different were then asked to indicate their preferred method from a list of space heating methods.

### 4.6.1 Preference versus Current Space Heating Methods

Twenty-one percent (21%) of new homeowners indicated their current home does not have the space heating method they prefer. Exhibit 4-19 examines the current heating method (main method only) of those who prefer a different method. The table organizes the data by the current space heating method used by electric and gas households, the proportion of homeowners with these methods that would prefer something else, and the population adjusted proportion of new homes represented by these homeowners.<sup>13</sup> The latter reflects the fact that only a portion (21%) of homeowners prefer a different space heating method.

#### QUALITATIVE RESEARCH HIGHLIGHTS

- Focus group participants tended to prefer a gas furnace over electric baseboard heating. The “quality” of heat given off by a gas FAF was an important factor – making the home feel “warm and welcoming”. Having a gas FAF also meant having a backup in case of a power failure.
- Negative aspects of gas FAFs included the need to use specialized tradespeople to service the system



**Exhibit 4-19: Current versus Preferred Heating Systems (%)  
Gas and Electric Households**

Current Main Space Heating Method	Percent using space heating method	Percent who would prefer some other space heating method	Percent who would prefer some other space heating method (population adjusted)
Wired-in electric heater (baseboards)	11.1	46.9	5.2
Gas wall heater	0.2	43.0	0.1
Electric radiant heat (floors, walls, and/or ceilings)	0.2	38.2	0.1
Gas heater stove	0.2	33.4	0.1
Wood burning fireplace	0.2	29.2	0.1
Wired-in electric wall heater (fan forced)	0.5	24.4	0.1
Central forced air furnace – Electric	4.5	23.2	1.0
Central forced air furnace – Gas	48.2	20.0	9.6
Gas fireplace	1.5	16.0	0.2
Heat pump - air source	13.9	14.0	2.0
Wood stove	0.5	13.0	0.1
Heat pump - ground source (geothermal)	4.6	9.6	0.4
Hot water radiant in-floor / under floor heat	12.8	5.3	0.7
Electric fireplace	0.2	0.0	--
Hot water baseboards	1.2	--	0.0
Portable Electric Heaters	--	--	--
Other	0.2	--	--
<b>Total</b>	<b>100.0</b>	<b>20.7</b>	<b>20.7</b>

Totals may not sum due to rounding.

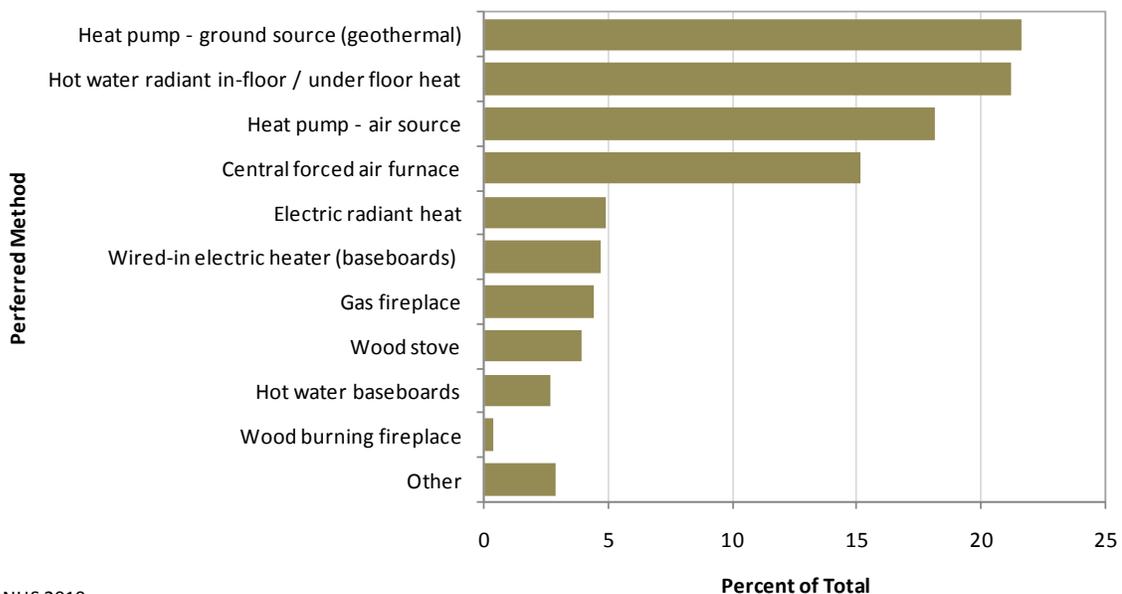
<sup>13</sup> Space heating preferences do not necessarily reflect dissatisfaction with an existing method. Rather, it may be that some other method holds more appeal than the current method.

The data show that homeowners with electric baseboard heaters are the most likely to say they preferred some other method (47% of those with electric baseboard heaters, or 10% of all homes built since 2005). The next least preferred methods are gas wall heaters (43%) and electric radiant in-floor / under floor heat (38%) but these two systems are not very common. Twenty percent (20%) of homeowners with gas furnaces indicated they would prefer something else. These homeowners represent 10% of all new homes using a gas forced air furnace. Of note, 10% of homeowners with a geothermal system, and 14% of homeowners with an ASHP would prefer a different space heating method.

**4.6.2 Preferred Space Heating Method**

Figure 4-5 summarizes the space heating methods that homeowners would prefer. Four space heating methods stand out as preferred choices compared to all others: geothermal (22% of those who prefer a different space heating system), hot water radiant / under floor heat (21%), air source heat pump (18%), and a central forced air furnace (15%).

**Figure 4-5: Space Heating Preferences  
Gas and Electric Homes Built Since 2005**



RNHS 2010

These results are consistent with focus group discussions, where the popularity of newer heating methods (heat pumps, hot water under-floor heating) among homebuyers was evident.

Caution is advised in the interpretation of these data as neither equipment purchase costs, maintenance costs or operating costs were provided for alternative space heating methods. Thus, even though a homeowner might prefer a different space heating method, other factors may override their preferred choice of heating system in their next home. For example, their preferred method may prove to be too expensive to install or operate, or simply be discounted in favour of other criteria that take priority in the home selection process.



# 5 DOMESTIC WATER HEATING

This section summarizes fuels and methods used for domestic water heating (DWH) in new homes, with comparisons made to the stock of gas homes constructed prior to 2006.

## 5.1 Domestic Water Heating – Highlights

### SECTION HIGHLIGHTS

- The use of natural gas for domestic water heating has declined significantly in homes built since 2005, down more than 20 percentage points when compared to the stock of older gas homes.
- Traditional storage-style gas hot water tanks have seen the biggest decline.
- Gas instantaneous (tankless) heaters are growing in both awareness and popularity, with 7% of new gas homes equipped with these units.
- Builders and developers confirm the popularity of tankless units, particularly among higher end homebuyers.
- Focus groups and RNHS results confirm that most homebuyers do not have strong preferences regarding the fuel or method used for domestic water heating.

## 5.2 Domestic Water Heater Misclassification

Analysis of REUS 2008 water heating data indicated that approximately 10% of hot water heaters were incorrectly classified, either in their fuel or type of hot water heater (e.g., storage tank with vent through roof, storage tank without a vent, etc.). The error revealed itself by participants indicating their electric hot water tank had either a roof or side wall vent, or, alternatively, their natural gas or propane-fired tank or instantaneous heater had no vent. It was not possible to clarify the direction of error as it is unclear whether respondents were misclassifying the fuel or misclassifying the equipment. Another 14% of domestic water heaters went unclassified as to type (i.e., respondents selected “don’t know” to the DWH type question) suggesting the misspecification error may be somewhat larger than 10%.<sup>14</sup>

The 2010 RNHS survey restructured the water heater specification questions to include simplified equipment categories, and a quality control question which queried respondents who had storage and condensing water heaters about the type of venting (roof, sidewall, or none). The efforts to improve the quality of the data were modestly successful, with 7% of all DWH incorrectly specified. As in the 2008 REUS, the most common source of confusion arose around fuel – as evidenced by the proportion who either incorrectly indicated their gas DWH was not vented, or indicated their electric DWH was vented. As was the case with the REUS 2008 survey results, it is not possible to clarify which direction the error lies as it is unclear whether these respondents are misclassifying the fuel or the equipment.

<sup>14</sup> These additional domestic water heaters may have the correct fuel specified, but again, without confirmation as to the type of heater, it is not possible to quantify any potential misspecification error for DWH fuel for these tanks.

# DOMESTIC WATER HEATING

## 5.3 Saturation & Penetration of Hot Water Heaters

Exhibit 5-1 summarizes the penetration and saturation of domestic water heaters for gas homes built since 2005 by region, with comparable data presented for the stock of gas homes built prior to 2006 (REUS 2008). The penetration of hot water heaters (any fuel) in new homes is 94%. Six percent (6%) of new homes did not have a unit inside the dwelling (i.e., DWH was centrally provided) compared to 3% for the stock of older homes.

DWH saturation in new homes (the number of DWH units per home with a unit inside the dwelling) is effectively unchanged from homes built prior to 2006.

**Exhibit 5-1: Domestic Water Heater Penetration and Saturation by Region  
Gas Homes**

	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2186
Penetration (%)	92.8	95.1	95.3	95.1	93.7	96.5
Saturation <sup>1</sup>	1.03	1.06	1.04	1.05	1.04	1.03
Households with >1 water heater (%) <sup>1</sup>	3.1	5.4	3.9	4.5	3.7	3.1
No hot water heater in residence (%)	7.2	4.9	4.7	4.9	6.3	3.5

<sup>1</sup> Excludes dwellings where hot water is centrally provided.

Twelve percent (12%) of new gas townhouses / row houses have DWH provided centrally, rather than via a DWH unit inside the home (Exhibit 5-2). The less than 100% penetration of domestic hot water heaters in single family detached units is somewhat confusing. A review of heating systems indicated that the majority of these homes used a gas furnace, with only a few using a gas boiler (which with a combined DWH function may have explained some of the difference). DWH data from the 2008 REUS also had penetration of DWHs in SFDs at less than 100% (97%).

**Exhibit 5-2: Domestic Water Heaters by Dwelling Type – Any Fuel  
Gas Homes**

	SFD	Dup/ Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Penetration (%)	94.8	99.1	87.6	93.7
Saturation <sup>1</sup>	1.05	1.01	1.01	1.04
Households with >1 water heater (%) <sup>1</sup>	4.5	0.6	0.7	3.7
No hot water heater in residence (%)	5.2	0.9	12.4	6.3

<sup>1</sup> Excludes dwellings where hot water is centrally provided.

## 5.4 Domestic Water Heater Fuels

The use of natural gas or piped propane for DWH in new gas homes has declined significantly compared to the stock of gas homes built prior to 2006. Exhibit 5-3 (next page) shows that 69% of gas homes built since 2005 had a domestic hot water heater in the dwelling that used gas, compared to 91% of gas homes built prior to 2006. Electric hot water heaters increased their share in gas homes from 12% prior to 2006 to 35% in new gas homes. Gas DWH share among new homes is highest in the Lower Mainland

(76% of homes with a DWH heater) and lowest on Vancouver Island (49%). Geothermal systems provide the hot water for less than 1% of all new gas homes overall, but 3% of homes in the South Interior.

### Exhibit 5-3: Domestic Water Heating Fuels by Region (%) Gas Homes (Multiple Responses Allowed)

DWH Fuel <sup>1,2</sup>	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2220
Electricity	27.4	55.9	41.7	32.2	34.7	11.6
Natural gas	76.1	49.0	59.1	70.8	68.7	90.9
Piped propane	--	0.1	0.7	--	0.1	0.2
Bottled propane	--	0.4	--	1.2	0.2	--
Oil	--	0.4	--	--	0.1	0.2
Geothermal	--	0.4	2.6	0.6	0.4	--
<b>No DWH Indicated</b>	<b>7.6</b>	<b>4.9</b>	<b>6.0</b>	<b>4.9</b>	<b>6.7</b>	<b>6.9</b>

<sup>1</sup> Data excludes dwellings where hot water is centrally provided.

<sup>2</sup> Columns are not additive because some homes may have more than one DWH fuel.

Exhibit 5-4 shows that, among new homes serviced by gas, the incidence of gas DWH is highest among townhouses / row houses and single family detached dwellings (70% and 69% respectively), and lowest in duplexes and triplexes (58%). Fourteen percent (14%) of townhouses / row houses have their DWH provided from outside the unit (centrally provided).

### Exhibit 5-4: Domestic Water Heating Fuels by Dwelling Type – All DWH Units New Gas Homes (Multiple Responses Allowed)

DWH Fuel <sup>1,2</sup>	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Electricity	35.0	40.7	31.6	34.7
Natural gas	69.0	58.0	69.9	68.7
Piped propane	0.1	0.3	--	0.1
Bottled propane	0.3	--	--	0.2
Oil	0.1	--	--	0.1
Geothermal	0.5	1.5	--	0.4
<b>No DWH Indicated</b>	<b>5.1</b>	<b>0.9</b>	<b>13.6</b>	<b>6.4</b>

<sup>1</sup> Data excludes dwellings where hot water is centrally provided.

<sup>2</sup> Columns are not additive because some homes may have more than one DWH fuel.

When analyzed by dwelling vintage (Exhibit 5-5, next page), the data show that the use of gas for domestic water heating increases with newer homes up to 1996-2005. For example, 79% of gas homes built before 1950 have a gas DWH, compared to 91% of gas homes built during the 1996 to 2005 period. This trend reversed dramatically, however, in homes built since 2005, with gas DWH present in only 62% of the units. The shift for new homes has been from gas to electric DWH, with electricity now accounting for 34% of new gas homes, compared to 6% to 14% of older homes, depending upon the vintage.

## DOMESTIC WATER HEATING

**Exhibit 5-5: Domestic Water Heating Fuels by Dwelling Vintage (%)  
Gas Homes (Multiple Responses Allowed)**

DWH Fuel <sup>1,2</sup>	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	162	377	287	475	714	967
Electricity	14.2	10.5	12.4	11.9	6.1	34.1
Natural gas	79.2	86.2	83.1	88.8	91.1	68.7
Piped propane	--	0.0*	0.2	0.2	0.3	0.1
Bottled propane	--	--	--	--	--	0.2
Oil	1.8	0.1	--	0.0*	--	0.1
Geothermal	--	--	--	--	--	0.4
<b>No DWH Indicated</b>	<b>6.9</b>	<b>3.0</b>	<b>4.4</b>	<b>4.5</b>	<b>5.0</b>	<b>6.7</b>

\* less than 0.1%

<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

<sup>2</sup> Columns are not additive because some homes may have more than one DWH fuel.

### 5.5 Saturation & Penetration of Gas Domestic Water Heaters

Exhibit 5-6 details the penetration and saturation of gas domestic water heaters by dwelling vintage and by region. To allow consistency with the 2008 REUS data, South Interior and North Interior regions were combined. All estimates exclude homes where the domestic hot water is centrally provided.

**Exhibit 5-6: Gas DWH - Penetration & Saturation by Region by Dwelling Vintage  
Gas Homes**

Region	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
<b>Lower Mainland, Fraser Valley &amp; Whistler</b>						
Penetration (%)	81.4	88.2	87.7	88.8	91.8	73.9
Saturation <sup>1</sup>	0.84	0.92	0.88	0.91	0.92	0.76
<b>Vancouver Island &amp; Sunshine Coast</b>						
Penetration (%)	84.0	70.0	76.7	76.2	83.8	47.6
Saturation <sup>1</sup>	0.86	0.72	0.80	0.76	0.87	0.49
<b>South Interior &amp; North Interior</b>						
Penetration (%)	77.1	88.6	84.0	91.6	95.6	63.9
Saturation <sup>1</sup>	0.84	0.91	0.86	0.94	1.00	0.94
<b>All Regions</b>						
Penetration (%)	81.1	86.7	86.0	88.4	91.7	66.9
Saturation <sup>1</sup>	0.84	0.90	0.87	0.90	0.93	0.69

<sup>1</sup> Excludes dwellings where hot water is centrally provided.

REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

The data confirm the decline in the penetration of gas DWH in dwellings built since 2005 occurred in all regions. The largest decline occurred for new homes on Vancouver Island where 48% of new homes have gas DWH, down dramatically from 84% of homes built in the 1996 to 2005 period. New homes in the Interior regions saw a 32 percentage point decline. The smallest decline was in the Lower Mainland, where penetration of gas DWH declined from 92% to 74%. The declines are accompanied by a decline in the average number of gas DWH units per gas home (saturation).

Exhibit 5-7 (next page) shows that the recent decline in gas DWH in gas homes occurred for both single detached dwellings, and other dwelling types (duplexes, triplexes, townhouses, and row houses). The latter dwelling group is combined due to small sample sizes for some vintage categories.

## Exhibit 5-7: Gas DWH - Penetration & Saturation by Dwelling Type by Dwelling Vintage Gas Homes

Dwelling Type <sup>1</sup>	Before 1950	1950 – 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
<b>Single Family Detached</b>						
Penetration (%)	81.3	87.7	90.8	90.2	93.1	67.2
Saturation	1.04	1.03	1.03	1.01	1.00	0.69
<b>Duplex/Triplex/Townhouse/Row House</b>						
Penetration (%)	64.4	91.9	55.9	94.1	89.2	65.6
Saturation	0.64	0.94	0.60	0.95	0.90	0.67

<sup>1</sup>REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

### 5.6 Water Heating Equipment (Methods)

Exhibit 5-8 summarizes the relative distribution of DHW heater types used in gas homes constructed since 2005 regardless of how many hot water heaters are present in the home. Comparable numbers for the stock of gas homes older than 2006 taken from the 2008 REUS are provided for comparison in the far right hand column.

Half (50%) of DHW heaters continue to be the standard, non-condensing type of gas storage tank, although regionally this varies from a high of 56% in the Lower Mainland / Fraser Valley to a low of 32% on Vancouver Island. Gas condensing DWH units are present in 5% of new homes, and tankless or instantaneous gas water heaters are installed in 7% of all new homes surveyed. Regionally, the incidence of tankless models is highest in the North Interior and Vancouver Island regions (16% and 10% respectively). The Lower Mainland and South Interior have the lowest penetration of tankless units (6% and 4% respectively).

#### QUALITATIVE RESEARCH HIGHLIGHTS

- Instantaneous or tankless hot water heaters were mentioned frequently during focus groups on Vancouver Island but to a lesser degree in the Vancouver and Kelowna focus groups.
- Tankless models were typically associated with higher end homes, but builders indicated that awareness of the instantaneous hot water units is increasing among homeowners regardless of home value or household income.

### Exhibit 5-8: Domestic Water Heater Types by Region % of all Gas Homes with DWH Heaters

DWH Type <sup>1,2</sup>	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	269	305	147	182	903	1963
Electric storage water heater (tank)	22.5	47.5	34.4	28.9	28.9	14.0
Gas storage water heater (tank)	55.8	32.3	46.0	46.0	49.7	67.9 <sup>2</sup>
Gas condensing water heater	6.9	2.7	4.0	1.8	5.1	1.0
Gas tankless (Instantaneous)	5.5	10.2	4.2	16.4	7.2	2.7
Combined space and water heater	1.7	0.4	1.4	1.4	1.4	0.7
DK	7.6	7.0	10.1	5.5	7.7	13.6

<sup>1</sup> Data excludes dwellings where hot water is centrally provided.

<sup>2</sup> Columns are not additive because some homes may have more than one DWH fuel.

## DOMESTIC WATER HEATING

The majority (84%) of tankless water heaters were the only DHW heating appliance in the home. Approximately 6% of tankless units were paired with another tankless unit.

The proportion of survey respondents unable to classify the type of hot water heater ranged from 6% from 10% depending upon the region.

Exhibit 5-9 summarizes the distribution of hot water heater types in new gas homes by the three dwelling types. Compared to townhouses / row houses, single family detached dwellings are more likely to have a gas condensing water heater (6% versus 2%), or an instantaneous water heater (9% versus 3%).

### QUALITATIVE RESEARCH HIGHLIGHTS

- Builders and developers attributed the decline in gas DWH to developments in gas furnaces (i.e., fewer installations, regulations requiring high efficiency units) which eliminated the need for a B-vent.
- From a builder's perspective, the cost of adding a B-vent, the loss of precious interior space to accommodate the vent, and relative cost disadvantage of a gas DWH relative to an electric DWH, makes gas DWH considerably less desirable than electric DWH.

**Exhibit 5-9: Domestic Water Heater Types by Dwelling Type  
% of all New Gas Homes with Domestic Water Heaters**

DWH Type <sup>1,2</sup>	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Electric storage water heater (tank)	29.6	37.7	27.0	28.9
Gas storage water heater (tank)	47.4	49.3	56.6	49.7
Gas condensing water heater	6.0	1.8	1.5	5.1
Gas tankless (Instantaneous)	8.6	4.2	3.2	7.2
Combined space and water heater	1.5	0.5	0.8	1.4
DK	6.8	6.3	10.9	7.7

<sup>1</sup> Data excludes dwellings where hot water is centrally provided.

<sup>2</sup> Columns are not additive because some homes may have more than one DWH fuel.

### 5.7 Water Heating Preferences

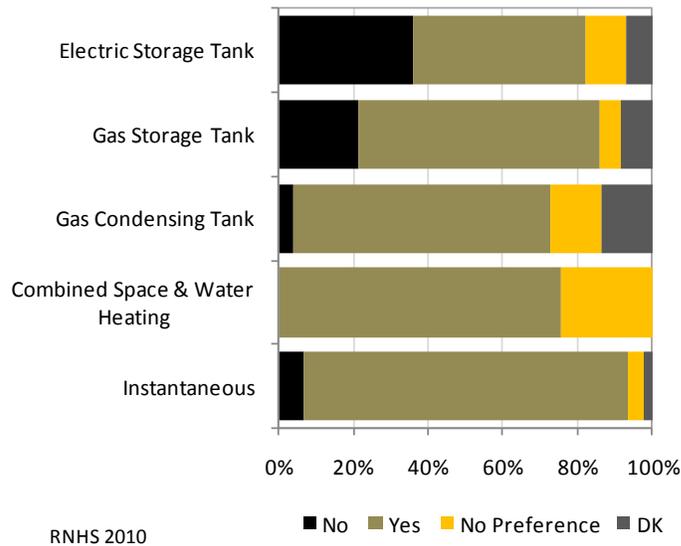
Nearly one quarter (23%) of all gas and electric households, regardless of their DWH fuel, prefer a different method of domestic water heating than they currently have in their new home. Regardless of their current DWH fuel, approximately 20% of households did not have a clear preference (either said they had no preference or said they didn't know).

Figure 5-1 (next page) summarizes DWH preference of new home owners, by the type of water heater they currently have. Homes with electric DWHs were significantly more likely to say they preferred a different system compared to homes with a gas DWH system (36% versus 21%). Twenty-one percent of homes with a gas storage tank preferred something else. All other methods had considerably fewer respondents who would prefer some other form of DWH.

### QUALITATIVE RESEARCH HIGHLIGHTS

- The fuel used for domestic water heating, and to a lesser degree the method, are low on the home purchase criteria list for most new homebuyers.
- Instantaneous hot water heaters were the exception. Homeowners were attracted by their compact size, instantaneous (non-storage) nature of providing hot water, and their energy efficiency.
- Builders on Vancouver Island suggested that instantaneous models were increasingly expected by buyers of higher end homes.

**Figure 5-1: Does this Residence have the Water Heating Method You Prefer?**

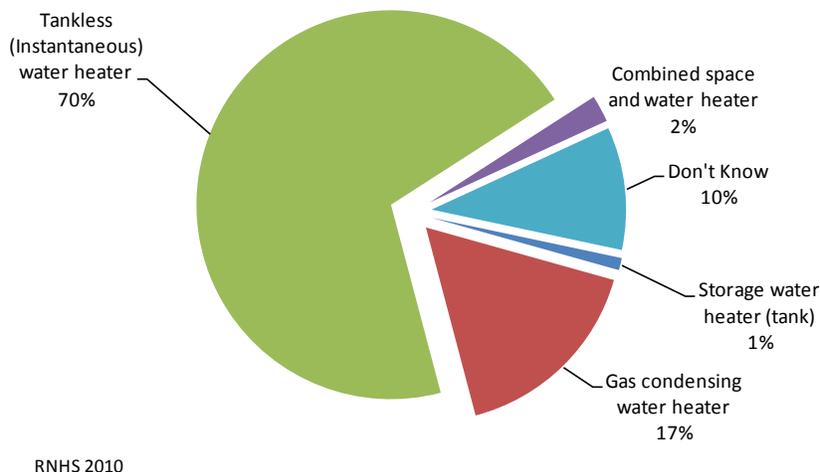


Households that indicated they preferred a different domestic water heating method than they currently had were provided with a list of alternative heating methods. Figure 5-2 summarizes the distribution of methods that households preferred. Overwhelmingly, the majority (70%) of households preferring a different DWH method would choose an instantaneous (tankless) hot water heater. Another 17% would prefer a condensing hot water heater. All other methods received very few mentions.

**QUALITATIVE RESEARCH HIGHLIGHTS**

- Builders reported considerable interest in instantaneous hot water heating and geothermal systems from homeowners.
- However, many homeowners lost interest once the costs to purchase and install these systems were known.

**Figure 5-2: Preferred Water Heating Method**



## DOMESTIC WATER HEATING

---

Caution is recommended in the interpretation of these data as preferences do not necessarily translate into action. In particular, survey respondents were not provided with relative DWH equipment costs – to purchase, maintain or operate – for the alternative systems. Their stated preferences could change if the costs of the different systems were known.

# 6 FIREPLACES & HEATING STOVES

This section summarizes information on the incidence and use of fireplaces and heating stoves in new home construction.

## 6.1 Fireplace and Heater Stoves – Highlights

### SECTION HIGHLIGHTS

- Gas or electric fireplaces remain a popular feature of homes constructed since 2005, present in 97% of all new gas homes
- 77% of new gas homes have a gas fireplace, compared to the 65% of older gas homes.
- 63% of new homes with a gas fireplace use it to supplement their home’s space heating system.

## 6.2 Fireplace and Heating Stove Types

The following types of fireplaces and heating stoves were queried in the 2010 RNHS:

- **Decorative fireplaces** – These units provide ambience but have little or no heating ability. The firebox is typically steel or masonry, and the hearth is typically open to the room (no fixed glass front).
- **Heater type fireplaces (built-ins and inserts)** – These fireplaces are efficient heaters with glass fronts and may have features such as fans and thermostatic control. They may be built-in at the time of construction, or inserted into an existing masonry or other fireplace as an upgrade.
- **Free standing fireplaces and heating stoves** – These are stand-alone units that can be used for both ambience and heating. Heating stoves resemble traditional wood stoves in appearance but may use fuels other than wood, including gas or electricity.

## 6.3 Penetration and Saturation Rates – By Region

Regardless of the fuel or type, 97% of gas dwellings constructed since 2005 have a fireplace or heater style stove (Exhibit 6-1). On a regional basis, fireplaces in new gas homes are less common in the North Interior region (80% of new homes) compared to the other three regions (95% to 100% of new homes).

### Exhibit 6-1: Fireplaces and Heating Stoves by Region

#### All Fireplace Types and Fuels – Gas Homes

	LM	VI	SI	NI	2010 RNHS
Unweighted base					
Penetration (%)	100.4*	99.7	94.6	80.0	97.3
Saturation	1.35	1.15	1.16	0.93	1.25

\* Rounding error

## FIREPLACES AND HEATING STOVES

Penetration and saturation rates for fireplaces in gas homes are calculated using a base of all homes, not just those with a fireplace or heating stove. This is different than the method used in the 2008 REUS. The latter calculated the rates using only homes with a fireplace or heating stove to ensure consistency with FortisBC's residential end-use surveys conducted in 2002 and 1993. To allow comparison with the 2010 RNHS results, the 2008 REUS penetration and saturation estimates were recalculated on the total base of households. The results are summarized in Exhibit 6-2.

### QUALITATIVE RESEARCH HIGHLIGHTS

- Wherefore art thou fireplace? With interior space at a premium in many Lower Mainland residential developments, one large developer is considering eliminating the fireplace in new developments to allow sufficient room for the big screen televisions.



**Exhibit 6-2: Fireplace and Heating Stove Details by Region  
Gas Homes**

Fireplace / Heating Stove Type	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	295	323	156	193	967	2141
<b>Gas (decorative)</b>						
Penetration (%)	36.7	30.6	38.9	36.1	35.8	17.7
Saturation	0.55	0.35	0.48	0.42	0.49	0.22
<b>Gas (heater type)</b>						
Penetration (%)	42.9	51.2	35.1	27.8	41.8	42.1
Saturation	0.56	0.59	0.45	0.33	0.53	0.57
<b>Gas (free standing)</b>						
Penetration (%)	1.1	2.9	1.4	2.6	1.6	5.6
Saturation	0.01	0.03	0.02	0.03	0.02	0.06
<b>Gas (Any Type)</b>						
Penetration (%)	79.1	82.0	72.9	64.6	77.3	65.0
Saturation	1.12	0.97	0.95	0.78	1.03	0.84
<b>Electric</b>						
Penetration (%)	19.2	10.1	13.4	9.0	15.8	5.7
Saturation	0.23	0.13	0.15	0.10	0.19	0.08
<b>Wood burning fireplace</b>						
Penetration (%)	0.5	2.8	1.9	1.1	1.1	23.4
Saturation	0.00*	0.03	0.02	0.02	0.01	0.29
<b>Wood burning stove</b>						
Penetration (%)	--	1.8	3.9	1.7	0.9	4.8
Saturation	--	0.02	0.04	0.02	0.01	0.05
<b>Other</b>						
Penetration (%)	--	0.4	--	1.7	0.3	0.6
Saturation	--	--	--	0.02	--	0.01

\* Value less than 0.01

Regardless of the type of gas fireplace, 77% of gas homes constructed since 2005 are equipped with at least one gas fireplace, compared to 65% of the stock of older gas homes. Interestingly, newer homes have a significantly higher proportion of decorative gas fireplaces compared to the stock of gas homes constructed before 2006 (36% versus. 18%). Wood burning fireplaces and stoves have almost disappeared from homes built since 2005 (2% of new homes).

## 6.4 Penetration and Saturation Rates – By Dwelling Type

Regardless of fireplace type or fuel, single family detached dwellings have the highest penetration of fireplaces (99%), followed by duplexes / triplexes (96%) and townhouses/row houses (90%).

**Exhibit 6-3: Fireplaces and Heating Stoves by Dwelling Type – Gas Homes**  
**All Fireplace and Heating Stove Fuels**

	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Penetration (%)	99.0	95.7	90.4	97.3
Saturation	1.31	1.19	0.99	1.25

Penetration and saturation rates for fireplaces and heating stoves by the three dwelling types are provided in Exhibit 6-4. Townhouses and row houses have significantly lower penetration of decorative gas fireplaces and a higher penetration of electric fireplaces compared to detached and semi-detached dwellings.

**Exhibit 6-4: Fireplace and Heating Stove Details by Dwelling Type**  
**Gas Homes**

Fireplace / Heating Stove Type	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
<b>Gas (decorative)</b>				
Penetration (%)	38.9	46.9	19.1	35.8
Saturation	0.54	0.55	0.24	0.49
<b>Gas (heater type)</b>				
Penetration (%)	44.5	31.1	31.5	41.8
Saturation	0.57	0.44	0.32	0.53
<b>Gas (free standing)</b>				
Penetration (%)	1.7	0.8	1.6	1.6
Saturation	0.02	0.01	0.02	0.02
<b>Gas (Any Type)</b>				
Penetration (%)	83.0	78.2	51.1	77.3
Saturation	1.14	0.99	0.58	1.03
<b>Electric</b>				
Penetration (%)	10.9	16.9	38.2	15.8
Saturation	0.14	0.20	0.41	0.19
<b>Wood burning fireplace</b>				
Penetration (%)	1.4	--	--	1.1
Saturation	0.02	--	--	0.01
<b>Wood burning stove</b>				
Penetration (%)	1.2	--	--	0.9
Saturation	0.01	--	--	0.01
<b>Other</b>				
Penetration (%)	0.3	--	--	0.3
Saturation	0.00*	--	--	0.00*

\* Value less than 0.01

### QUALITATIVE RESEARCH HIGHLIGHTS

- The outside wall vent required by natural gas fireplace discourages their use in row houses where inside units have only two outside walls. In effect, fireplaces compete against space needed for windows and entrance ways.

## FIREPLACES AND HEATING STOVES

Regardless of the type of gas fireplaces, 83% of single family detached dwellings had a gas fireplace, compared to 51% of townhouses / row houses. With the exception of townhouses / row houses, the penetration of decorative gas fireplaces is surprising (39% of SFDs, and 47% of duplexes / triplexes).

Exhibit 6-5 summarizes the penetration and saturation rates for fireplaces and heating stoves by dwelling vintage using data from the 2008 REUS for vintages up to and including 1996-2005, and the 2010 RNHS for 2006 and newer dwellings. The intent of the exhibit is to illustrate trends in the six fireplace types.

### Exhibit 6-5: Fireplaces and Heating Stoves by Dwelling Vintage Gas Homes – Gas Homes

Fireplace Type	Before 1950	1950 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2006 or newer
Unweighted base <sup>1</sup>	162	377	287	475	714	959
<b>Gas (decorative)</b>						
Penetration (%)	8.5	12.9	9.1	24.4	30.9	33.7
Saturation	0.09	0.14	0.10	0.35	0.40	0.45
<b>Gas (heater type)</b>						
Penetration (%)	25.9	35.5	32.6	52.1	59.9	40.1
Saturation	0.32	0.48	0.43	0.74	0.83	0.49
<b>Gas (free standing)</b>						
Penetration (%)	6.8	4.7	5.7	7.5	4.6	1.7
Saturation	0.09	0.05	0.06	0.09	0.05	0.02
<b>Gas (Any Type)</b>						
Penetration (%)	39.2	52.8	46.9	78.4	88.7	77.3
Saturation	0.49	0.67	0.58	1.12	1.27	1.03
<b>Electric</b>						
Penetration (%)	9.8	7.2	4.0	5.6	3.4	18.2
Saturation	0.11	0.11	0.07	0.06	0.07	0.21
<b>Wood burning fireplace</b>						
Penetration (%)	23.9	37.0	39.0	10.4	2.8	1.2
Saturation	0.32	0.44	0.51	0.12	0.03	0.01
<b>Wood burning stove</b>						
Penetration (%)	4.2	3.8	11.2	2.6	2.5	1.1
Saturation	0.04	0.04	0.12	0.03	0.03	0.01
<b>Other</b>						
Penetration (%)	4.1	0.0	0.0	0.5	0.0	0.3
Saturation	0.04	0.00	0.00	0.00	0.00	0.00

Totals may not sum due to rounding.

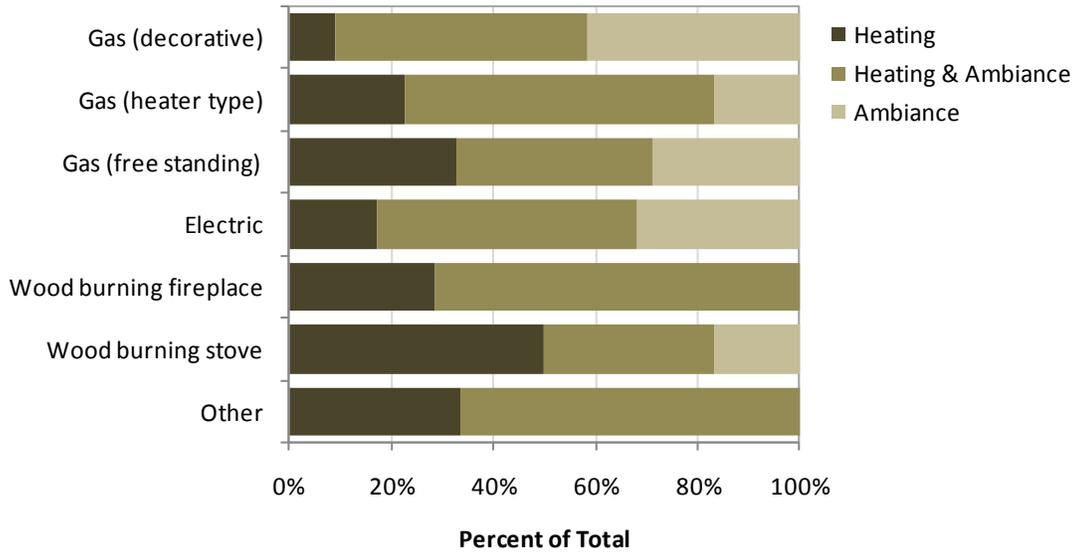
<sup>1</sup> REUS 2008 data for homes built prior to 2006, RNHS 2010 data for homes built since 2005

The data show that the penetration of gas fireplaces (any type) varies depending upon the vintage of dwelling. For example, 89% of homes built in the 1996-2005 period have a gas fireplace, compared to 39% of gas homes built prior to 1950.

### 6.5 Fireplace Use

As discussed in Section 4.5.3, fireplaces play an important role for many households in providing supplemental space heating, in addition to providing ambience. For each fireplace and heating stove type, survey respondents were asked to indicate the primary use for the fireplace / stove usage including heating, ambience or a combination of heating and ambience. The proportions for each type of use are summarized graphically in Figure 6-1 (next page).

**Figure 6-1: Fireplace Usage Behaviours – New Homes**



On average, 63% of new homes with a gas fireplace use it to help heat their home. This compares to 70% of gas homes with a gas fireplace built before 2005. Fireplace heating in this instance is subjective, based on self-reported behaviour. As such, the proportions should be interpreted with caution. The degree of space heating load offset by fireplace use is not known.



# 7 APPLIANCES

This section summarizes the penetration and saturation of a variety of gas and electric appliances commonly found in gas homes. As with previous chapters, comparisons are made to the stock of gas homes built prior to 2006 using data from FortisBC's 2008 Residential End-use Study.

## 7.1 Appliances – Highlights

### SECTION HIGHLIGHTS

- The penetration of gas cooking appliances, including piped gas BBQs, continues to increase.
- High efficiency clothes washers are now the dominant laundry choice in new homes.
- The proportion of new homes with central air conditioning is up significantly, in part due to increased penetration of air source and ground source heat pumps.
- Of note, nearly three-in-every-ten gas homes constructed in the Lower Mainland / Fraser Valley since 2005 have central air conditioning, compared to just 6% of older homes in the region.

## 7.2 Cooking Appliances

Exhibit 7-1 (next page) summarizes the penetration and saturation rates of cooking appliances by region for gas homes constructed since 2005. These data are compared to comparable data on the stock of older gas homes (2008 REUS).

The data show that the penetration of gas cooking appliances, including gas ranges, cook tops, and gas barbeques, is significantly higher in new gas homes compared to the stock of homes built prior to 2006. Commensurate with the increased penetration of gas cooking appliances, electric ranges and cook tops are significantly less common in newer homes.

The highest penetrations of gas cooking appliances in new housing, with the exception of piped gas BBQs, are found in gas homes in the Lower Mainland / Fraser Valley region. Gas cooking appliances are least prevalent in the North Interior. Of note, more than half of new homes surveyed in the South Interior reported having piped gas BBQs. Similarly high penetration rates for gas BBQs are noted for Vancouver Island homes, and to a lesser degree North Interior homes.

### QUALITATIVE RESEARCH HIGHLIGHTS

- Gas cooking appliances have a prestige factor and thus are associated with higher end kitchen designs and higher end homes. As well, some Asian cultures prefer gas cooking appliances for cooking.
- Focus group participants highlighted the positive characteristics of cooking with a gas appliance, particularly its superior temperature control.



## APPLIANCES

### Exhibit 7-1: Penetration and Saturation of Cooking Appliances by Region Gas Homes

Cooking Appliance	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2,209
<b>Electric range</b>						
Penetration (%)	51.6	64.2	65.1	73.9	57.8	75.5
Saturation	0.64	0.67	0.68	0.81	0.67	0.86
<b>Gas range</b>						
Penetration (%)	39.1	25.2	26.2	19.7	33.1	17.6
Saturation	0.43	0.25	0.26	0.20	0.35	0.19
<b>Electric cook top</b>						
Penetration (%)	20.3	22.1	25.9	22.0	21.5	12.7
Saturation	0.24	0.22	0.27	0.23	0.24	0.13
<b>Gas cook top</b>						
Penetration (%)	25.8	21.8	20.9	11.0	22.9	9.6
Saturation	0.27	0.22	0.21	0.11	0.24	0.11
<b>Electric wall oven</b>						
Penetration (%)	14.1	19.4	17.0	10.2	15.0	13.5
Saturation	0.15	0.22	0.19	0.12	0.16	0.16
<b>Gas wall oven</b>						
Penetration (%)	6.9	0.4	0.6	1.1	4.4	2.6
Saturation	0.08	0.00*	0.01	0.01	0.05	0.04
<b>Gas barbeque (piped gas)</b>						
Penetration (%)	32.4	49.4	53.3	43.2	38.9	15.5
Saturation	0.33	0.50	0.54	0.44	0.39	0.16
<b>Gas barbeque (bottled gas)</b>						
Penetration (%)	35.9	29.5	32.6	36.4	34.5	48.8
Saturation	0.36	0.31	0.33	0.38	0.35	0.51

\* Value less than 0.01

Penetration and saturation rates for cooking appliances in new dwellings, by dwelling type, are summarized in Exhibit 7-2 (next page).

Differences among the three dwelling types are modest with the exception of piped gas BBQs which are significantly more common in single detached and semi-detached dwellings compared to townhouses / row houses.

**Exhibit 7-2: Penetration and Saturation of Cooking Appliances by Dwelling Type  
New Gas Homes**

Cooking Appliances	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
<b>Electric range</b>				
Penetration (%)	57.1	64.9	59.4	57.8
Saturation	0.67	0.71	0.66	0.67
<b>Gas range</b>				
Penetration (%)	33.8	26.4	31.1	33.1
Saturation	0.36	0.26	0.33	0.35
<b>Electric cook top</b>				
Penetration (%)	21.7	19.3	21.1	21.5
Saturation	0.25	0.20	0.21	0.24
<b>Gas cook top</b>				
Penetration (%)	22.7	13.5	25.5	22.9
Saturation	0.23	0.14	0.31	0.24
<b>Electric wall oven</b>				
Penetration (%)	15.9	16.1	10.3	15.0
Saturation	0.18	0.18	0.10	0.16
<b>Gas wall oven</b>				
Penetration (%)	4.3	1.8	5.2	4.4
Saturation	0.05	0.02	0.05	0.05
<b>Gas barbeque (piped gas)</b>				
Penetration (%)	42.7	38.3	22.2	38.9
Saturation	0.43	0.38	0.22	0.39
<b>Gas barbeque (bottled gas)</b>				
Penetration (%)	32.2	33.7	45.3	34.5
Saturation	0.33	0.34	0.45	0.35

### 7.3 Cleaning Appliances

Cleaning appliances include dishwashers, clothes washers, and clothes dryers. These appliances impact natural gas use either directly (e.g., gas dryers) or indirectly via demand for hot water when supplied by gas DWH (e.g., dishwashers and clothes washers). Exhibit 7-3 (next page) summarizes the penetration and saturation rates for cleaning appliances for homes constructed since 2005 with comparisons made to the stock of older gas homes.

The data confirm the continuing shift to high efficiency front loading clothes washers.<sup>15</sup> Seventy-one percent (71%) of new gas homes reported having the high efficiency units compared to 27% of the stock of homes built prior to 2006. As a cautionary note, penetration rates for front loading washing machines for the stock of homes built before 2006 are likely low, given the turnover of appliance stock since the 2008 REUS survey was fielded (November 2008).

The penetration of gas clothes dryers appears to have declined, with 3% of new homes equipped with these units compared to 6% of the older stock of homes. Commensurately, the incidence of electric clothes dryers in newer homes is higher than the stock of older gas homes (93% versus 87% respectively).

<sup>15</sup> Recently, some top loading washing machine models are now qualified as Energy Star. Future residential end use surveys will need to address this development in the wording of the household appliance questions.

## APPLIANCES

### Exhibit 7-3: Penetration and Saturation of Cleaning Appliances by Region Gas Homes

Cleaning Appliance	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2,209
<b>Dishwasher</b>						
Penetration (%)	97.4	98.3	96.7	96.2	97.4	81.9
Saturation	1.07	1.02	1.02	1.01	1.05	0.87
<b>Top loading clothes washer</b>						
Penetration (%)	29.0	25.0	24.9	28.5	27.8	70.7
Saturation	0.30	0.25	0.25	0.29	0.28	0.74
<b>Front loading clothes washer</b>						
Penetration (%)	69.4	75.3	75.7	68.7	71.1	27.4
Saturation	0.75	0.77	0.79	0.71	0.75	0.30
<b>Electric clothes dryer</b>						
Penetration (%)	91.3	94.4	96.8	92.1	92.6	87.1
Saturation	0.99	0.98	1.01	0.96	0.99	0.91
<b>Gas clothes dryer</b>						
Penetration (%)	3.2	2.6	1.9	2.8	2.9	5.9
Saturation	0.04	0.03	0.02	0.03	0.03	0.07

The penetration and saturation of cleaning appliances for new gas homes is summarized by the three dwelling types in Exhibit 7-4.

### Exhibit 7-4: Penetration and Saturation of Cleaning Appliances by Dwelling Type New Gas Homes

Cleaning Appliance	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
<b>Dishwasher</b>				
Penetration (%)	97.2	98.8	97.9	97.4
Saturation	1.06	1.01	1.00	1.05
<b>Top loading clothes washer</b>				
Penetration (%)	27.2	21.1	31.9	27.8
Saturation	0.28	0.23	0.32	0.28
<b>Front loading clothes washer</b>				
Penetration (%)	71.7	77.8	66.5	71.1
Saturation	0.77	0.78	0.70	0.75
<b>Electric clothes dryer</b>				
Penetration (%)	92.6	95.6	92.0	92.6
Saturation	0.99	0.98	0.97	0.99
<b>Gas clothes dryer</b>				
Penetration (%)	3.4	2.1	0.7	2.9
Saturation	0.04	0.02	0.01	0.03

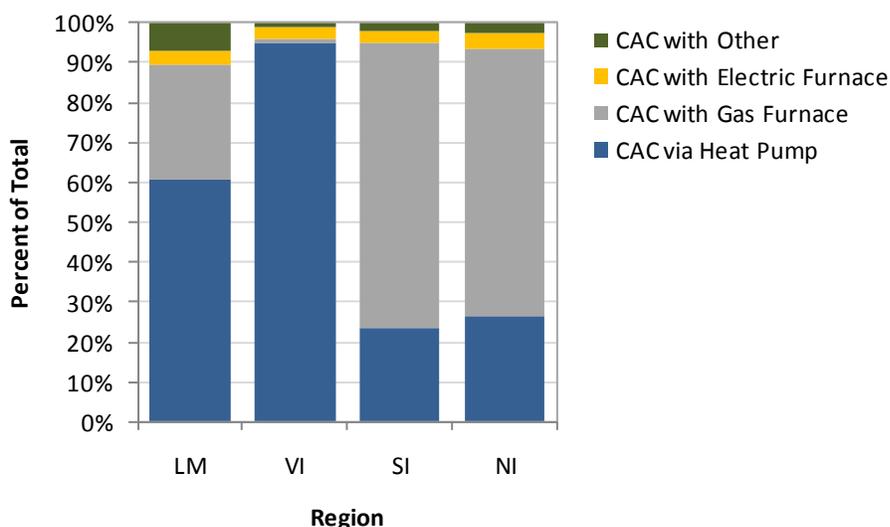
7.4 Air Conditioning

This section summarizes penetration and saturation rates for air conditioners in gas homes, with detail for central air conditioning units, electric through-the-wall units, window units, and portable air conditioning units.

Data for central air conditioners is presented two ways – the first as supplied by respondents to the RNHS and REUS (which may or may not include central air conditioning provided by air source or ground source heat pumps), and second with the inclusion of central air conditioning provided by traditional central air conditioning units (e.g., paired with a forced air furnace) and via air source and ground source heat pumps. Given the increased penetration of heat pump technology, the latter measure is considered a more accurate indicator of the proportion of homes with central air conditioning. To clearly understand how central air conditioning is desired, future surveys will need to expand the equipment choices for central air conditioning provided to survey respondents.

Figure 7-1 summarizes the equipment source for central air conditioning for each of the four regions. The data show that, on average, slightly more than half (52%) of gas homes constructed since 2005 that have central air conditioning, do so because they have an air source or ground source heat pump. Of note, the vast majority (95%) of new homes on Vancouver Island that have central air conditioning, do so because they have either an air source or ground source heat pump rather than a dedicated (traditional) central air conditioner paired with a gas or electric furnace. Sixty-one percent (61%) of Lower Mainland / Fraser Valley homes with central air conditioning do so because of heat pumps.<sup>16</sup> The incidence of traditional central air conditioning units is considerably higher in the South and North Interior regions.

Figure 7-1: Central Air Conditioning – Equipment Combinations



<sup>16</sup> There is the possibility that some air source heat pumps captured in this analysis are mini-split units which typically would not be considered to be a source of “central” air conditioning. While the RNHS survey did not distinguish the type of air source heat pump, mini-split heat pumps are most commonly used in retrofit situations rather than in new construction.

## APPLIANCES

Exhibit 7-5 summarizes data on air conditioning appliances for new gas homes by region, with comparisons to the 2008 REUS data. The data show that central air conditioning, including homes with heat pumps, is present in 42% of new gas homes constructed since 2005. The incidence of central air conditioning is highest in the South Interior and North Interior regions (89% and 63% proportionately). Of note, 28% of Lower Mainland new homes have central air conditioning, compared to 6% for stock of homes in this region constructed prior to 2006.<sup>17</sup> Only 2% of gas homes on Vancouver Island built prior to 2006 reported having central air condition in the 2008 REUS.

**Exhibit 7-5: Penetration and Saturation of Air Conditioning Appliances by Region Gas Homes**

Heating / Cooling Appliance	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2,209
<b>Electric central air conditioner<sup>1</sup></b>						
Penetration (%)	19.8	22.1	83.6	62.1	34.1	15.2
Saturation	0.21	0.22	0.84	0.63	0.35	0.15
<b>Central air conditioning including heat pumps<sup>2</sup></b>						
Penetration (%)	28.3	41.5	89.4	63.3	41.5	18.6
Saturation	0.28	0.42	0.89	0.63	0.41	0.19
<b>Electric wall air conditioner</b>						
Penetration (%)	0.0	0.0	2.8	1.1	0.5	10.3
Saturation	0.00	0.00	0.03	0.01	0.01	0.16
<b>Electric window air conditioner</b>						
Penetration (%)	4.1	3.0	0.6	0.6	2.9	n/a
Saturation	0.05	0.03	0.01	0.01	0.03	n/a
<b>Portable air conditioner</b>						
Penetration (%)	15.1	3.2	0.6	3.2	9.1	10.4
Saturation	0.18	0.03	0.01	0.03	0.11	0.12

n/a = appliance not queried

<sup>1</sup> May or may not include the central air conditioning function provided via air source and ground source heat pumps.

<sup>2</sup> Includes central air conditioning provided by air source and ground source heat pumps

Exhibit 7-6 (next page) examines air conditioning penetration and saturation rates by dwelling type. Of note, 19% of townhouses and row houses have central air conditioning, significantly less than single detached and semi-detached dwellings (46% and 51% respectively). The low penetration for townhouses / row houses, in large part, appears to explain why townhouses and row houses have a significantly higher incidence of portable air conditioning units (17% versus 8% in SFDs and 4% in Duplex/Triplex ).

<sup>17</sup> Exhibit 8.10, p. 8-6, *Residential End-use Study – Final Report*, report prepared for Terasen Gas by Sampson Research Inc., November 2009.

**Exhibit 7-6: Penetration and Saturation of Air Conditioning Appliances by Dwelling Type  
New Gas Homes**

Heating / Cooling Appliance	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
<b>Electric central air conditioner <sup>1</sup></b>				
Penetration (%)	37.2	41.7	18.9	34.2
Saturation	0.38	0.42	0.20	0.35
<b>Central air conditioning incl. heat pumps <sup>2</sup></b>				
Penetration (%)	45.8	51.3	19.4	41.5
Saturation	0.46	0.51	0.19	0.41
<b>Electric wall air conditioner</b>				
Penetration (%)	0.4	0.0	0.5	0.4
Saturation	0.00	0.00	0.00	0.00
<b>Electric window air conditioner</b>				
Penetration (%)	3.3	1.8	3.1	3.2
Saturation	0.04	0.02	0.03	0.04
<b>Portable air conditioner</b>				
Penetration (%)	7.8	4.2	16.5	9.2
Saturation	0.10	0.04	0.18	0.11

<sup>1</sup> May or may not include the central air conditioning function provided via air source and ground source heat pumps.

<sup>2</sup> Includes central air conditioning provided by air source and ground source heat pumps

**7.5 Miscellaneous Appliances**

Exhibit 7-7 (next page) summarizes the penetration and saturation of outdoor heaters (both piped gas and bottled gas units) and heat recovery ventilators in new homes by region, and overall in the stock of gas homes constructed prior to 2006. Four percent (4%) of new homes have a piped gas outdoor heater, compared to 1% of older homes. While the numbers are small, new homes in the South Interior had the highest incidence of outdoor heaters (6%). Of note, 6% of homes had outdoor heaters fuelled by bottled propane including 9% of homes in the Lower Mainland.

Heat recovery ventilators provide a method to provide fresh air to homes that have been warmed by outgoing stale air. The ability to provide conditioned fresh air to a new home using gas cooking equipment is important to ensuring proper indoor air quality and reducing space heating load.

Heat recovery ventilators are present in 4% of new homes, up from 2% of the older stock of gas homes. As the incidence of outdoor heaters and heat recovery ventilators is low, caution is advised in the interpretation of trends.

## APPLIANCES

### Exhibit 7-7: Penetration and Saturation of Miscellaneous Appliances by Dwelling Type Gas Homes

Heating / Cooling Appliance	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2,209
<b>Gas outdoor heater (piped gas)</b>						
Penetration (%)	3.3	4.5	5.5	2.9	3.8	1.3
Saturation	0.03	0.04	0.07	0.03	0.04	0.02
<b>Gas outdoor heater (bottled gas)</b>						
Penetration (%)	8.9	4.2	4.2	1.6	6.3	1.6
Saturation	0.09	0.04	0.04	0.02	0.07	0.02
<b>Heat recovery ventilator</b>						
Penetration (%)	3.2	6.6	2.8	2.5	3.8	1.9
Saturation	0.03	0.07	0.03	0.03	0.04	0.02

n/a = appliance not queried

Data on outdoor heaters and heat recovery ventilators for new homes are summarized by dwelling type in Exhibit 7-8.

### Exhibit 7-8: Penetration and Saturation of Miscellaneous Appliances by Dwelling Type New Gas Homes

Heating / Cooling Appliance	SFD	Duplex/ Triplex	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
<b>Gas outdoor heater (piped gas)</b>				
Penetration (%)	4.4	1.4	2.6	3.8
Saturation	0.05	0.01	0.03	0.04
<b>Gas outdoor heater (bottled gas)</b>				
Penetration (%)	6.4	8.3	5.6	6.3
Saturation	0.07	0.08	0.06	0.07
<b>Heat recovery ventilator</b>				
Penetration (%)	4.9	2.0	0.9	3.8
Saturation	0.05	0.02	0.01	0.04

# 8 POOLS AND HOT TUBS

This section summarizes the penetration of pools and hot tubs in new residential construction, including their fuels used for heating.

## 8.1 Pools and Hot Tubs – Highlights

### SECTION HIGHLIGHTS

- The incidence of pools and hot tubs in new homes is lower than in the stock of existing homes, reflecting their status as luxury items that are often installed after the home is purchased.
- The number of survey respondents with a pool or hot tub was insufficient to reliability report on the fuel mix for heating.

## 8.2 Penetration

On average, 3% of homes constructed since 2005 have a swimming pool that is either for their use exclusively or shared with others (e.g., typical of townhouse complexes) (Exhibit 8-1) with the vast majority (2.4%) having exclusive use. The incidence of exclusive-use pools in the stock of gas homes built prior to 2005 is 5%.

**Exhibit 8-1: Penetration of Pools and Hot Tubs by Region (%)**  
Gas Homes

	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2189
Swimming pool	3.1	--	5.8	2.3	2.8	6.3
Exclusive use of resident	2.4	--	5.8	2.3	2.4	5.2
Hot tub	9.4	8.1	15.4	8.4	9.7	14.5
Exclusive use of resident	8.7	8.1	15.4	8.4	9.3	13.3

n/a =data not available

Hot tubs for the exclusive use of the homeowner are present in 9% of new homes, compared to 13% of the stock of homes built prior to 2006. The lower incidence of hot tubs and pools in new homes likely reflects the fact that they are luxury items that are added to the home sometime after the home is built.

Exhibit 8-2 (next page) summarizes the penetration of pools and hot tubs by the three dwelling types. The incidence of exclusive-use hot tubs is significantly lower for dwellings other than SFDs. Not surprisingly, only SFDs were likely to have an exclusive-use swimming pool.

## POOLS AND HOT TUBS

---

**Exhibit 8-2: Penetration of Pools and Hot Tubs by Dwelling Type (%)  
New Gas Homes**

	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Swimming pool	3.0	1.5	2.0	2.8
Exclusive use of resident	3.0	--	--	2.4
Hot tub	11.7	4.1	2.0	9.7
Exclusive use of resident	11.7	2.6	--	9.3

### 8.3 Pool and Hot Tub Heating

A review of the data suggests that natural gas is the predominant fuel used to heat pools, and electricity for hot tubs. As there were an insufficient number of homes with an exclusive use pool (between 18 and 20 homes) that responded to the RNHS survey, the reliability of the fuel mix estimates for pools is too low to report these data.

Of those homes with an exclusive use hot tub, 78% used electricity to heat their unit. The remaining 22% was heated using natural gas. Regional and dwelling type data are not reported due small sample sizes.

# 9 DEMOGRAPHICS

This section summarizes the key demographic and socio-demographic characteristics of respondents to the 2010 RNHS. Where relevant, comparisons are made to similar data from the 2008 REUS.

## 9.1 Respondent Age

Exhibit 9-1 summarizes the ages of respondents to the 2010 RNHS by region. Compared to data from the 2008 REUS, respondents to the 2010 RNHS are significantly younger. Thirty-six percent (36%) of RNHS respondents living in gas homes are under 45 years of age, compared to 18% of REUS 2008 respondents. As well, proportionately fewer respondents to the RNHS are aged 65 or older compared to REUS 2008 (18% versus 32% respectively).

**Exhibit 9-1: Age of Survey Respondents by Region (%)  
Gas Homes**

Age Group	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2186
18 yrs and younger	--	--	--	--	--	--
19 – 24 yrs	1.3	0.1	0.8	0.8	1.0	0.4
25 – 34 yrs	13.2	8.7	10.4	11.1	11.8	4.2
35 – 44 yrs	25.4	12.2	30.7	17.0	22.8	13.7
45 – 54 yrs	24.5	17.0	21.4	24.1	22.8	20.4
55 – 64 yrs	21.5	33.1	22.2	26.3	24.2	28.9
65 yrs and older	14.1	28.9	14.5	20.7	17.5	32.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

Exhibit 9-2 summarizes respondents by age for each dwelling type. Of note, there is a relatively higher proportion of younger adults (34 years or less) living in townhouses and row houses. A similar differentiation was observed between SFDs and TH/RHs in the 2008 REUS.

**Exhibit 9-2: Age of Survey Respondents by Building Type (%)  
New Gas Homes**

Age Group	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
18 yrs and younger	--	--	--	--
19 – 24 yrs	0.7	0.3	2.3	1.0
25 – 34 yrs	9.8	9.5	21.5	11.8
35 – 44 yrs	24.6	5.0	18.2	22.8
45 – 54 yrs	23.9	13.8	19.8	22.8
55 – 64 yrs	23.6	34.0	24.3	24.2
65 yrs and older	17.3	37.4	14.0	17.5
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

## DEMOGRAPHICS

### 9.2 Marital Status

The marital status of 2010 RNHS respondents living in gas homes, by region, and with comparisons to the 2008 REUS, is presented in Exhibit 9-3.

**Exhibit 9-3: Marital Status of Survey Respondents by Region (%)  
Gas Homes**

Marital Status	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2174
Single	5.4	4.7	4.8	8.2	5.5	6.7
Married / common law	81.7	84.9	87.6	81.9	83.0	79.7
Divorced / separated	7.6	3.4	4.7	5.7	6.3	5.8
Widowed	5.4	7.0	2.8	4.2	5.2	7.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

The marital status of 2010 RNHS respondents by dwelling type is summarized in Exhibit 9-4. Proportionately speaking, there are significantly more single and divorced respondents living in townhouses and row houses compared to SFDs.

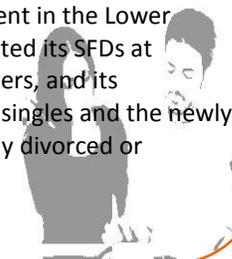
**Exhibit 9-4: Marital Status of Survey Respondents by Region (%)  
New Gas Homes**

Marital Status	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Single	3.3	6.7	15.2	5.5
Married / common law	85.6	83.3	70.8	83.0
Divorced / separated	5.8	4.7	9.2	6.3
Widowed	5.3	5.3	4.9	5.2
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

#### QUALITATIVE RESEARCH HIGHLIGHTS

- Large developers design their developments with specific customer segments in mind. They actively commission / use market research to understand consumer preferences.
- One development in the Lower Mainland targeted its SFDs at “move-up” buyers, and its townhouses at singles and the newly singled (recently divorced or widowed).



### 9.3 Number of People in the Household

Exhibit 9-5 (next page) summarizes the average number of persons living in the household by age group, and for the home overall. The average number of persons per household varies from a low of 2.5 persons for Vancouver Island to a high of 3.4 persons for Lower Mainland / Fraser Valley. The overall RNHS average is somewhat higher than the REUS 2008 average. This is consistent with the higher percentage of RNHS homes with children under 18 years of age compared to the stock of homes represented by the 2008 REUS (average of 0.75 versus 0.44 respectively).

**Exhibit 9-5: Number of People in the Household by Age Group and Region**

Age Group	LM	VI	SI	NI	2010 RNHS	2008 TG
Unweighted base	294	321	155	192	962	2181
18 yrs and younger	0.84	0.42	0.85	0.73	0.75	0.44
19 – 24 yrs	0.24	0.10	0.20	0.18	0.21	0.20
25 – 34 yrs	0.45	0.21	0.25	0.30	0.37	0.22
35 – 44 yrs	0.51	0.28	0.58	0.38	0.46	0.32
45 – 54 yrs	0.50	0.31	0.42	0.48	0.45	0.45
55 – 64 yrs	0.49	0.59	0.44	0.46	0.50	0.55
65 yrs and older	0.33	0.57	0.27	0.43	0.37	0.62
<b>Household Mean</b>	<b>3.35</b>	<b>2.49</b>	<b>3.01</b>	<b>2.90</b>	<b>3.11</b>	<b>2.79</b>

Exhibit 9-6 summarizes the average number of persons living in the household by age group, for the three building types. People living in SFDs are more likely to have children (18 years and younger) at home, compared to townhouses / row houses (average of 0.83 versus 0.55 respectively).

**Exhibit 9-6: Number of People in the Household by Building Type**

Age Group	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
18 yrs and younger	0.83	0.20	0.55	0.75
19 – 24 yrs	0.22	0.11	0.14	0.21
25 – 34 yrs	0.36	0.22	0.46	0.37
35 – 44 yrs	0.50	0.11	0.36	0.46
45 – 54 yrs	0.50	0.28	0.30	0.45
55 – 64 yrs	0.50	0.64	0.45	0.50
65 yrs and older	0.39	0.61	0.26	0.37
<b>Household Mean</b>	<b>3.26</b>	<b>2.43</b>	<b>3.15</b>	<b>3.11</b>

Totals may not sum due to rounding.

## 9.4 Education

Exhibit 9-7 (next page) summarizes the highest level of education achieved by survey respondents. Compared to the 2008 REUS respondents, respondents to the 2010 RNHS have a higher level of education attainment. Regionally, respondents from the North Interior are more likely to have completed trade or technical school than respondents in the other three regions.

## DEMOGRAPHICS

### Exhibit 9-7: Highest Level of Education Completed by Region (%) Gas Homes

Education Level	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2221
Some high school	2.7	3.8	2.9	3.0	2.9	4.7
Completed high school	11.2	14.0	9.4	11.3	11.5	16.9
Some trade / technical school	6.4	4.4	4.1	3.0	5.4	7.4
Completed trade / technical school	12.5	13.4	14.0	21.9	13.9	14.4
Some university / college	18.9	22.3	14.3	13.4	18.4	18.0
Completed university / college	30.5	30.1	38.3	30.8	31.4	25.8
Post graduate	16.9	10.2	15.7	15.5	15.4	9.8
NR	1.0	1.8	1.3	1.1	1.2	3.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

The education levels for RNHS 2010 respondents organized by dwelling type show that those living in townhouses / row houses tend to have a higher level of educational attainment than those living in single or semi-detached homes (Exhibit 9-8).

### Exhibit 9-8: Highest Level of Education Completed by Building Type (%) New Gas Homes

Education Level	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Some high school	3.0	6.9	1.6	2.9
Completed high school	12.1	12.6	8.7	11.5
Some trade / technical school	5.6	3.9	4.7	5.4
Completed trade / technical school	15.6	12.3	6.4	13.9
Some university / college	16.7	17.2	26.3	18.4
Completed university / college	30.4	31.0	35.6	31.4
Post graduate	15.1	16.1	16.7	15.4
NR	1.5	--	--	1.2
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

## 9.5 Household Income

Exhibit 9-9 (next page) summarizes annual household income before taxes (2009) of gas households in new homes, and contrasts it with households in older gas homes (2007 household income from REUS 2008). Consistent with the data on education, households in gas homes built since 2005 have higher household incomes than those living in gas homes built prior to 2006.

**Exhibit 9-9: Annual Household Income (2009) by Region (%)**

**Gas Homes**

Annual Household Income	LM	VI	SI	NI	2010 RNHS	2008 REUS <sup>1</sup>
Unweighted base	294	321	155	192	962	2221
Less than \$20,000	1.9	2.4	1.8	1.5	1.9	3.7
\$20,000 to \$39,999	5.9	6.9	3.2	7.0	5.9	16.7
\$40,000 to \$59,999	10.2	16.9	11.6	18.1	12.4	17.6
\$60,000 to \$79,999	13.1	10.8	14.1	10.4	12.5	15.1
\$80,000 to \$99,999	15.4	10.3	10.2	12.3	13.5	10.8
\$100,000 to \$124,999	12.8	14.5	18.6	18.3	14.4	11.5
Over \$125,000	22.0	13.1	16.3	12.8	18.8	9.6
NR	18.8	25.1	24.2	19.6	20.6	14.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

<sup>1</sup> Household income before taxes for 2007

Household incomes by the three building types are summarized in Exhibit 9-10.

**Exhibit 9-10: Annual Household Income (2009) by Dwelling Type (%)**

**New Gas Homes**

Annual Household Income	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
Less than \$20,000	1.7	4.1	2.3	1.9
\$20,000 to \$39,999	5.6	4.3	7.3	5.9
\$40,000 to \$59,999	11.3	16.2	16.6	12.4
\$60,000 to \$79,999	10.8	16.0	19.4	12.5
\$80,000 to \$99,999	13.4	13.1	14.2	13.5
\$100,000 to \$124,999	14.7	11.1	13.4	14.4
Over \$125,000	20.6	10.8	11.9	18.8
NR	21.7	24.4	14.7	20.6
Total	100.0	100.0	100.0	100.0

Totals may not sum due to rounding.

**9.6 Language**

Exhibit 9-11 (next page) summarizes the main language spoken in the home for new homes, and homes built prior to 2006 (REUS 2008). While English is the predominant main language spoken in the majority of homes regardless of region, homes in the Lower Mainland / Fraser Valley have greater diversity with Asian and South Asian languages as the main language in 11% of new homes.

## DEMOGRAPHICS

**Exhibit 9-11: Main Language Spoken in the Home by Region (%)  
Gas Homes**

Main Language	LM	VI	SI	NI	2010 RNHS	2008 REUS
Unweighted base	294	321	155	192	962	2221
English	87.7	98.6	98.7	98.7	92.1	88.8
Mandarin	4.4	--	--	--	2.6	1.4
Cantonese	1.6	--	--	--	1.0	3.6
Punjabi	1.9	0.4	--	--	1.2	0.4
Korean	2.1	--	--	--	1.3	0.0*
Tagalog	0.7	--	--	--	0.4	1.0
Farsi (Persian)	0.2	--	--	--	0.1	--
French	--	--	--	0.6	0.1	0.4
German	--	--	--	0.2	0.0	0.6
Other	1.0	0.7	0.6	0.6	0.8	2.4
NR	1.4	1.1	1.3	0.6	1.3	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

\* Value less than 0.1%

Totals may not sum due to rounding.

The distribution of main languages spoken in the home by dwelling type for new homes is provided in Exhibit 9-12. Of note, Asian and South Asian languages are most prevalent in townhouses and row houses than SFDs (12% versus 6% of households respectively).

**Exhibit 9-12: Main Language Spoken in the Home by Dwelling Type (%)  
New Gas Homes**

Main Language	SFD	Dup/Tri	TH/RH	2010 RNHS
Unweighted base	662	136	169	967
English	92.8	97.9	87.6	92.1
Mandarin	2.2	0.0	5.2	2.6
Cantonese	0.7	1.5	2.0	1.0
Punjabi	1.5	0.0	0.0	1.2
Korean	0.7	0.0	3.9	1.3
Tagalog	0.4	0.0	0.7	0.4
Farsi (Persian)	0.0	0.0	0.7	0.1
French	0.1	0.0	0.0	0.1
German	0.0	0.5	0.0	0.0
Other	1.1	0.0	0.0	0.8
NR	1.6	0.0	0.0	1.3
Total	100.0	100.0	100.0	100.0

\* Value less than 0.1%

Totals may not sum due to rounding.

# 10 GAS END-USE COMBINATIONS

The purpose of this section is to summarize key trends and developments in gas appliances and other end-uses discussed individually in earlier sections, pulling data for new homes from the 2010 RNHS with construction vintage specific data from the 2008 REUS. Additionally, this section presents and discusses the results of an analysis of gas end-use combinations or pairings, again based on data from the 2010 RNHS and 2008 REUS surveys. This analysis explores the factors influencing the number of gas end-uses per home, and specific combinations, including dwelling type, vintage, and market value.

## 10.1 Highlights

### SECTION HIGHLIGHTS

- The traditional pairing of gas space and domestic water heating in newer homes is on the decline. Proportionately fewer new homes have a gas domestic water heater paired with a gas furnace compared to older homes, a trend which began in the period 1996 - 2005.
- Conversely, the penetration of smaller gas loads such as gas cook tops, ranges, and BBQs has increased significantly in new homes.
- There are more than 200 unique combinations of gas end-uses in homes in FortisBC's service regions. The 10 most common end-use combinations account for, depending upon the dwelling type, between 61% to 69% of all gas end-use combinations in new homes.
- After several decades of gradual decline, the proportion of newly constructed gas homes with only one or two gas end-uses has increased.

## 10.2 Gas End-Use Trends – Summary

Figure 10-1 (next page) summarizes the penetration of major space heating and water heating appliances by dwelling vintage using RNHS data for gas homes built since 2005, and 2008 REUS data for older vintages. The figure clearly shows the long-term gradual decline in the penetration of gas forced air furnaces since the mid-1970s, and the recent drop in installations of gas DWHs. Data for gas fireplaces (any type) show more than a doubling of market share in homes from 39% for homes built prior to 1950 to 89% by 1996-2005, before falling back to 1986-1995 levels (77%-78%) with homes built since 2005.

# GAS END-USE COMBINATIONS

**Figure 10-1: Gas End-Use Trends – Gas Space & Water Heating**

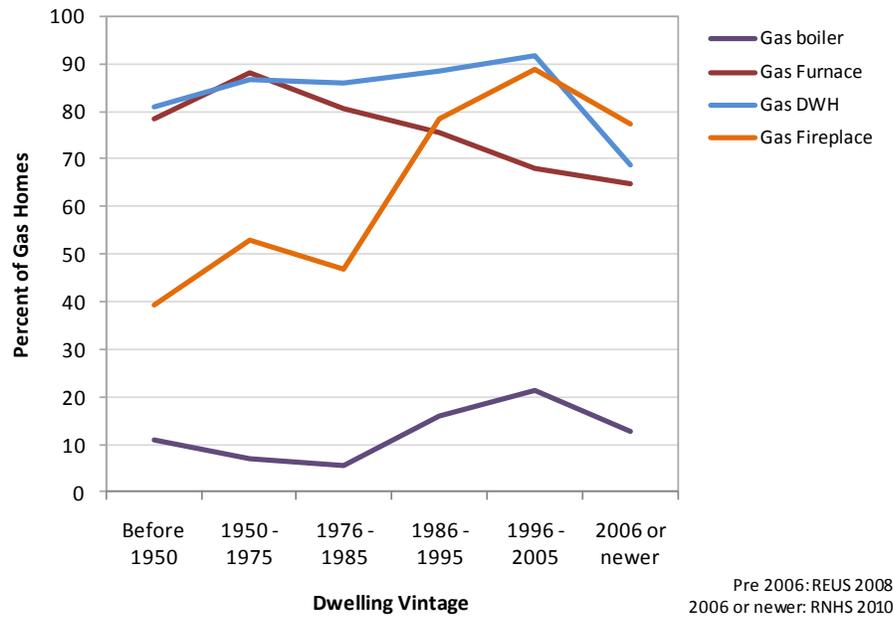
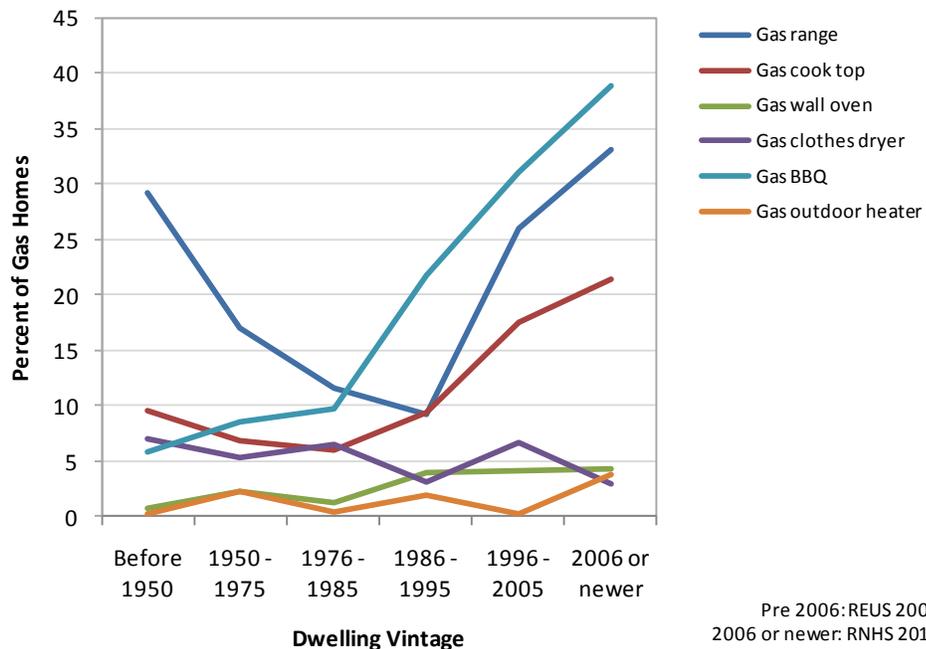


Figure 10-2 summarizes the penetration of gas cooking appliances including ranges, cook tops, wall ovens, and outdoor piped gas BBQs; clothes driers; and piped gas outdoor heaters. The steady rise in the penetration of gas cooking appliances is evident, with the penetration of piped gas BBQs in new homes nearly quadruple that of homes constructed in the 1976-85 period. While penetration has been traditionally quite low, the popularity of gas dryers appears to be on a slow long-term decline.

**Figure 10-2: Gas End-use Trends – Gas Cooking & Other End-Uses**



**10.3 Gas End-Use Combinations**

Despite any retrofit activity that has been undertaken in older homes, analysis of the incidence of individual gas end-uses (e.g., gas furnaces, gas DWH, etc.) suggests that the mix of gas end-uses in newer gas homes is different than older gas homes. To better understand the nature of the change, combinations or “pairings” of gas end-uses in homes built since 2005 were compared to older vintages – from the perspective of the most common end-use combinations, and the average number of gas end-uses installed per home. Variations in the type and number of combinations were analyzed by dwelling vintage, dwelling type, location (region), and market value (new homes only).

**10.3.1 Gas End-Use Counts by Region**

Exhibit 10-1 summarizes the distribution of gas homes built since 2005 by the number of gas end-uses in the home. The data show that 9% of new homes have only one gas end-use, 22% have two gas end-uses, and 29% have three gas end-uses. While the proportion of homes built prior to 2006 with only one gas end-use is not significantly different from new homes, newer homes are more likely than older homes to have four or more gas end-uses than older homes (40% versus 26%). Overall, new homes have an average of 3.3 gas end-uses. By comparison, older homes have an average of 2.9 end-uses per home.

**Exhibit 10-1: Number Gas End-Use Combinations by Region (%)  
Gas Homes**

Gas End-Use Combinations	LM	VI	SI	NI	RNHS 2010	REUS 2008
Unweighted base	295	323	156	193	967	2221
One gas end-use	6.4	19.1	9.6	9.0	9.3	7.6
Two gas end-uses	18.7	30.0	20.4	29.0	22.0	29.6
Three gas end-uses	30.0	26.5	31.9	26.1	29.2	36.5
Four gas end-uses	19.4	14.8	21.3	22.1	19.1	15.9
Five gas end-uses	15.9	6.1	8.4	9.1	12.6	7.7
Six or more gas end-uses	9.6	3.4	8.3	4.7	7.8	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
<b>Average per-Dwelling</b>	<b>3.5</b>	<b>2.6</b>	<b>3.3</b>	<b>3.1</b>	<b>3.3</b>	<b>2.9</b>

Totals may not sum due to rounding.

Regional differences in the number of gas end-uses for new homes are evident. Most notably, new homes on Vancouver Island are significantly more likely than homes in the other three regions to have only one gas end-use (19% versus 6% to 9% depending upon the region). On average, new Vancouver Island homes have 2.6 gas end-uses, compared to the overall average of 3.5.

**10.3.2 Gas End-Use Counts by Dwelling Type**

Single family detached dwellings have an average of 3.3 gas end-uses each compared to 2.9 for duplexes and triplexes, and 2.7 for townhouses and row houses (Exhibit 10-2) (next page).

# GAS END-USE COMBINATIONS

**Exhibit 10-2: Average Number of Gas End-uses by Dwelling Type  
New Gas Homes**

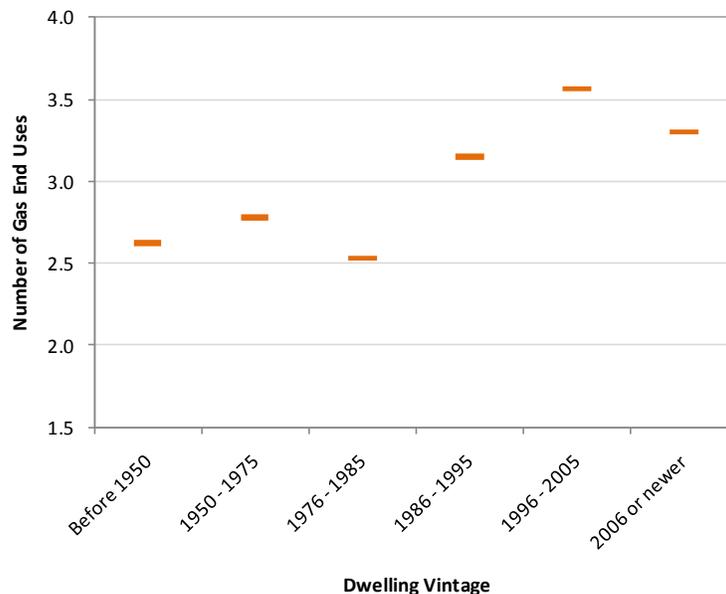
Gas End-Use Combinations	LM	VI	SI	NI	RNHS 2010
Unweighted base	295	323	156	193	967
<b>Single Family Detached</b>					
Average	3.7	2.7	3.3	3.2	3.3
Std Deviation	2.5	1.0	1.2	1.0	1.6
<b>Duplex / Triplex</b>					
Average	2.9	2.7	3.6	2.6	2.9
Std Deviation	1.0	0.4	1.0	0.6	0.7
<b>Townhouse / Row House</b>					
Average	2.8	2.4	2.5	2.9	2.7
Std Deviation	1.4	1.3	0.7	1.1	1.3
<b>All Dwellings</b>					
Average	3.5	2.6	3.3	3.1	3.3
Std Deviation	2.1	1.0	1.2	1.0	1.5

While not presented here, the average number of gas end-uses tends to increase as the size of the dwelling increases.

### 10.3.3 Gas End-Use Counts by Dwelling Vintage

Figure 10-3 summarizes the average number of gas end-uses by dwelling vintage. With the exception of homes built in the mid-1970s to the mid-1980s, the average number of gas end-uses per home for homes built prior to 2006 had been increasing.

**Figure 10-3: Average Number of Gas End-uses – Gas Homes**



Pre-2006: REUS 2008  
1006 or newer: RNHS 2010

Gas homes built since 2005 reversed this trend, declining to an average of 3.3 gas end-uses on average, compared to 3.6 for the homes built the decade earlier. The recent decline is attributed, in part, due to the shift of new home construction towards more townhouses / row houses, which have fewer gas end-uses on average than single family detached dwellings, but also due to substantial declines in gas DWH and gas furnaces, and a smaller decline in gas fireplaces. The decline has been partly offset by the increase in gas cooking appliances.

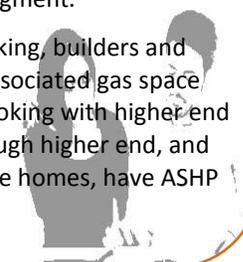
### 10.3.4 Gas End-Use Counts by Dwelling Value

Figure 10-4 shows that the number of gas end-uses per home increases with higher value homes.<sup>18</sup> For example, single family detached homes valued at between \$200,000 and \$399,999 have an average of 2.3 gas end-uses. This rises to an average of 4.6 gas end-uses for SFDs valued at \$1 million or more.

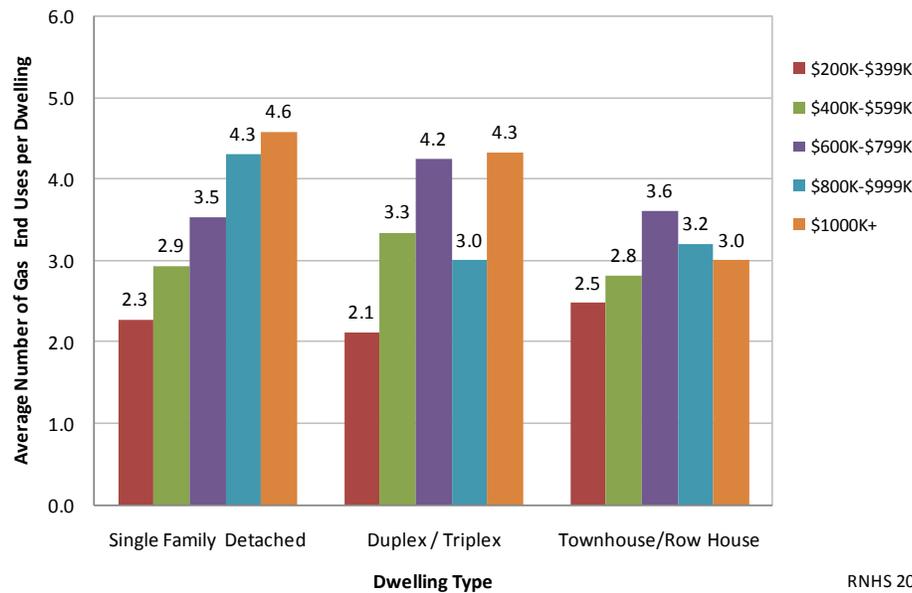
The relationship between number of gas end-uses and dwelling value applies to the other dwelling types as well. Townhouses and row houses valued under \$400,000, for example, averaged 2.5 gas end-uses. Similar homes valued at \$600,000 to \$799,000 have an average of 3.6 gas end-uses. Although home values vary by region, the relationship between the number of gas end-uses and value of the home holds true for all regions.

#### QUALITATIVE RESEARCH HIGHLIGHTS

- Builders emphasized the importance of pricing their developments so they were competitive in the marketplace. End-use equipment decisions were driven, in large part, by the home's price point, and target buyer segment.
- Generally speaking, builders and homebuyers associated gas space heating and cooking with higher end homes. (Although higher end, and some mid-range homes, have ASHP for heating)



**Figure 10-4: Average Number of Gas End-Uses by Dwelling Value  
Homes Built Since 2005**



<sup>18</sup> Home values based on self-reported data (RNHS 2010).

# GAS END-USE COMBINATIONS

## 10.4 Most Common Gas End-Use Combinations

An analysis of the specific gas end-uses by dwelling type, region, and vintage reveals considerable diversity in the combinations of gas end-uses present. Of note, there are over 130 unique combinations of gas end-uses for homes constructed since 2005. When gas homes constructed prior to 2006 are included, the number of unique combinations of gas end-use appliances increases to more than 200.

### QUALITATIVE RESEARCH HIGHLIGHTS

- The increased popularity of gas cooking appliances is being driven by several factors including the superior heat control offered by gas cooking, cultural preferences, and the association of gas cooking appliances with higher end kitchens.

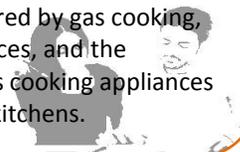


Exhibit 10-3 ranks the the ten most common end-use combinations for new homes by region, based on the proportion of all combinations they represent. Depending upon the region, these ten combinations account for 54% to 72% of all combinations observed among new homes in the RNHS 2010. The most common end-use combinations for all regions, except Vancouver Island, include the traditional pairings of gas furnaces or boilers (SH), gas fireplaces (FP), and gas domestic water heaters (DWH). Vancouver Island is noteworthy as the two most common gas end-use combinations include fireplaces (FP) and nothing else, and fireplaces paired with BBQs (FP BBQ). These two pairings account for 22% of all gas end-use combinations for this region.

**Exhibit 10-3: Top Ten Gas End-Use Combinations by Region – New Homes Percent of Gas Homes Built Since 2005**

Lower Mainland		Vancouver Island		South Interior		North Interior	
Combination	%	Combination	%	Combination	%	Combination	%
SH DWH FP	18.4	FP	11.3	SH DWH FP	11.1	SH DWH	13.2
SH FP	7.0	FP BBQ	10.3	SH DWH FP BBQ	9.9	SH DWH FP BBQ	12.8
SH DWH FP GR	6.6	DWH FP	6.8	SH DWH	6.9	SH DWH FP	12.5
SH DWH	4.4	DWH FP BBQ	5.5	SH DWH BBQ	5.2	SH FP	9.8
SH DWH FP CT BBQ	4.4	SH DWH FP	5.1	SH FP BBQ	5.1	SH	6.6
SH DWH FP GR BBQ	4.1	SH DWH FP BBQ	4.0	SH	5.1	SH DWH BBQ	5.5
FP	3.4	FP CT	3.2	FP	4.5	SH FP BBQ	3.8
SH DWH FP BBQ	3.4	BBQ	2.9	SH FP	4.5	SH DWH FP CT BBQ	3.2
SH DWH FP GR CT BBQ	3.3	FP GR	2.7	SH FP GR	3.2	SH GR	2.5
SH FP BBQ	3.0	FP GR BBQ	2.6	FP BBQ	3.1	SH DWH FP GR BBQ	2.5
<b>Total (%)</b>	<b>58.0</b>	<b>Total (%)</b>	<b>54.4</b>	<b>Total (%)</b>	<b>58.6</b>	<b>Total (%)</b>	<b>72.4</b>

**LEGEND:**  
**SH** = space heating (gas boiler or gas furnace)  
**DWH** = gas domestic water heater  
**FP** = gas fireplace  
**CT** = gas cook top  
**WO** = gas wall oven  
**CD** = gas clothes dryer  
**GR** = gas range  
**BBQ** = piped gas BBQ

Totals may not sum due to rounding.

Exhibit 10-4 (next page) summarizes the ten most common gas end-use combinations for gas homes constructed prior to 2006 based on data from the 2008 REUS. Depending upon the region, these ten combinations account for 66% to 80% of all gas end-use combinations or pairings, in contrast to 54% to 72% for newer homes. The Interior region comprises both south and north regions but these were not broken out in the 2008 REUS so are presented in the exhibit as a single region.

**Exhibit 10-4: Top Ten Gas End-Use Combinations by Region (%) – Older Homes  
Percent of Gas Homes Built Prior to 2006**

Lower Mainland		Vancouver Island		Interior	
Combination	%	Combination	%	Combination	%
SH DWH FP	30.1	SH DWH FP	18.8	SH DWH	26.3
SH DWH	20.1	SH DWH	11.5	SH DWH FP	24.6
SH DWH FP BBQ	3.9	DWH FP	10.6	SH DWH FP BBQ	9.0
SH FP	3.8	FP	5.4	SH	5.5
SH DWH FP GR	3.7	SH FP	4.2	SH DWH BBQ	3.4
SH	3.5	SH DWH FP GR	4.0	SH FP	3.2
SH DWH GR	3.3	SH DWH FP BBQ	3.5	SH DWH GR	2.7
FP	2.1	FP BBQ	3.1	FP	1.6
SH DWH FP GR BBQ	1.9	SH DWH GR	2.4	SH DWH FP GR	1.6
SH DWH FP CT	1.8	SH DWH FP GR BBQ	2.4	SH DWH CD	1.6
<b>Total (%)</b>	<b>74.2</b>	<b>Total (%)</b>	<b>65.9</b>	<b>Total (%)</b>	<b>79.5</b>

**LEGEND:**  
 SH = space heating (gas boiler or gas furnace)  
 DWH = gas domestic water heater  
 FP = gas fireplace  
 CT = gas cook top  
 WO = gas wall oven  
 CD = gas clothes dryer  
 GR = gas range  
 BBQ = piped gas BBQ

Totals may not sum due to rounding

Exhibit 10-5 summarizes the top ten end-use combinations for new homes by dwelling type. Generally speaking, SFDs have a greater diversity of end-use combinations compared to townhouses / row houses.

**Exhibit 10-5: Top Ten Gas End-use Combinations by Dwelling Type (%) – New Homes  
Percent of Gas Homes Built Since 2005**

Single Family Detached		Duplex / Triplex		Townhouse / Row House		All Dwelling Types	
Combination	%	Combination	%	Combination	%	Combination	%
SH DWH FP	15.4	SH DWH FP GR	11.7	SH DWH	13.3	SH DWH FP	14.6
SH FP	6.4	SH DWH FP BBQ	10.5	SH DWH FP	12.5	SH FP	6.3
SH DWH FP BBQ	5.0	SH FP	10.3	SH DWH FP BBQ	5.7	SH DWH FP BBQ	5.3
SH DWH FP GR	4.9	SH DWH FP	6.3	SH DWH FP CT	5.6	SH DWH	5.2
FP	4.5	FP GR	6.1	FP	5.2	FP	4.7
SH DWH FP CT BBQ	4.2	SH DWH	5.7	SH FP	4.7	SH DWH FP GR	4.5
SH DWH FP GR BBQ	3.7	FP	5.1	SH	4.5	SH DWH FP CT BBQ	3.5
SH FP BBQ	3.6	SH FP BBQ	4.8	SH DWH GR CT	3.4	SH DWH FP GR BBQ	3.3
FP BBQ	3.5	SH	4.6	GR CT	3.4	SH FP BBQ	3.2
SH DWH	3.5	SH DWH FP GR BBQ	4.0	SH GR	3.0	FP BBQ	3.1
<b>Total (%)</b>	<b>54.7</b>	<b>Total (%)</b>	<b>69.1</b>	<b>Total (%)</b>	<b>61.3</b>	<b>Total (%)</b>	<b>53.7</b>

**LEGEND:**  
 SH = space heating (gas boiler or gas furnace)  
 DWH = gas domestic water heater  
 FP = gas fireplace  
 CT = gas cook top  
 WO = gas wall oven  
 CD = gas clothes dryer  
 GR = gas range  
 BBQ = piped gas BBQ

Totals may not sum due to rounding

Exhibit 10-6 (next page) summarizes the top ten end-use combinations for the stock of older homes by the three dwelling types, and for the three dwelling types combined. The data suggest considerably less diversity in gas end-use combinations for older homes versus newer homes.

# GAS END-USE COMBINATIONS

**Exhibit 10-6: Top Ten Gas End-Use Combinations by Dwelling Type (%) – REUS 2008  
Gas Homes Built Prior to 2006**

Single Family Detached		Duplex / Triplex		Townhouse / Row House		All Dwelling Types	
Combination	%	Combination	%	Combination	%	Combination	%
SH DWH FP	26.5	SH DWH FP	24.2	SH DWH FP	46.0	SH DWH FP	28.0
SH DWH	22.2	SH DWH	20.1	SH DWH	9.6	SH DWH	21.0
SH DWH FP BBQ	5.2	SH DWH FP BBQ	14.3	DWH FP	5.3	SH DWH FP BBQ	5.4
SH FP	3.5	SH	9.5	FP	5.2	SH FP	3.5
SH DWH GR	3.5	SH DWH CD	4.0	SH FP	4.9	SH DWH FP GR	3.3
SH DWH FP GR	3.5	FP BBQ	4.0	SH	3.4	SH	3.3
SH	2.9	SH DWH FP GR CT BBQ CD	4.0	SH DWH FP CD	3.1	SH DWH GR	3.1
SH DWH FP GR BBQ	2.1	DWH FP	2.7	SH CT	2.4	DWH FP	2.4
DWH FP	2.1	FP	2.6	SH DWH FP WO	2.4	FP	2.2
FP	1.9	SH DWH FP CD	1.8	SH DWH FP GR	2.3	SH DWH FP GR BBQ	1.8
<b>Total</b>	<b>73.4</b>	<b>Total</b>	<b>87.2</b>	<b>Total</b>	<b>84.6</b>	<b>Total</b>	<b>74.0</b>

**LEGEND:**  
**SH** = space heating (gas boiler or gas furnace)  
**DWH** = gas domestic water heater  
**FP** = gas fireplace  
**CT** = gas cook top  
**WO** = gas wall oven  
**CD** = gas clothes dryer  
**GR** = gas range  
**BBQ** = piped gas BBQ

Totals may not sum due to rounding

## 10.4.1 Incidence of Gas Space Heat and Gas DWH

The previous exhibits provided insight into the variety of gas end-use combinations. It is useful, however, to explore trends in the more “traditional” or common pairings of gas space heat, and gas or electric DWH.

Exhibit 10-7 (next page) summarizes the incidence of homes with gas furnaces or boilers paired with gas DWH or electric DWH, by the three dwelling types.<sup>19</sup> These data confirm there has been a significant reduction in the number of new homes that are using gas for domestic water heating. For example, 56% of new SFDs have the traditional pairing of gas space heat and gas DWH, compared to 81% for the stock of older gas SFDs, a decline of 25 percentage points. Seventy-three percent (73%) of townhouses / row houses built prior to 2006 have gas space heat (gas furnace or boiler) and gas DWH, compared to 54% of townhouses / row houses constructed since 2005.

### QUALITATIVE RESEARCH HIGHLIGHTS

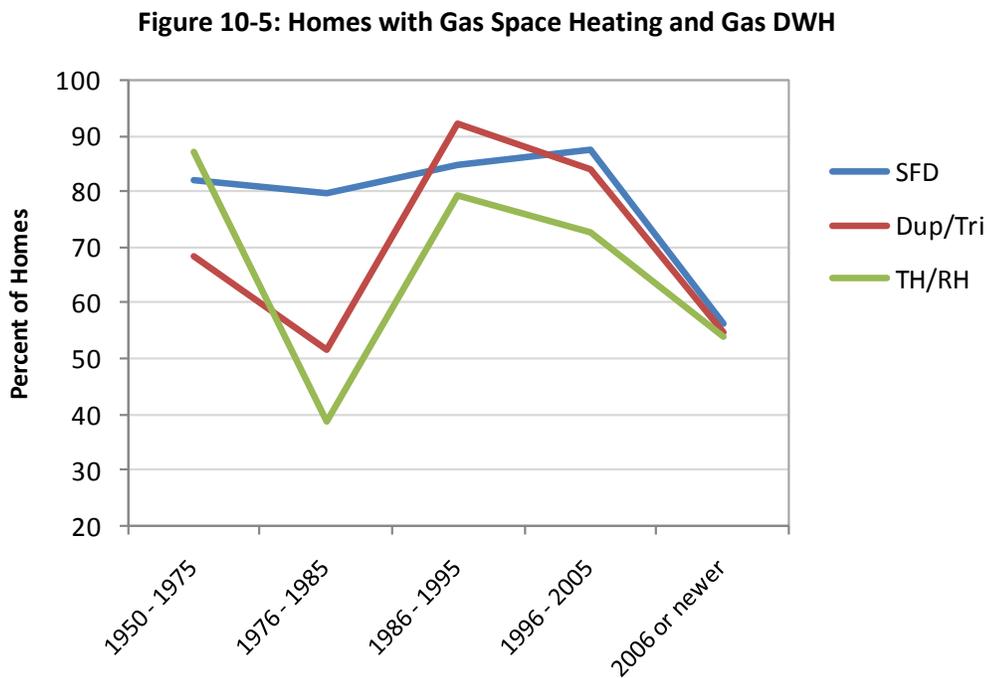
- A major Lower Mainland residential developer interviewed for this project confirmed that while they continue to install high efficiency gas furnaces in their new developments, they no longer pair them with a gas DWH because the b-vent required by a gas DWH takes away from interior living space.

<sup>19</sup> These homes may have other gas end-uses. However, this analysis concentrates on the largest gas loads which traditionally have been space and domestic water heating.

**Exhibit 10-7: Gas Space Heat and DWH Combinations by Region and Dwelling Type (%)**  
**Gas Homes**

	LM	VI	SI	NI	RNHS 2010	REUS 2008
Unweighted base	295	323	156	193	967	2221
<b>Single Family Detached</b>						
Gas space heat & gas DWH	68.1	19.5	46.0	64.3	56.2	81.2
Gas space heat & electric DWH	20.6	6.9	35.7	30.7	21.0	10.8
<b>Duplex / Triplex</b>						
Gas space heat & gas DWH	51.8	18.3	78.6	67.7	54.6	77.3
Gas space heat & electric DWH	22.2	40.0	14.3	20.6	23.4	11.6
<b>Townhouse / Row House</b>						
Gas space heat & gas DWH	54.9	40.7	62.5	57.9	53.9	72.8
Gas space heat & electric DWH	16.7	29.6	31.3	36.8	21.5	12.1
<b>All Dwellings</b>						
Gas space heat & gas DWH	65.1	22.2	50.3	63.6	55.7	78.7
Gas space heat & electric DWH	19.9	11.2	33.7	31.0	21.2	11.9

Figure 10-5 illustrates the incidence of gas space heating paired with gas DWH for the three dwelling types, by dwelling vintage. The data for SFDs confirm that the trend away from having a gas DWH is a recent development. Data for duplexes / triplexes, and townhouses / row houses suggest the decline began in homes constructed in the 1996-2005 period, and became significantly more pronounced in homes built since that time.



Pre-2006: REUS 2008  
 2006 or newer: RNHS 2010



# 11 BIBLIOGRAPHY

*2008 Residential End-Use Study*, Consultant report prepared for FortisBC (Terasen Gas), November 2009



# Appendix A

## Residential New Home Survey Questionnaire



## Terasen Gas Residential New Home Survey



Thank you for your participation. Please have the person in your home who is most responsible for home maintenance and repair complete this questionnaire. The survey responses should refer to the residence located at the address shown on the attached label above.

### Win a \$500 Gift Certificate

By completing this survey, your name will be entered into a draw to win a \$500 gift certificate to a home improvement / hardware store near you. Contest details are available on the last page of the survey.

This survey is open to residents who live in homes built between 2006 and 2010. We are interested in hearing from you even if you are not a customer of Terasen Gas. The information you provide will be used to better understand how newer residential households use energy, and help design energy efficiency and alternative energy programs. All individual data will be kept confidential.

### Double your chances to win. Complete the survey online and we'll enter you into the draw twice!

You can choose to complete this survey online by going to [www.nrg-surveys.com/Terasen/](http://www.nrg-surveys.com/Terasen/) and entering the random ID code that appears on the label above.

### Instructions for Completing the Mail Survey

Some questions require you to mark an "X", for example:

Do you rent or own this residence?      Rent       Own

Some questions require you to fill in a number, for example:      23      years

Some questions allow you to check several answers. These questions will have the instruction "check all that apply."

When you have completed the survey, please put the questionnaire in the enclosed envelope. No postage is needed. Surveys are due by **November 26, 2010**.

If you have mislaid the return envelope, please mail the questionnaire to:

NRG Research Group  
1380 – 1100 Melville St.  
Vancouver, BC V6E 4A6

## A. YOUR RESIDENCE

A1. Is this residence a:

- Single family dwelling (detached)
- Duplex (2 units attached)
- Row house or townhouse (3 or more units attached, each with a separate entrance)
- Apartment
- Mobile home
- Other

A2. When was this residence built?

- Before 2006
- 2006
- 2007
- 2008
- 2009
- 2010
- Don't know

IF THIS RESIDENCE WAS BUILT BEFORE 2006 OR YOU ANSWERED "DON'T KNOW" GO TO SECTION J

A3. Does this residence receive a natural gas bill or piped propane gas bill monthly or every other month?

- Yes
- No  → GO TO QUESTION A5
- Don't know  → GO TO QUESTION A5

IF THIS RESIDENCE IS AN APARTMENT AND YOU ANSWERED "NO" TO THE LAST QUESTION, PLEASE GO TO SECTION J

A4. Is this residence currently supplied with natural gas under a fixed-rate contract with a gas marketer?

- Yes
- No
- Don't know

IF THIS RESIDENCE RECEIVES A NATURAL GAS OR PIPED PROPANE BILL PLEASE GO TO QUESTION A7

A5. Is natural gas service available on your street or road?

- Yes
- No
- Don't know

A6. Does this residence have a natural gas connection that is currently disconnected or turned off?

- Yes
- No
- Don't know

A7. Do you rent or own this residence?

- Rent  → GO TO QUESTION A11
- Own

A8. Was this residence purchased new or had it been previously owned?

- Purchased new
- Previously owned  → GO TO QUESTION A11
- Don't know  → GO TO QUESTION A11

A9. Was construction on this residence completed before you decided to purchase it?

- Yes
- No
- Don't Know

A10. Which of the following choices were offered to you as part of the purchase of this residence? (Check all that apply)

- Central forced air furnace
- Wired-in electric heater (baseboards)
- Hot water baseboards
- Hot water radiant in-floor / under floor heat
- Electric radiant heat (floors, walls, and/or ceilings)
- Gas heater stove
- Heat pump – air source
- Heat pump – ground source (geothermal)
- Air conditioning (other than heat pump)
- Electric fireplace
- Gas fireplace
- Kitchen materials
- Flooring materials
- Other (specify): \_\_\_\_\_
- No choices offered

A11. What is the estimated market value of this residence?

- Under \$200,000
- \$200,000 - \$399,999
- \$400,000 - \$599,999
- \$600,000 - \$799,999
- \$800,000 - \$999,999
- \$1,000,000 or more
- Don't know

A12. What is the height of the ceilings in this residence, excluding the basement? Please indicate the percentage of the residence with each ceiling height. Choose the closest height. Your answers should sum to 100%.

	Percentage
8 feet	<input type="text"/>
9 feet	<input type="text"/>
10 feet	<input type="text"/>
More than 10 feet	<input type="text"/>
<b>TOTAL 100%</b>	

A13. Is there a secondary suite in this residence?

- Yes
- No

A14. What is the total floor area of this residence, including basement and / or unfinished areas but excluding the garage or carport?

sq. feet OR  sq. metres

**B. SPACE HEATING**

This section deals with how you heat your residence. You will be asked questions on what fuels you use (i.e. gas /electricity /wood) and the methods you use (i.e. furnace/baseboard heaters/ fireplace).

**B1. What is the MAIN fuel used to heat this residence? The main fuel is the one that heats most of the residence during a typical year. If you have hot water space heating please specify the fuel used to heat the water. (check one fuel only)**

- Electricity
- Natural gas
- Piped propane
- Bottled propane
- Oil
- Wood
- Geothermal
- Other
- Don't know

**B2. Have you changed from one MAIN fuel to another to heat this residence within the past five years?**

- Yes
- No  →GO TO QUESTION B4

**B3. What was the previous MAIN space heating fuel? (check one fuel only)**

- Electricity
- Natural gas
- Piped propane
- Bottled propane
- Oil
- Wood
- Geothermal
- Other
- Don't know

**B4. Please indicate any OTHER fuel(s) used to help heat this residence (check all that apply) and which OTHER fuel is used the most (check one only). Note: most heat pumps use one of the following fuels.**

	All OTHER fuels (check all that apply)	Most commonly used OTHER fuel (check one only)
Electricity	<input type="radio"/>	<input type="radio"/>
Natural gas	<input type="radio"/>	<input type="radio"/>
Piped propane	<input type="radio"/>	<input type="radio"/>
Bottled propane	<input type="radio"/>	<input type="radio"/>
Oil	<input type="radio"/>	<input type="radio"/>
Wood	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>
Don't know	<input type="radio"/>	<input type="radio"/>

UNLESS OTHERWISE STATED, ANY REFERENCES TO "GAS" FROM THIS POINT FORWARD IN THE SURVEY MEAN EITHER NATURAL GAS OR PIPED PROPANE GAS.

**B5. Do you have a gas furnace, a gas boiler, or neither?**

- Gas boiler
- Gas furnace
- Neither

**Boilers are different than Domestic Hot Water Tanks**

A domestic hot water tank supplies hot water for bathing, washing dishes, washing clothes, etc.

A boiler provides hot water to heat your house – typically using radiant in-floor piping or upright / baseboard style radiators. Some space heat boilers also heat water in a separate tank for domestic use.

**B6. Please check the main method used to heat this residence, then the second most used method, and then all other methods used to heat this residence.**

	Main method (check one only)	Second most used method (check one only)	All other methods (check all that apply)
Central forced air furnace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wired-in electric heater (baseboards)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wired-in electric wall heater (fan forced)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hot water baseboards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hot water radiant in-floor / under floor heat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric radiant heat (floors, walls, and/or ceilings)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas wall heater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Portable electric heaters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood stove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas heater stove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump – air source	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat pump – ground source (geothermal)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood burning fireplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric fireplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas fireplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# APPENDIX A

B7. Does this residence have the space heating method you prefer?

- No   
 Yes   
 No preference   
 Don't know
- } GO TO SECTION C

B8. Please check the space heating method you would have preferred to heat this residence. (check one method only)

	Preferred method (check one only)
Central forced air furnace	<input type="radio"/>
Wired-in electric heater (baseboards)	<input type="radio"/>
Hot water baseboards	<input type="radio"/>
Hot water radiant in-floor / under floor heat	<input type="radio"/>
Electric radiant heat (floors, walls, and/or ceilings)	<input type="radio"/>
Wood stove	<input type="radio"/>
Gas heater stove	<input type="radio"/>
Heat pump – air source	<input type="radio"/>
Heat pump – ground source (geothermal)	<input type="radio"/>
Wood burning fireplace	<input type="radio"/>
Electric fireplace	<input type="radio"/>
Gas fireplace	<input type="radio"/>
Other (specify): _____	<input type="radio"/>

## C. FIREPLACES AND HEATING STOVES

Many homes are equipped with fireplaces or heating stoves. Some provide ambiance but little or no heat, while others can be used to heat one or more rooms.

C1. Do you have a fireplace or heating stove in this residence?

- Yes   
 No  → GO TO SECTION D

C2. How many of the following types of fireplaces and heating stoves do you have? Please tell us how many of each type and indicate whether they are used primarily for heating, ambiance or both.

	Used primarily for:					Heat	Am- biance	Both
	None	1	2	3	4+			
Gas (decorative)	<input type="radio"/>							
Gas (heater type)	<input type="radio"/>							
Gas (free standing)	<input type="radio"/>							
Electric	<input type="radio"/>							
Wood burning fireplace	<input type="radio"/>							
Wood burning stove	<input type="radio"/>							
Other	<input type="radio"/>							

## D. DOMESTIC WATER HEATING

D1. How many water heaters are there in this residence? If you live in an apartment, townhouse, or row house where hot water is centrally provided to all units (from outside your unit), please check "none".

- 1   
 2   
 3+   
 None  → GO TO SECTION E

D2. What type of fuel does your water heater(s) use? Check one only for each heater that you have.

	Heater 1	Heater 2	Heater 3
Electricity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Piped Propane	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bottled Propane	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geothermal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Tankless (Instantaneous) Water Heaters:

Compact units that provide hot water on demand without the need for a storage tank.

### Gas Condensing Water Heaters:

These high efficiency water heaters use a heat exchanger to extract heat from the flue gases. Can be vented to the outside using plastic pipe.

D3. What types of water heater(s) are there in this residence?

	Heater 1	Heater 2	Heater 3
Storage water heater (tank)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gas condensing water heater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tankless (instantaneous) water heater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Combined space and water heater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

D4. If this residence has a storage or condensing water heater, does it have a:

	Heater 1	Heater 2	Heater 3
Side wall vent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Roof vent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No vent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

D5. Does this residence have the domestic water heating method you prefer?

- No
  - Yes
  - No preference
  - Don't know
- } GO TO SECTION E

D6. Which domestic hot water heating method would you have preferred?

- Storage water heater (tank)
- Gas condensing water heater
- Tankless (instantaneous) water heater
- Combined space and water heater
- Don't know

**E. APPLIANCES**

E1. Please indicate the number of each of the following appliances in use at this residence.

COOKING	# in use
Electric range	<input type="text"/>
Gas range	<input type="text"/>
Electric cook top	<input type="text"/>
Gas cook top	<input type="text"/>
Electric wall oven	<input type="text"/>
Gas wall oven	<input type="text"/>
Gas barbeque (piped gas)	<input type="text"/>
Gas barbecue (bottled propane gas)	<input type="text"/>
<b>CLEANING</b>	
Dishwasher	<input type="text"/>
Top loading clothes washer	<input type="text"/>
Front loading clothes washer	<input type="text"/>
Electric clothes dryer	<input type="text"/>
Gas clothes dryer	<input type="text"/>
<b>AIR CONDITIONING</b>	
Electric central air conditioner	<input type="text"/>
Electric through the wall unit	<input type="text"/>
Electric window air conditioner	<input type="text"/>
Portable air conditioner	<input type="text"/>
<b>MISCELLANEOUS</b>	
Gas outdoor heater (piped gas)	<input type="text"/>
Gas outdoor heater (bottled gas)	<input type="text"/>
Heat recovery ventilator	<input type="text"/>

**F. SWIMMING POOLS AND HOT TUBS**

F1. Do you have a swimming pool at this residence?

- Yes, indoor
- Yes, outdoor
- No  → GO TO QUESTION F4

F2. Is this pool for the exclusive use of this residence (example: backyard pool in a single family dwelling) or shared with other residences (example: pool in an apartment / condominium / or townhouse complex)?

- Exclusive use only
- Share with others  → GO TO QUESTION F4

F3. Please indicate the type of fuel used by the pool heater and whether solar energy is used to assist the water heating process.

Fuel type	Solar assisted heating
Solar <input type="radio"/>	N/A
Natural gas <input type="radio"/>	<input type="radio"/>
Electric <input type="radio"/>	<input type="radio"/>
Propane <input type="radio"/>	<input type="radio"/>
Other <input type="radio"/>	<input type="radio"/>
Not heated <input type="radio"/>	

F4. Do you have a hot tub at this residence?

- Yes, indoor
- Yes, outdoor
- No  → GO TO SECTION G

F5. Is this hot tub for the exclusive use of this residence (example: hot tub in a single family dwelling) or shared with other residences (example: hot tub in an apartment / condominium / or townhouse complex)?

- Exclusive use only
- Share with others  → GO TO SECTION G

F6. What type of fuel does the hot tub heater use?

- Natural gas
- Electric
- Propane
- Other

**G. ATTITUDES AND PREFERENCES**

We would like to understand your views on a number of energy related issues. For the following set of statements, please check the answer that most accurately reflects your agreement or disagreement with the statement.

G1. On a scale of 1 to 5, where 1 means that you strongly disagree and 5 means that you strongly agree, please indicate whether you agree or disagree with the following statements.

	Strongly Disagree		Strongly agree		Don't Know
	1	2	3	4	
I am really concerned about climate change	<input type="radio"/>				
I feel morally obligated to do the best I can to conserve energy	<input type="radio"/>				
I am well informed about alternative sources of energy such as landfill gas, biogas, and geothermal energy	<input type="radio"/>				
Natural gas is an environmentally friendly energy source	<input type="radio"/>				
I am well informed about the theory of climate change	<input type="radio"/>				
Natural gas is a safe energy source	<input type="radio"/>				
It is cheaper to heat a house with natural gas than electricity	<input type="radio"/>				
A home heated with natural gas is more comfortable than one heated with electricity	<input type="radio"/>				
Energy is not a major household expense	<input type="radio"/>				

G2. On a scale of 1 to 5, where 1 means decrease significantly and 5 means increase significantly, how much do you think prices for the following goods and services will change over the next 10 years?

	Decrease Significantly		Stay the Same	Increase Significantly		Don't Know
	1	2		3	4	
Groceries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mortgage rates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gasoline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electricity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cell phone service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G3. On a scale of 1 to 5, where 1 means that you strongly disagree and 5 means that you strongly agree, please indicate whether you agree or disagree with the following statements.

	Strongly Disagree	Neither Agree nor Disagree		Strongly Agree	Don't Know
	1	2	3	4	
Alternative energy sources such as solar, wind and biogas are affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know at least three things I could do to reduce my carbon footprint	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like my home to be more energy efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am well informed about renewable energy sources (wind, solar, hydroelectric, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G4. There are several emerging sources of energy that could be used to heat your home. How knowledgeable would you say you are of the following green sources of energy?

	Not at all Know-ledgeable	Not too Know-ledgeable	Somewhat Know-ledgeable	Very Know-ledgeable
	1	2	3	4
Landfill gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geothermal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G5. Some energy sources used to heat our homes may be harmful to the environment we live in because they produce air pollution, water pollution, or toxic wastes. On a scale of 1 to 5, where 1 means not at all harmful and 5 means very harmful, how harmful are the following energy sources?

	Not at all Harmful	Somewhat Harmful		Very Harmful	Don't Know
	1	2	3	4	
Large hydroelectric	<input type="radio"/>				
Coal	<input type="radio"/>				
Landfill gas	<input type="radio"/>				
Solar	<input type="radio"/>				
Natural gas	<input type="radio"/>				
Wind	<input type="radio"/>				
Geothermal	<input type="radio"/>				
Wood	<input type="radio"/>				
Small hydroelectric	<input type="radio"/>				
Biogas	<input type="radio"/>				
Diesel	<input type="radio"/>				
Nuclear	<input type="radio"/>				

**G6. Terasen Gas is...?**

- Part of a publically traded company
- Part of BC Hydro
- A Provincial Crown Corporation
- Don't Know

**H6. What was your total annual household income before taxes in 2009?**

- Less than \$20,000
- \$20,000 to \$39,999
- \$40,000 to \$59,999
- \$60,000 to \$79,999
- \$80,000 to \$99,999
- \$100,000 to \$124,999
- \$125,000 and greater
- Prefer not to answer

**H. DEMOGRAPHICS**

The final questions are for classification purposes only and are completely confidential, as are all your answers.

**H1. Into which of the following age categories do you fit?**

- 18 years or under
- 19-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65 years and older

**H2. What is your marital status?**

- Single
- Married/common law
- Divorced/separated
- Widowed

**H3. How many people, including yourself, are currently living in your household? Please include any boarders or renters who do not have a separate natural gas account.**

number \_\_\_\_\_

**H4. Please indicate the number of occupants by age category:**

	None	1	2	3	4	5	6+
18 years or under	<input type="radio"/>						
19-24 years	<input type="radio"/>						
25-34 years	<input type="radio"/>						
35-44 years	<input type="radio"/>						
45-54 years	<input type="radio"/>						
55-64 years	<input type="radio"/>						
65 years and older	<input type="radio"/>						

**H5. What is the highest level of education you have completed?**

- Some high school
- Completed high school
- Some trade/technical school
- Completed trade/technical school
- Some university/college
- Completed university/college
- Post graduate

**H7. Please indicate the main language spoken in your home (check one only) and all other languages spoken in your home. (check all that apply)**

	Main language spoken in home (check one only)	Other languages spoken in home (check all that apply)
English	<input type="radio"/>	<input type="radio"/>
Mandarin	<input type="radio"/>	<input type="radio"/>
Cantonese	<input type="radio"/>	<input type="radio"/>
Other Chinese	<input type="radio"/>	<input type="radio"/>
Punjabi	<input type="radio"/>	<input type="radio"/>
Korean	<input type="radio"/>	<input type="radio"/>
Tagalog	<input type="radio"/>	<input type="radio"/>
Farsi (Persian)	<input type="radio"/>	<input type="radio"/>
Vietnamese	<input type="radio"/>	<input type="radio"/>
Spanish	<input type="radio"/>	<input type="radio"/>
French	<input type="radio"/>	<input type="radio"/>
German	<input type="radio"/>	<input type="radio"/>
Hindi	<input type="radio"/>	<input type="radio"/>
Other (Specify) _____	<input type="radio"/>	<input type="radio"/>

**J. SURVEY COMPLETION**

**J1. From time to time, Terasen Gas conducts follow-up research with survey respondents – either in the form of a survey or a discussion group to hear from them first-hand. May we have your permission to contact and invite you to participate in future research into energy conservation and program planning?**

- Yes  → Please provide your name and contact phone number below.
- No

Please provide your name and phone number so we can contact you if you are the winner of the \$500 gift certificate.

Name: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Terasen Gas and NRG Research would like to thank you for your help and assistance. If you have any questions please contact Walter Wright at (604) 592-7653 at Terasen Gas.

### CONTEST RULES

All entries must be received by NRG Research by **November 26, 2010**. A contestant's name will be determined by a random draw on December 15, 2010 from all entries received. To win, the selected contestant must answer a time limited mathematical skill-testing question, without mechanical or other assistance.

The selected contestant will be notified by telephone by NRG Research. The research company will attempt to reach the selected contestant no more than 3 times. If NRG Research is unable to contact him or her within 5 days of the draw date, NRG Research will draw the name of another contestant eligible for the prize.

Contestants who complete and return the survey form by mail will have their name entered once in the draw. Contestants who complete the survey form online will have their name entered into the draw twice.

Contestants must be residents of British Columbia.

**Terasen Gas customers who have completed and returned the Terasen Gas 2010 Residential New Home Survey form by November 26, 2010 will be entered automatically.** To enter without completing the survey, mail a letter with your name, telephone number and address to NRG Research, 1380-1100 Melville St., Vancouver BC V6E 4A6. Mark the envelope "Residential Survey Contest".

Chances of winning are based on the number of eligible entries received.

Employees or agents of Terasen Gas and their immediate families are not eligible to win.

There is one prize of a \$500 gift certificate from a home improvement store located near the prize winner.

Terasen Gas and NRG Research assume no responsibility for lost or misdirected entry forms.

By entering, contestants agree to abide by the contest rules and that the decision of the judge shall be final.

Terasen Gas is the common name of Terasen Gas Inc., Terasen Gas (Vancouver Island) Inc., and Terasen Gas (Whistler) Inc. The companies are indirect, wholly owned subsidiaries of Fortis Inc. Terasen Gas uses the Terasen Gas name and logo, "*Get comfortable.*", and "*Burn blue. Save green.*" under license from Terasen Inc.

## **Sampson Research**

Economic research that matters to communities and business



604.740.0254

[www.sampsonresearch.com](http://www.sampsonresearch.com)

**Attachment 4.3**

---

# Terasen Gas

## Customer Choice Ad Tracking

December 2008

Produced by  
The TNS Customer Equity Company SA (Pty) Ltd  
Brand Equity & Conversion Model™ Centre of Excellence



# Presentation Scope



1. Business and Research Context



2. Explaining the Conversion Model™



3. Management Summary



4. Overall Market Comparisons



5. Lower Mainland



6. Vancouver Island



7. BC Interior



8. Appendix

## Business and Research Context

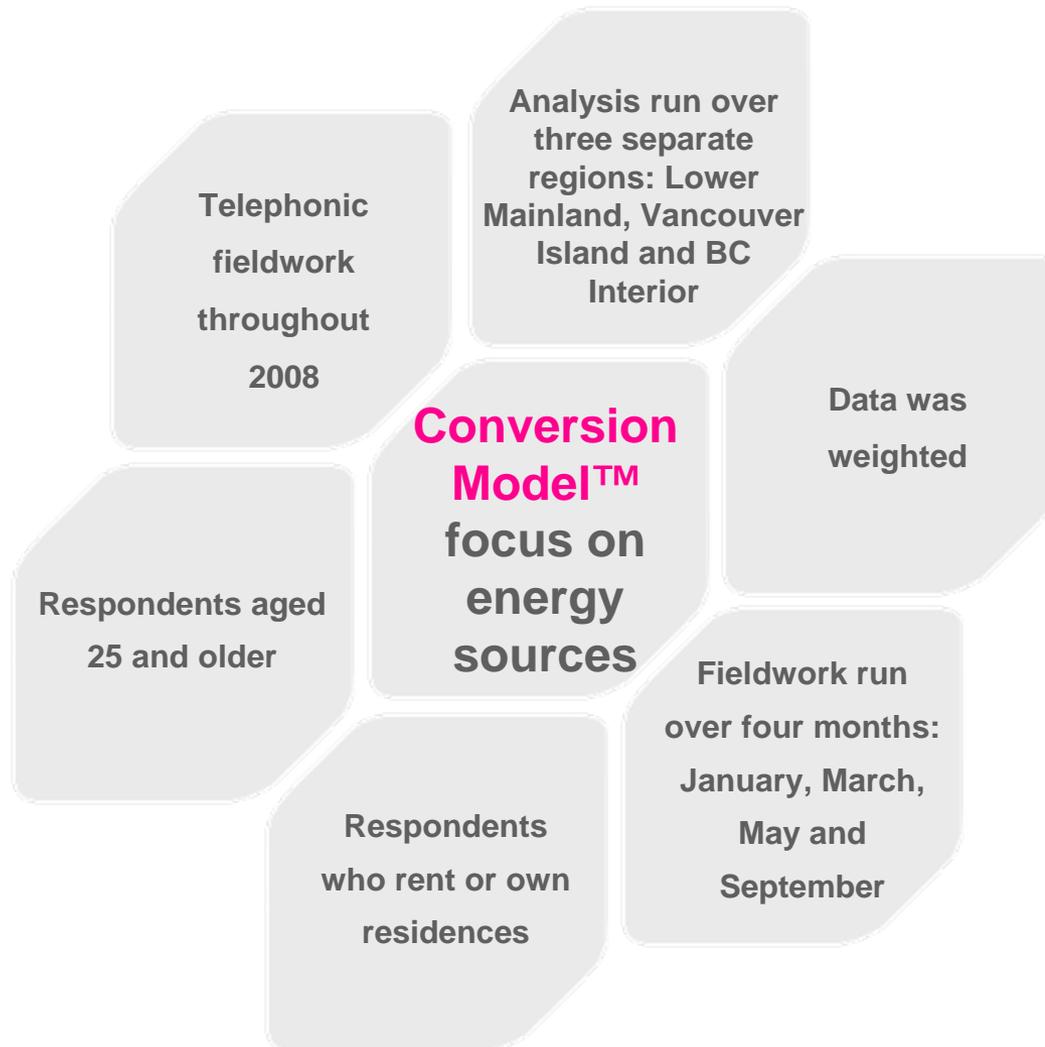


# Business and Research Context

**The Conversion Model™ analysis is designed to answer the following questions:**

- Which is the strongest energy source for home heating in the market?
- What are the perceptions of different energy sources?
- Which energy sources are opportunities for Natural Gas?
- Which energy sources are threats to Natural Gas?
- What strategies should Terasen Gas adopt for market share acquisition?

# What did we do?



# Explaining the Conversion Model™



# Our Extensive Track Record...

Used on more than *10 000 studies*

It's the world's *most widely validated*  
measure of **Commitment**

Used by *80%* of the worlds most  
valuable brands\*

In over *100 countries*

On over *300 product categories*



# Why is Commitment the Engine of Our Equity Model?

## Because Committed Consumers...

- Will go out of their way to find their brand
- Are less price sensitive
- Tend to ignore competitor brands' discounts or promotions
- Have a lower likelihood of defecting than other consumers
- Tend to give most of their business to the brand to which they are Committed
- Need less persuading to make repeat purchases or spend even more with the brand
- Are more likely to be enthusiastic about their own brand's advertising
- Are more likely than others to respond negatively to competitors' advertising

# Explaining the Conversion Model™

## The 4 Dimensions of Commitment



### **Brand rating**

How do users and aware non-users rate your brand?



### **Attitude to alternatives**

How do all the alternative brands compare: how does each one rate?



### **Involvement in the category**

How important a decision is brand choice: how much does it matter for this category?



### **Ambivalence**

Are there many, few or no reasons to change from brands currently used?

# Explaining the Conversion Model™ Question Detail

## The 4 Dimensions of Commitment



Brand Rating

Respondents **rate the brands** of category X they are aware of on a **10 point scale**, where “10” means they think it is perfect in every way and “1” means they think it is terrible



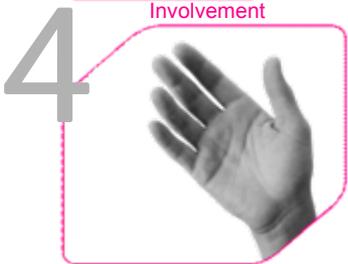
Attraction to Alternatives

Respondents are asked **how important the decision of which brand to buy in category X is**. This is rated on a **5 point scale** where ‘1’ means they think the brand choice is ‘extremely important’ and ‘5’ means they think the brand choice is ‘not at all important’



Involvement

Understand **how likely the respondent is to continue using a brand**:  
‘Many good reasons to continue and no reasons to change’  
‘Many good reasons to continue, but there are also many good reasons for me to change’  
‘Few good reasons to continue, and many good reasons for me to change’



Ambivalence

# Explaining the Conversion Model™

The Conversion Model™ segments the market as follows...

## USERS



*Entrenched Average*

*Shallow Convertible*



*Committed*



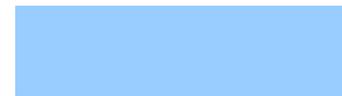
*Uncommitted*

## NON-USERS



*Available Ambivalent*

*Weakly Strongly Unavailable*



*Open*



*Aware Unavailable*

# Explaining the Conversion Model™

The segments tell us how people feel about their energy sources

<b>Users: Committed</b>	<b>Entrenched</b>	Strongly Committed to the energy source. Unlikely to switch energy sources in the long-term
	<b>Average</b>	Committed to the energy source but not as strongly. Unlikely to switch in the short-term
<b>Users: Uncommitted</b>	<b>Shallow</b>	Uncommitted to the energy source and could switch. Some are already looking at alternatives
	<b>Convertible</b>	Uncommitted to the energy source. The most likely to defect to another energy source
<b>Non-users: Open</b>	<b>Available</b>	Non-users of the energy source who are most likely to be acquired in the short-term
	<b>Ambivalent</b>	Non-users who are as attracted to the energy source as they are to other energy sources in the market
<b>Non-users: Aware Unavailable</b>	<b>Weakly Unavailable</b>	Non-users who are not currently available to the energy source, but may be available later on
	<b>Strongly Unavailable</b>	Non-users who are not available to the energy source, they strongly prefer their current energy source

# Management Summary



# Energy Source Market Insights Summary

**Residents in all three regions predominantly use natural gas or electricity to heat their home, and a relatively low proportion of the market is Committed to only one energy source.**

- Commitment to the main energy source used is quite low, indicating that this market will operate as a commodity market.
  - Residents will therefore predominantly focus on market factors (such as pricing, ease of use, availability, etc.) when choosing an energy source to heat their home (although they often don't have a choice).
- A high proportion of the people in the market are unhappy with the energy source they currently use (Seekers) and are actively looking for alternatives.
  - Commitment to each energy source is low in absolute terms, mostly due to users being dissatisfied with their primary energy source.
  - Any energy source that manages to identify and remove these sources of dissatisfaction (or their associated perceptions) will become very successful, provided it has the necessary market factor strength in place.

**Geothermal Heat Pumps and Heat Pumps Using an Air Source are small attractive energy sources with strong Commitment among users.**

- These energy sources are perceived as being environmentally friendly and sustainable.
- However, they are aspirational energy sources due to strong market barriers (mostly relating to price and accessibility), and are therefore unlikely to pose a realistic threat to Natural Gas.

# Energy Source Market Insights Summary (cont'd)

**While Electricity has a high penetration in each of the three regions, emotional affinity for the energy source is low.**

- Commitment to Electricity is low, with approximately half of users likely to switch away from the energy source if given a convenient opportunity to do so (Convertible).
- In addition, non-user Attraction to Electricity is below average when compared to other energy sources.
- Electricity is generally used as a secondary energy source in their repertoire, with Electricity being used in situations where the main energy source is not perceived as being as effective (e.g. drying laundry, heating water and cooking).

**Natural Gas is in a strong position with high penetration, strong Commitment relative to other energy sources and above average non-user Attraction.**

- The vast majority of Committed users are only enthusiastic about Natural Gas, with any other energy source being used as a secondary source in the repertoire.
- Due to the nature of the category, almost three quarters of Uncommitted users and Open non-users are either attracted to more than one energy source or unhappy with all options.
  - Natural Gas may be able to build Commitment and frequency of use as well as acquire new users by changing the perceptions of these sources of dissatisfaction regarding energy sources.
- Natural Gas should leverage residents' high emotional affinity with the energy source and increase its market strength by communicating the benefits of using Natural Gas to developers.
  - Any significant growth in users is likely to come from new entries to the market through property developments.

# Energy Source Market Comparisons

**Natural Gas is the most used energy source among *Lower Mainland* residents with strong emotional attachment.**

- Natural Gas has very limited opportunities for growth in this region due to its high penetration.
- Natural Gas needs to adopt a retention strategy in this region through reinforcing Commitment and reducing dual usage with other energy sources (mainly Electricity) by communicating the benefits of Natural Gas.
- By informing developers of residents' strong emotional affinity with Natural Gas and pushing for Natural Gas to be installed in new developments, the energy source can gain market share.

**Natural Gas has an opportunity for growth among *Vancouver Island* residents.**

- Natural Gas should leverage and communicate its attractive image to developers.
- As half of Uncommitted users and Open non-users are unhappy with current energy sources (Seekers), Natural Gas should communicate its benefits over other energy sources.
- It is also imperative that Natural Gas ensures that appropriate market factors are set in place to support these claims (such as the cost, pipeline network, ease of switching, etc.).

**Similar to the *Lower Mainland*, Natural Gas is a very strong energy source in the *BC Interior*.**

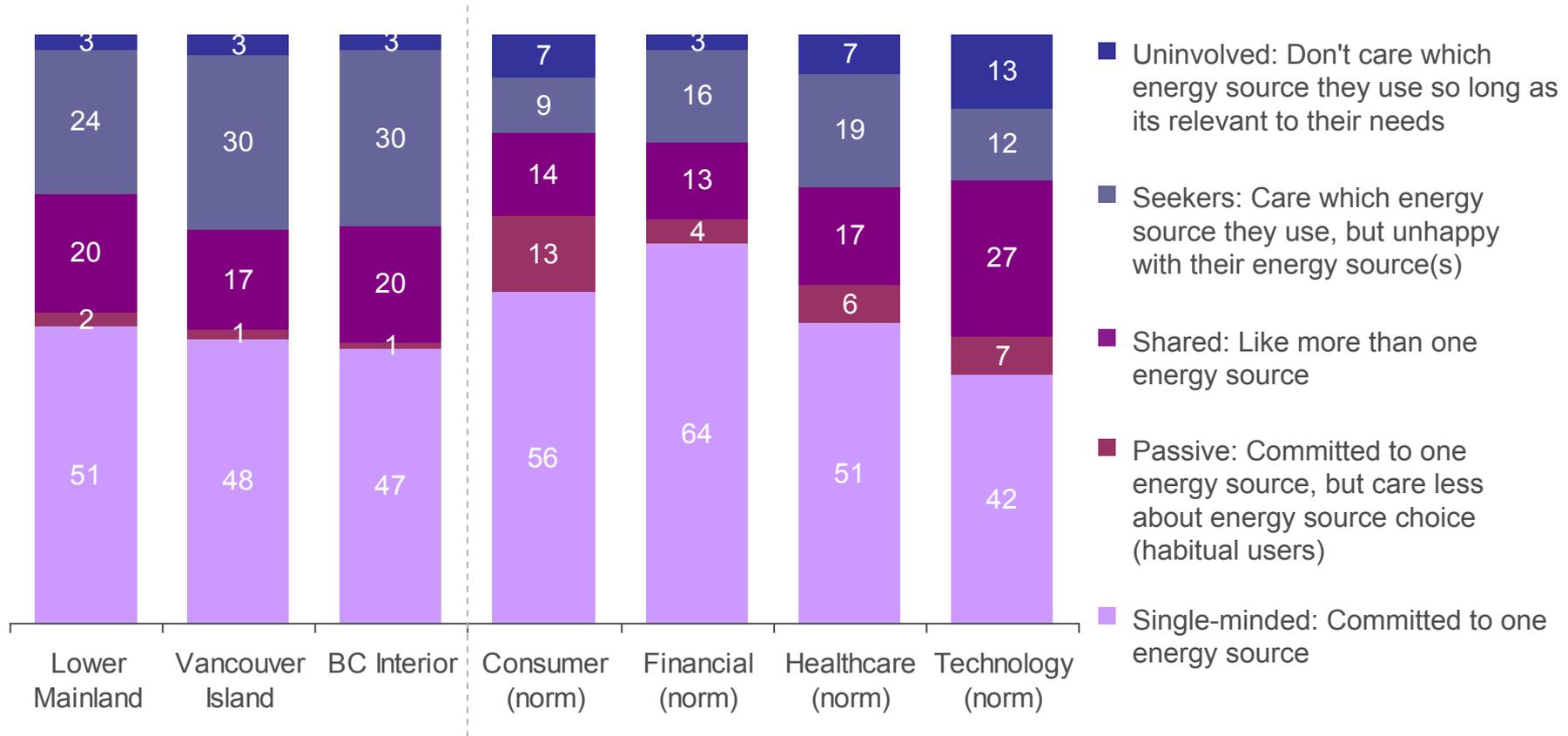
- While a fifth of the market is Open to using Natural Gas, many of these individuals see other energy sources as similar to Natural Gas.
- By strengthening the perceptions of Natural Gas over Electricity in this market and ensuring that supportive market factors are in place, Natural Gas can reduce dual usage, build Commitment and acquire new residents as users.

## Overall Market Comparisons



# States of Mind™ - What are respondents' attitudes towards the market as a whole?

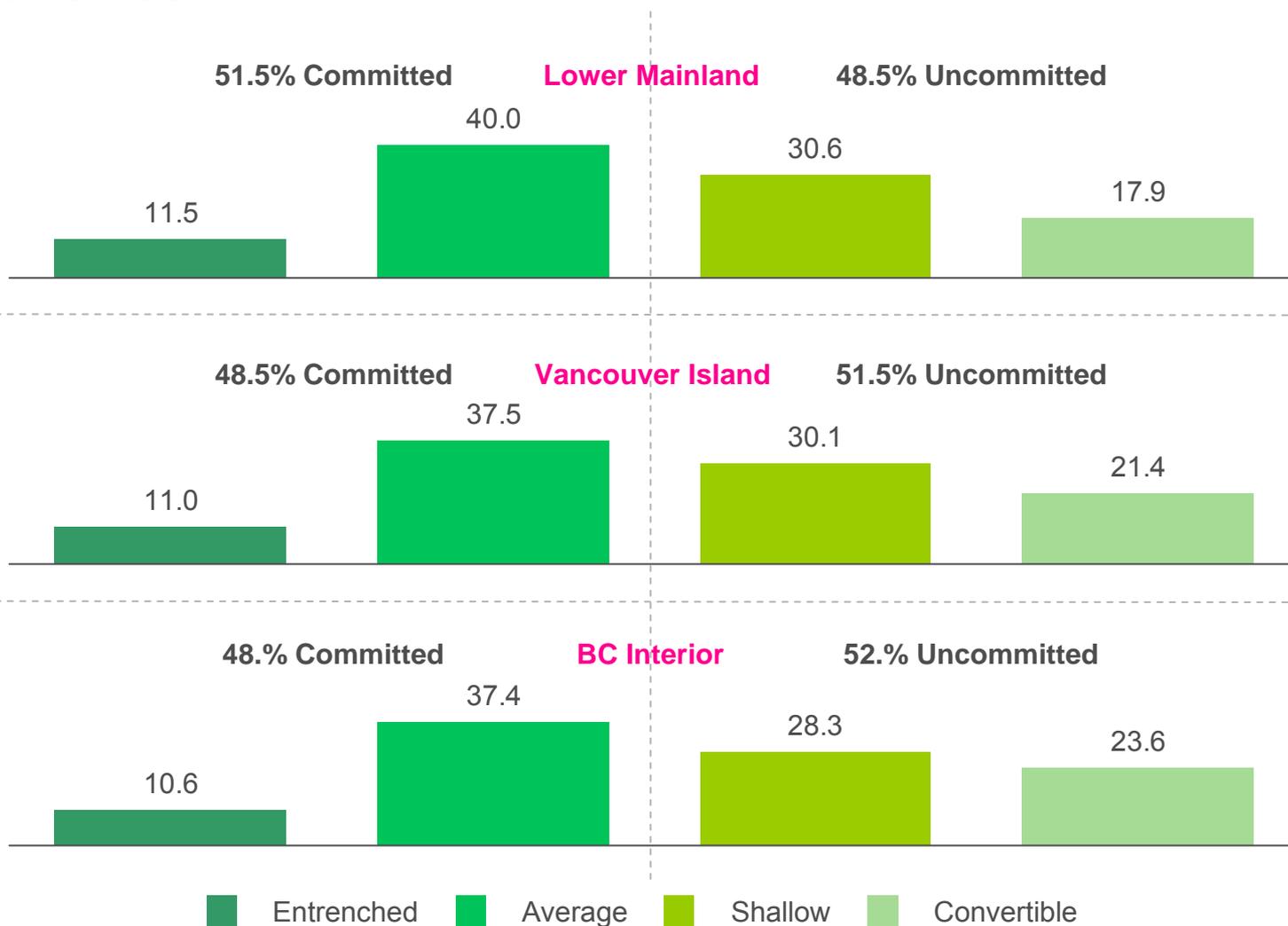
Compared to other normative categories, a fairly low proportion of the market is Committed to only one energy source (Single-minded), while a high proportion is unhappy with the energy sources that they use (Seekers)



Base: Lower Mainland n^=2,897; Vancouver Island n^=668; BC Interior n^=678  
 Read: 51% of the Lower Mainland market is Committed to a single energy source (even if they use more than one) and care about the energy source choice (Single-minded)  
 Note: Numbers > 0.5 rounded up  
 ^ Weighted base

What does Commitment to the main energy source in respondents' repertoires look like?

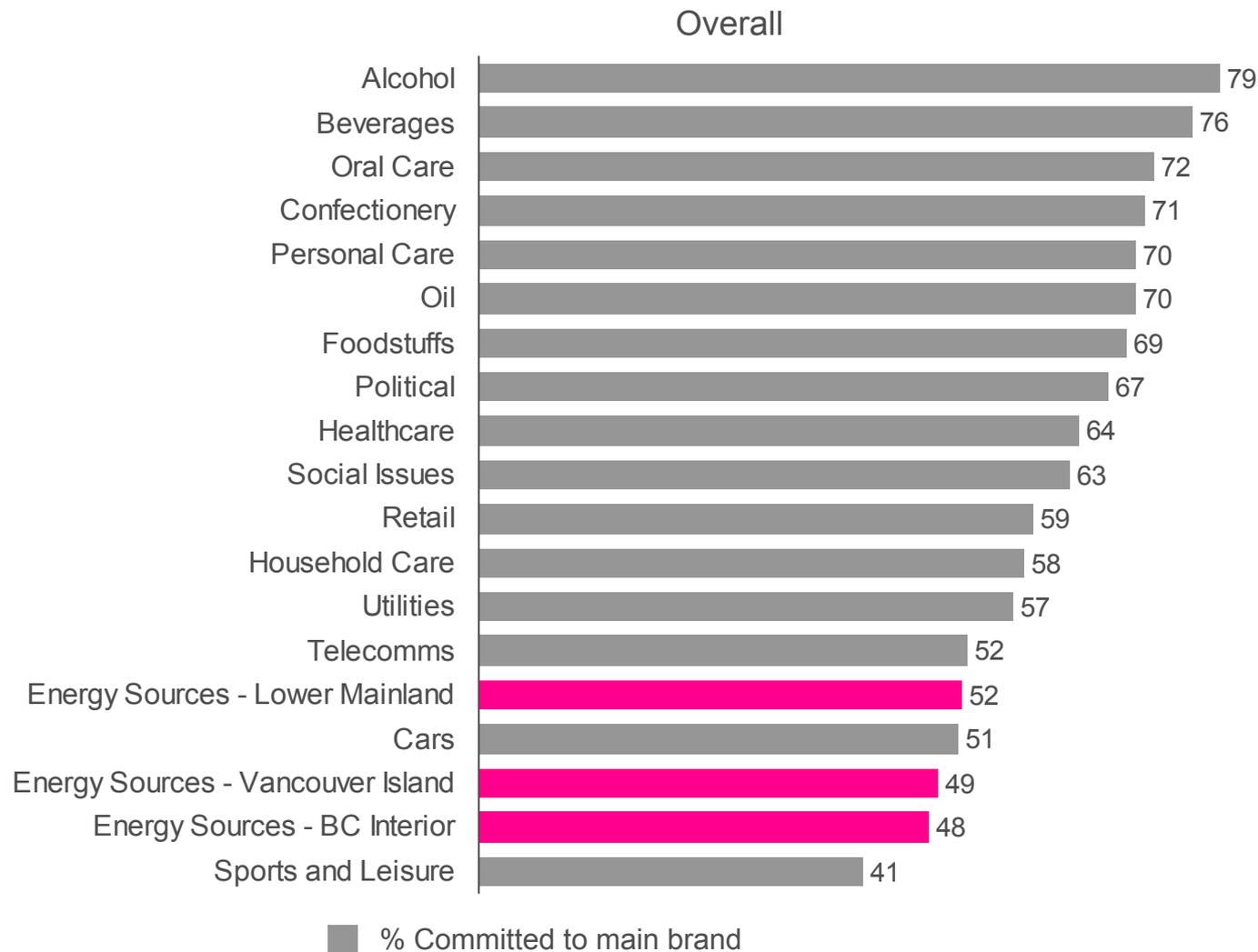
Commitment to the main energy source is low. Roughly half of each market is Uncommitted to the main energy source used to heat homes



Base Lower Mainland n^=2,863; Vancouver Island n^=666; BC Interior n^=677  
 Read 11.5% of Lower Mainland respondents are Entrenched to their main energy source  
 Note: ^ Weighted base

How does this study compare to Conversion Model™ studies worldwide?

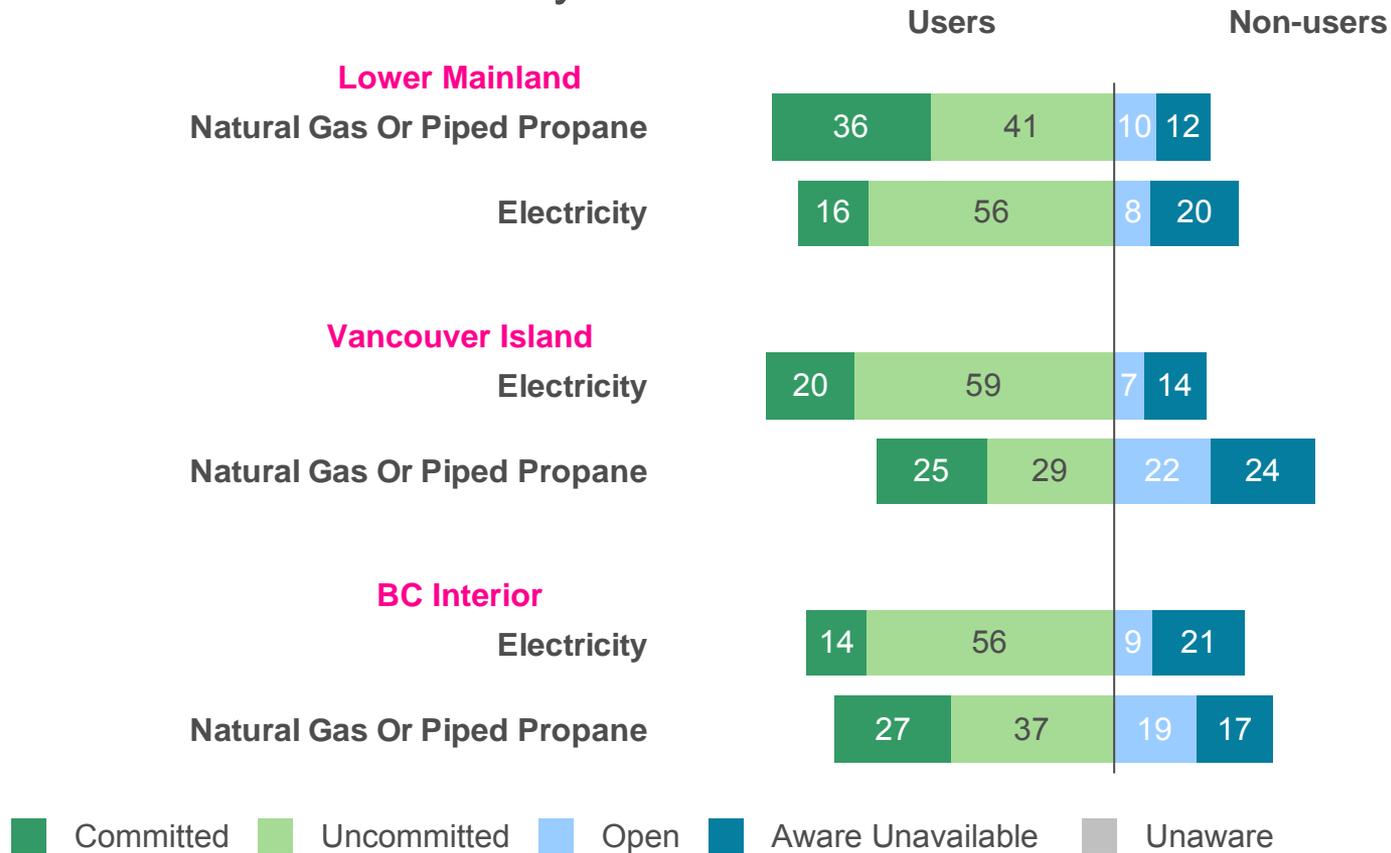
Compared to other categories, Commitment to the main energy source is quite low



Read: 59% of people are Committed to their main brand in a retail context  
Note: Numbers > 0.5 rounded up

## Brand Health Chart – The overall market picture

While Electricity generally has high penetration in all three regions, residents have a much stronger affinity for Natural Gas. Natural Gas has much stronger Commitment among users and higher Openness among non-users than Electricity



Read: For Natural Gas Or Piped Propane in Lower Mainland: 36% of the market is Committed, 41% is Uncommitted, 10% is Available, 12% is Unavailable and 0% has not heard of the energy source

Note: Numbers > 0.5 rounded up

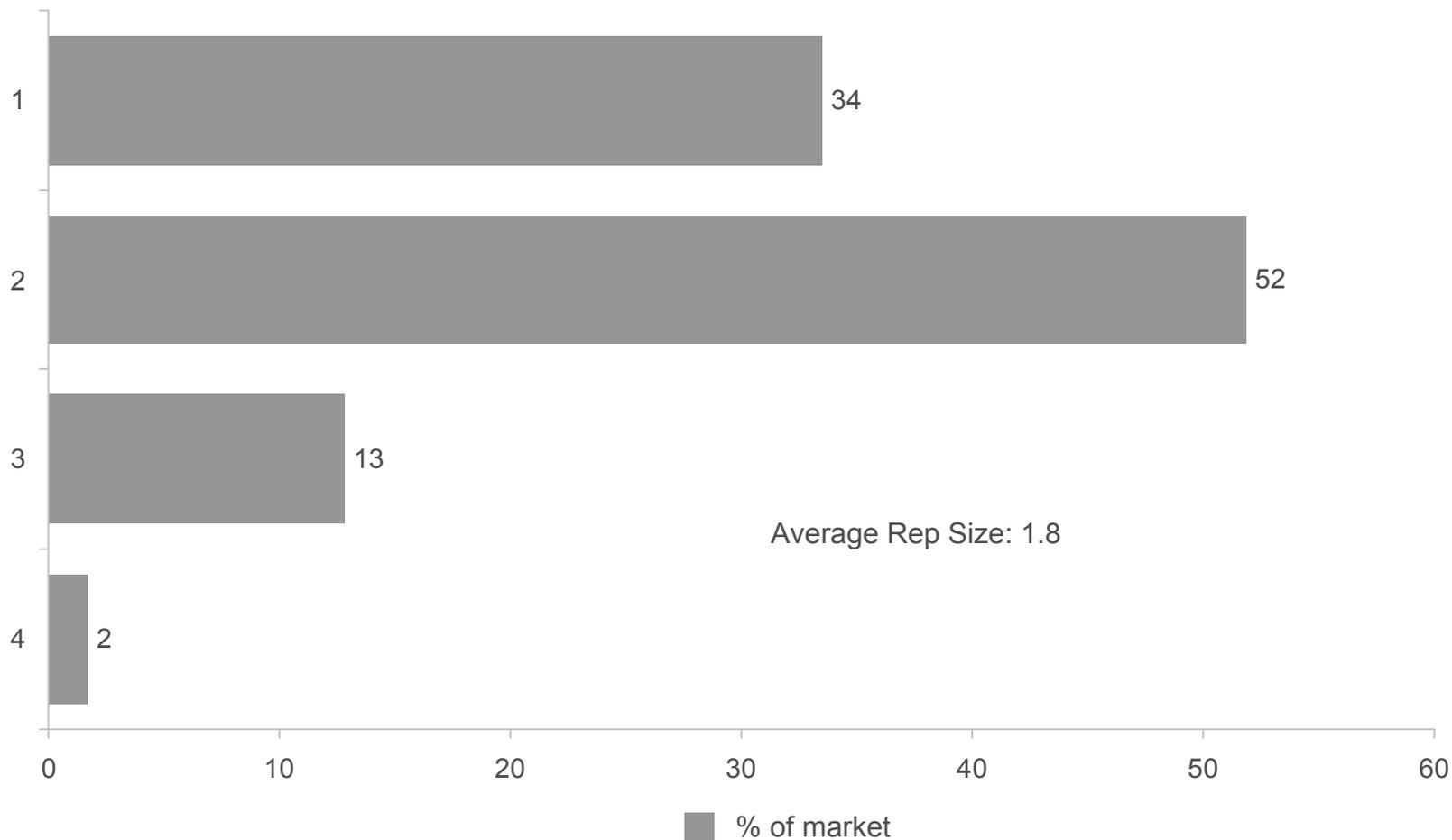
## Lower Mainland



What proportion of the market used a specific number of energy sources?

## The majority of Lower Mainland residents make use of two energy sources to heat their home

### Repertoire size

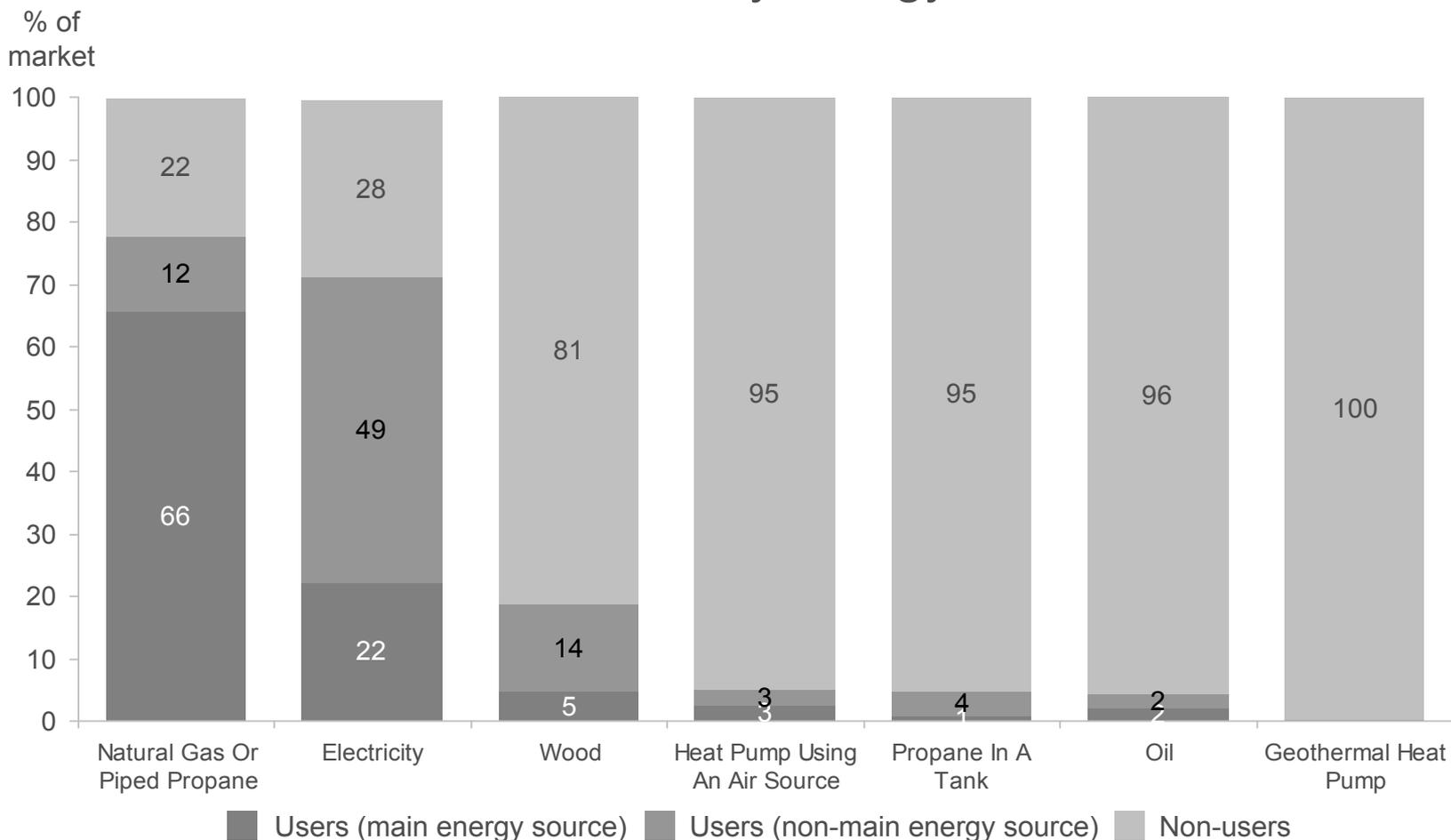


Base  $n^{\wedge}$  = 2 921  
Read: 34% of the market has used only one energy source  
Note: Numbers > 0.5 rounded up  
 $\wedge$  Weighted base

Lower Mainland

What proportion of the market uses each energy source as its main energy source?

Two thirds of Lower Mainland residents make use of Natural Gas as the main energy source in heating their home, while Electricity is used as more of a secondary energy source



Base n<sup>^</sup> = 2 921  
 Read: 66% of the market uses Natural Gas or Piped Propane as their main energy source  
 Note: Numbers >0.5 rounded up  
 ^ Weighted base size

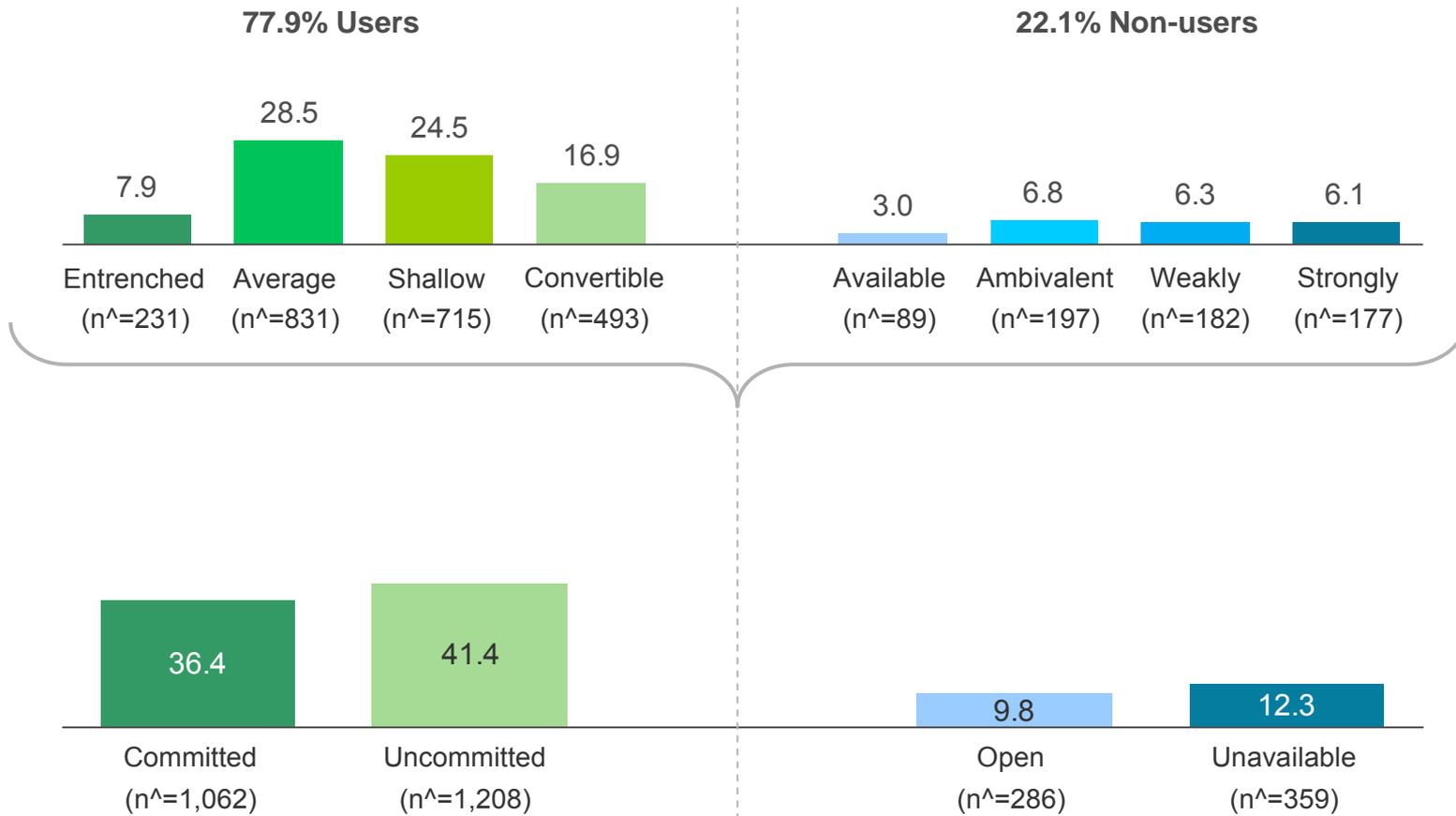
Lower Mainland

# Brand Performance Measurement

How do the energy sources perform?

What do the energy source of interest's Conversion Model™ segments look like?  
 Due to its size in the market, Natural Gas is unlikely to gain a significant amount of new users (except in the case of the development of new residences)

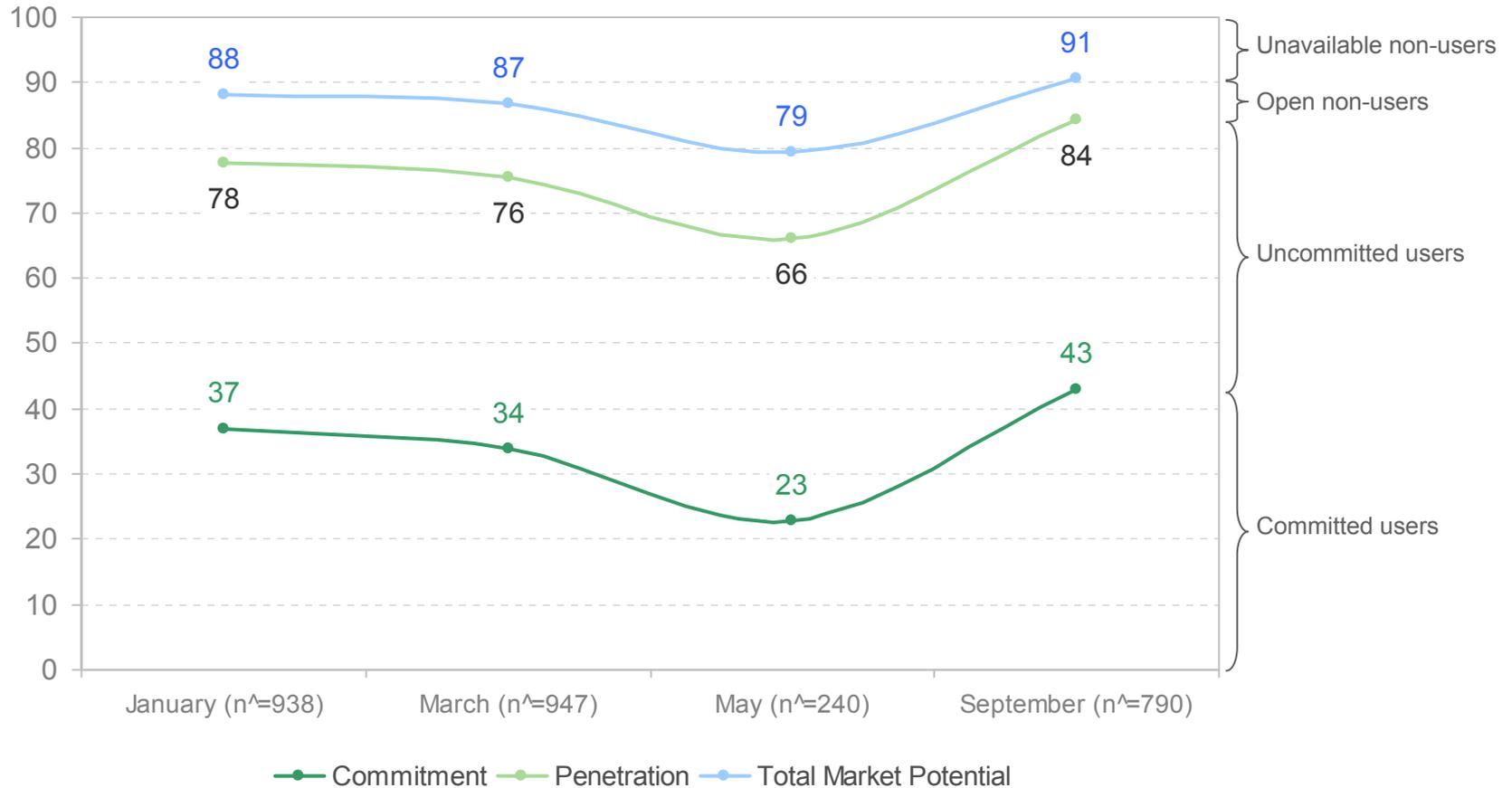
Natural Gas Or Piped Propane's Conversion Model™ Line



Lower Mainland

Base n<sup>^</sup> = 2,914  
 Read: 7.9% of the market is Entrenched to Natural Gas Or Piped Propane  
 Note: ^ Weighted base

# Natural Gas' position in the market seems to follow a seasonal trend, with usage declining over summer periods



Read: For Natural Gas or Piped Propane: 43% of the market was Committed in September, 84% used the energy source and 91% either used the energy source or were Open to using the energy source

Note: Numbers > 0.5 rounded up

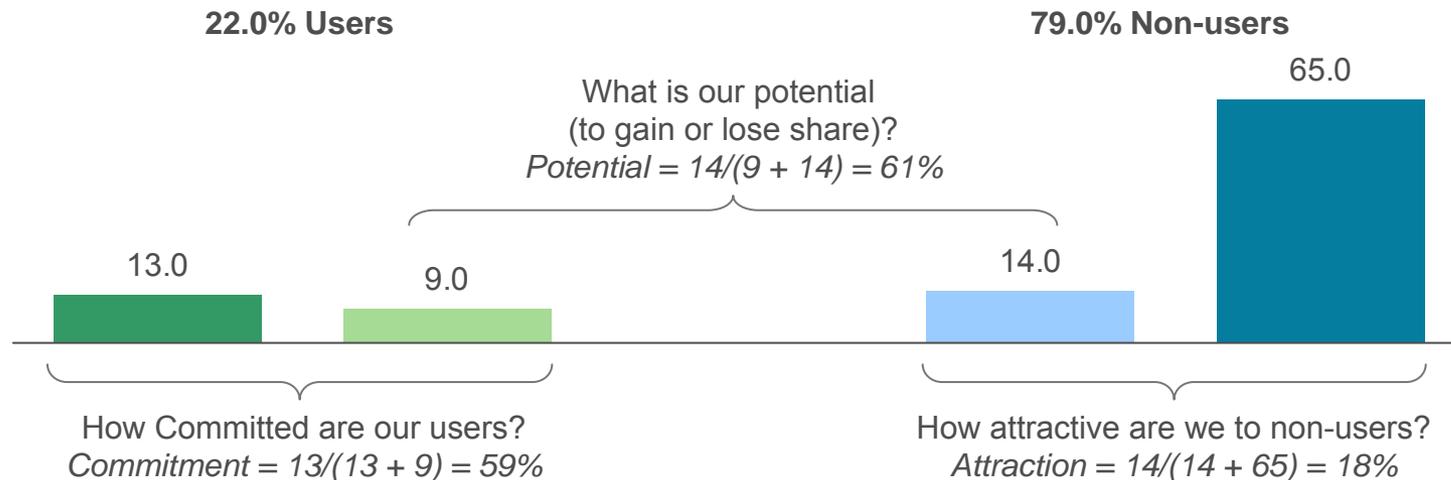
<sup>^</sup> Weighted base

**Lower Mainland**

# What you need to look at to get the full story...

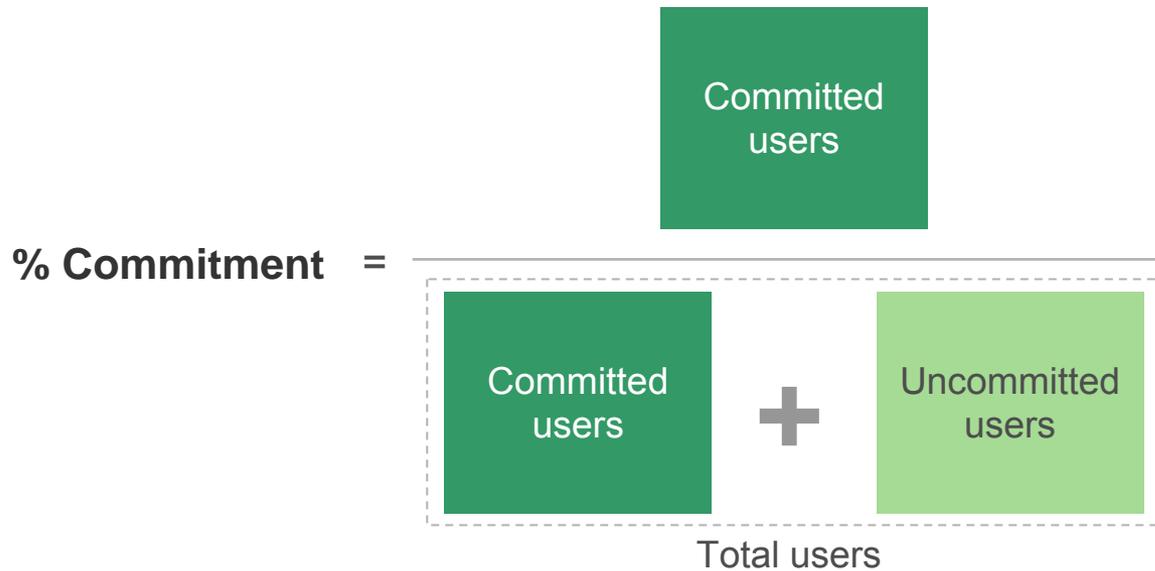
(To answer the questions: How secure is our business, how strong is our energy source?)

## Example Data Only For Illustration



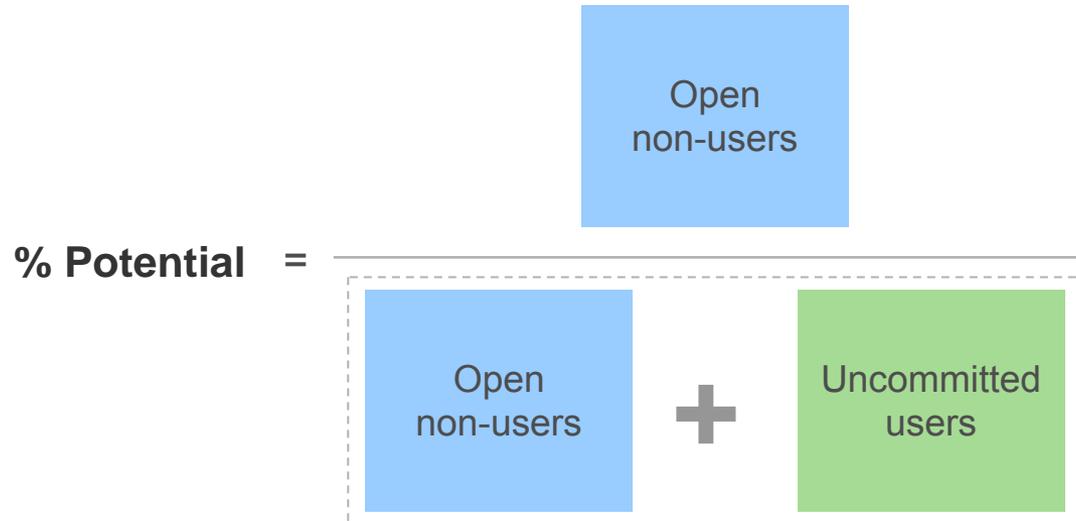
Note: This chart uses example data  
These ratios are then indexed against the total category to determine each energy source's relative strengths and weaknesses.

# Commitment Index (calculated at aggregate level)



$$\text{Commitment Index} = \frac{\% \text{ Commitment for energy source A}}{\text{average Commitment}} \times 100$$

# Potential Index (calculated at aggregate level)



$$\text{Potential Index} = \frac{\% \text{ Potential for energy source A}}{\text{average Potential}} \times 100$$

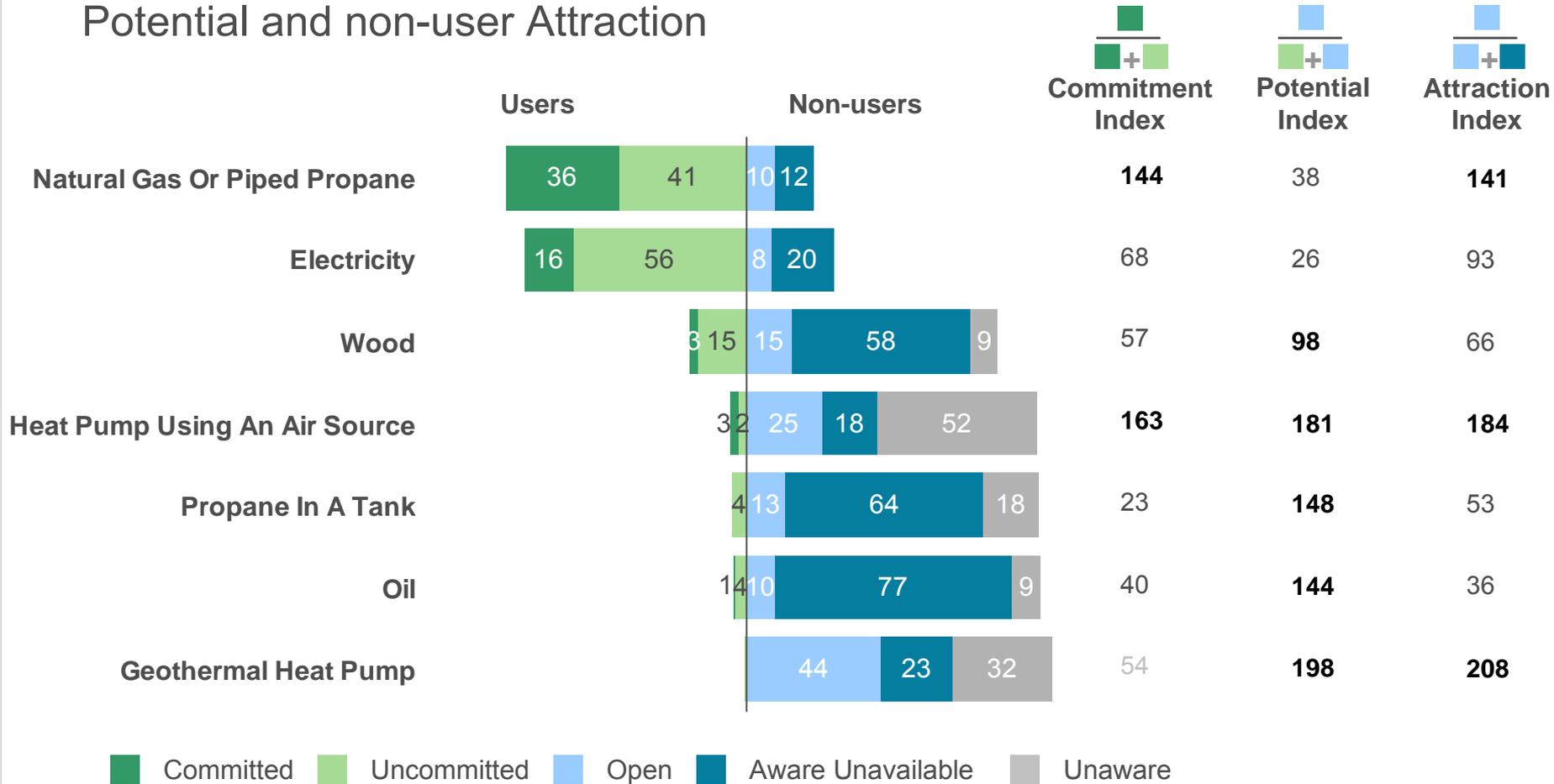
# Attraction Index (calculated at aggregate level)

$$\% \text{ Attraction} = \frac{\text{Open non-users}}{\text{Open non-users} + \text{Aware Unavailable non-users}}$$

$$\text{Attraction Index} = \frac{\% \text{ Attraction for energy source A}}{\text{average Attraction}} \times 100$$

# Brand Health Chart – The overall market picture

Natural Gas is the leading energy source among Lower Mainland residents, with above average Commitment and non-user Attraction. While being a widely used energy source, Electricity has poor customer relations, future Potential and non-user Attraction



Base n^ = 2,914

Read: For Natural Gas Or Piped Propane: 36% of the market is Committed, 41% is Uncommitted, 10% is Available, 12% is Unavailable and 0% has not heard of the energy source. Commitment is 44 points above the market average, Potential is 62 points below the average and Attraction is 41 points above the average

Note: Numbers > 0.5 rounded up

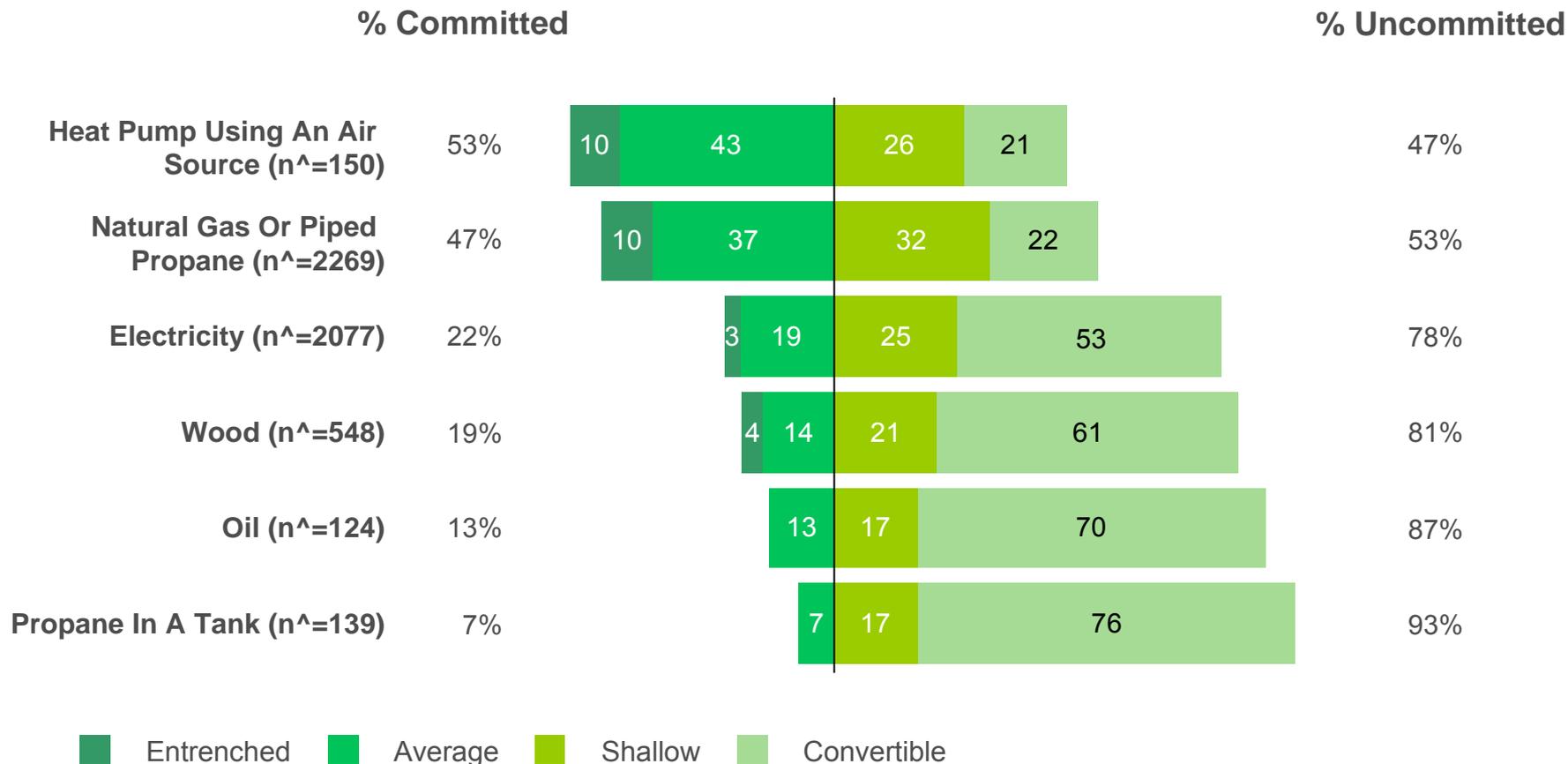
^ Weighted base

Indices with n<30 in the denominator greyed out

Indices over 115 bolded for emphasis

**Lower Mainland**

While Natural Gas has a high level of Commitment relative to other energy sources, Commitment to all energy sources is fairly low in absolute terms



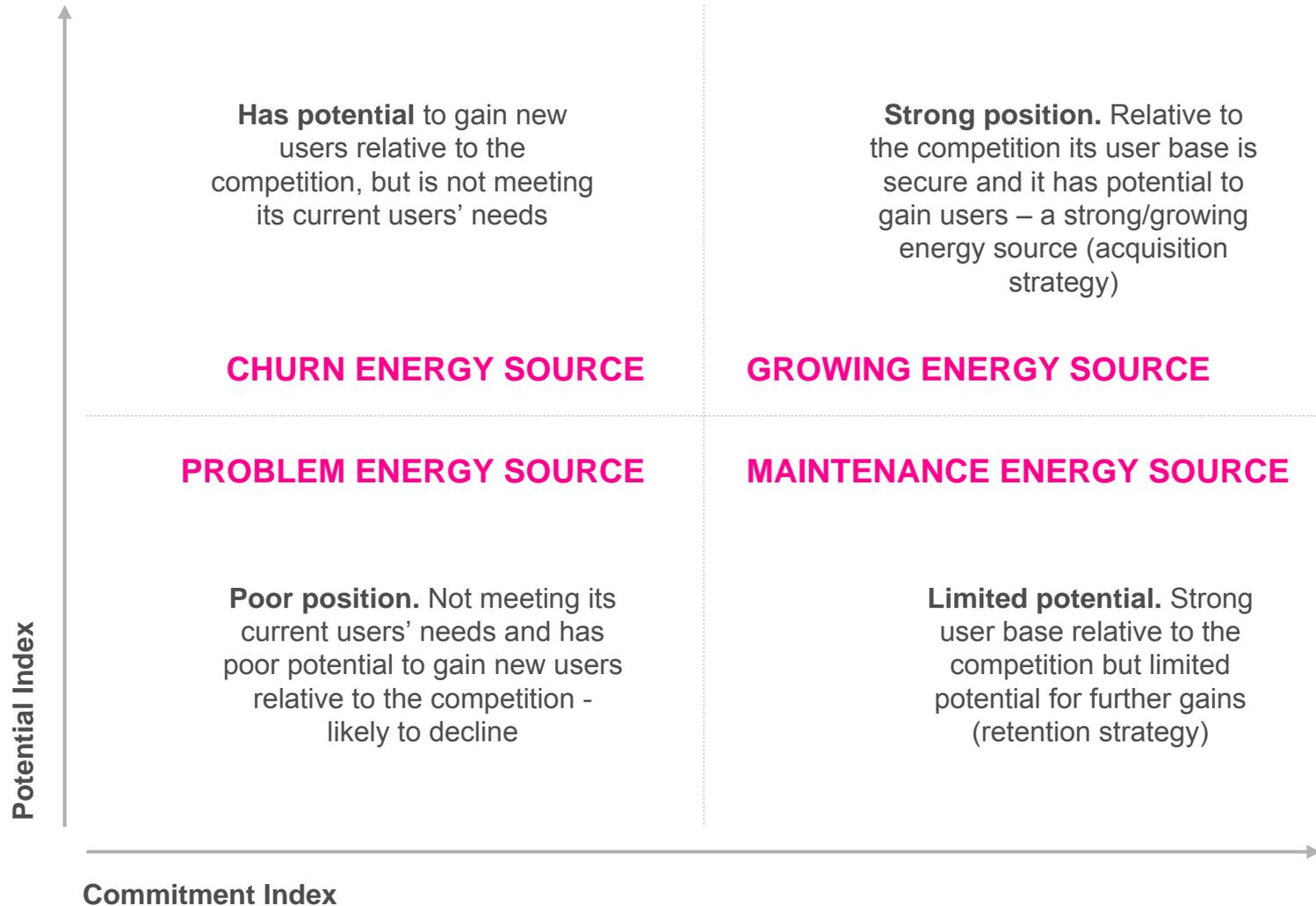
Read: For Natural Gas Or Piped Propane: 10% of its users are Entrenched, 37% are Average, 32% are Shallow and 22% are Convertible

Note: Energy sources with less than 30 users not shown

Numbers > 0.5 rounded up

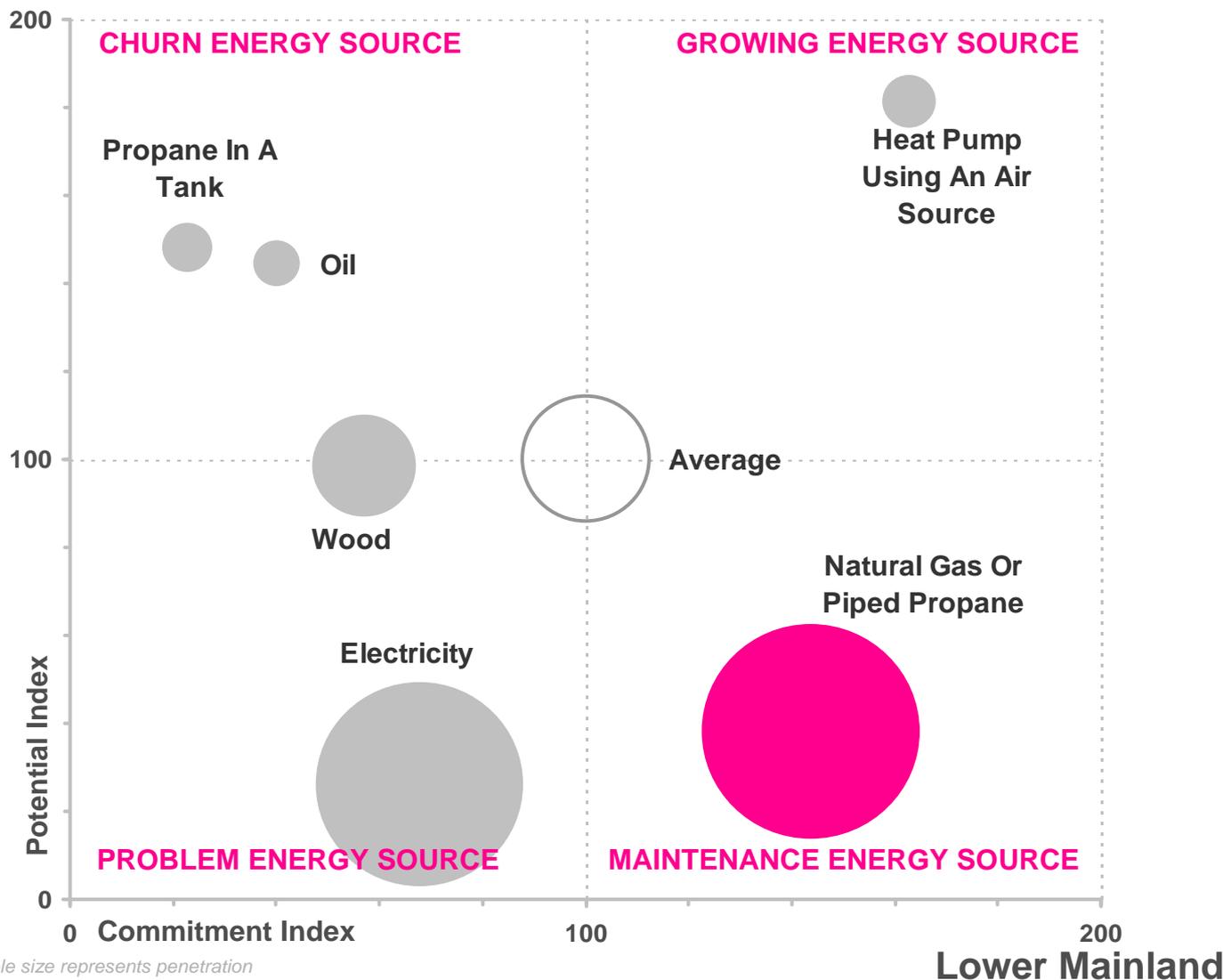
^ Weighted base

# Conversion Model™ Map



Note:  $Commitment = \frac{Committed\ users}{total\ users}$   
 $Potential = \frac{Open\ non-users}{(Uncommitted\ users + Open\ non-users)}$

Due to its size and strength in the Lower Mainland market, Natural Gas should adopt a strategy to maintain current users and build on current strengths



Note: Bubble size represents penetration  
 Energy sources with n<30 in denominator of Commitment or Potential Index not shown  
 Commitment = Committed users/total users  
 Potential = Open non-users/(Uncommitted users + Open non-users)

# Power in the Mind vs. Power in the Market

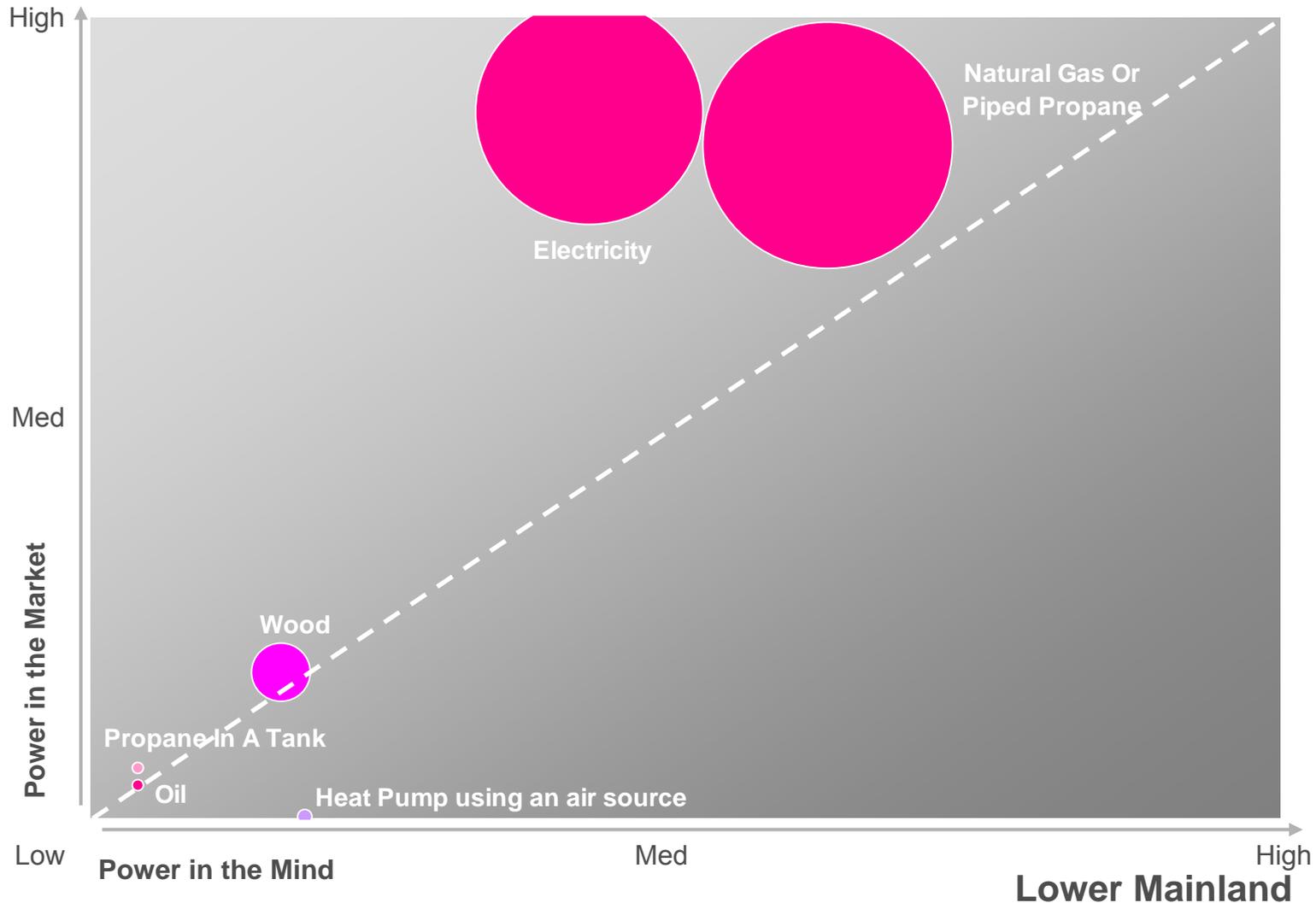
## POWER IN THE MIND

The share your energy source would achieve if buyers acted purely on their preferences  
*(In the absence of any market factors)*

## POWER IN THE MARKET

The share your energy source would get if market forces were the only factors at play  
*(If consumers have equal preference for all energy sources)*

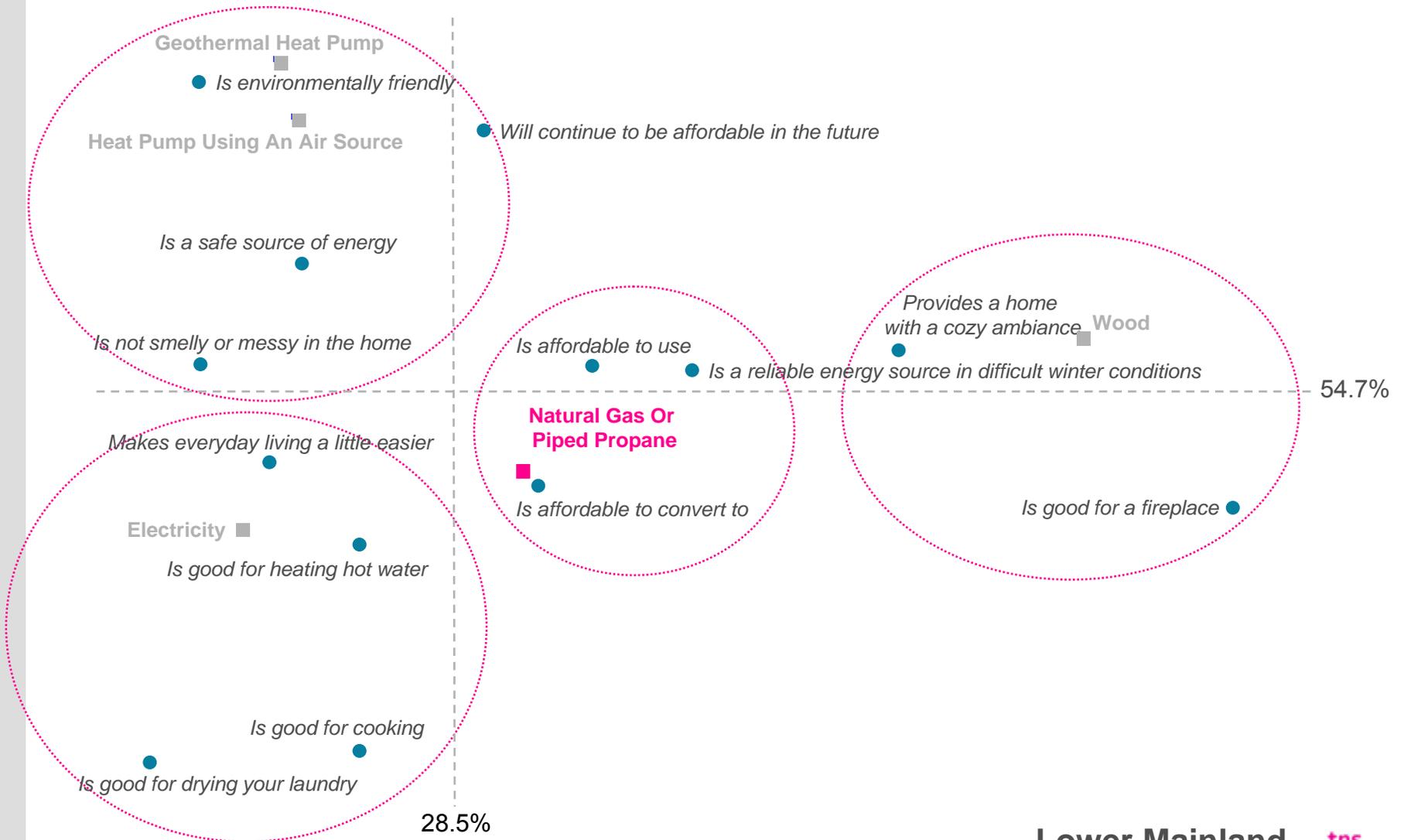
Power in the Mind vs. Power in the Market – Where does an energy source’s strength lie?  
 Customer choice in this market is driven by market factors, with the two largest energy sources having a strong reliance on market strength (such as price, accessibility, ease of use and availability)



Note: Bubble size represents penetration

# Perceptual map

Natural Gas is seen as being affordable, while electricity has specific uses (heating water, drying laundry, cooking, etc.)



Note: Percent explained by axes 1 and 2 = 83.2%  
 Inertia = 0.17  
 Energy sources and attributes with correlation < 0.50 not shown

Lower Mainland

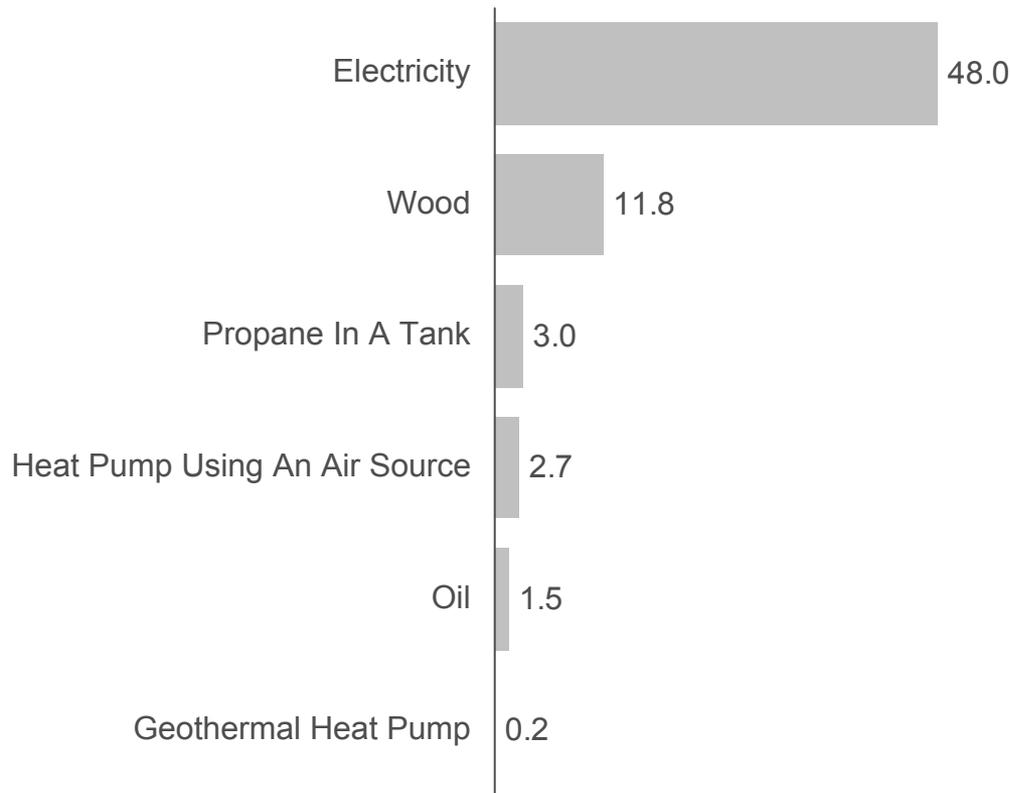
# Explaining Energy Source Performance

How does my energy source perform?

Which energy sources does the energy source of interest share users with?

## Half the market use Natural Gas and Electricity together to heat their home

### DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use



Base  $n^{\wedge}$  = 2893 (total market)

Read: 48.0% of the market uses both Natural Gas Or Piped Propane and Electricity

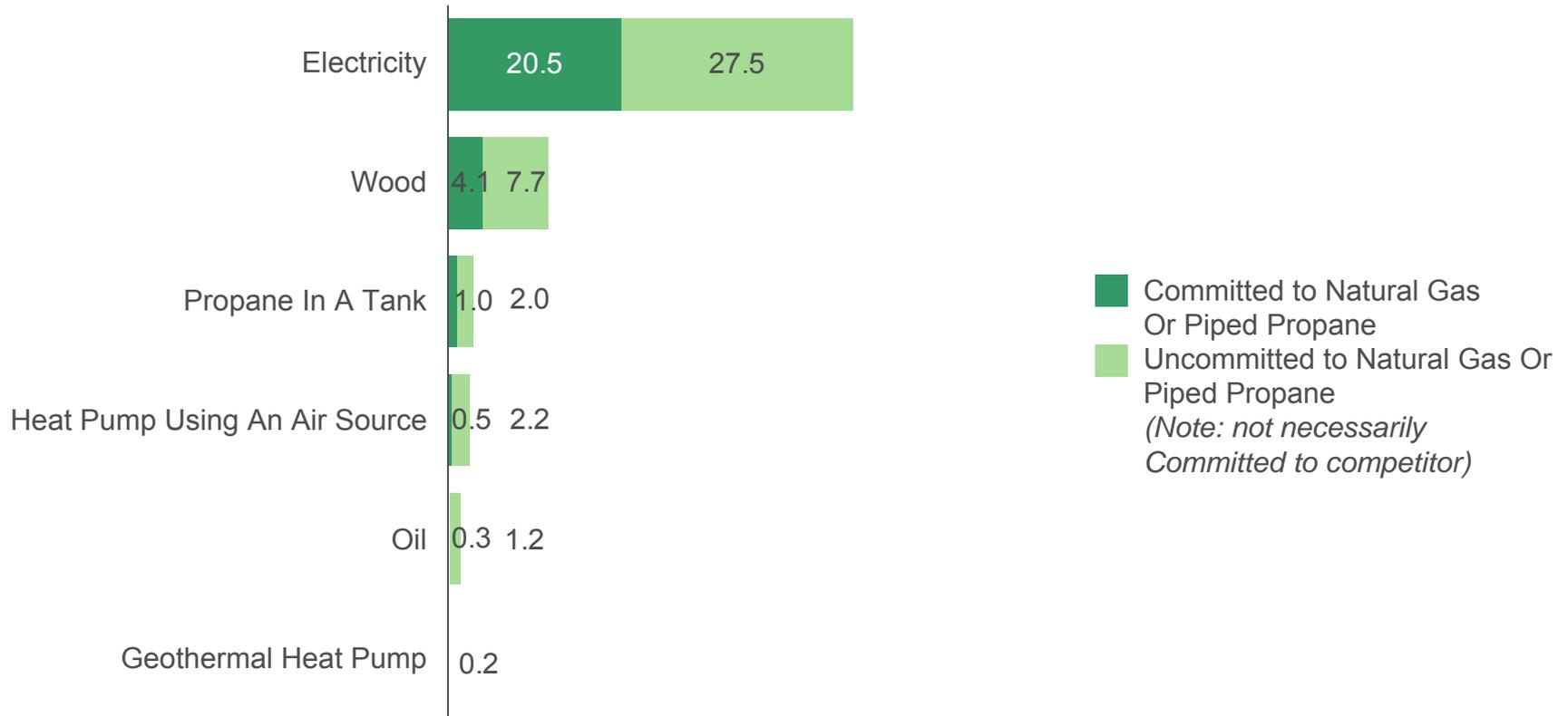
Note: Energy sources ranked on total dual users  
Percentages are based on the total market

Lower Mainland

Are dual users Committed or Uncommitted to the energy source of interest?

## A fifth of the market use both Natural Gas and Electricity and are Committed to Natural Gas

### DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use



Base  $n^{\wedge}$  = 2893 (total market)

Read: 20.5% of the market uses both Natural Gas Or Piped Propane and Electricity, and is Committed to Natural Gas Or Piped Propane. 27.5% is either Committed to Natural Gas Or Piped Propane to Electricity or Uncommitted to both

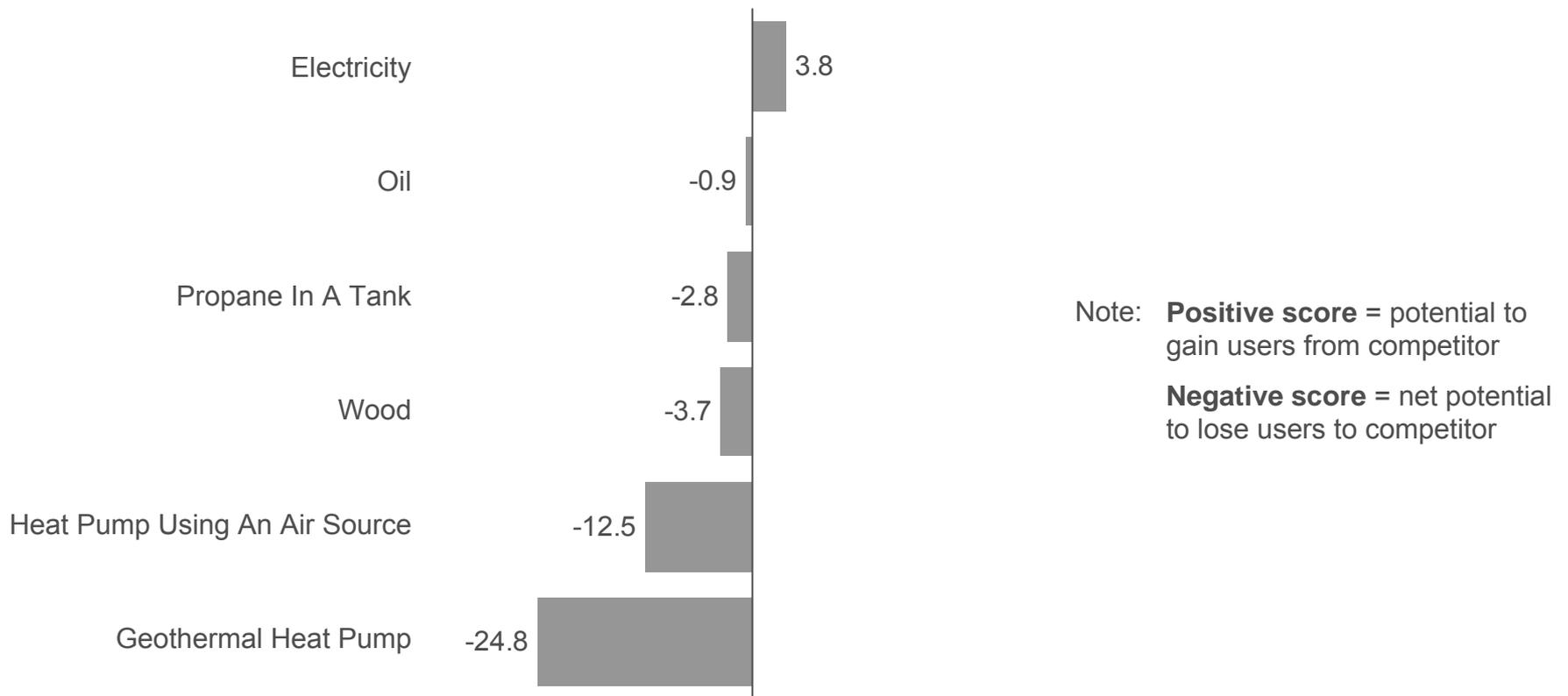
Note: Energy sources ranked on total dual users  
Percentages are based on the total market

Lower Mainland

## Potential net opportunities & threats for energy source of interest

While Natural Gas has the potential to lose users to Heat Pumps Using an Air Source and Geothermal Heat Pumps, these losses are likely to be limited as they are small, expensive and exclusive energy sources with limited availability

### POTENTIAL FUTURE NET GAIN/LOSS for Natural Gas Or Piped Propane



Base n<sup>^</sup> = 2893 (total market)

Read: Natural Gas Or Piped Propane stands to potentially gain 3.8% of the market from Electricity overall

Note: This chart does not include dual users

Energy sources ranked on potential net gain/loss

Percentages are based on the total market

Lower Mainland

## Commitment profiles for the energy source of interest

Three quarters of both Uncommitted users and Open non-users are either enthusiastic about more than one energy source (Shared) or unhappy with energy sources they currently use (Seekers)

Natural Gas Or Piped Propane	Total (n <sup>^</sup> =2,890) %	Users (n <sup>^</sup> =2,254) %	Non-users (n <sup>^</sup> =637) %	Users		Non-users	
				Committed (n <sup>^</sup> =1,060) %	Uncommitted (n <sup>^</sup> =1,193) %	Open (n <sup>^</sup> =279) %	Unavailable (n <sup>^</sup> =357) %
States of Mind™							
Single-minded	50	51	49	89 ←	17	24	→ 70
Passive	2	2	3	4	1	2	4
Shared	20	22	16	8	→ 33	22	11
Seekers	24	23	29	0	→ 43	48 ←	14
Uninvolved	3	3	3	0	5	4	2

Single-minded	Passive	Shared	Seekers	Uninvolved
Committed to one energy source	Committed to one energy source, but care less about energy source choice (habitual users)	Like more than one energy source	Care which energy source they use, but unhappy with their energy source(s)	Don't care which energy source they use
↓	↓	↓	↓	↓
<b>Maintenance:</b> Identify and reinforce key drivers of Commitment	<b>Maintenance:</b> Keep the energy source top of mind and reinforce key drivers	<b>Maximize share:</b> Understand why competitors appeal to determine what can be done to gain more share	<b>Solve problems:</b> Identify and address areas of dissatisfaction	<b>Accept:</b> Low involvement and focus on market factors (price, distribution, etc.), or investigate ways to increase involvement

Read: 89% of Natural Gas Or Piped Propane's Committed users are Single-minded in their Commitment

Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted;

Open vs. Unavailable)

Arrows indicate trends (skews under 10% not highlighted)

Numbers > 0.5 rounded up

^ Weighted base

Lower Mainland

# Open non-users are most likely to be using Electricity or Wood to heat their home

Natural Gas Or Piped Propane	Total (n <sup>^</sup> =2914) %	Users (n <sup>^</sup> =2269) %	Non-users (n <sup>^</sup> =645) %	Users		Non-users	
				Committed (n <sup>^</sup> =1062) %	Uncommitted (n <sup>^</sup> =1208) %	Open (n <sup>^</sup> =286) %	Unavailable (n <sup>^</sup> =359) %
<b>Usage</b>							
Natural Gas Or Piped Propane	78	100	0	100	100	0	0
Electricity	72	68	85	65	→ 70	83	86
Wood	19	15	35	12	17	42 ←	29
Heat Pump Using An Air Source	5	3	11	3	3	19 ←	4
Propane In A Tank	5	5	7	3	6	9	5
Oil	4	2	13	1	3	19 ←	9
<b>Average repertoire size</b>	<b>1.8</b>	<b>1.9</b>	<b>1.5</b>	<b>1.8</b>	<b>2.0</b>	<b>1.7</b>	<b>1.3</b>

Read: 65% of Natural Gas Or Piped Propane's Committed users have also used Electricity  
 Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)  
 Arrows indicate trends (skews under 10% not highlighted)  
 Numbers > 0.5 rounded up  
 ^ Weighted base

## Commitment profiles for the energy source of interest

The majority of the market is not interested in switching to a long-term, fixed price contract such as the Customer Choice Program

Natural Gas or Piped Propane	Total (n <sup>^</sup> =1,845) %	Users		Non-users			
		Users (n <sup>^</sup> =1,845) %	Non-users (n <sup>^</sup> =0 <sup>**</sup> ) %	Committed (n <sup>^</sup> =894) %	Uncommitted (n <sup>^</sup> =950) %	Open (n <sup>^</sup> =0 <sup>**</sup> ) %	Unavailable (n <sup>^</sup> =0 <sup>**</sup> ) %
<b>Customer Choice Program (QC)</b>							
Definitely interested	2	2	0	2	2	0	0
Very interested	4	4	0	2	5	0	0
Somewhat interested	21	21	0	19	22	0	0
Not very interested	21	21	0	17	25	0	0
Not at all interested	49	49	0	54 ←	44	0	0
Don't Know	4	4	0	5	4	0	0

Read: 19% of Natural Gas or Piped Propane's Committed users are Somewhat interested

Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)

Arrows indicate trends (skews under 10% not highlighted)

Numbers > 0.5 rounded up

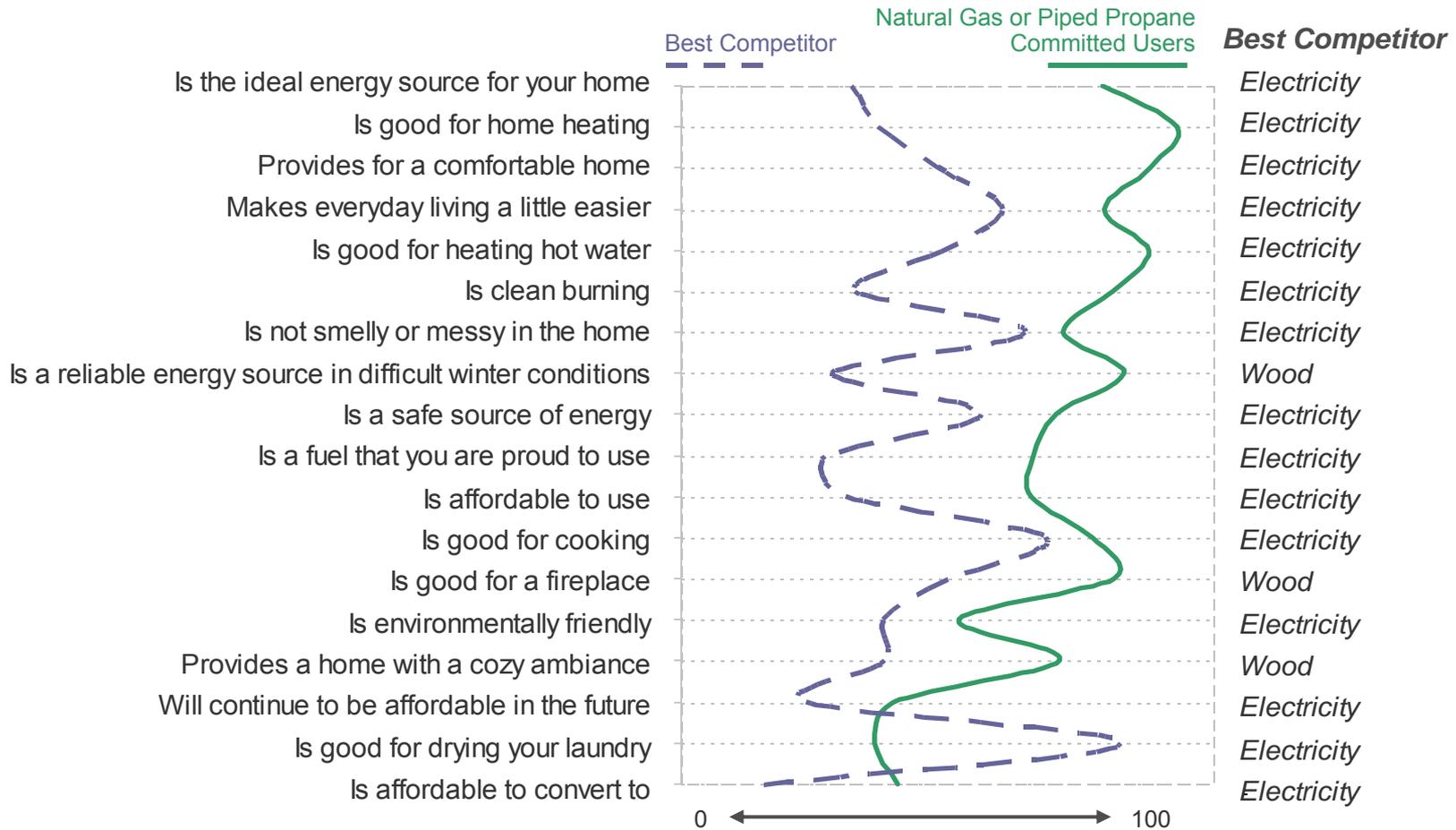
\*\* Base size too small for analysis

^ Weighted base

Lower Mainland

How is the energy source of interest rated in comparison to its competitors?

# Natural Gas is rated higher than all energy sources on everything other than drying laundry



Base n^ = 1, 062 (Committed users)

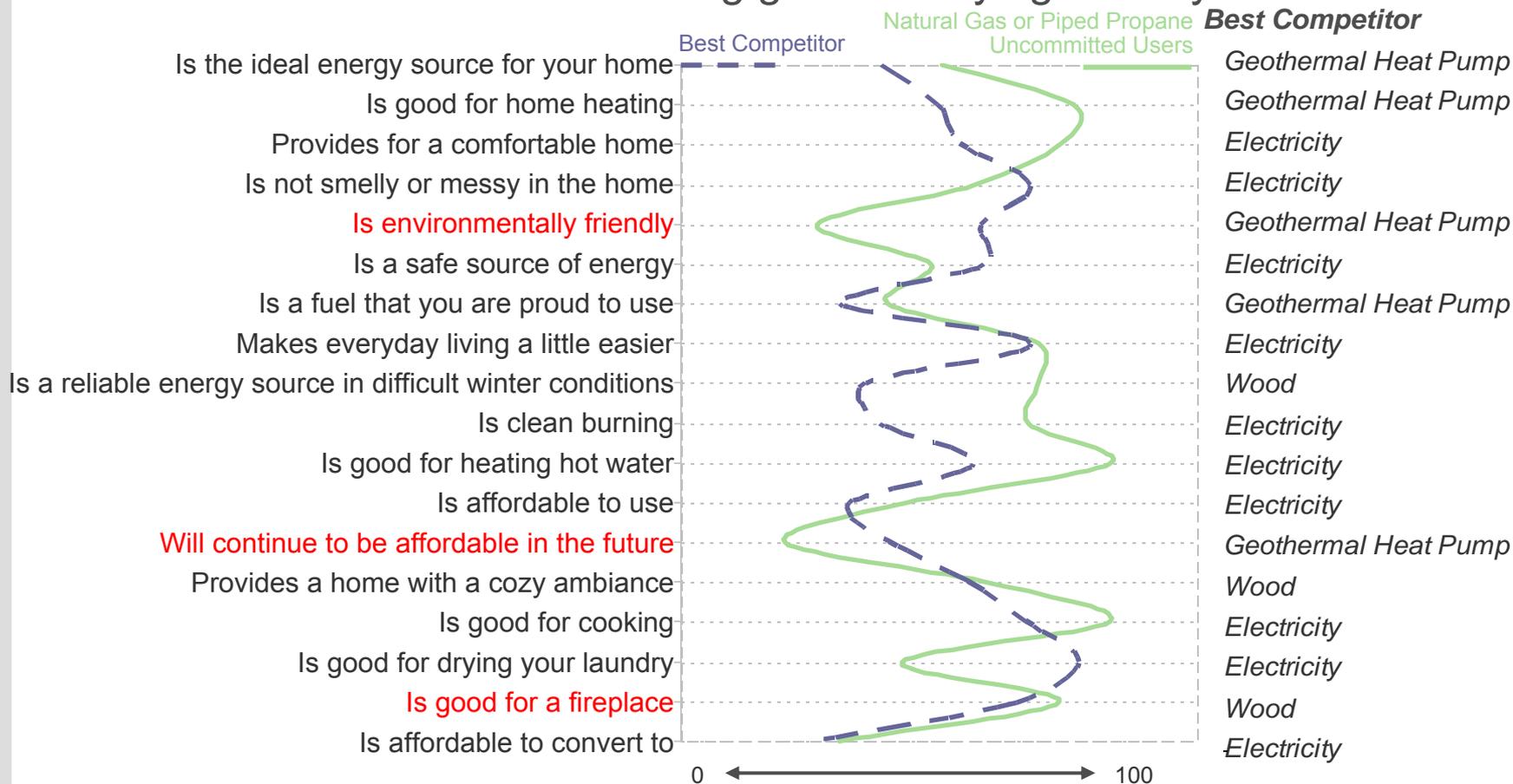
Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Committed users. Natural Gas or Piped Propane performs better than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

^ Weighted base

Lower Mainland

How is the energy source of interest rated in comparison to its competitors?  
 Although Natural Gas is generally rated highly by Uncommitted users, Electricity and Geothermal Heat Pumps outperform Natural Gas in not being messy/smelly, being safe and environmentally friendly, continuing to be affordable in the future and being good for drying laundry



Base n^ = 1,208 (Uncommitted users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Uncommitted users. Natural Gas or Piped Propane performs better than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

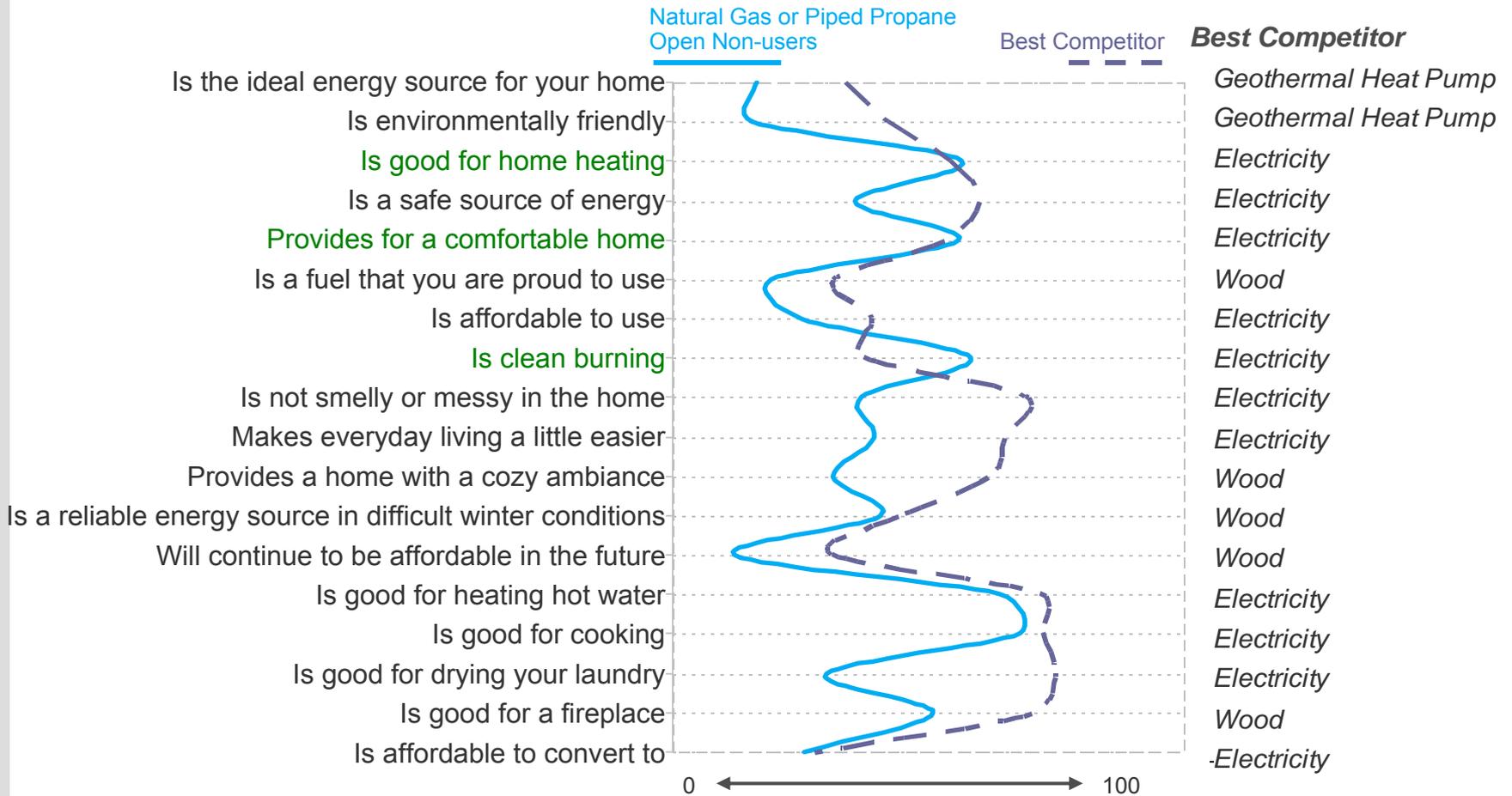
^ Weighted base

Lower Mainland



How is the energy source of interest rated in comparison to its competitors?

Natural Gas' strengths among Open non-users include being clean burning, being good for home heating and providing for a comfortable home



Base n^ = 286 (Open non-users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Open users. Natural Gas or Piped Propane performs worse than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

^ Weighted base

Lower Mainland

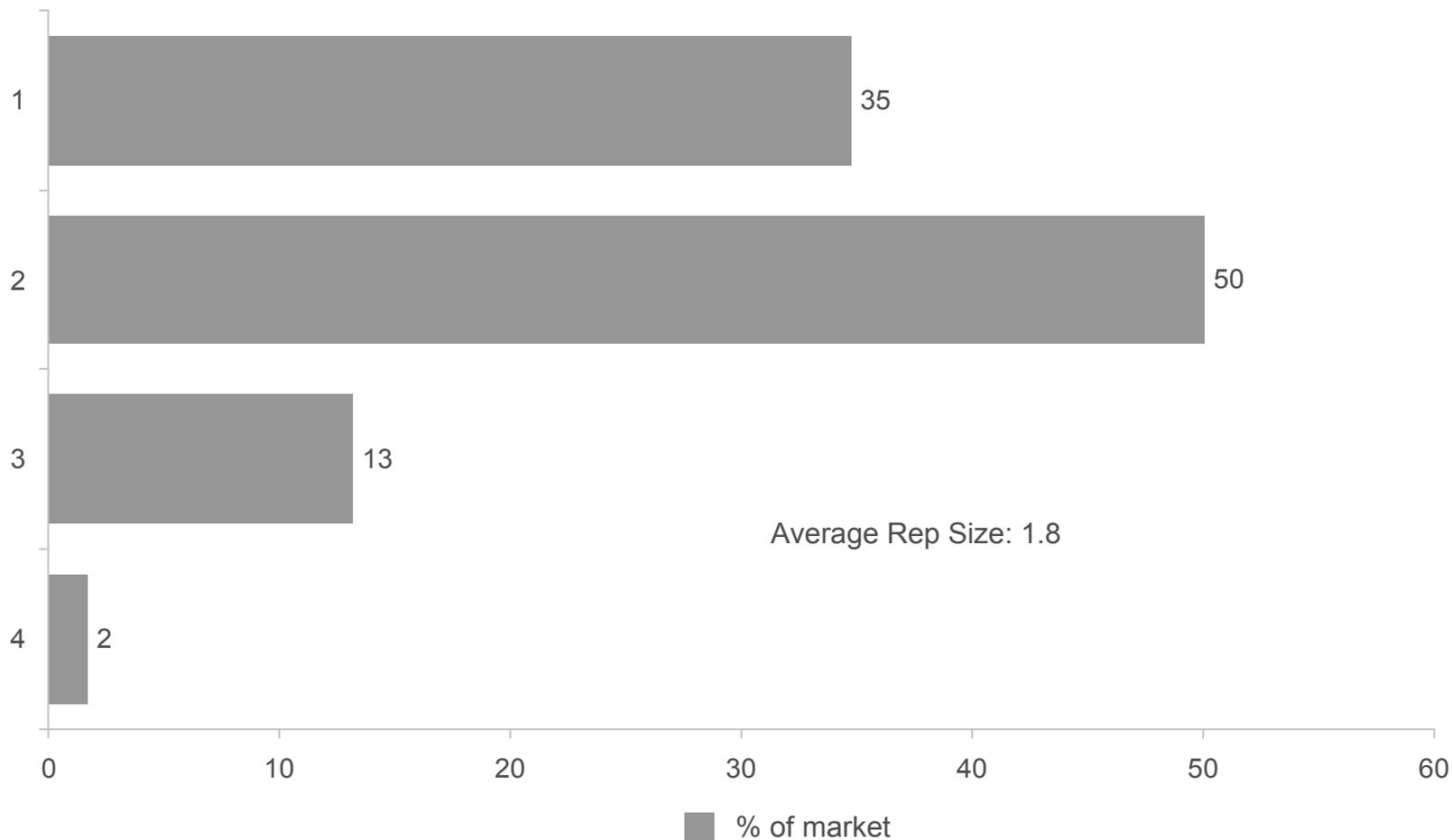
# Vancouver Island



What proportion of the market used a specific number of energy sources?

## The majority of Vancouver Island residents make use of two energy sources to heat their home

### Repertoire size

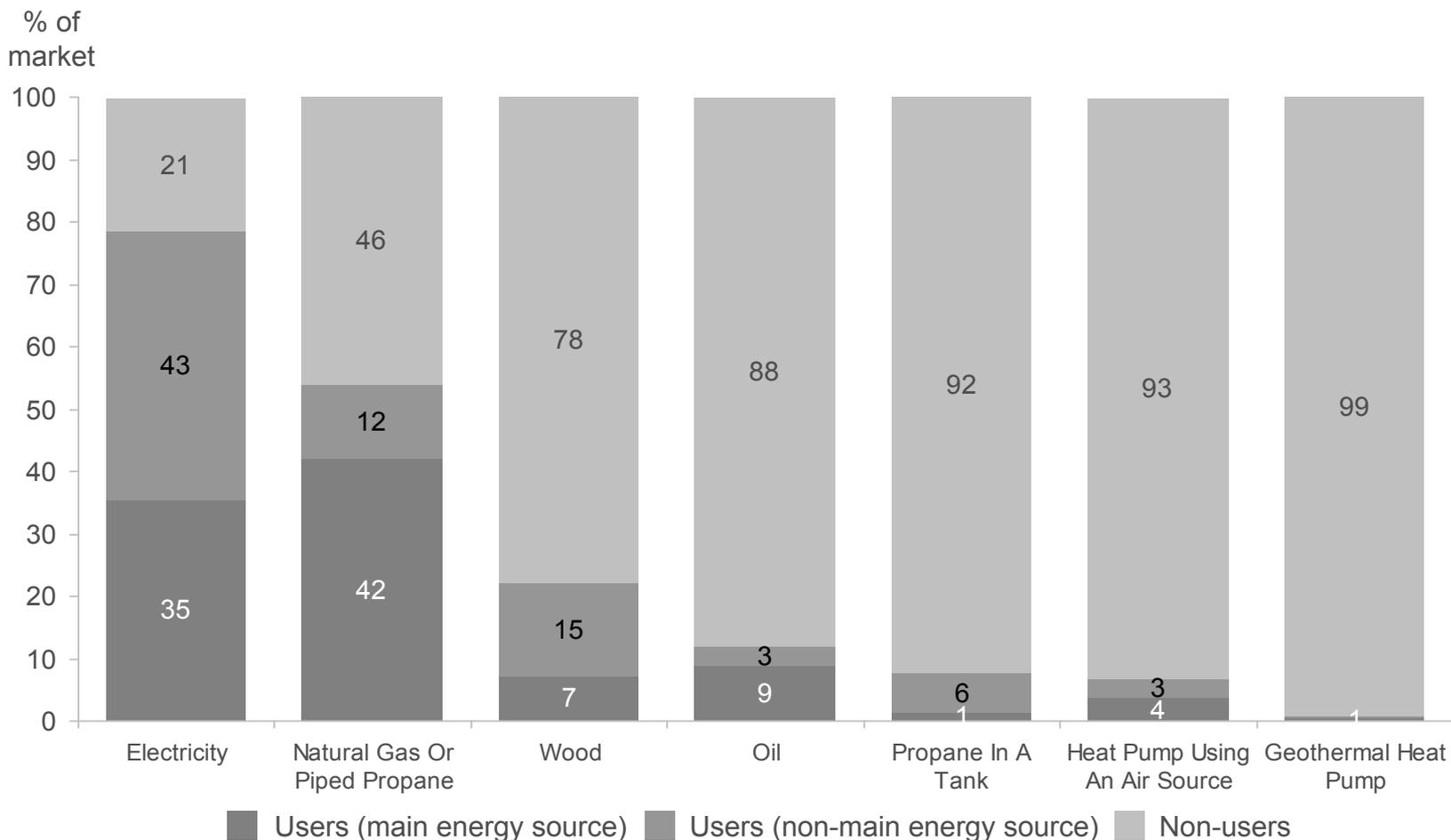


Base  $n^{\wedge}$  = 674  
Read: 35% of the market has used only one energy source  
Note: Numbers > 0.5 rounded up  
 $\wedge$  Weighted base

Vancouver Island

What proportion of the market uses each energy source as its main energy source?

Although Electricity is more widely used in Vancouver Island, 42% of residents use Natural Gas as their main energy source



Base n<sup>^</sup> = 674  
 Read: 42% of the market uses Nautal Gas or Piped Propane as their main energy source  
 Note: Numbers >0.5 rounded up  
 ^ Weighted base size

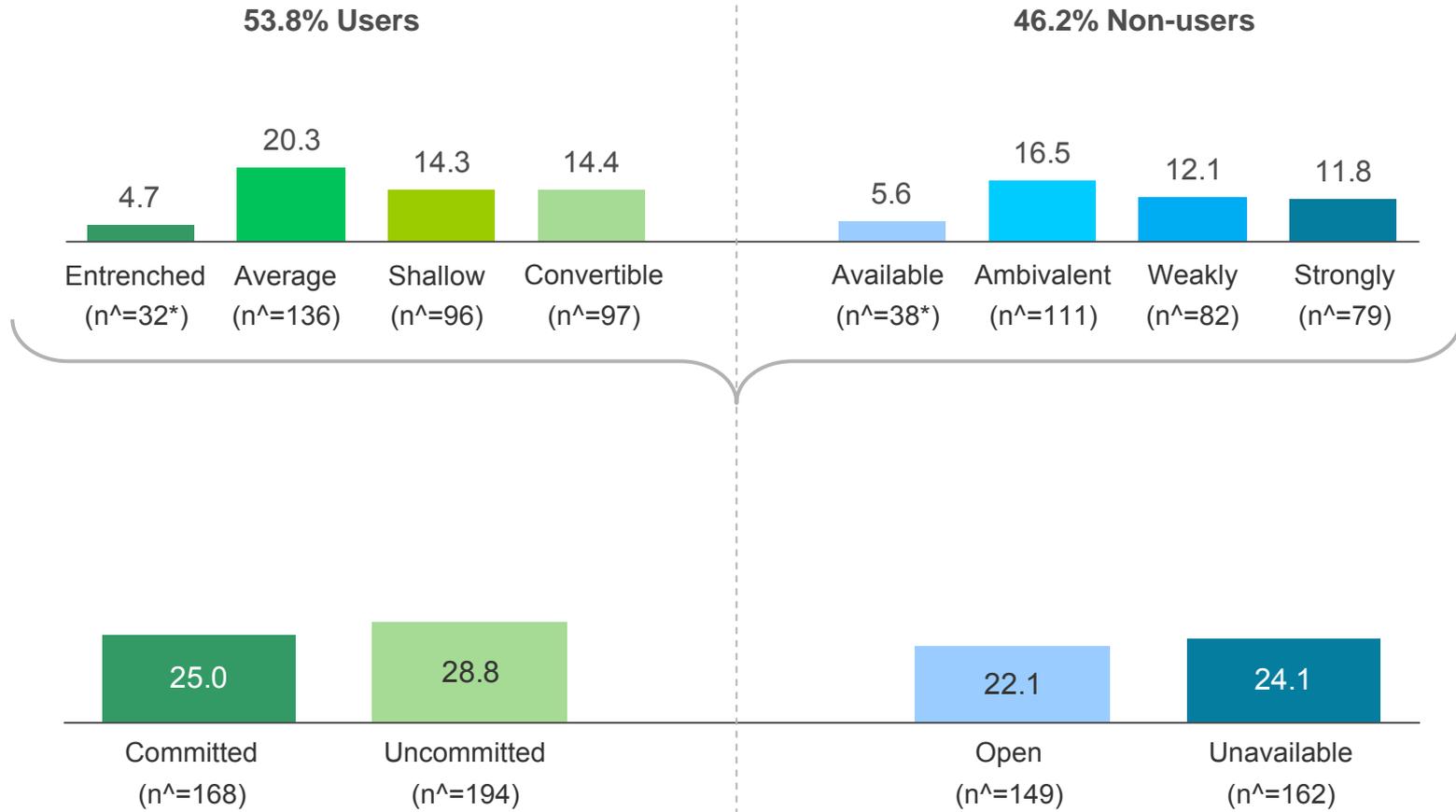
# Energy Source Performance Measurement

How do the energy sources perform?

What do the energy source of interest's Conversion Model™ segments look like?

The majority of Open non-users are Ambivalent to Natural Gas and see other energy sources as being very similar

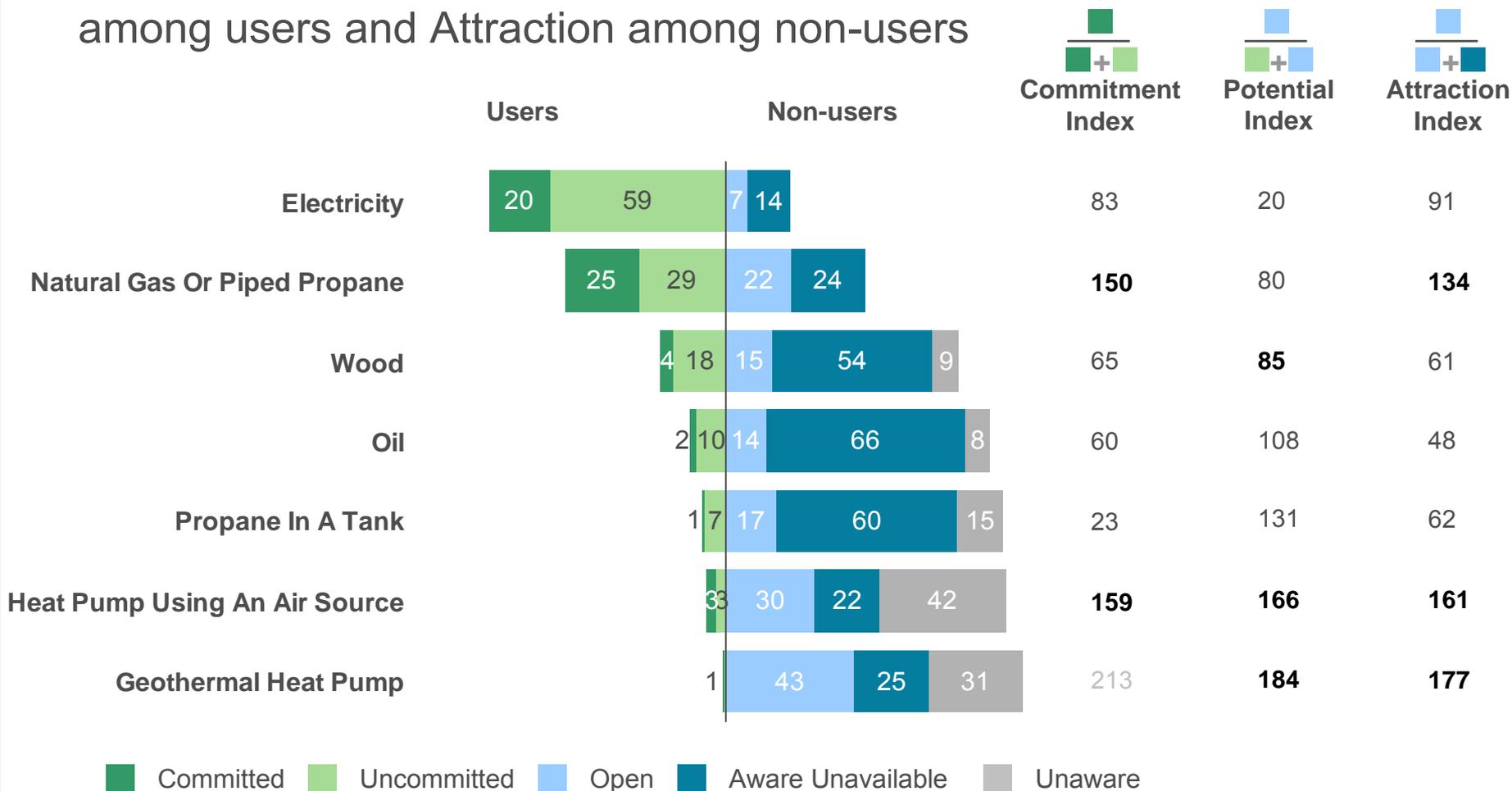
Natural Gas Or Piped Propane's Conversion Model™ Line



Base n^ = 673  
 Read: 4.7% of the market is Entrenched to Natural Gas Or Piped Propane  
 Note: ^ Weighted base

# Brand Health Chart – The overall market picture

While Electricity has a higher penetration rate among Vancouver island residents than Natural Gas, Natural Gas has a far higher Commitment among users and Attraction among non-users



Base n^ = 673

Read: For Natural Gas Or Piped Propane: 25% of the market is Committed, 29% is Uncommitted, 22% is Available, 24% is Unavailable and 0% has not heard of the energy source. Commitment is 50 points above the market average, Potential is 20 points below the average and Attraction is 34 points above the average

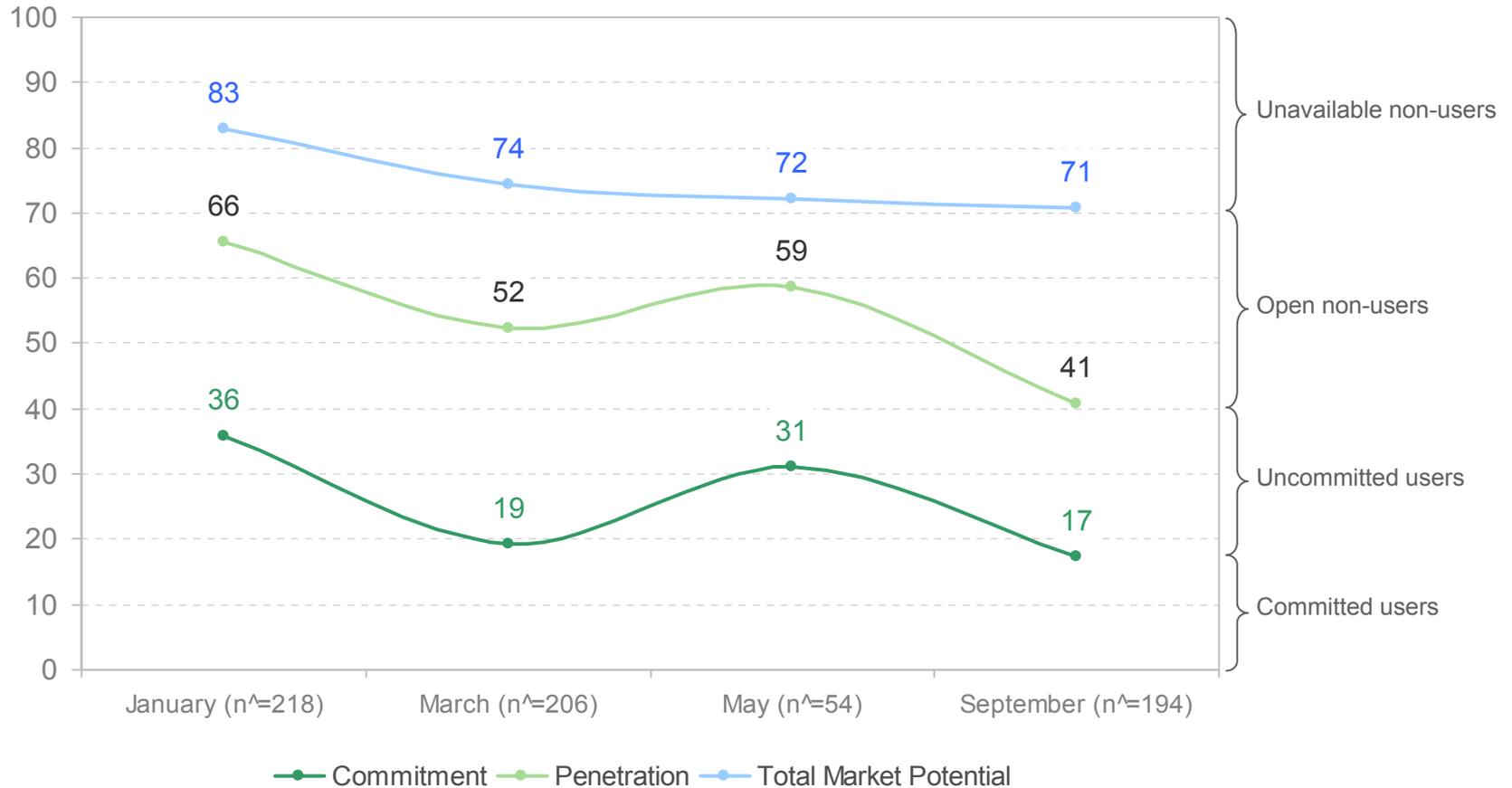
Note: Numbers > 0.5 rounded up

^ Weighted base

Indices with n<30 in the denominator greyed out  
Indices over 115 bolded for emphasis

Vancouver Island

## Penetration and Commitment has decreased since January



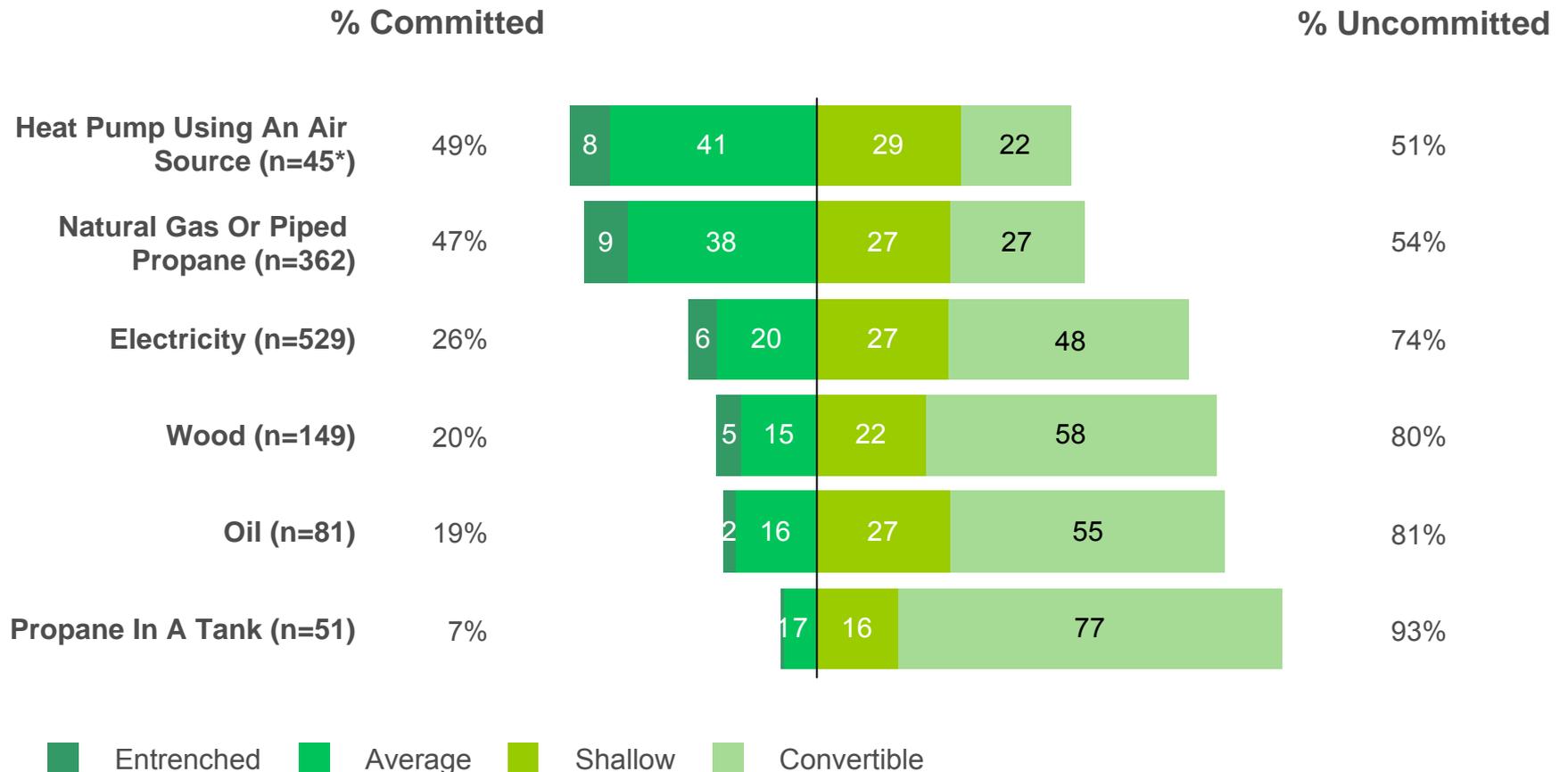
Read: For Natural Gas or Piped Propane: 17% of the market was Committed in September, 41% used the energy source and 71% either used the energy source or were Open to using the energy source

Note: Numbers > 0.5 rounded up

^ Weighted base

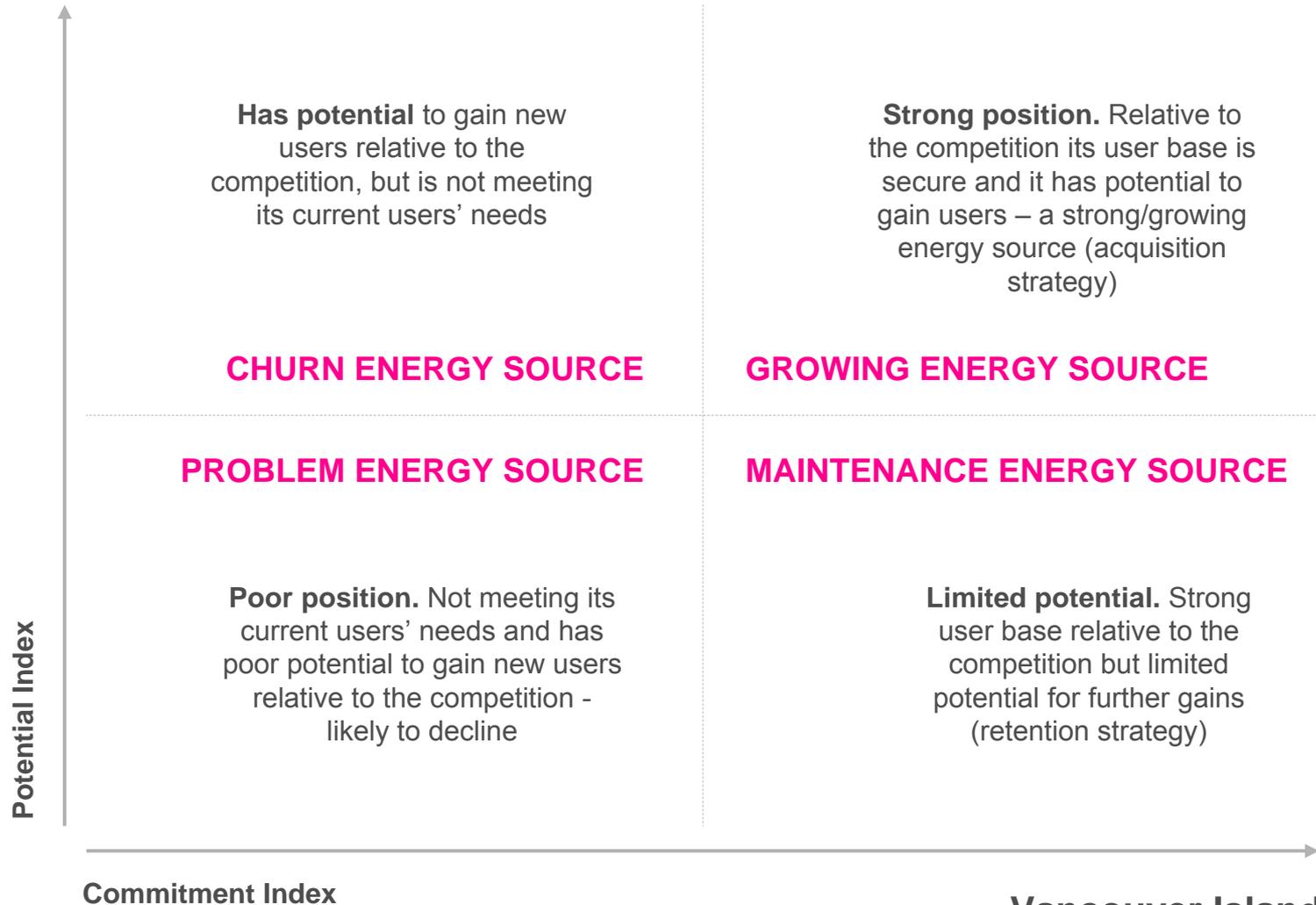
Vancouver Island

# Almost half of Electricity users would switch away from the energy source in the short term if transitioning was an easy process



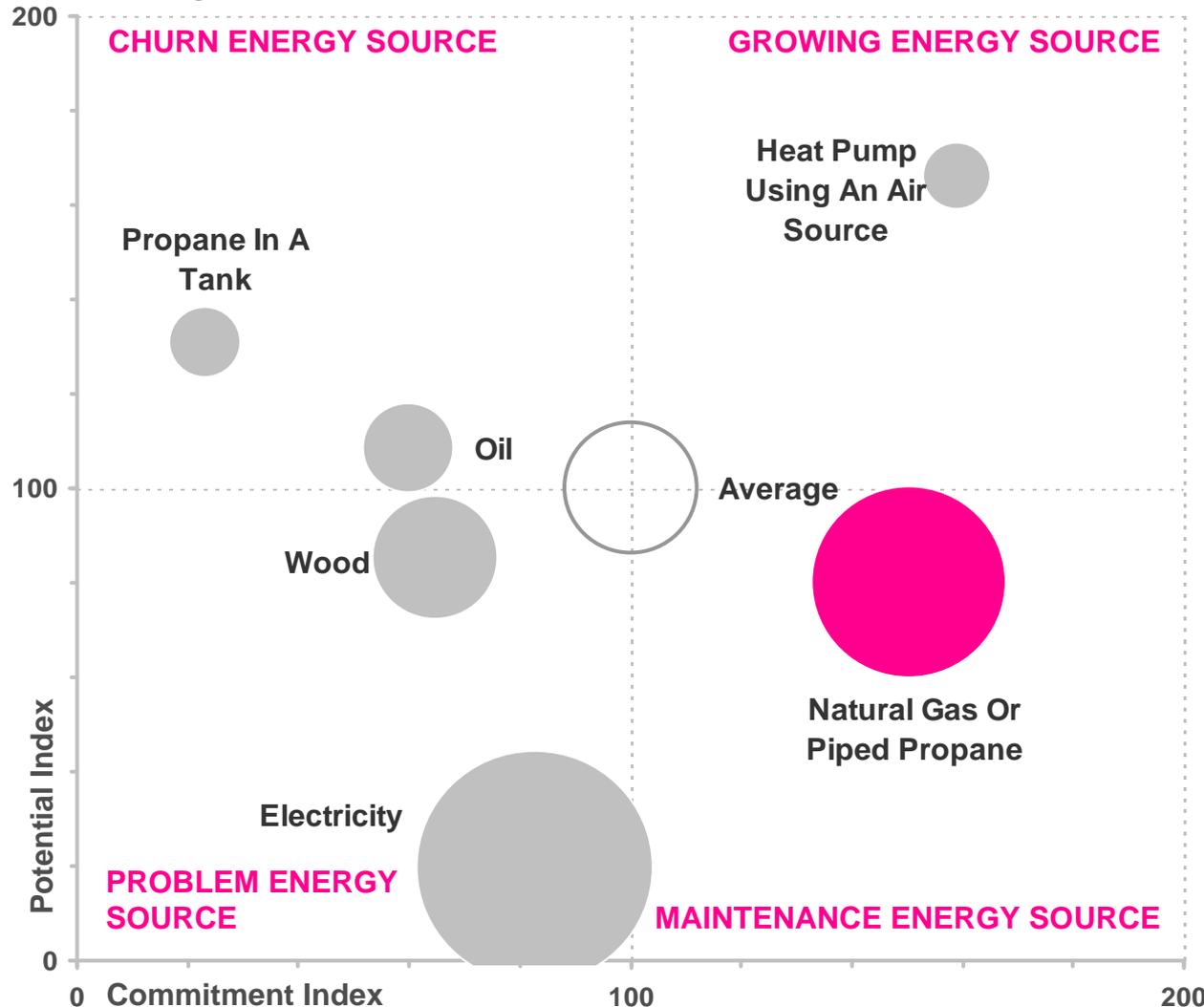
Read: For Electricity: 6% of its users are Entrenched, 20% are Average, 27% are Shallow and 48% are Convertible  
 Note: Energy sources with less than 30 users not shown  
 \* Caution: small base size  
 ^ Weighted base

# Conversion Model™ Map



Note:  $Commitment = \frac{Committed\ users}{total\ users}$   
 $Potential = \frac{Open\ non-users}{(Uncommitted\ users + Open\ non-users)}$

Conversion Model™ Map – Energy source positions in terms of Potential and Commitment  
 Heat Pump Using an Air Source, although small and not very accessible, is an attractive energy source to residents. Natural Gas is in a good position with high Commitment



Note: Bubble size represents penetration  
 energy sources with n<30 in denominator of Commitment or Potential Index not shown  
 Commitment = Committed users/total users  
 Potential = Open non-users/(Uncommitted users + Open non-users)

Vancouver Island

# Power in the Mind vs. Power in the Market

## POWER IN THE MIND

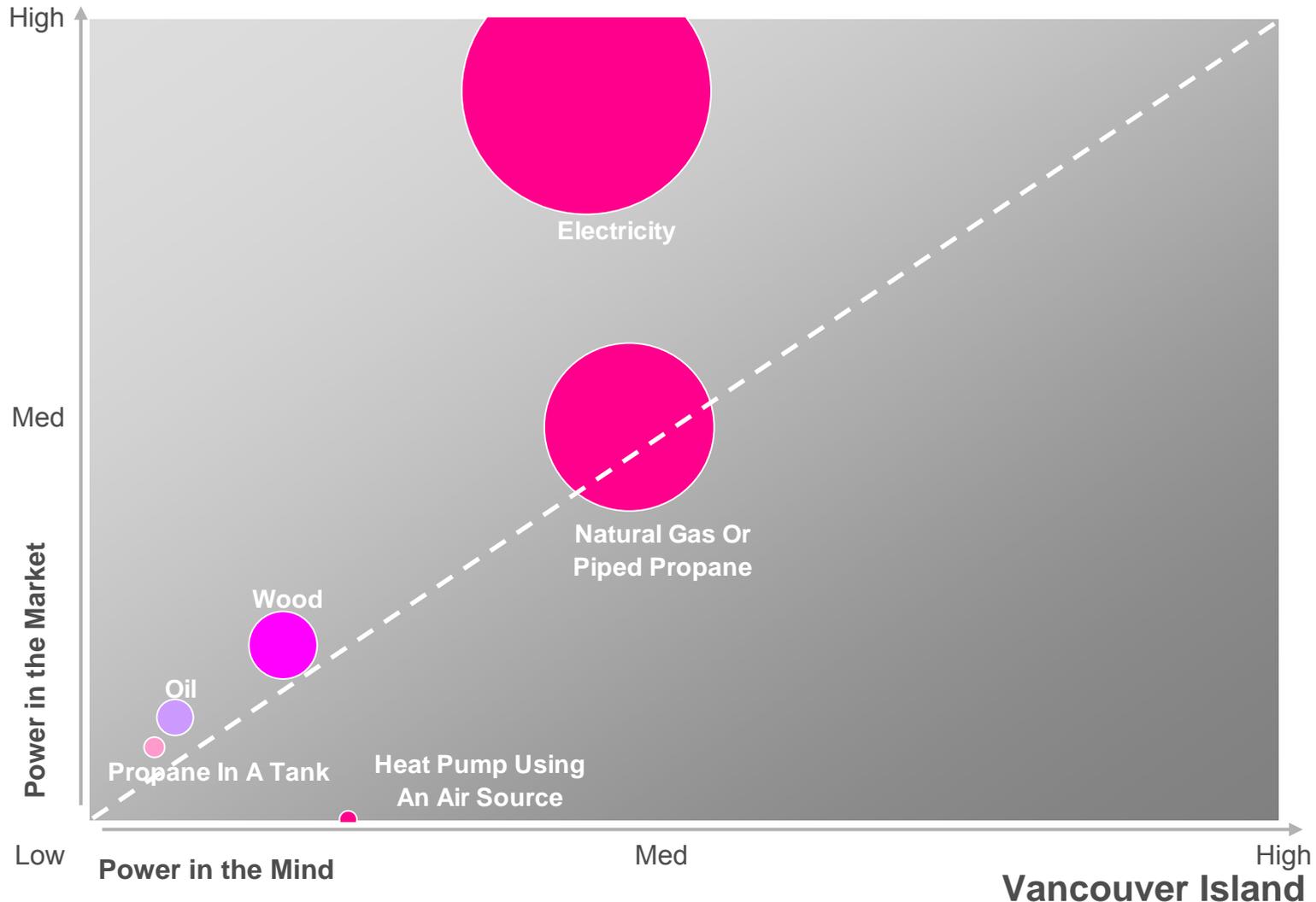
The share your energy source would achieve if buyers acted purely on their preferences  
*(In the absence of any market factors)*

## POWER IN THE MARKET

The share your energy source would get if market forces were the only factors at play  
*(If consumers have equal preference for all energy sources)*

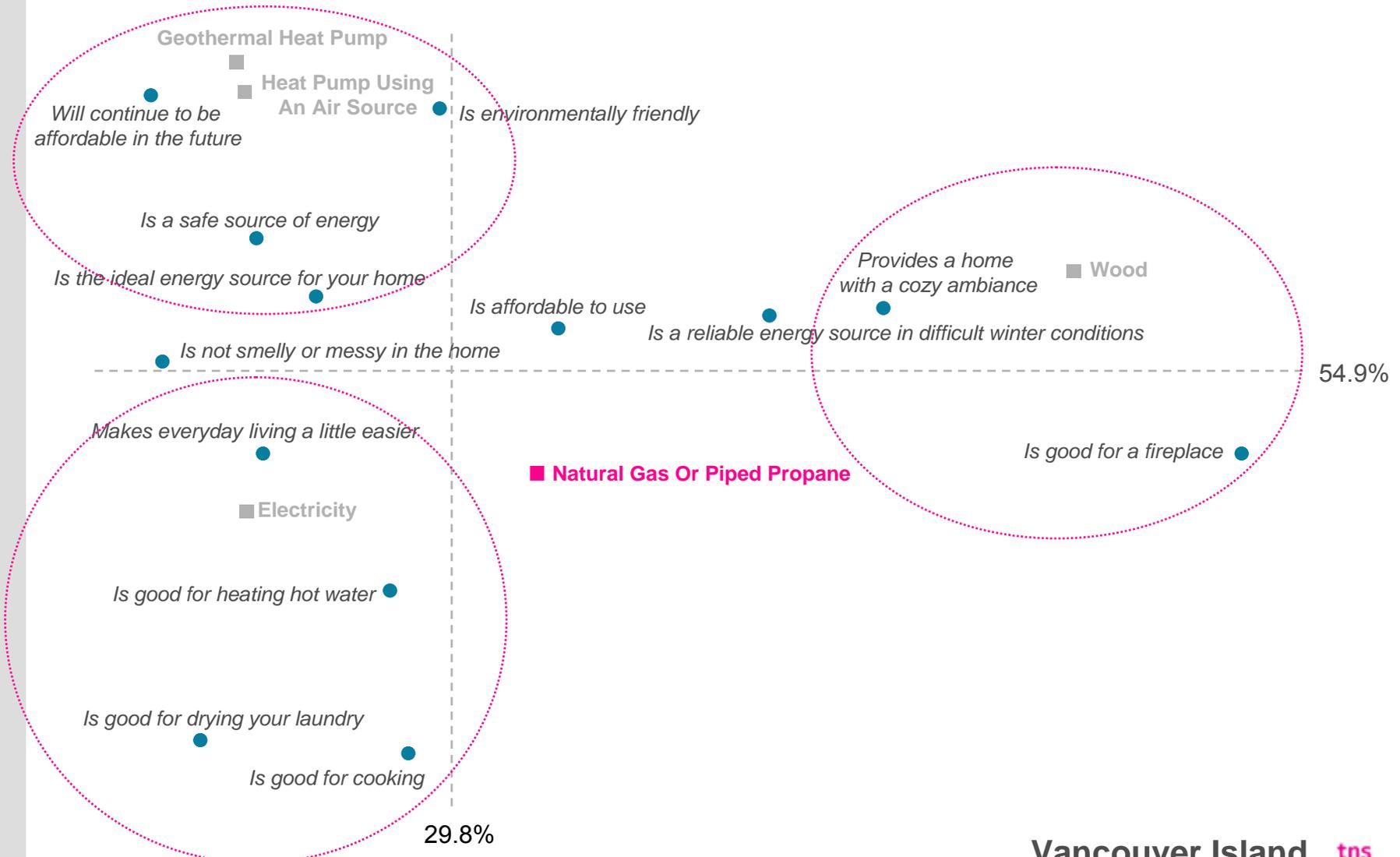
Power in the Mind vs. Power in the Market – Where does an energy source’s strength lie?

Natural Gas in Vancouver Island has more of an equal balance of emotional attraction and market factor strength



Note: Bubble size represents penetration

# Natural Gas has no clear positioning or defining attributes among Vancouver Island residents



Note: Percent explained by axes 1 and 2 = 84.7%  
Inertia = 0.19  
Energy sources and attributes with correlation < 0.50 not shown

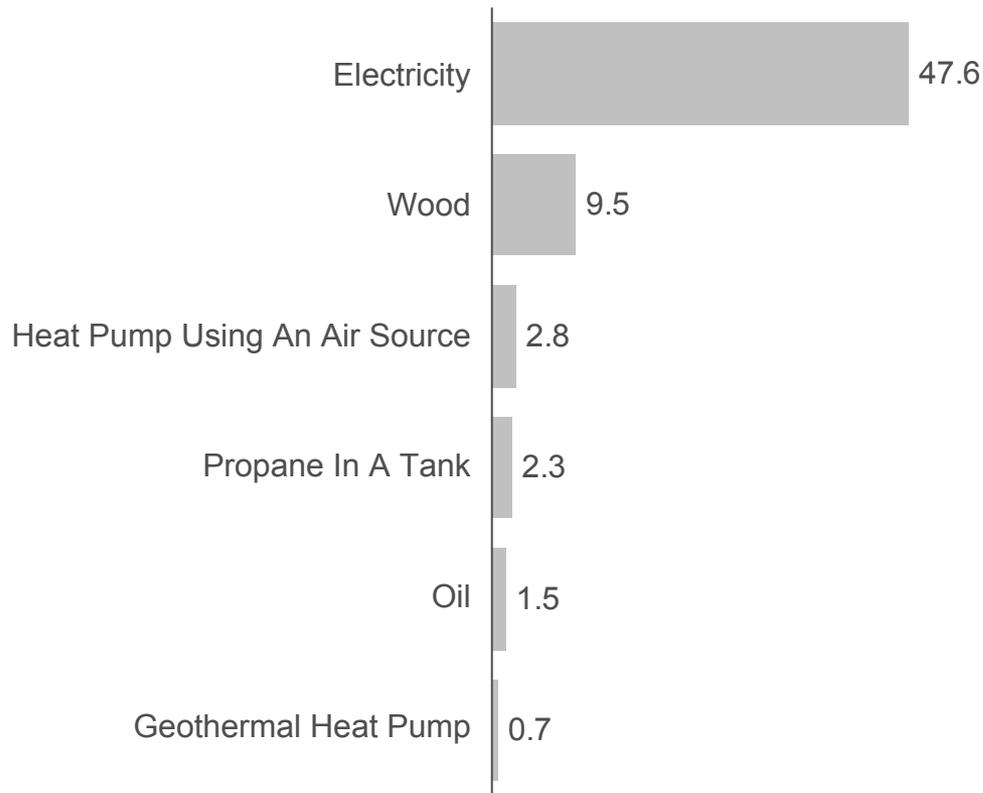
# Explaining Energy Source Performance

How does my energy source perform?

Which energy sources does the energy source of interest share users with?

## Almost half of residents use Electricity and Natural Gas together to heat their home

### DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use



Base n<sup>^</sup> = 670 (total market)

Read: 47.6% of the market uses both Natural Gas Or Piped Propane and Electricity

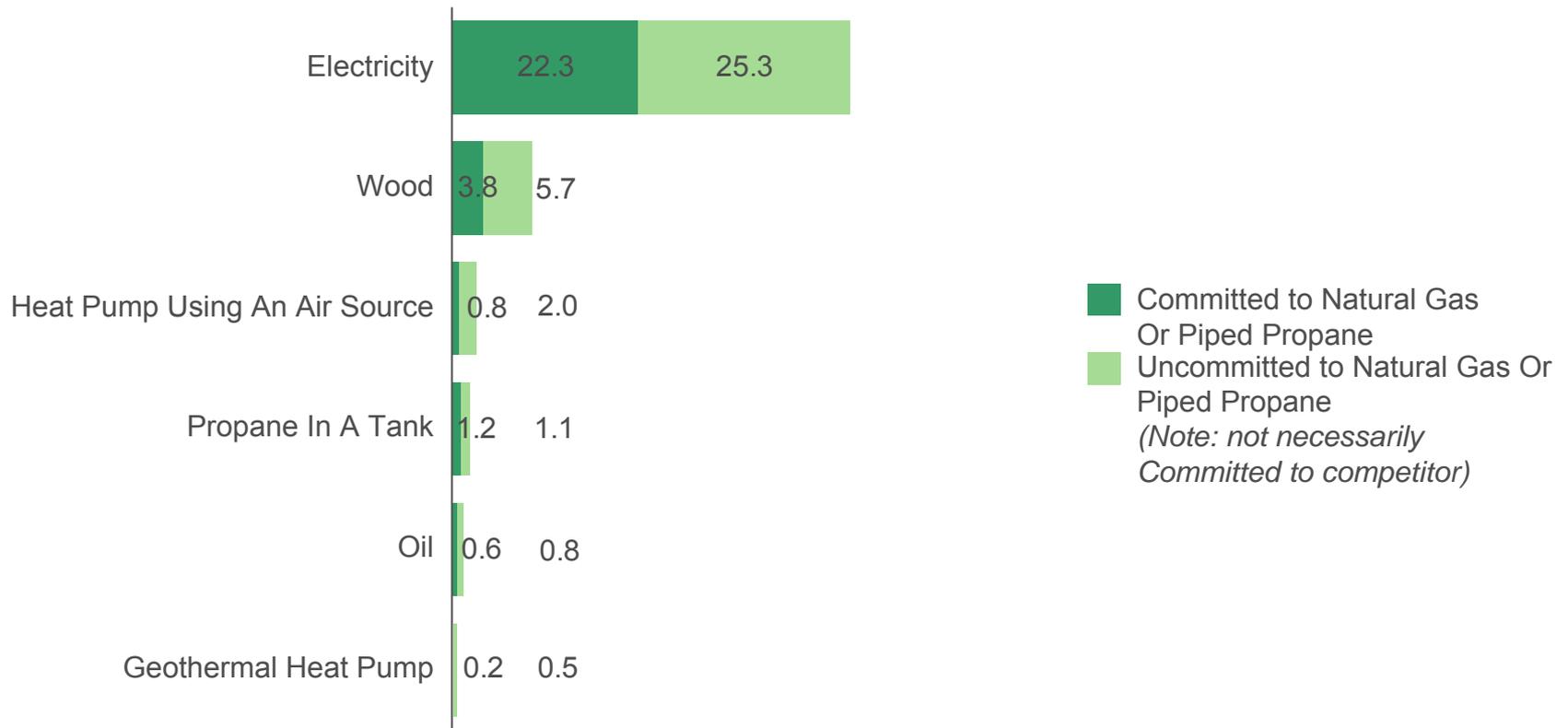
Note: Energy sources ranked on total dual users  
Percentages are based on the total market

Vancouver Island

Are dual users Committed or Uncommitted to the energy source of interest?

## In line with Commitment levels, roughly half of dual users are Committed to Natural Gas

### DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use



Base  $n^{\wedge}$  = 670 (total market)

Read: 22.3% of the market uses both Natural Gas Or Piped Propane and Electricity, and is Committed to Natural Gas Or Piped Propane. 25.3% is either Committed to Electricity or Uncommitted to both

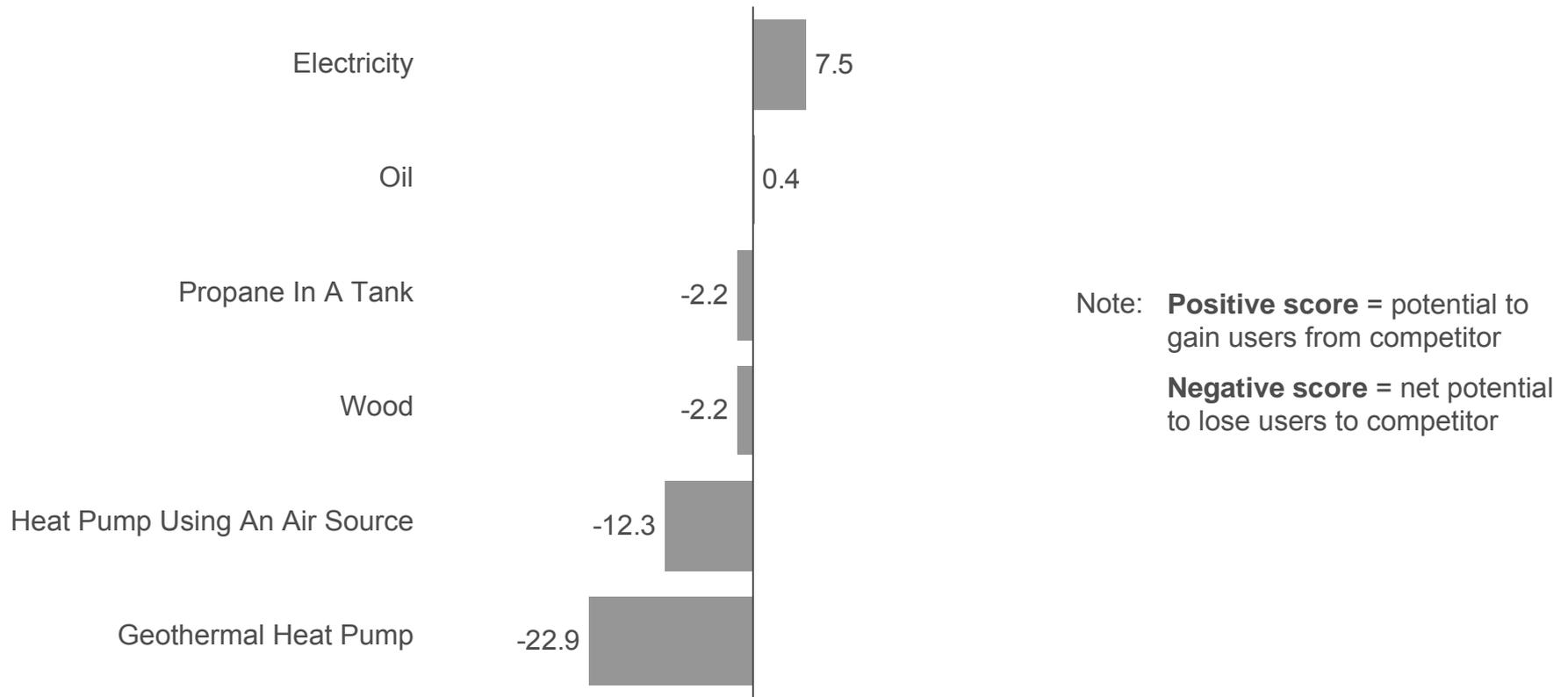
Note: Energy sources ranked on total dual users  
Percentages are based on the total market

Vancouver Island

Potential net opportunities & threats for energy source of interest

Natural Gas can potentially gain the most users from Electricity, while aspirational energy sources pose the largest threat (although these threats are unlikely to be realized)

**POTENTIAL FUTURE NET GAIN/LOSS for Natural Gas Or Piped Propane**



Base n^ = 670 (total market)  
Read: Natural Gas Or Piped Propane stands to potentially gain 7.5 % of the market from Electricity overall  
Note: This chart does not include dual users  
Energy sources ranked on potential net gain/loss  
Percentages are based on the total market

# Commitment profiles for the energy source of interest

## Natural Gas has a strong Committed base, as 89% are Single-minded in their Commitment to Natural Gas

Natural Gas Or Piped Propane	Total (n^=668) %	Users (n^=359) %	Non-users (n^=309) %	Users		Non-users	
				Committed (n^=167) %	Uncommitted (n^=192) %	Open (n^=148) %	Unavailable (n^=161) %
<b>States of Mind™</b>							
Single-minded	48	52	44	89 ←	20	26	→ 61
Passive	1	2	1	2	1	0	2
Shared	17	18	16	9	→ 25	19	13
Seekers	30	25	35	0	→ 47	50 ←	21
Uninvolved	3	4	3	0	7	5	2

Single-minded	Passive	Shared	Seekers	Uninvolved
Committed to one energy source	Committed to one energy source, but care less about energy source choice (habitual users)	Like more than one energy source	Care which energy source they use, but unhappy with their energy source(s)	Don't care which energy source they use
↓	↓	↓	↓	↓
<b>Maintenance:</b> Identify and reinforce key drivers of Commitment	<b>Maintenance:</b> Keep the energy source top of mind and reinforce key drivers	<b>Maximize share:</b> Understand why competitors appeal to determine what can be done to gain more share	<b>Solve problems:</b> Identify and address areas of dissatisfaction	<b>Accept:</b> Low involvement and focus on market factors (price, distribution, etc.), or investigate ways to increase involvement

Read: 89% of Natural Gas Or Piped Propane's Committed users are Single-minded in their Commitment  
 Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)  
 Arrows indicate trends (skews under 10% not highlighted)  
 Numbers > 0.5 rounded up  
 ^ Weighted base

# Open non-users are more likely than Unavailable non-users to be using Wood or Propane in a Tank to heat their home

Natural Gas Or Piped Propane	Total	Users	Non-users	Users		Non-users	
				Committed	Uncommitted	Open	Unavailable
	(n <sup>^</sup> =673) %	(n <sup>^</sup> =362) %	(n <sup>^</sup> =311) %	(n <sup>^</sup> =168) %	(n <sup>^</sup> =194) %	(n <sup>^</sup> =149) %	(n <sup>^</sup> =162) %
<b>Usage</b>							
Electricity	79	73	86	72	73	89	82
Natural Gas Or Piped Propane	54	100	0	100	100	0	0
Wood	22	11	35	12	11	43 ←	27
Oil	12	3	23	2	3	26	20
Propane In A Tank	8	4	12	4	5	17 ←	7
Heat Pump Using An Air Source	7	5	9	2	7	8	10
Geothermal Heat Pump	1	1	1	1	1	0	2
<b>Average repertoire size</b>	<b>1.8</b>	<b>2.0</b>	<b>1.7</b>	<b>1.9</b>	<b>2.0</b>	<b>1.8</b>	<b>1.5</b>

Read: 72% of Natural Gas Or Piped Propane's Committed users have also used Electricity  
 Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)  
 Arrows indicate trends (skews under 10% not highlighted)  
 Numbers > 0.5 rounded up  
 ^ Weighted base

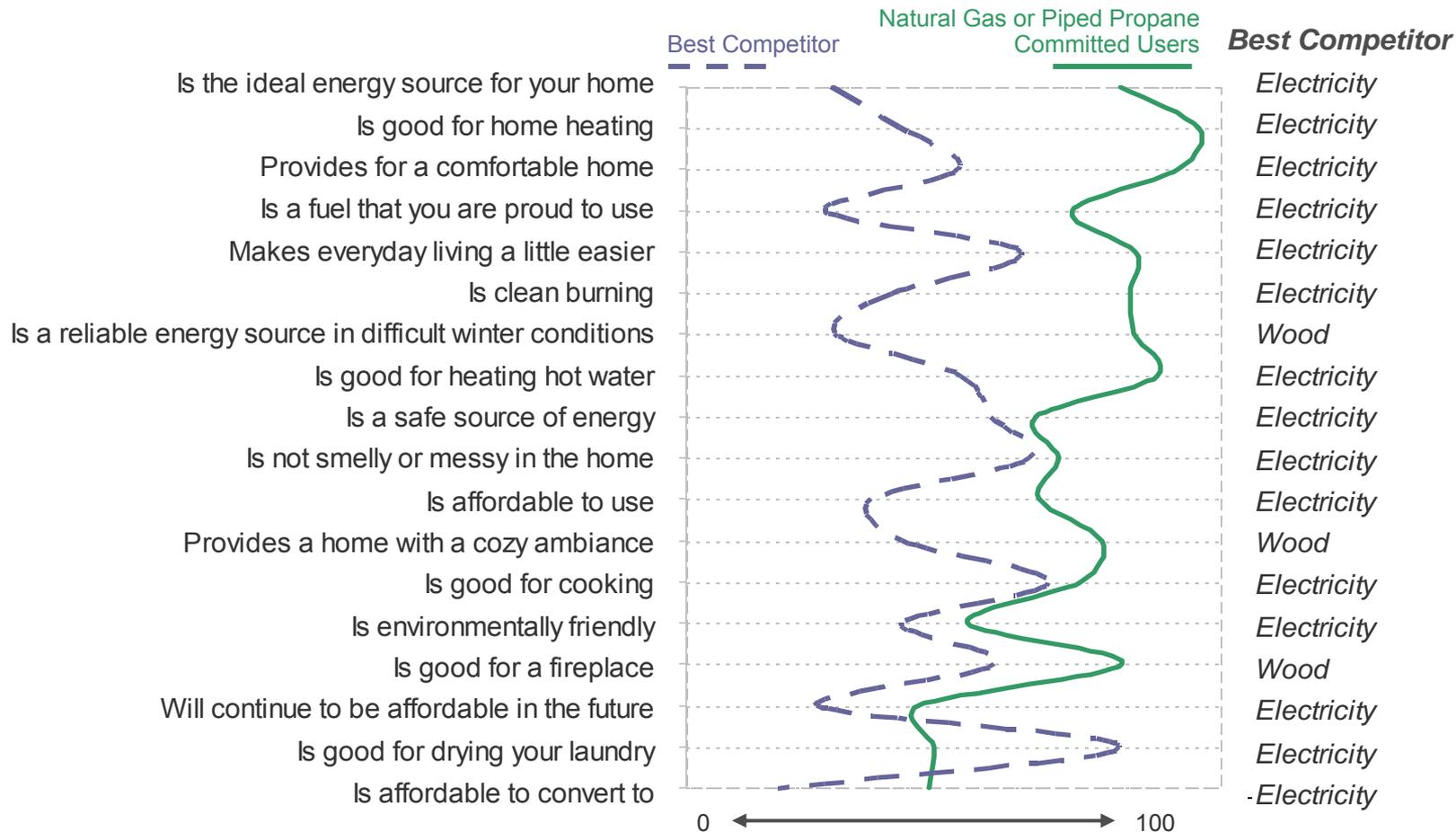
# The vast majority of both Committed and Uncommitted users are not interested in switching to the Customer Choice Program

Natural Gas or Piped Propane	Total	Users		Non-users			
		Committed	Uncommitted	Open	Unavailable		
	(n <sup>^</sup> =181)	(n <sup>^</sup> =181)	(n <sup>^</sup> =0 <sup>**</sup> )	(n <sup>^</sup> =94)	(n <sup>^</sup> =87)	(n <sup>^</sup> =0 <sup>**</sup> )	(n <sup>^</sup> =0 <sup>**</sup> )
	%	%	%	%	%	%	%
<b>Customer Choice Program (QC)</b>							
Definitely interested	2	2	0	2	2	0	0
Very interested	4	4	0	5	4	0	0
Somewhat interested	18	18	0	15	22	0	0
Not very interested	24	24	0	26	21	0	0
Not at all interested	49	49	0	50	48	0	0
Don't Know	3	3	0	3	3	0	0

Read: 50% of Natural Gas or Piped Propane's Committed users are Not at all interested  
 Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)  
 Arrows indicate trends (skews under 10% not highlighted)  
 Numbers > 0.5 rounded up  
 \*\* Base size too small for analysis  
 ^ Weighted base

How is the energy source of interest rated in comparison to its competitors?

Among Committed users, Natural Gas has the biggest lead over competitors on being good for home heating, being reliable during winter conditions and being a fuel that residents are proud to use



Base n<sup>^</sup> = 168 (Committed users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Committed users. Natural Gas or Piped Propane performs better than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

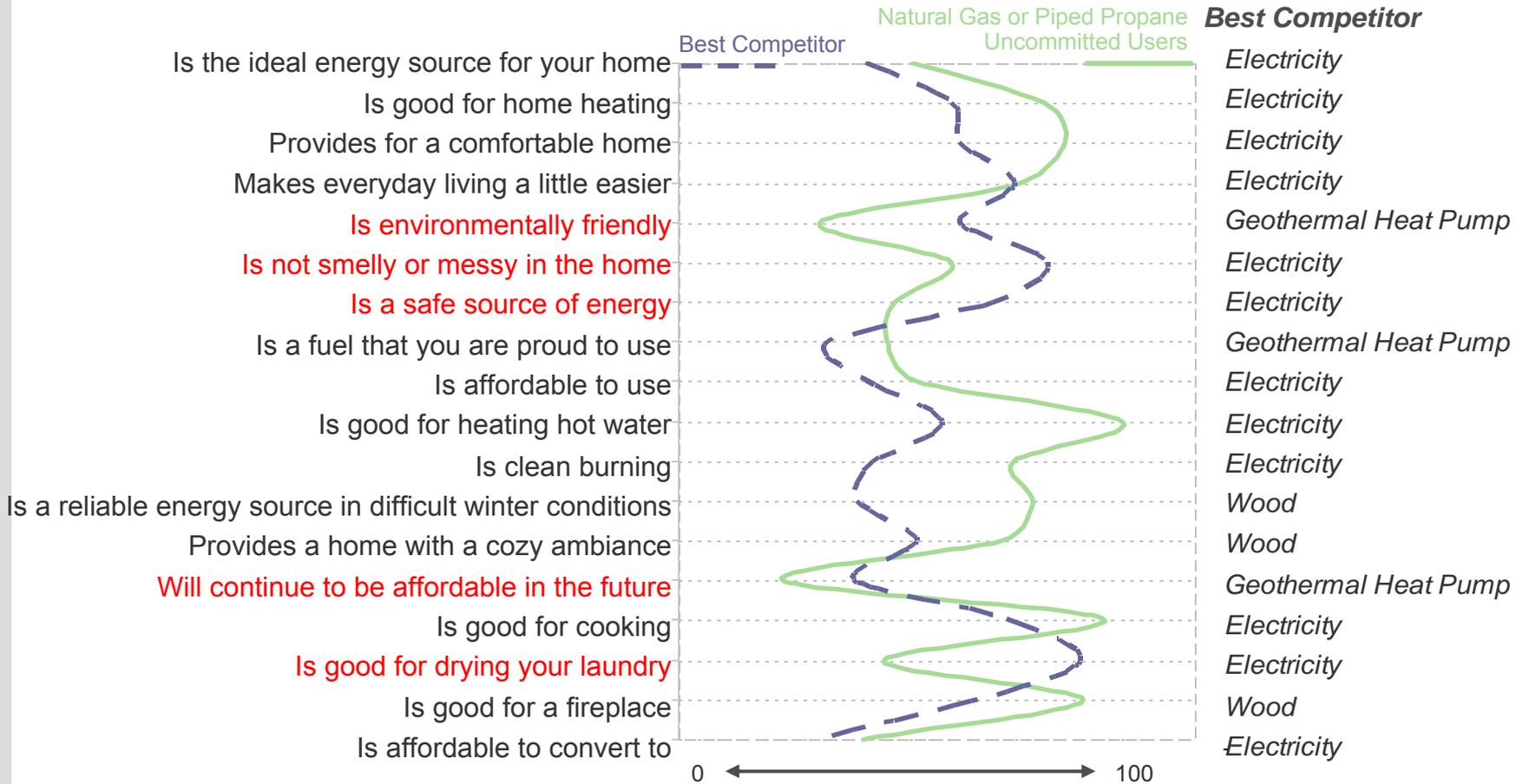
^ Weighted base

Vancouver Island



How is the energy source of interest rated in comparison to its competitors?

Relative to other energy sources, Natural Gas performs weakly on being good for drying laundry, being environmentally friendly, not being smelly or messy and being safe



Base n<sup>^</sup> = 194 (Uncommitted users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Uncommitted users. Natural Gas or Piped Propane performs better than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

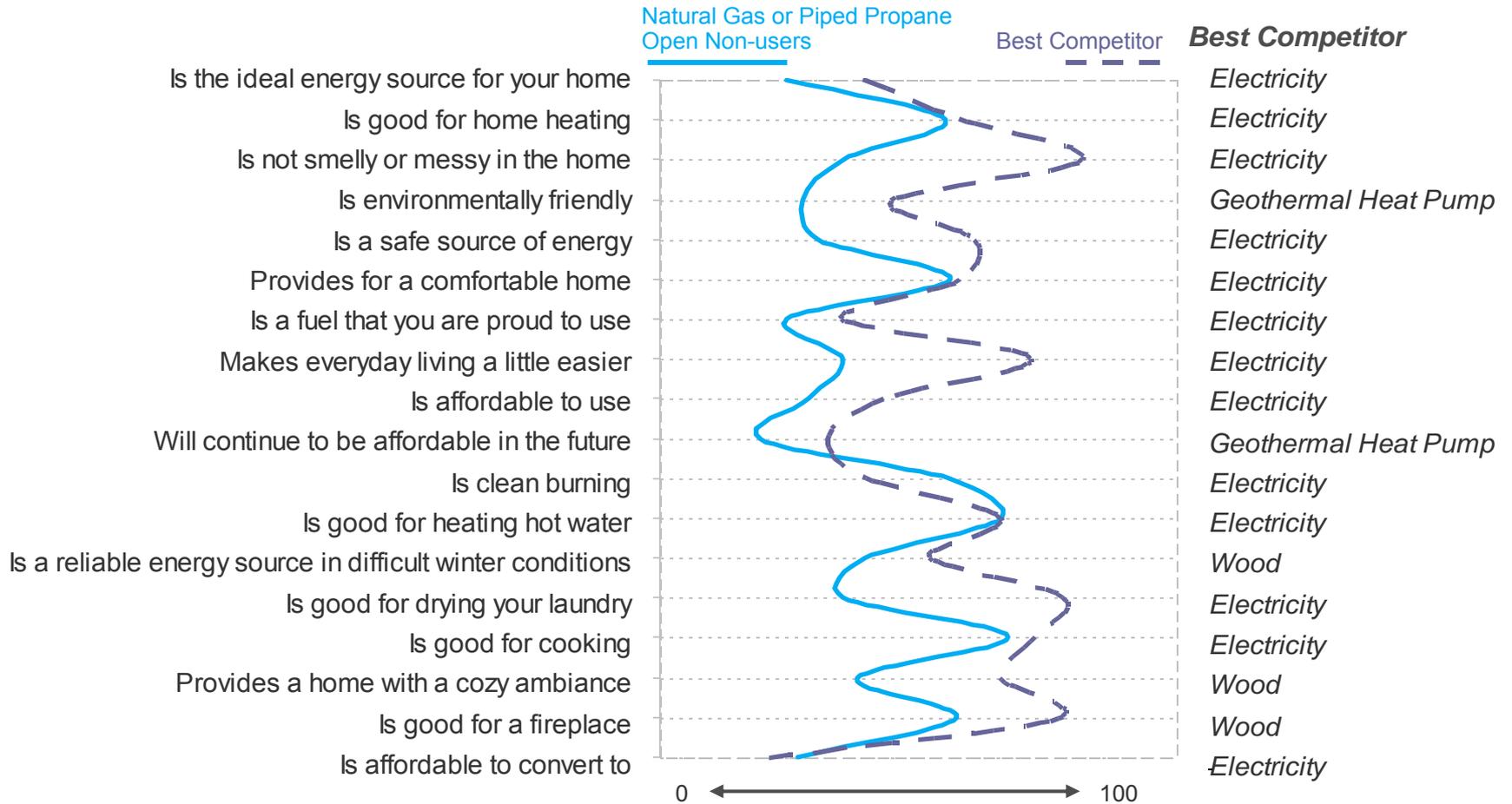
^ Weighted base

Vancouver Island



How is the energy source of interest rated in comparison to its competitors?

Open non-users generally rate Natural Gas below competitor energy sources, except on being clean burning and affordable to convert to



Base n<sup>^</sup> = 149 (Open non-users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Open non-users. Natural Gas or Piped Propane performs worse than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

^ Weighted base

Vancouver Island



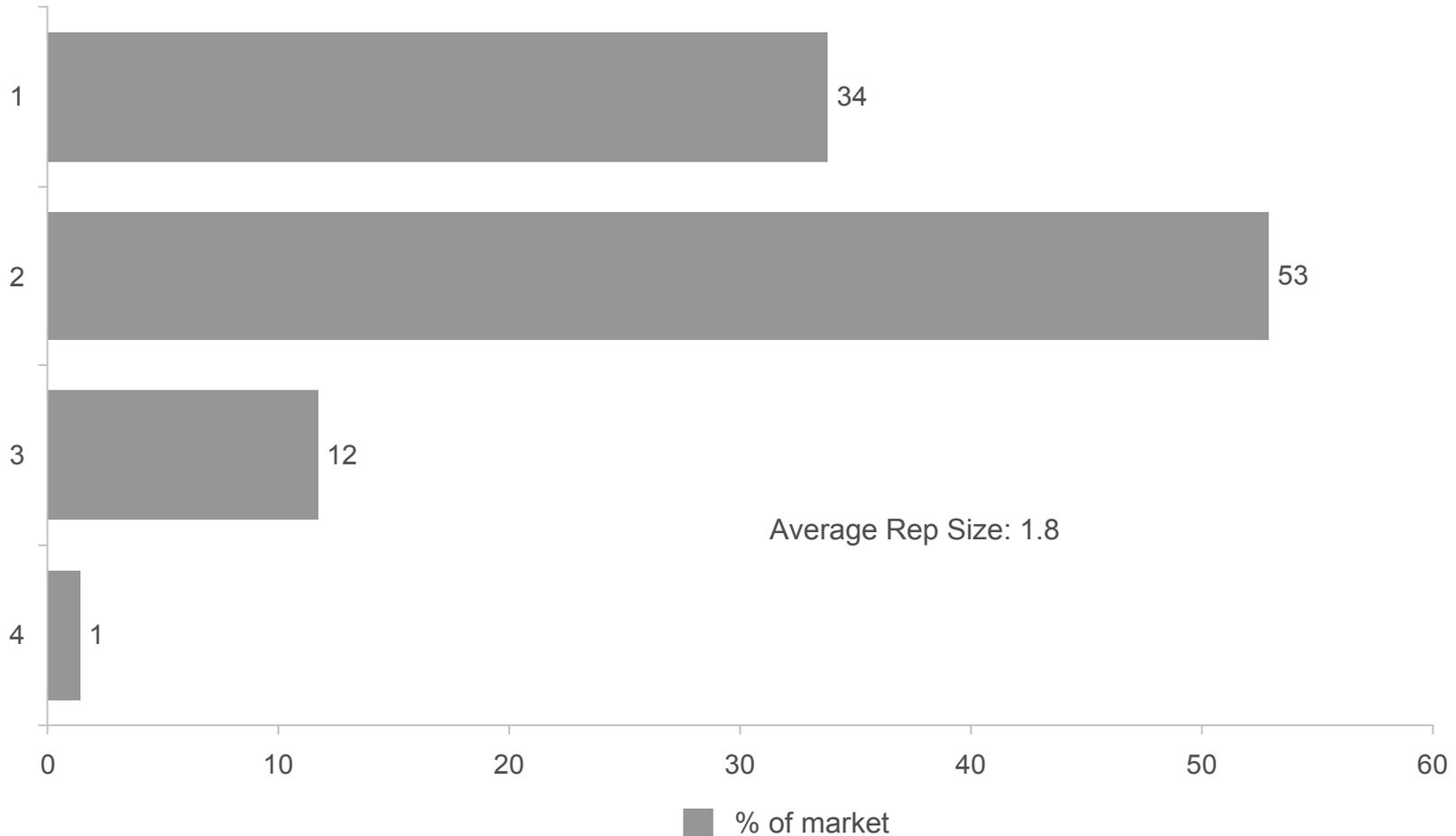
# BC Interior



What proportion of the market used a specific number of energy sources?

## The majority of BC Interior residents make use of two energy sources to heat their home

### Repertoire size

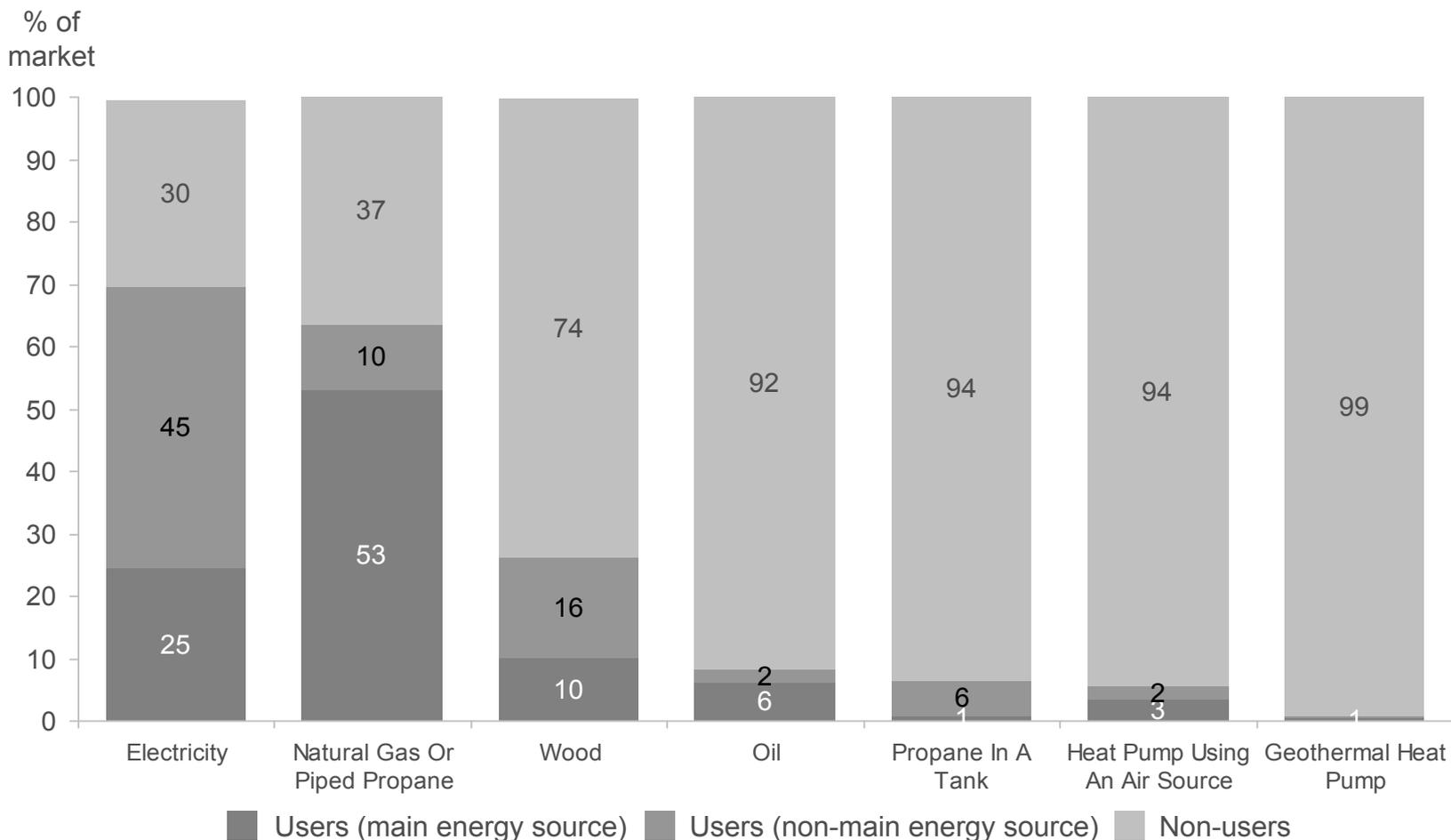


Base  $n^{\wedge}$  = 685  
Read: 34% of the market has used only one energy source  
Note: Numbers > 0.5 rounded up  
 $\wedge$  Weighted base

BC Interior

What proportion of the market uses each energy source as its main energy source?

# Natural Gas has the highest proportion of main energy source usage, with a large lead over Electricity



Base n<sup>^</sup> = 685  
 Read: 53% of the market uses Natural Gas or Piped Propane as their main energy source  
 Note: Numbers >0.5 rounded up  
 ^ Weighted base size

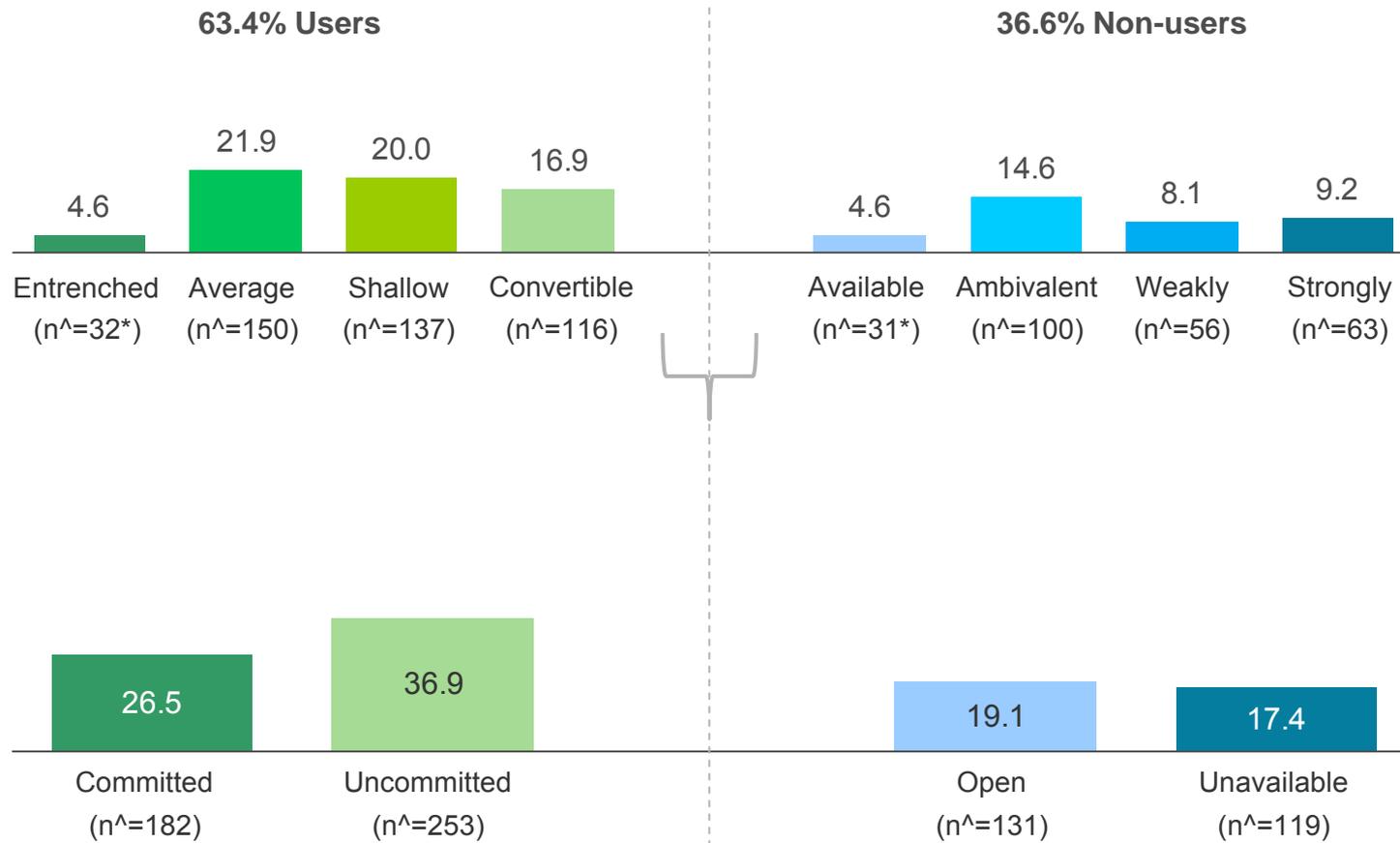
**BC Interior**

# Energy Source Performance Measurement

How do the energy sources perform?

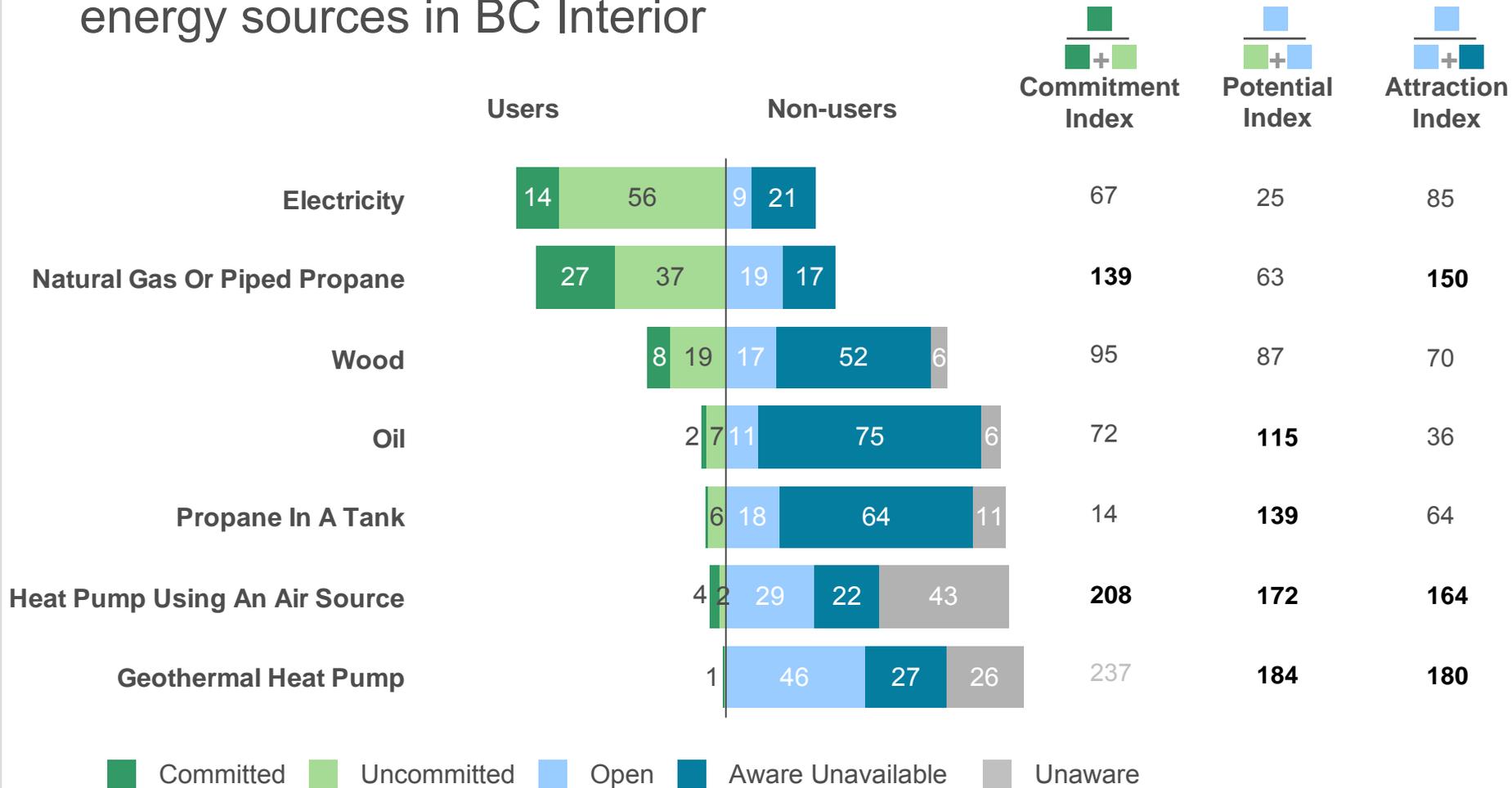
# What do the energy source of interest's Conversion Model™ segments look like? Quite a high proportion of Uncommitted users are looking at alternative energy sources to switch to (Convertible)

Natural Gas Or Piped Propane's Conversion Model™ Line



Base n^ = 685  
 Read: 4.6% of the market is Entrenched to Natural Gas Or Piped Propane  
 Note: \* Caution: Small base size  
 ^ Weighted base

# Natural Gas has the best Commitment among its users and Attraction among its non-users when compared to conventional energy sources in BC Interior



Base n^ = 685

Read: For Natural Gas Or Piped Propane: 27% of the market is Committed, 37% is Uncommitted, 19% is Available, 17% is Unavailable and 0% has not heard of the energy source. Commitment is 39 points above the market average, Potential is 37 points below the average and Attraction is 50 points above the average

Note: Numbers > 0.5 rounded up

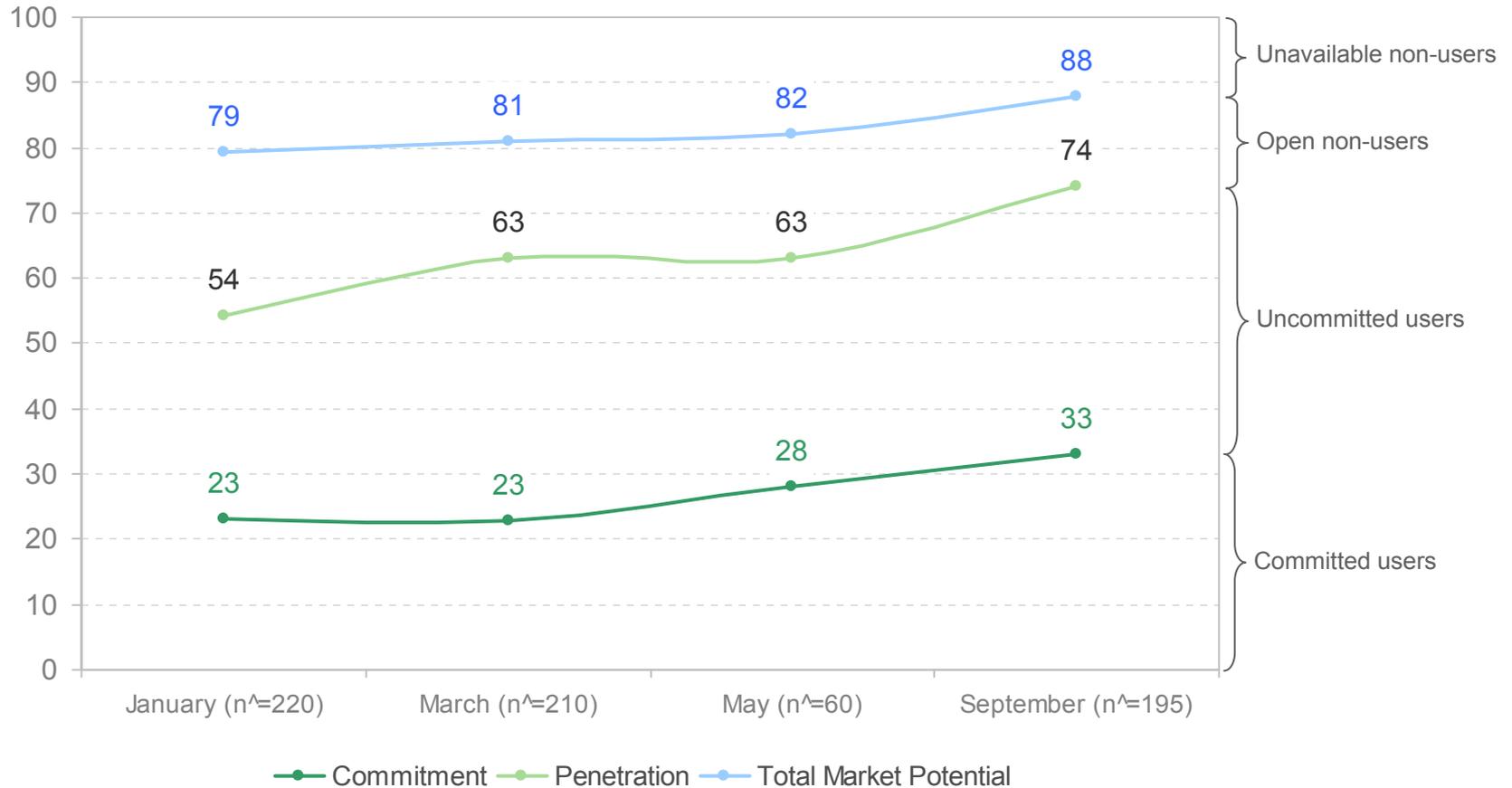
^ Weighted base

Indices with n<30 in the denominator greyed out

Indices over 115 bolded for emphasis

**BC Interior**

# Commitment, penetration and market potential in BC Interior all seem to be on an upward trend during 2008



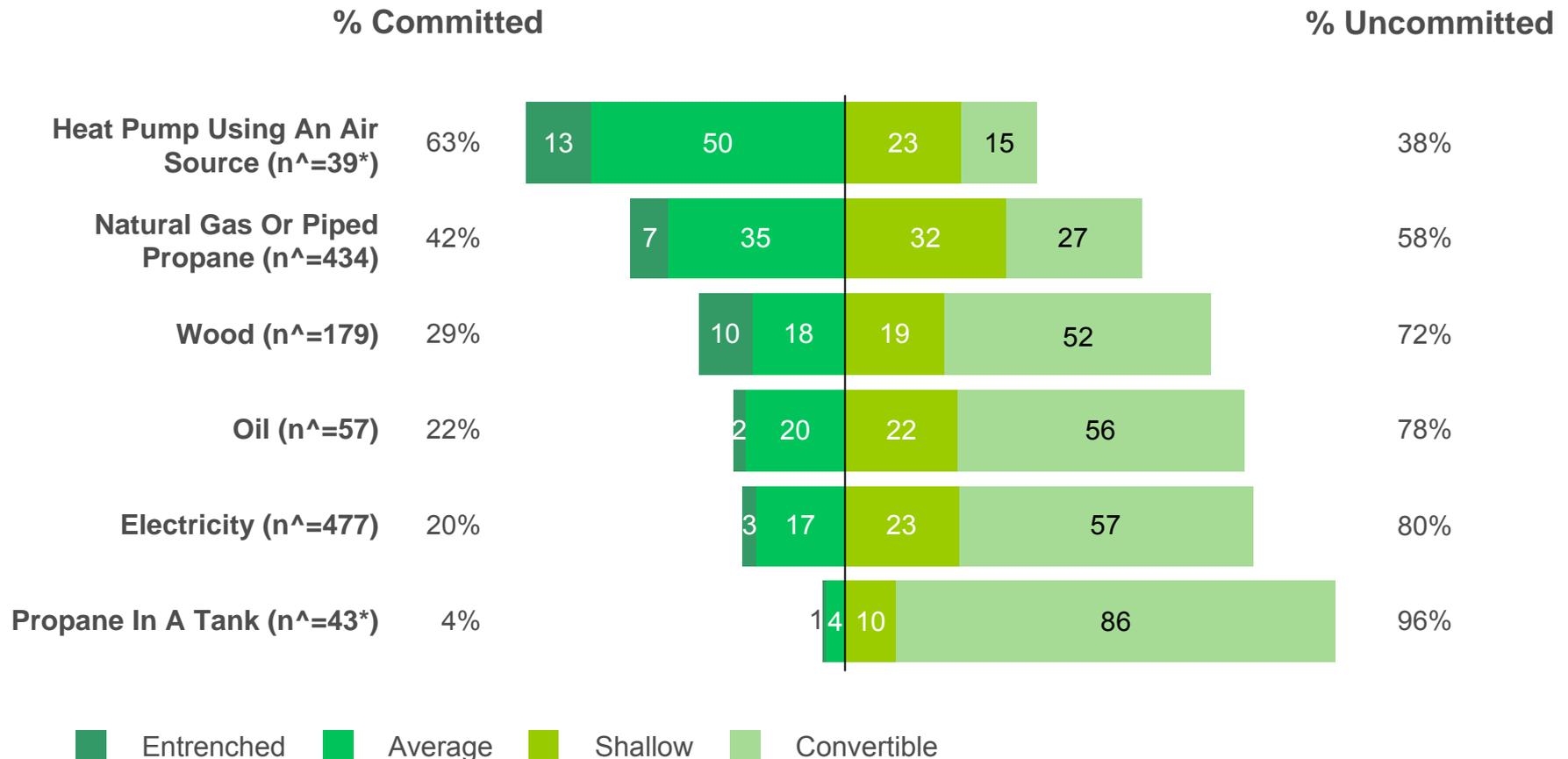
Read: For Natural Gas or Piped Propane: 33% of the market was Committed in September, 74% used the energy source and 88% either used the energy source or were Open to using the energy source

Note: Numbers > 0.5 rounded up

^ Weighted base

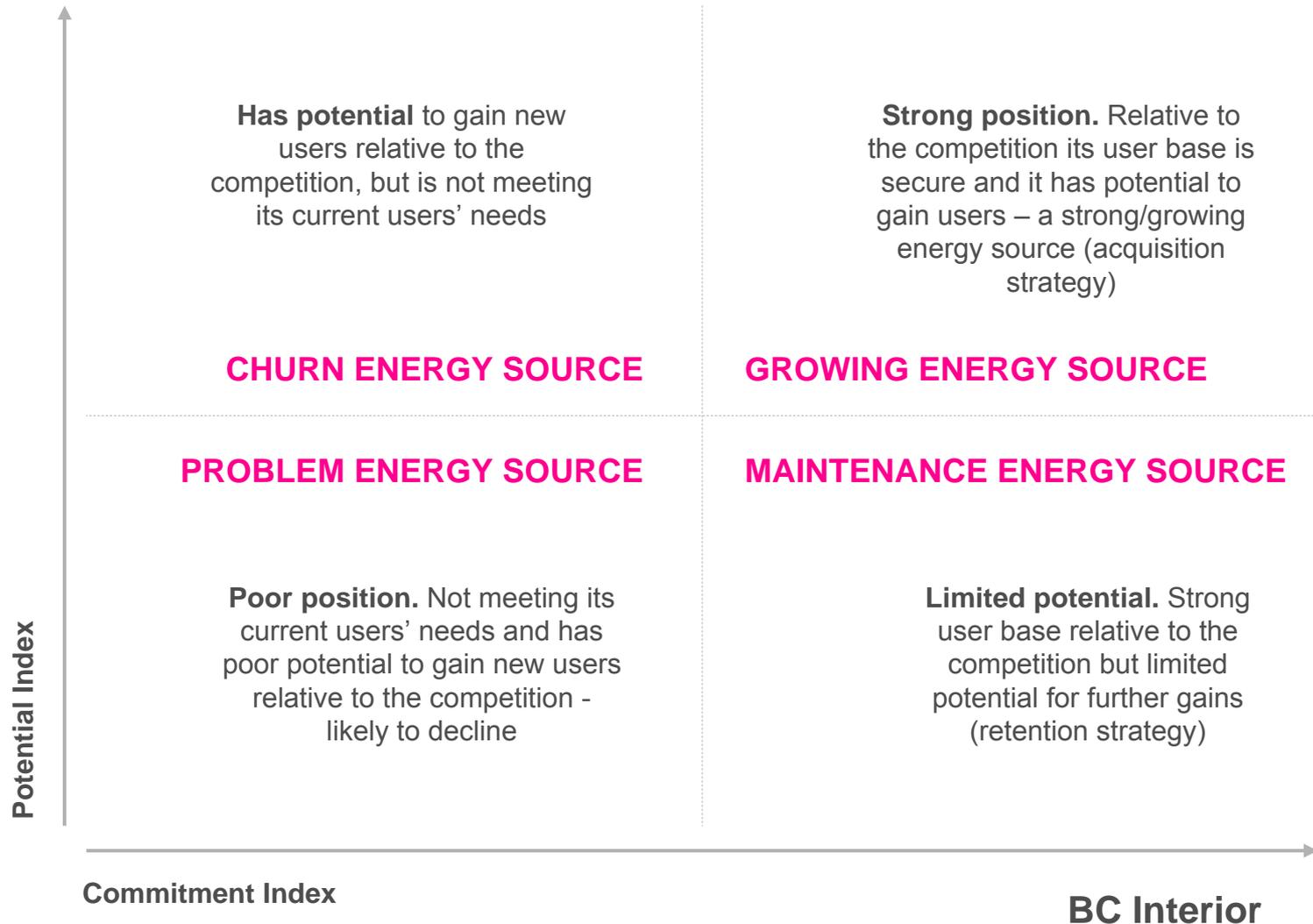
BC Interior

Natural Gas has the second highest level of Commitment among users, with the aspirational Heat Pump Using an Air Source occupying the top position



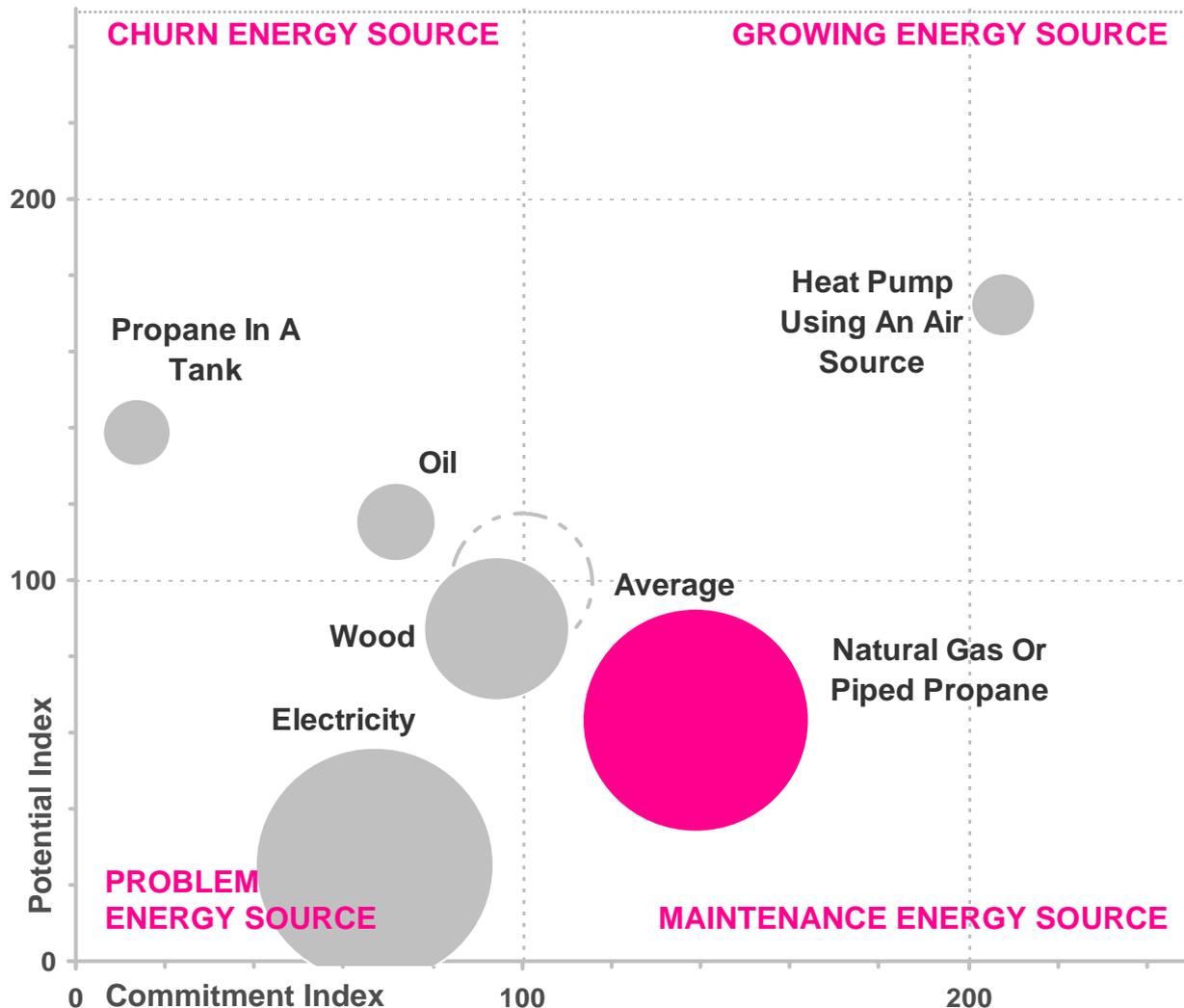
Read: For Electricity: 3% of its users are Entrenched, 17% are Average, 23% are Shallow and 57% are Convertible  
 Note: Energy sources with less than 30 users not shown  
 Numbers > 0.5 rounded up  
 \* Caution: Small base size  
 ^ Weighted base

# Conversion Model™ Map



Note:  $Commitment = Committed\ users / total\ users$   
 $Potential = Open\ non-users / (Uncommitted\ users + Open\ non-users)$

While Natural Gas has a strong Committed user base, future gains are limited due to its large size in the market



Note: Bubble size represents penetration energy sources with n<30 in denominator of Commitment or Potential Index not shown  
 Commitment = Committed users/total users  
 Potential = Open non-users/(Uncommitted users + Open non-users)

BC Interior

# Power in the Mind vs. Power in the Market

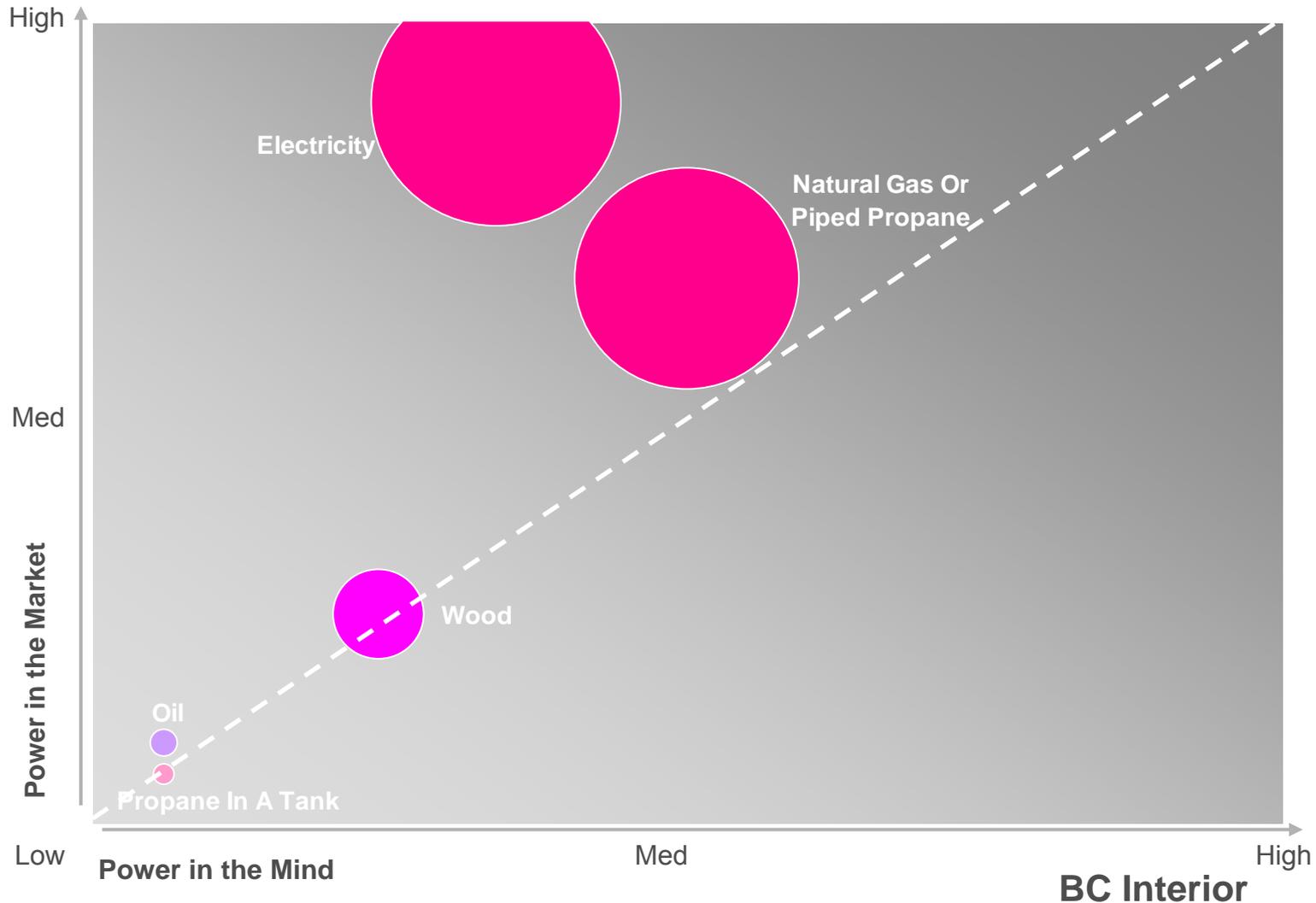
## POWER IN THE MIND

The share your energy source would achieve if buyers acted purely on their preferences  
*(In the absence of any market factors)*

## POWER IN THE MARKET

The share your energy source would get if market forces were the only factors at play  
*(If consumers have equal preference for all energy sources)*

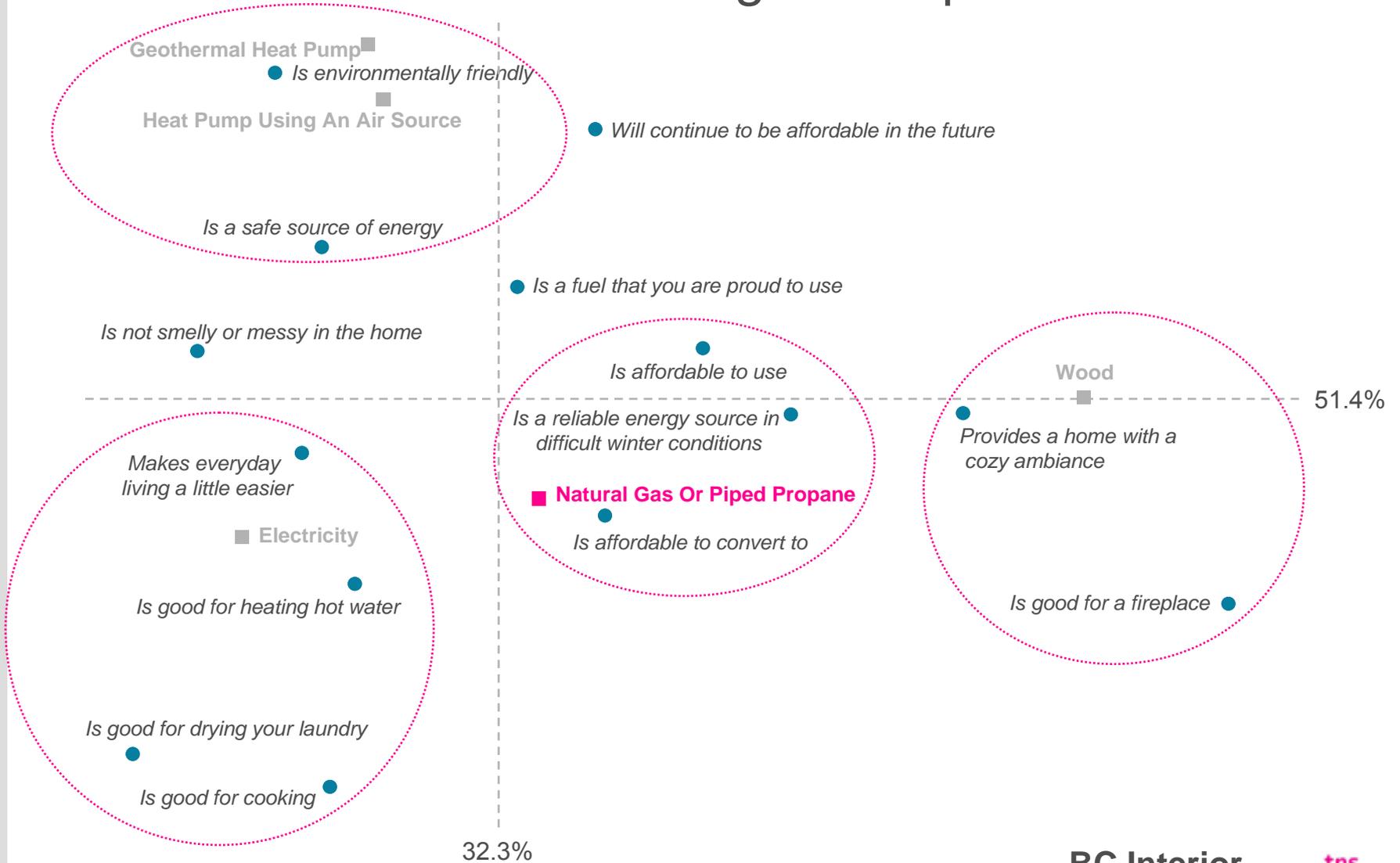
Electricity and Natural Gas both rely on market factors such as price, accessibility and ease of use to drive usage



Note: Bubble size represents penetration

Perceptual map

# Natural Gas is perceived to be an affordable energy source that is reliable during winter periods



Note: Percent explained by axes 1 and 2 = 83.7%  
 Inertia = 0.19  
 Energy sources and attributes with correlation < 0.50 not shown

BC Interior

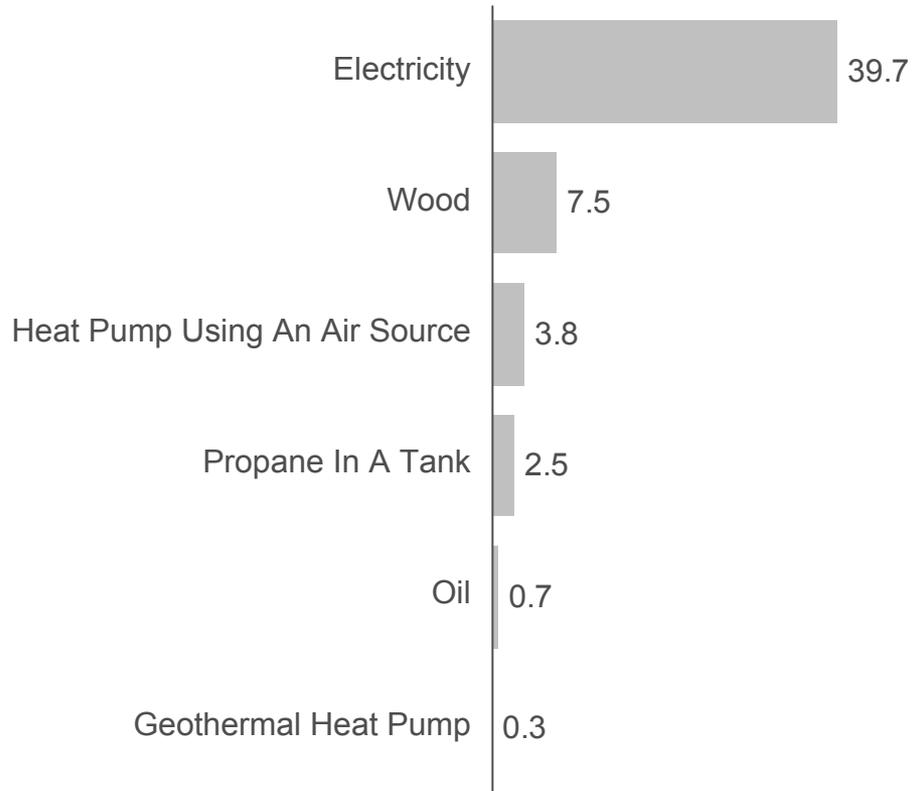
# Explaining Energy Source Performance

How does my energy source perform?

Which energy sources does the energy source of interest share users with?

## Dual usage is highest for Electricity

**DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use**



Base n^ = 677 (total market)

Read: 39.7% of the market uses both Natural Gas Or Piped Propane and Electricity

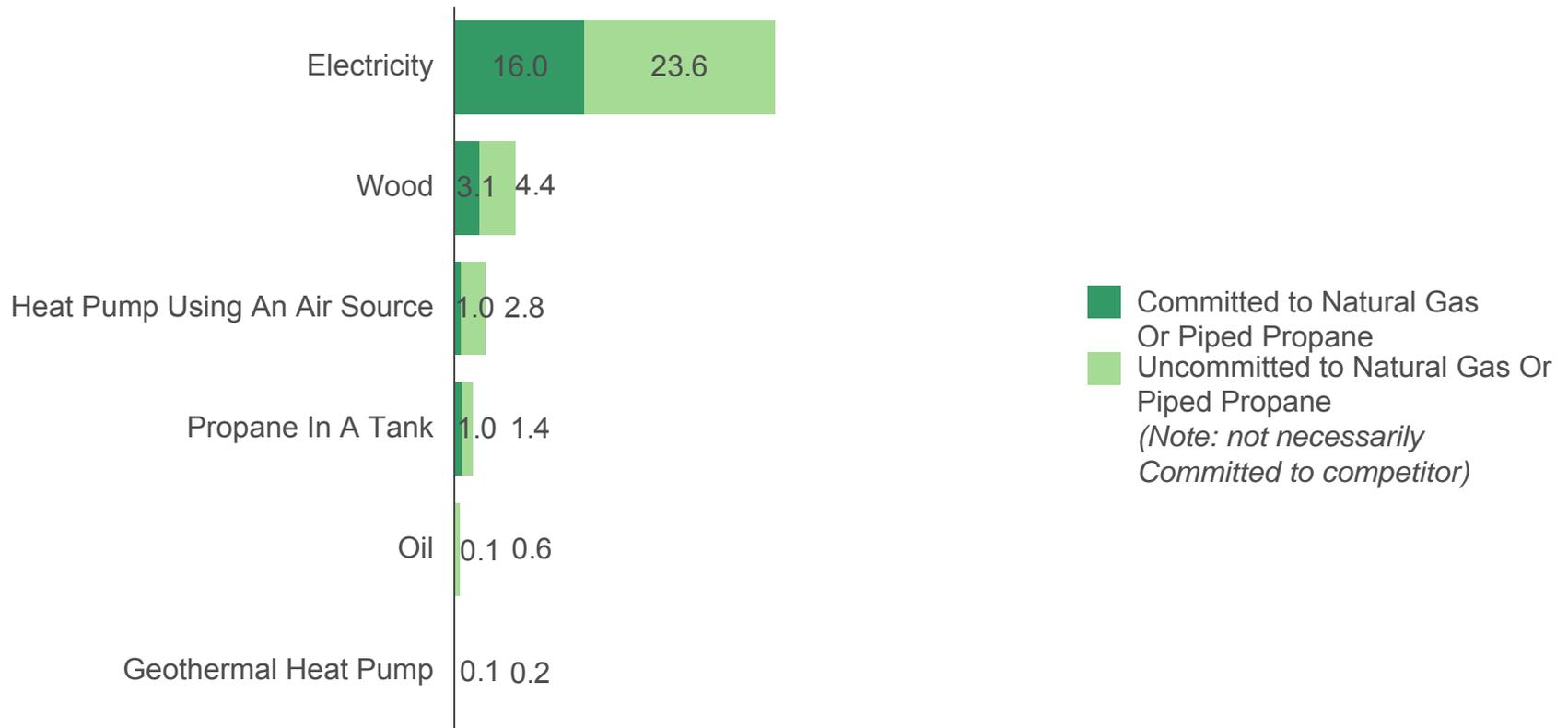
Note: Energy sources ranked on total dual users  
Percentages are based on the total market

**BC Interior**

Are dual users Committed or Uncommitted to the energy source of interest?

## A quarter of the market are dual users of Electricity and Natural Gas and are Uncommitted to Natural Gas

### DUAL USERS: Other energy sources that Natural Gas Or Piped Propane's customers use



Base  $n^{\wedge}$  = 677 (total market)

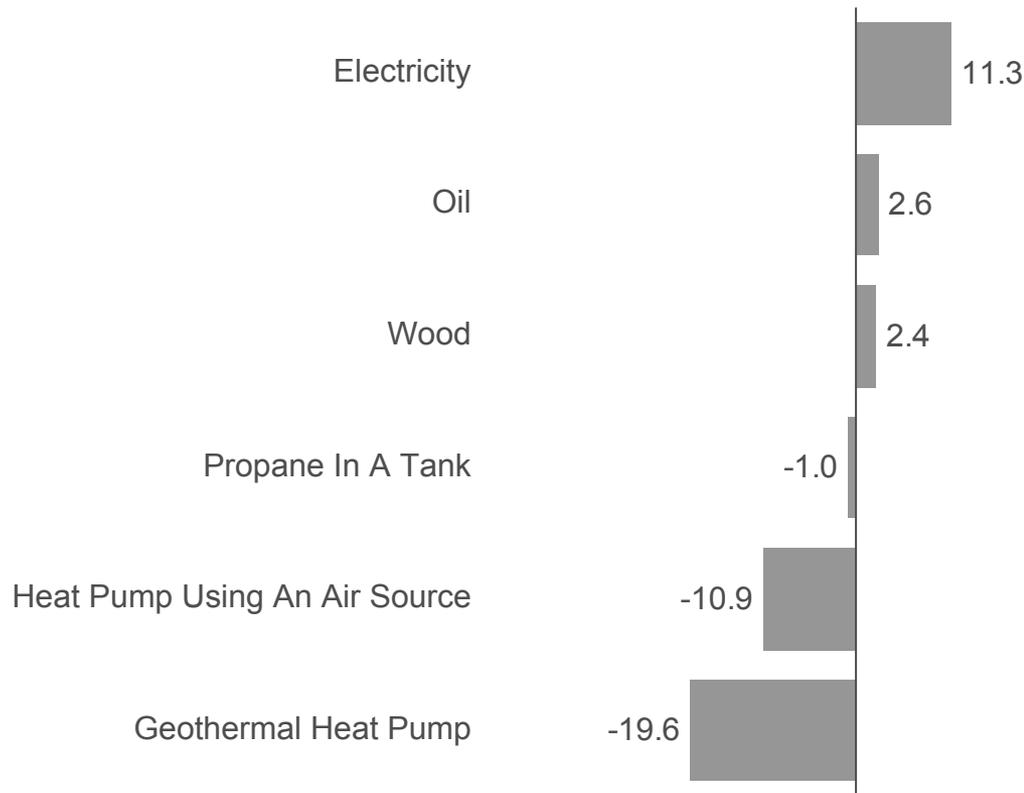
Read: 16.0% of the market uses both Natural Gas Or Piped Propane Electricity, and is Committed to Natural Gas Or Piped Propane. 23.6% is either Committed to Electricity or Uncommitted to both

Note: Energy sources ranked on total dual users  
Percentages are based on the total market

BC Interior

# Electricity offers the greatest opportunity for potential gains among BC Interior residents

## POTENTIAL FUTURE NET GAIN/LOSS for Natural Gas Or Piped Propane



Note: **Positive score** = potential to gain users from competitor  
**Negative score** = net potential to lose users to competitor

Base n^ = 677 (total market)  
Read: Natural Gas Or Piped Propane stands to potentially gain 11.3 % of the market from Electricity overall  
Note: This chart does not include dual users  
Energy sources ranked on potential net gain/loss  
Percentages are based on the total market

# Half of Uncommitted users and Open non-users are unhappy with the energy sources they currently use (Seekers)

	Total (n <sup>^</sup> =678) %	Users (n <sup>^</sup> =431) %	Non-users (n <sup>^</sup> =247) %	Users		Non-users	
				Committed (n <sup>^</sup> =180) %	Uncommitted (n <sup>^</sup> =251) %	Open (n <sup>^</sup> =129) %	Unavailable (n <sup>^</sup> =118) %
Single Minded	47	49	43	91 ←	19	26	→ 61
Passive	1	1	2	1	1	0	3
Shared	20	22	16	8	→ 32	18	14
Seekers	30	27	35	0	→ 46	52 ←	18
Uninvolved	3	2	4	0	3	4	4

**States of Mind™**

Single-minded	Passive	Shared	Seekers	Uninvolved
Committed to one energy source	Committed to one energy source, but care less about energy source choice (habitual users)	Like more than one energy source	Care which energy source they use, but unhappy with their energy source(s)	Don't care which energy source they use
↓	↓	↓	↓	↓
<i>Maintenance:</i> Identify and reinforce key drivers of Commitment	<i>Maintenance:</i> Keep the energy source top of mind and reinforce key drivers	<i>Maximize share:</i> Understand why competitors appeal to determine what can be done to gain more share	<i>Solve problems:</i> Identify and address areas of dissatisfaction	<i>Accept:</i> Low involvement and focus on market factors (price, distribution, etc.), or investigate ways to increase involvement

Read: 91% of Natural Gas Or Piped Propane's Committed users are Single-minded in their Commitment  
 Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)  
 Arrows indicate trends (skews under 10% not highlighted)  
 Numbers > 0.5 rounded up  
 ^ Weighted base

# Open non-users are more likely than Unavailable non-users to be using Wood and Oil to heat their home

Natural Gas Or Piped Propane	Total (n <sup>^</sup> =685) %	Users		Users		Non-users	
		Users (n <sup>^</sup> =434) %	Non-users (n <sup>^</sup> =250) %	Committed (n <sup>^</sup> =182) %	Uncommitted (n <sup>^</sup> =253) %	Open (n <sup>^</sup> =131) %	Unavailable (n <sup>^</sup> =119) %
<b>Usage</b>							
Electricity	70	63	83	59	66	84	81
Natural Gas Or Piped Propane	63	100	0	100	100	0	0
Wood	26	15	45	11	19	54	36
Oil	8	1	20	0	2	26	14
Propane In A Tank	6	4	10	4	5	14	6
Heat Pump Using An Air Source	6	5	7	3	6	5	10
Geothermal Heat Pump	1	1	2	1	1	2	1
<b>Average repertoire size</b>	<b>1.8</b>	<b>1.9</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>1.8</b>	<b>1.5</b>



Read: 59% of Natural Gas Or Piped Propane's Committed users have also used Electricity

Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)

Arrows indicate trends (skews under 10% not highlighted)

Numbers > 0.5 rounded up

^ Weighted base

**BC Interior**

# The majority of BC Interior Natural Gas users are not interested in the Customer Choice Program

Natural Gas or Piped Propane	Total (n <sup>^</sup> =279) %	Users (n <sup>^</sup> =279) %	Non-users (n <sup>^</sup> =0 <sup>**</sup> ) %	Users		Non-users	
				Committed	Uncommitted	Open	Unavailable
				(n <sup>^</sup> =126) %	(n <sup>^</sup> =153) %	(n <sup>^</sup> =0 <sup>**</sup> ) %	(n <sup>^</sup> =0 <sup>**</sup> ) %
<b>Customer Choice Program (QC)</b>							
Definitely interested	2	2	0	2	2	0	0
Very interested	3	3	0	2	4	0	0
Somewhat interested	20	20	0	17	23	0	0
Not very interested	18	18	0	15	20	0	0
Not at all interested	56	56	0	63	51	0	0
Don't Know	1	1	0	2	0	0	0

Read: 17% of Natural Gas or Piped Propane's Committed users are Somewhat interested

Note: Blocked figures indicate significance at a 95% confidence interval (Committed vs. Uncommitted; Open vs. Unavailable)

Arrows indicate trends (skews under 10% not highlighted)

Numbers > 0.5 rounded up

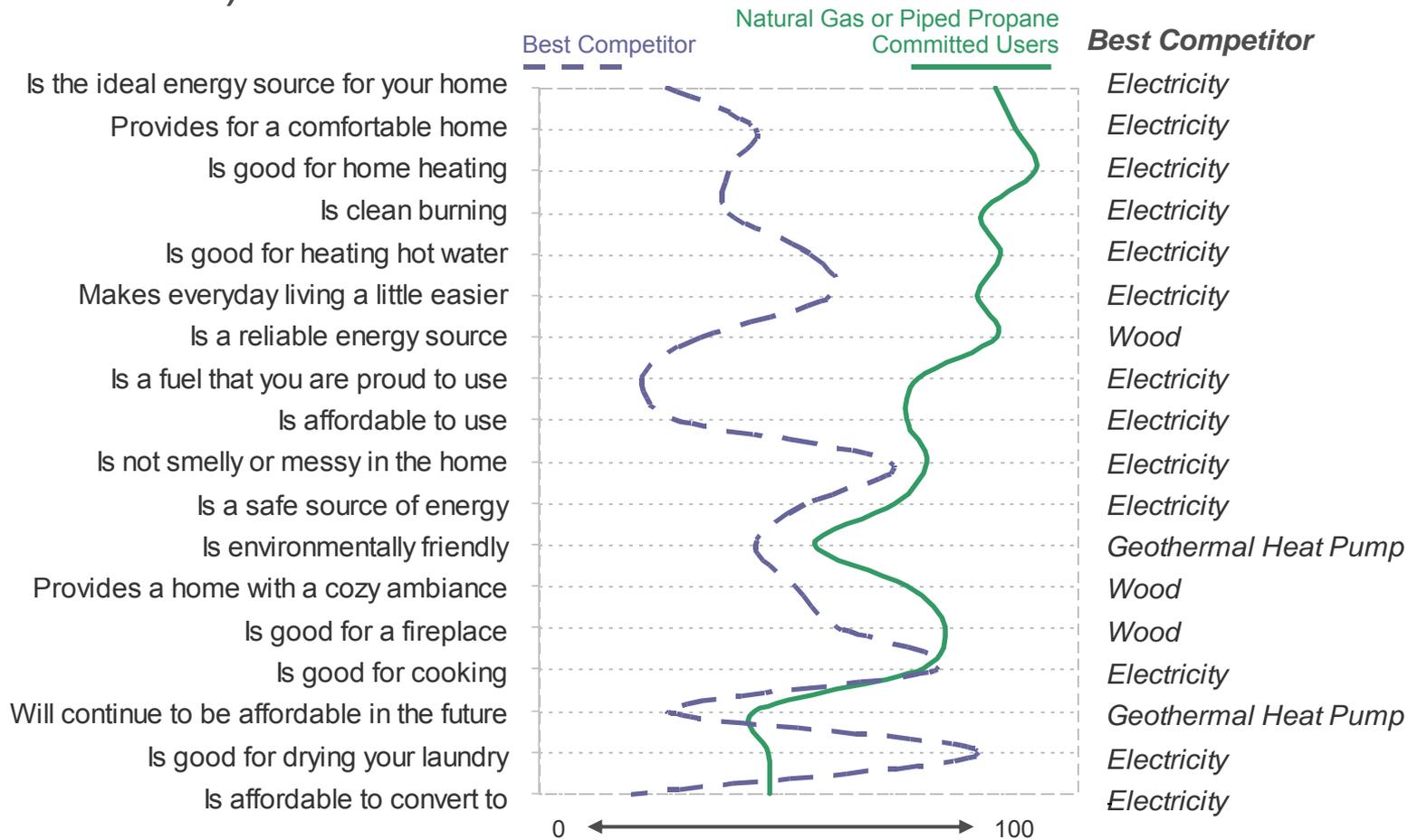
\*\* Base size too small for analysis

^ Weighted base

BC Interior

How is the energy source of interest rated in comparison to its competitors?

Natural Gas' only real weakness among Committed users is being good for drying laundry (although this is relatively less important for residents)



Base n^ = 182 (Committed users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Committed users. Natural Gas or Piped Propane performs better than its best competitor in this area

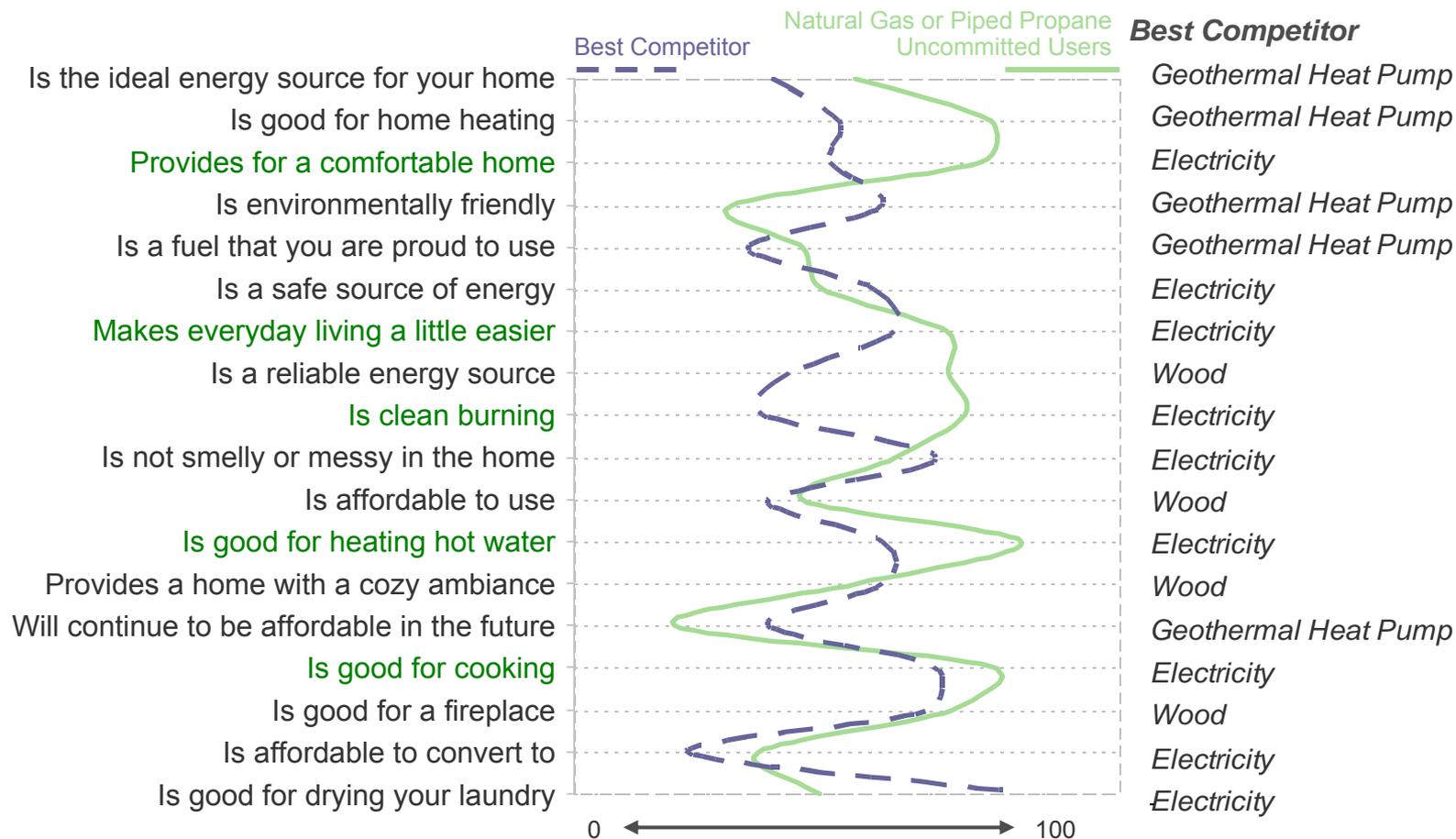
Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

^ Weighted base

BC Interior

How is the energy source of interest rated in comparison to its competitors?

Uncommitted users rate Natural Gas high on being good for home heating, providing a comfortable home, being reliable and clean burning



Base n^ = 253(Uncommitted users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Uncommitted users. Natural Gas or Piped Propane performs better than its best competitor in this area

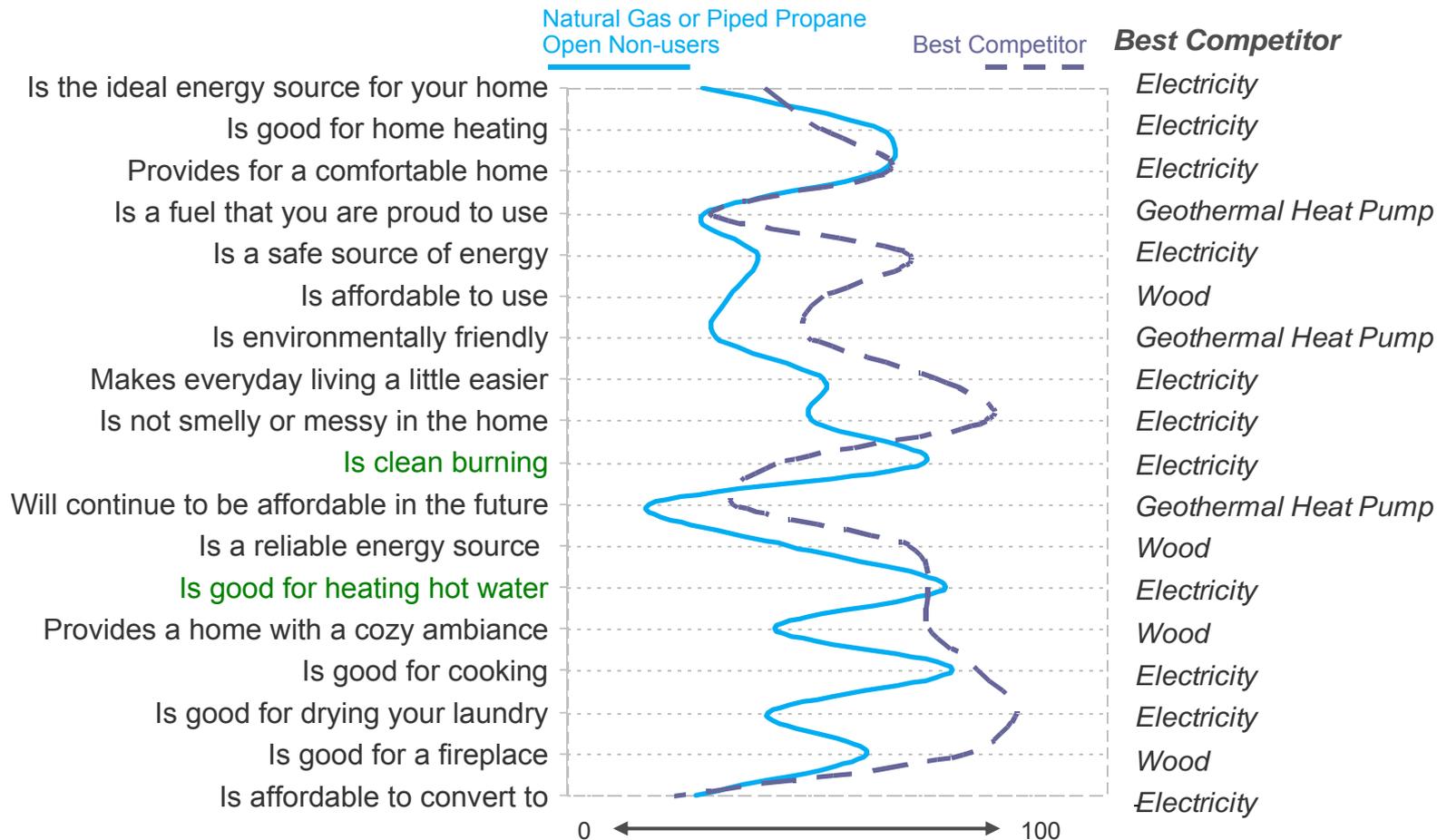
Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

^ Weighted base

BC Interior

How is the energy source of interest rated in comparison to its competitors?

# Strengths among Open non-users relate to being good for home heating and being clean burning



Base n<sup>^</sup> = 131 (Open non-users)

Read: "Is the ideal energy source for your home" is the most strongly associated with Ideal energy source among Open non-users. Natural Gas or Piped Propane performs worse than its best competitor in this area

Note: Attributes ranked using Jaccard Analysis with Ideal energy source as the dependent variable

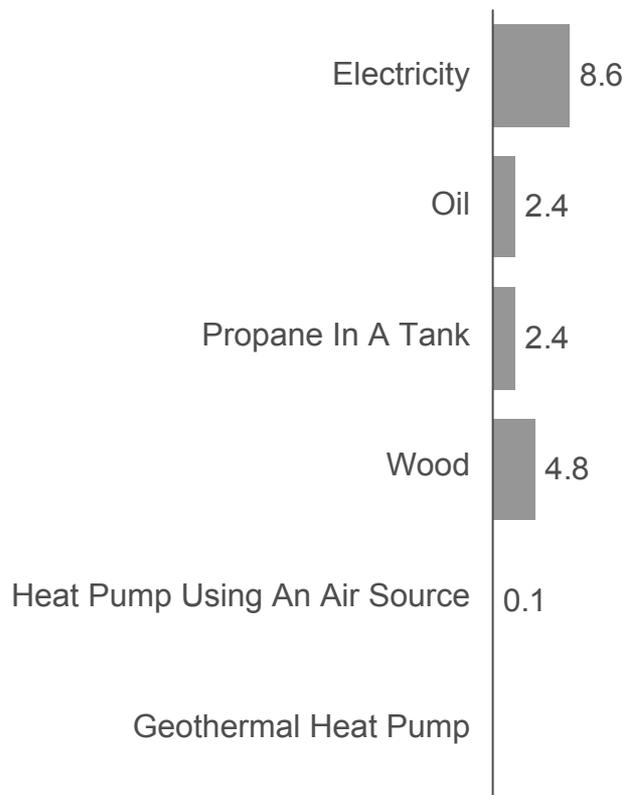
^ Weighted base

BC Interior

# Appendix

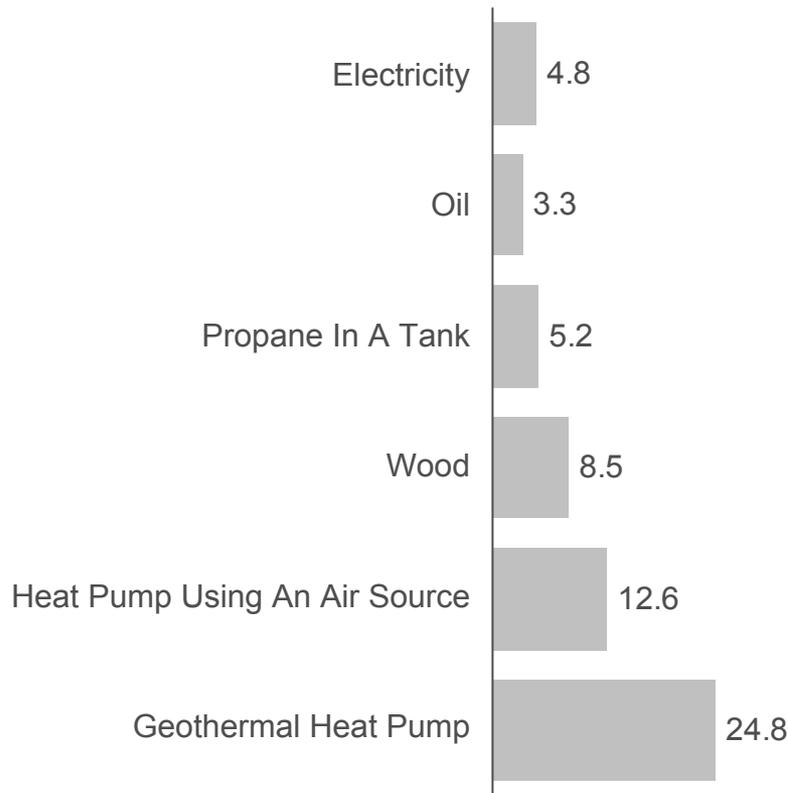


## POTENTIAL FUTURE OPPORTUNITIES: Energy sources that Natural Gas Or Piped Propane could gain users from



Base n^ = 2893 (total market)  
Read: Natural Gas Or Piped Propane could potentially gain 8.6% of the market from Electricity  
Note: This chart does not include dual users  
Energy sources ranked on potential net gain/loss  
Percentages are based on the total market

## POTENTIAL FUTURE THREATS: Energy sources that attract users of Natural Gas Or Piped Propane



Base n^ = 2893 (total market)

Read: Natural Gas Or Piped Propane could potentially lose 4.8% of the market to Electricity

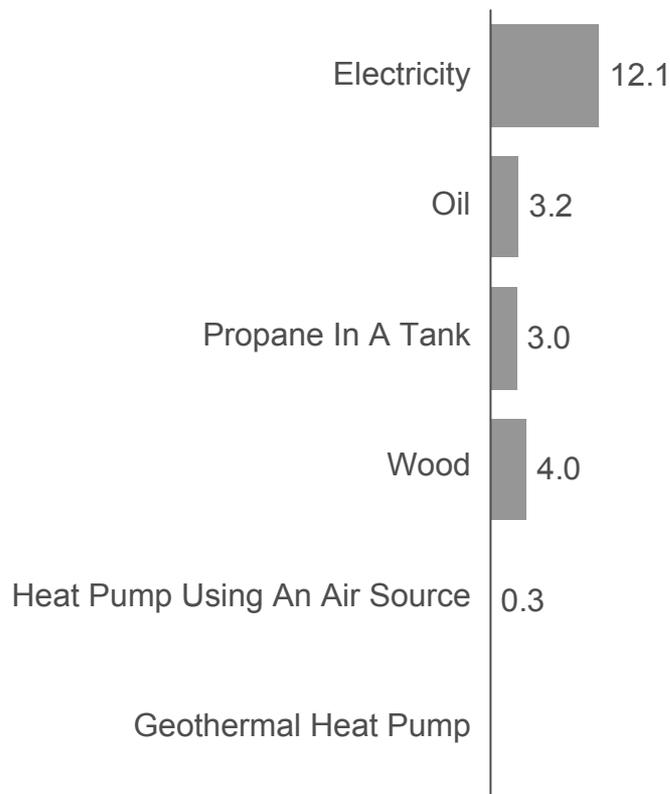
Note: This chart does not include dual users

Energy sources ranked on potential net gain/loss

Percentages are based on the total market

Lower Mainland

## POTENTIAL FUTURE OPPORTUNITIES: Energy sources that Natural Gas Or Piped Propane could gain users from



Base  $n^{\wedge}$  = 670 (total market)

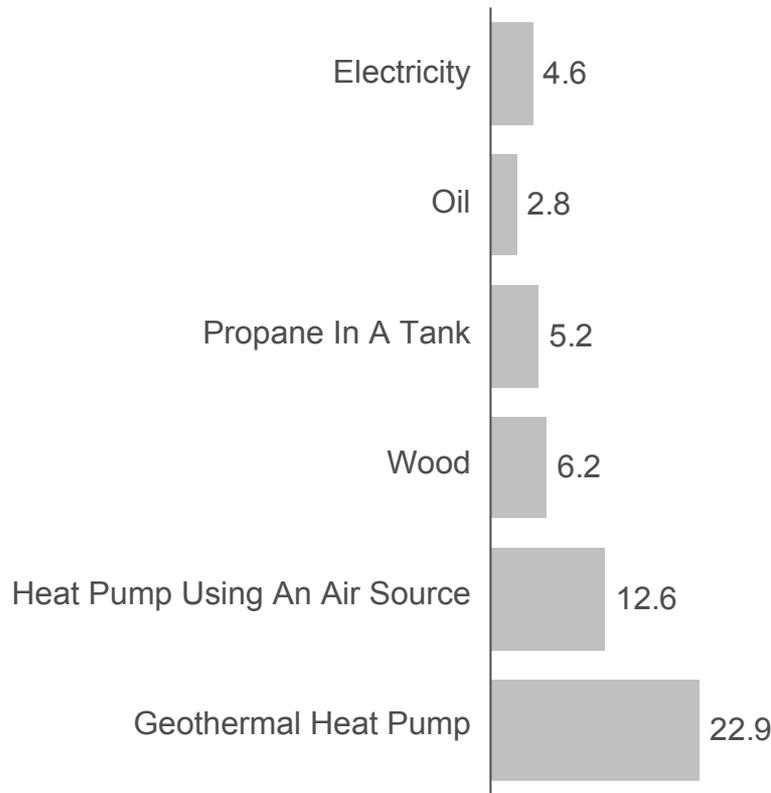
Read: Natural Gas Or Piped Propane could potentially gain 12.1% of the market from Electricity

Note: This chart does not include dual users

Energy sources ranked on potential net gain/loss

Percentages are based on the total market

## POTENTIAL FUTURE THREATS: Energy sources that attract users of Natural Gas Or Piped Propane



Base  $n^{\wedge}$  = 670 (total market)

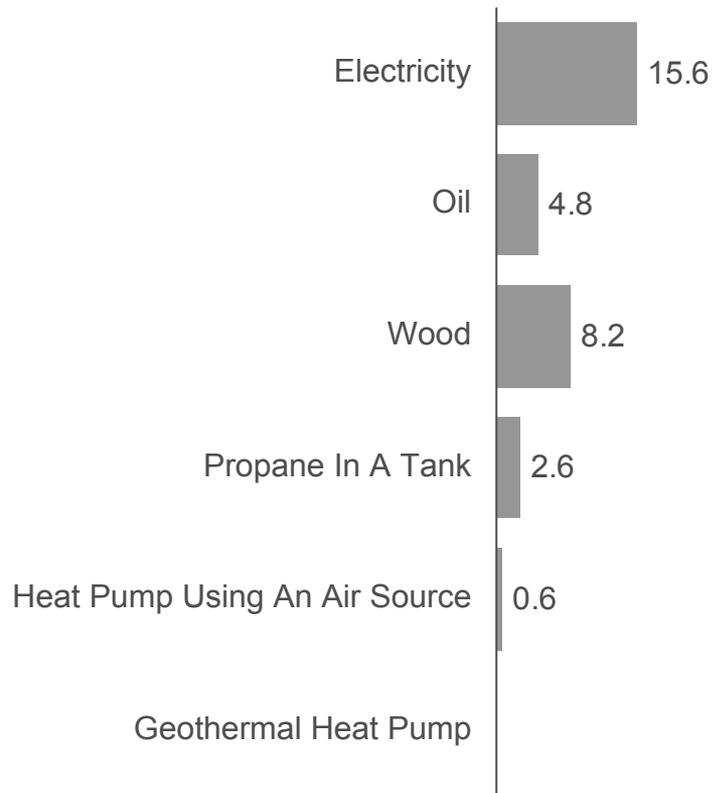
Read: Natural Gas Or Piped Propane could potentially lose 4.6 % of the market to Electricity

Note: This chart does not include dual users

Energy sources ranked on potential net gain/loss

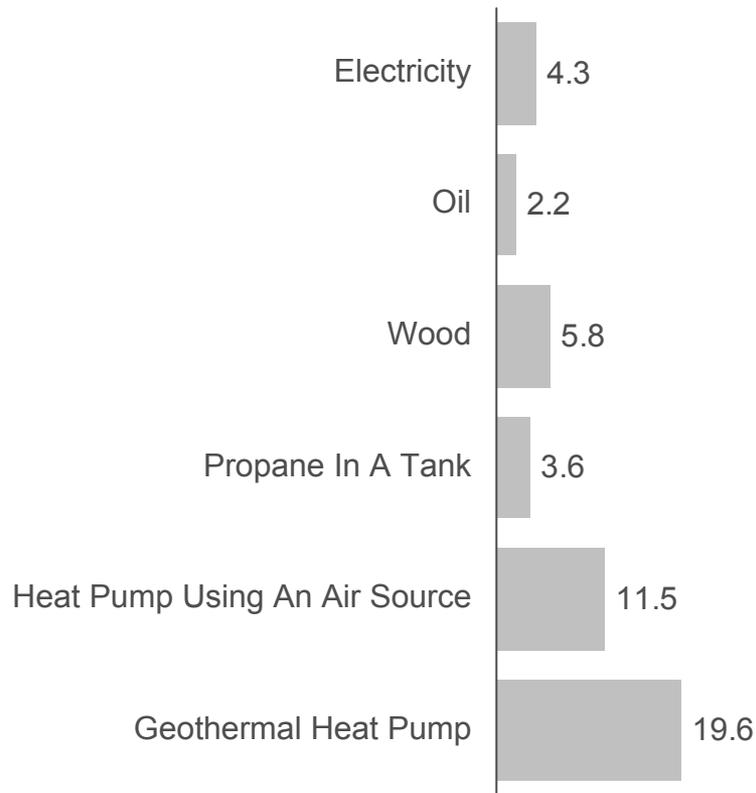
Percentages are based on the total market

## POTENTIAL FUTURE OPPORTUNITIES: Energy sources that Natural Gas Or Piped Propane could gain users from



Base  $n^{\wedge}$  = 677 (total market)  
Read: Natural Gas Or Piped Propane could potentially gain 15.6% of the market from Electricity  
Note: This chart does not include dual users  
Energy sources ranked on potential net gain/loss  
Percentages are based on the total market

## POTENTIAL FUTURE THREATS: Energy sources that attract users of Natural Gas Or Piped Propane



Base  $n^{\wedge}$  = 677(total market)

Read: Natural Gas Or Piped Propane could potentially lose 4.3% of the market to Electricity

Note: This chart does not include dual users

Energy sources ranked on potential net gain/loss

Percentages are based on the total market

# Where does States of Mind™ fit in? \*

Commitment is brand-focused

(It looks at each brand)

States of Mind™ is respondent-focused

(It looks at each respondent)

	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Etc. Etc. Etc.
Respondent 1	Entrenched	Shallow	Ambivalent	Unavailable	Unavailable	And so on ...
Respondent 2	Shallow	Shallow	Ambivalent	Available	Unavailable	And so on ...
Respondent 3	Shallow	Unavailable	Unavailable	Unavailable	Available	And so on ...
Respondent 4	...	...	...	...	And so on	

1. *Commitment* is a measure of the strength of the relationship a person has with a specific brand
2. *States of Mind™* is an additional segmentation that stems from Conversion Model™ and tells us how people relate to and operate within a given market
3. *States of Mind™* segments tell us how people feel about *the market as a whole* (rather than specific brands)
4. Key inputs to determining a person's 'state of mind' are the Conversion Model™ output (i.e. Commitment), importance of brand choice in the category and the number of brands they use

\*This slide is best viewed in Slide Show mode (F5) in order to see animated explanation

# Calculating the market averages

Example:	Users	Committed	Uncommitted	Open	Aware Unav	Unaware Unav	Total
<b>Brand A</b>	<b>692</b>	242	450	78	87	9	866
<b>Brand B</b>	<b>234</b>	69	165	242	346	52	866
...							
<b>Brand n</b>	<b>61</b>	0	61	69	17	719	866
Totals	<b>2720</b>	624	2096	1256	1983	1845	

**Average Committed =** 

$$= \frac{\text{Sum of all Committed users (across all brands in the market)}}{\text{Sum of all users (across all brands in the market)}}$$

$$= \frac{(\text{Committed brand A users}) + (\text{Committed brand B users}) + \dots + (\text{Committed brand n users})}{(\text{Users of brand A}) + (\text{users of brand B}) + \dots + (\text{users of brand n})}$$

Example:  $(242 + 69 + \dots + 0) / (692 + 234 + \dots + 61) = 624 / 2720 = \mathbf{0.23}$

**Average Potential =** 

$$= \frac{\text{Sum of all Open (across all brands in the market)}}{(\text{Sum of all Uncommitted}) + (\text{sum of all Open})}$$

Example:  $(78 + 242 + \dots + 69) / ((450 + 165 + \dots + 61) + (78 + 242 + \dots + 69)) = 1256 / 3352 = \mathbf{0.37}$

**Average Attraction =** 

$$= \frac{\text{Sum of all Open (across all brands in the market)}}{\text{Sum of all aware non-users (across all brands in the market)}}$$

Example:  $(78 + 242 + \dots + 69) / (165 + 588 + \dots + 86) = 1256 / 3239 = \mathbf{0.39}$

Note: The averages are weighted averages, so that small brands don't skew the average

**Attachment 17.1**

---



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 243

**79.0 Reference: Thermal Energy**

**Exhibit B-9, BCUC IR 1.158.1**

- 79.1 As FEU has chosen to undertake thermal energy activities which may or may not be activities of a regulated utility, please explain what policies, procedures and controls exist within FEU to ensure that potential thermal activities costs are appropriately allocated to and recovered from either regulated, isolated ratepayers or general natural gas ratepayers? Specifically explain how FEU ensures that there are no conflicts of interests, incentive compensation conflict or lack of understanding amongst employees of how to separate these costs?

**Response:**

All of the thermal energy activities that the FEU are choosing to undertake are regulated activities. The thermal energy activities of the FEU are being provided within the regulated public utility (FEI) as another distinct class of service. The Thermal Energy Services Deferral Account and overhead cost allocation methodology is described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU employee timesheet completion practices have been put in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. The FEU's employees are trained and advised on how to complete time sheets and code expenses appropriately to ensure that costs are captured and allocated appropriately among the classes of service. The FEU do not have incentive compensation policies that would cause a conflict of interest for the appropriate allocation of costs between service classes.

- 79.2 What formal communication was made to all i)marketing departments and ii)accounting personal to clarify the difference between a regulated and non-regulated activity to ensure that thermal activities costs are appropriately accounted for? Please provide copies of this formal communication.

**Response:**

No formal communication was made to marketing or accounting personnel regarding regulated and non-regulated activity with regard to FEI's thermal energy services, nor was one necessary. The thermal energy activities of the FEU are being provided within the regulated public utility (FEI) as another distinct class of service and are regulated activities. Any time spent by FEU's employees would only be an allocation between two regulated classes of services. The FEU's



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 244

employee timesheet completion practices have been put in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility

- 79.3 What modifications were made to internal controls processes including job descriptions and process descriptions to ensure that potential alternative energy costs are identified, isolated, documented and properly accounted for at FEU? Please provide copies of these document both before and after these adjustments have been made.

**Response:**

No modifications to internal control processes, job or process descriptions were required to identify, isolate and ensure that alternative energy costs are properly accounted for. The FEU employee timesheet completion practices were already in place which ensures the appropriate allocation of costs between classes of service within the regulated public utility.

- 79.4 Is the documented cost allocation policy for thermal activities similar to that of transfer pricing methodologies? Please provide a copy of the formal FEU thermal activities cost allocation policies and procedures and describe when and who drafted, reviewed and approved this policy.

**Response:**

There is no documented policy within the FEU that governs cost allocation between classes of service (such as thermal energy services) within the regulated public utility, nor does the FEU believe one is needed. The cost allocation methodology for thermal energy activities that already exists is similar to the transfer pricing methodology except that the transfer pricing methodology applies to services provided by a regulated utility to a non-regulated affiliated company; thermal energy activities are regulated activities. The Thermal Energy Services Deferral Account and overhead cost allocation methodology described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU's employee timesheet completion practices are in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. Timesheet completion practices did not have to change to accommodate thermal energy services within the FEU for direct charges.



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 10

**4. Reference: FEU Response to BCUC IR No. 164.2 and 164.3**  
**Exhibit B-1, Application, Appendix G**  
**Thermal Energy Projects – Tracking Costs**

FEU states: *"When a Thermal Energy Services project is identified, the FEU create a new Internal Order ("IO") with a separate IO number."*

**Request:**

4.1 At what stage of development is a TES project typically "identified"?

**Response:**

A thermal energy services project is typically identified and assigned an internal order ("IO") number once an internal preliminary assessment has indicated that the project could be viable and customers wish to have project specific development proceed in order to confirm and/or refine preliminary findings and advance the project further.

4.2 How are TES development costs tracked before the IO is created?

**Response:**

As per Order G-141-09 approving the FEI 2010-2011 RRA, thermal energy services development costs are tracked as general business development and recorded in the Thermal Energy Services Deferral Account prior to creation of a project specific internal order.

4.3 How are the following TES costs tracked:

(a) sales and marketing that does not relate to a specific project,

**Response:**

Please refer to the response to Corix IR 2.4.2



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 11

- (b) costs for TES projects that are a mix of TES and other FEU services,

**Response:**

A thermal energy project would not be a mix of FEU services. A thermal energy project delivers thermal energy services and costs for development of the project are charged to the Thermal Energy Services Deferral Account. A customer, however, may receive a mix of FEU service classes for which costs would be tracked separately. Where natural gas is supplied as a fuel to the thermal energy project, the costs for natural gas service are tracked separately.

If an FEU employee works on both classes of service, as with any timesheet allocation, employees are expected to attribute their time on their timesheets to the best of their ability exercising considered judgement in cases where there is overlap in specific tasks.

Please also refer to the response to Corix IR 2.4.2 for additional detail regarding thermal energy services costs.

- (c) development of the TES business concept generally within FEU, and

**Response:**

Please refer to the response to Corix IR 2.4.2.

- (d) FEU work on provincial and federal government policy and legislative initiatives?

**Response:**

The FEU do not work directly on federal government policy and initiatives with respect to thermal energy projects. This may occur indirectly through membership and participation in national associations by the FEU staff; these costs are fully allocated to the Thermal Energy Services Deferral Account.

With respect to provincial government policy and initiatives, the vast majority of FEU work is associated with advancing the position of FEU as an energy solutions provider for the province with emphasis on natural gas. The extent to which this may support the thermal energy class of



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 12

service is captured through the allocation of some of the time of the FEU executive to the deferral account (please refer to FEU's response to BCUC IR 2.80.2).

If work specific to thermal energy initiatives with the province is required, then the FEU staff fully allocated to the Thermal Energy Services Deferral Account will handle the work even though natural gas is often a key component of the thermal energy initiative.

- 4.4 What direction does FEU give to its employees on the tracking of TES time and effort? Provide copies of any written directions or policies that relate to the tracking of TES time and effort.

**Response:**

The development of thermal energy services projects as a regulated class of service within FEI may draw on the expertise of various employees. FEI staff code their time on timesheets in relation to their effort for the Companies' various offerings or classes of service. While there are existing time sheet policies and standards within the FEU that govern this, there is no written direction or policy specific to the thermal energy class of service, nor does the FEU believe that one is required. Please see FEU's responses to BCUC IRs 2.79.1 and 2.79.4 which describe the direction and policies for employees related to tracking time and effort on the thermal energy class of service.

- 4.5 Would the Director of Thermal Energy Services identified in the response to 164.3 call upon the service, advice or information of others in the FEU organization (director or higher) in relation to the development of the TES business generally, or on specific projects? Explain how that might occur and be managed.

**Response:**

FEIs thermal energy services and natural gas services are classes of service within a single regulated public utility. As such, the Director has the ability to draw on resources of other senior management which is reflected in the \$0.5 million administration cost allocation to thermal energy services. These are costs that would be otherwise recovered from natural gas

**Attachment 17.4**

---

Fortis Group of Companies of BC  
Communications & Public Affairs Plan  
2010/2011  
25 August 2010

## Table of Contents

<b>Executive Summary</b> .....	<b>5</b>
<b>Business Objectives and Strategic Priorities</b> .....	<b>11</b>
<b>Communications Directions in 2010/2011</b> .....	<b>12</b>
<b>a) Communications Framework</b> .....	<b>12</b>
<b>b) Key Brand Message</b> .....	<b>13</b>
<b>c) Brand Pillars</b> .....	<b>13</b>
<b>d) Support Points</b> .....	<b>16</b>
<b>e) Success Stories &amp; Examples</b> .....	<b>16</b>
<b>f) Desired Outcomes</b> .....	<b>17</b>
<b>g) Brand Language</b> .....	<b>18</b>
Design and Tagline .....	18
<b>h) Channels</b> .....	<b>18</b>
1) Reach .....	19
Mass Media .....	19
2) Efficiency.....	19
Social Media.....	19
Traditional Media.....	20
3) Effectiveness.....	20
Strategic Partnerships.....	20
Presentations .....	20
Events.....	21
<b>j) Stakeholder Assessment</b> .....	<b>22</b>
Terasen.....	22
Residential & Commercial Customers:.....	22
Builders, Developers & HVAC Contractors.....	23
Policy Makers, Elected Officials & Bureaucrats .....	23
Provincial: .....	23
Municipal:.....	24
Industrial Operators & Engineers .....	24
Vehicle Fleet Managers .....	24
First Nations & Other Key NGO Opinion Leaders .....	25
Current & Prospective Employees .....	25
FortisBC.....	26
Residential and Commercial.....	26
First Nations.....	26
Current & Prospective Employees .....	27
<b>Lines of Business</b> .....	<b>28</b>
<b>Integrated Energy Solutions</b> .....	<b>28</b>
<b>Objectives</b> .....	<b>28</b>
<b>Stakeholder Strategies</b> .....	<b>28</b>
Builders, Developers and HVAC contractors .....	28
Policy Makers, Elected Officials (including First Nations) and Bureaucrats .....	28
General Public.....	29

<b>Tactics Summary and Budget</b> .....	<b>30</b>
<b>Evaluation</b> .....	<b>30</b>
<b>Natural Gas</b> .....	<b>31</b>
<b>Stakeholder Strategies</b> .....	<b>31</b>
Residential & Commercial Customers .....	31
Government Officials & Policy Makers.....	32
Municipal Return-To-Base Fleets.....	32
Natural Gas Transportation Companies .....	32
Media.....	33
Employees.....	33
<b>Tactics Summary and Budget</b> .....	<b>34</b>
<b>Evaluation</b> .....	<b>35</b>
<b>Electricity</b> .....	<b>36</b>
<b>Objectives</b> .....	<b>36</b>
<b>Stakeholder Strategies</b> .....	<b>36</b>
Residential & Commercial Customers .....	36
Government Officials & Policy Makers.....	37
First Nations.....	37
Media.....	37
<b>Employees</b> .....	<b>37</b>
<b>Tactics Summary and Budget</b> .....	<b>38</b>
<b>Evaluation</b> .....	<b>39</b>
<b>Energy Efficiency &amp; Conservation (Terasen)</b> .....	<b>40</b>
<b>Objectives</b> .....	<b>40</b>
<b>Stakeholder Strategies</b> .....	<b>40</b>
Customers .....	40
Builders, Developers & HVAC Contractors .....	41
<b>Tactics Summary and Budget</b> .....	<b>41</b>
<b>Evaluation</b> .....	<b>42</b>
<b>PowerSense (FortisBC)</b> .....	<b>43</b>
<b>Objectives</b> .....	<b>43</b>
<b>Stakeholder Strategies</b> .....	<b>43</b>
Customers .....	43
Contractor / Wholesaler .....	44
<b>Tactics Summary and Budget</b> .....	<b>45</b>
<b>Evaluation</b> .....	<b>46</b>
<b>Customer Care</b> .....	<b>47</b>
<b>Objectives:</b> .....	<b>47</b>
<b>Stakeholder Strategies</b> .....	<b>47</b>
Residential & Commercial Customers .....	47
Employees.....	48
Government Officials & Policy Makers.....	48
Media.....	49
<b>Tactics Summary and Budget for Terasen’s Customer Care Enhancement project</b>	<b>49</b>
<b>Evaluation</b> .....	<b>50</b>

<b>Objectives</b> .....	<b>51</b>
<b>Stakeholder Strategies - Safety</b> .....	<b>51</b>
Customers & General Public .....	51
Employees .....	52
<b>Stakeholder Strategies - Environmental Performance</b> .....	<b>52</b>
Customers & General Public .....	52
Government Officials & Policy Makers .....	53
<b>Stakeholder Strategies - Rates</b> .....	<b>53</b>
Residential & Commercial Customers .....	53
<b>Stakeholder Strategies - Community Investment and Employee Giving /</b>	
<b>Volunteerism</b> .....	<b>54</b>
Customers & General Public .....	54
Employees .....	55
<b>Tactics Summary and Budget</b> .....	<b>55</b>
<b>Evaluation</b> .....	<b>56</b>
<b>Employee Engagement</b> .....	<b>57</b>
<b>Stakeholder Strategies</b> .....	<b>57</b>
Employees .....	57
<b>Tactics Summary and Budget</b> .....	<b>58</b>
<b>Evaluation</b> .....	<b>59</b>

## **Executive Summary**

Terasen and Fortis BC have combined leadership and are about to announce a name change by early 2011. This marks a very exciting time for the combined organization and a significant opportunity to strengthen the brand.

This communications and public affairs plan outlines the most effective strategies to capitalize on this opportunity throughout 2010 and 2011. It focuses on leveraging combined leadership to reinforce priority messages and the most powerful ways to deliver them to the many stakeholder groups across the province.

The plan is divided into three main sections that are summarized below:

### **1. Business Objectives and Strategic Priorities**

The plan was developed to support the objectives and initiatives outlined in the combined July 20th strategic plan. The business priorities include:

- The integration of Terasen and FortisBC
- Renaming the companies with a common name
- Securing the base businesses (natural gas and electric)
- Integrating new products such as biogas and natural gas for transportation, and
- Growth – organic, energy infrastructure (capital projects) and acquisition

In addition, there will continue to be an ongoing corporate focus on customer care, community involvement, safety, operational excellence, employee retention and attraction and corporate social responsibility. All of the above will help differentiate the organization and provide a competitive advantage against other energy providers.

### **2. Communications Directions**

An integrated strategy was established for all communications and public affairs initiatives in 2010/11. This section reflects the umbrella brand positioning and overall process for developing communications that are unified and working towards a common goal.

#### **Communications Framework**

All communication budgets and projects will be centralized in each company in order to maximize the impact of all resources and align all activities by:

- a) focusing the message and drawing upon the relevant support points;
- b) crafting the means in which the content is packaged (brand language) to align with the brand
- c) strategically selecting the method by which the content is transmitted or delivered to the receiver

- d) addressing the perceptions and biases of the stakeholder that might affect interpretation
- e) identifying the desired actions or outcomes to be attained
- f) evaluating the resulting effectiveness or contribution towards corporate strategic goals

### **Key Brand Message**

The single most important part of this strategy is the key brand message. All of the brand analyses have funneled down into the following statement that will be communicated in all communication efforts:

*FortisBC is leading British Columbia to a sustainable energy future.*

### **Brand Pillars**

The brand is supported by three pillars, which are reflected in the key messages and are considered for the corporate social responsibility plan under development 1) Reliability - the critical importance of safety, 2) Relationships - the value of being a good corporate neighbour and 3) Readiness - the need to develop sustainable energy solutions to meet our customers' future energy requirements.

All three of these concepts are integral to the plan and are highlighted in all key lines of business strategies to reach each of the stakeholder groups.

### **Support Points**

The support points are based on the key lines of business and focus on the most motivating and concrete reasons why the key brand message is true and more so than any other organization in the marketplace. The points include:

- Energy solutions that optimize conventional and alternative energy sources (including geo-exchange, district energy systems, biogas, waste heat recovery and solar thermal)
- Natural gas for efficiency (homes, business, vehicles)
- Electricity for clean, B.C. generated energy (TBC)
- Top-notch customer care
- Energy efficiency and conservation tools and resources
- Strong employee engagement
- Strong commitments to communities

### **Success Stories**

Current projects were chosen as proof points to most clearly demonstrate the company's commitment to the sustainable future of British Columbia, to each of the key lines of business and to the CSR plan.

### **Desired Outcomes**

The following were deemed priority outcomes for the 2010/11 communications and public affairs plan:

- a) Increased awareness and demand for integrated energy solutions
- b) Increased awareness and demand for natural gas solutions
- c) Increased perception of value for electricity service
- d) Increased customer commitment and community engagement across the province
- e) Increased customer participation in energy efficiency and conservation programs
- f) Maintenance of excellent safety and environmental awareness measures
- g) Retention, attraction and motivation top employees in all business areas

All efforts will be evaluated against their ability to deliver these outcomes.

### **Brand Language**

All company communications will reflect a consistent tone of confidence, knowledge, leadership, trust and upbeat energy. A new, common brand design for both companies will be rolled out gradually prior to renaming, after which all communications will have a common brand, look and feel. A tagline will need to be developed to support the new name and will be evaluated to support the key brand message.

### **Channels**

Priority communication channels were selected for their ability to engage with each of our stakeholder groups and to most effectively deliver the key brand message. Three media goals were established along with the key modes of communication for each:

- a) Reach - Mass media
- b) Efficiency - Social media and traditional media
- c) Effectiveness - Strategic partnerships, presentations and events, face-to-face

### **Stakeholder Assessments**

An analysis was conducted of all key stakeholder groups: 1) residential and commercial customers, 2) builders, developers and HVAC contractors, 3) policy makers, elected officials and bureaucrats, 4) vehicle fleet managers, 5) First Nations and other key NGO opinion leaders and 6) current and prospective employees.

Current perceptions, attitudes, issues, motivations and challenges were identified to ensure that the communications/interactions are better tailored to meet their needs and to engage them to want to learn more.

### 3. Lines of Business

Strategies were developed for each key line of business to support the overall key brand message. The strategy and tactics are aligned to address the stakeholder assessments in the previous section. While tactics are categorized under a line of business it is recommended that care be taken to ensure that tactics do not overlap or compete for the attention of an external stakeholder. Centralization of budgets and governance of these tactics will minimize these risks.

#### **Energy Solutions**

Builders and developers, policy makers and the general public are the key targets for this line of business. Employee tools, social media, video, trade advertising and presentations will be used to:

- Generate interest in integrated energy solutions and secure deals with developers, provincial government, municipalities and facility owners to design and implement projects
- Demonstrate alignment with provincial energy policy
- Educate public about integrated energy solutions and the role the company plays
- Generate awareness, understanding and participation in the biomethane “Green Gas Program”

#### **Natural Gas**

Key targets include customers, policy makers, transportation companies, the media and employees. The objectives are as follows:

- Position natural gas as a clean, safe and reliable energy source that produces fewer emissions compared to many other traditional energy sources
- Demonstrate knowledge and expertise in natural gas as a transportation fuel alternative for fleet vehicles.
- Educate audiences that natural gas is an important contributor to B.C.'s economy

Online tools, sales collateral, media relations, newsletters and employee tools were selected to achieve these objectives.

#### **Electricity**

FortisBC targets include customers, policy makers, First Nations, transportation companies, the media and employees and have strategies similar to that of Terasen with the addition of objectives that reflect strong ties to the regions they serve.

- 1) Demonstrate FortisBC’s commitment to communicating openly about its activities, consulting with stakeholders about developments that affect them,

and contributing to the economic, environmental and social fabric of the communities the company serves

- 2) Enhance FortisBC's strong, recognizable identity within its service territory with a focus on strategic relationship building and awareness of the company's proud history in the province as the oldest electric utility in B.C.

### **Energy Efficiency and Conservation**

The following objectives were developed to support both the Terasen program and FortisBC PowerSense program:

- Reduce energy consumption and overall GHG emissions while helping meet B.C.'s climate action challenges
- Manage energy bills more effectively
- Increase awareness for incentives for upgrades to more energy efficient appliances & equipment in existing buildings
- Increase awareness for programs for new home construction that use latest energy efficient technologies

Online tools, advertising, strategic partnerships, events and print materials will be targeted at customers and builders and developers.

### **Customer Care**

Key targets include customers, employees, First Nations government officials and the media. Online tools, print materials, employee programs as well as community, media and government relations will be used to:

- Generate awareness and excitement of Terasen's new B.C.-based contact centres and maintain awareness of FortisBC's commitment to in-house customer care.
- Maintain reputation as a transparent and trustworthy organization
- Demonstrate commitment to being a customer-focused organization through accurate, timely and friendly communication
- Demonstrate commitment to corporate social responsibility and sustainability through the selection of a local workforce and the energy and environmental standards of the new buildings in addition to the sustainable, B.C.-sourced materials used

### **Commitments**

In order to support the companies' commitment to corporate social responsibility, the following objectives were established:

- Increased awareness of safety measures
- Increased awareness of environmental performance

- Better understanding on rates and service value
- Increased awareness of community investment and employee giving / volunteerism

Advertising, media relations, online tools, print, events, direct mail and employee programs will be used to reach the general public.

### **Employee Engagement**

Employee events, newsletters and promotional materials will be developed in order to achieve the following:

- Combined leadership and renaming of Terasen and FortisBC
- Retention, attraction and motivation of employees in all lines of business
- Development of knowledgeable brand ambassadors that clearly understand and support the brand's leadership positioning in energy sustainability
- Development of the brand pillars and cultures – Culture of Care (Relationships), Culture of Innovation (Readiness), Culture of Excellence (Reliability).

## **Business Objectives and Strategic Priorities**

Recognizing customers' needs and acknowledging the environment in which Terasen and FortisBC operate is becoming more challenging; the companies must position their resources to proactively meet these challenges and continue to build strong relationships with customers, employees and regulators. This is best accomplished as one company.

The retirement announcement of the Terasen Inc. President and CEO in March 2010 provided the opportunity for common leadership with one leadership team for both companies, effective July 1, 2010. Integrating business functions where it makes sense will create a stronger, more diverse entity.

Together, Terasen and FortisBC will now follow a common vision and carry a unified voice and integrated energy solutions to their customers and stakeholders, to further the objective of better leveraging the Fortis brand in B.C. By Fall of 2010, planning will be underway to rename Terasen and FortisBC with a common name – FortisBC. This will require additional budget and a separate integrated communications, marketing and public affairs plan.

A combined Terasen and FortisBC 2010 strategic plan has been prepared for the companies' Board of Directors (July 2010) which outlines the combined strategic business priorities for both organizations. All Communications and Public Affairs activities in 2010 and 2011 will be prioritized to support the objectives and initiatives outlined in the combined strategic plan.

These priorities include:

- The integration of Terasen and FortisBC
- Renaming the companies with a common name
- Securing the base businesses (natural gas and electric)
- Integrating new products such as biogas and natural gas for transportation, and
- Growth – organic, energy infrastructure (capital projects) and acquisition

Woven through these priorities is an ongoing focus on the customer and the use of high quality service and community involvement as a differentiator and competitive advantage versus other energy providers in the province. This includes an emphasis on the new contact centres; exploring technology such as advanced meters, energy efficiency programs, community investment, employee fundraising and volunteerism and being part of the social fabric of the communities we serve in addition to leveraging our strong relationships with First Nations communities.

Further to the business and strategic objectives, Terasen and FortisBC will continue to strengthen the communications of our commitments – safety; operational excellence; operating agreements with municipalities; employee retention and attraction; a focus on corporate social responsibility in the management of our operations; and ongoing public information and consultation on the companies' new capital projects.

## Communications Directions in 2010/2011

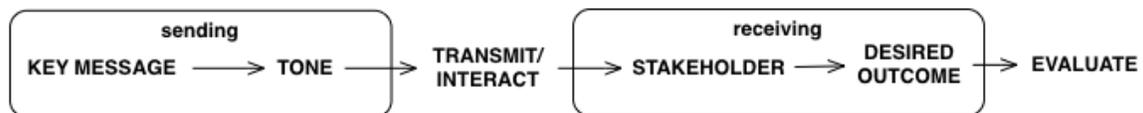
### a) Communications Framework

Given the recent combined leadership of Terasen and FortisBC, the new organization will be renamed to FortisBC with planning beginning as early as the fall of 2010. A complete separate strategy has been developed to launch the new name and the unique strength of the combined energy organization in British Columbia.

The new company, FortisBC, will be positioned as a leader in sustainable energy, offering a full-spectrum of energy products and services in British Columbia. The following plan highlights how this key message will best be communicated with all key lines of business to support it and will be further supported by the corporate social responsibility plan under development. It will also outline the most impactful channels to deliver this message to all of the key stakeholder groups.

This plan focuses all communication budgets and projects into one centralized process in order to maximize the impact of all resources and align all activities by:

- focusing the message and drawing upon the relevant support points;
- crafting the means in which the content is packaged (brand language) to align with the brand;
- strategically selecting the method by which the content is transmitted or delivered to the receiver;
- addressing the perceptions and biases of the stakeholder that might affect interpretation;
- identifying the desired actions or outcomes to be attained; and
- evaluating the resulting effectiveness or contribution towards corporate strategic goals.



This framework requires analysis of all communications requests to ensure that they are integrated and support the key message. In addition, it confirms that all stakeholder groups and desired outcomes are accounted for.

## **b) Key Brand Message**

All of the brand analyses funnel down into one single important message to communicate about FortisBC in all communication efforts:

*FortisBC is leading British Columbia to a sustainable energy future.*

This message provides the foundation on which the entire strategy is developed. Until the companies are renamed the individual company name (Terasen or FortisBC) will be used. This message will:

- 1) be demonstrated in everything the organization does and says;
- 2) be integrated across all facets of the organization;
- 3) differentiate the organization in the marketplace; and
- 4) support the future Corporate Social Responsibility Plan.

All communications efforts will be evaluated against their ability to powerfully communicate this key brand message.

## **c) Brand Pillars**

The brand is supported by three pillars that are reflected in the key message. These pillars represent the critical importance of safety, the value of being a good corporate neighbour and the need to develop sustainable energy solutions to meet our customers' future energy requirements.

All three of these concepts naturally originate from the work employees undertaken at Terasen and FortisBC, particularly while part of the Fortis group of companies and will no question continue to be at the core of the new FortisBC organization. The following descriptions provide more detail on each of the brand pillars and these pillars will be brought to life in our messaging.

It should be noted that the brand relevance for the new combined organization and the awareness of each pillar is currently being evaluated in Terasen's June 2010 wave of customer research, including customers in the FortisBC service territory.

Leading Pillar: Readiness

The company embodies all senses of the word: being fully prepared to do something and the characteristics of quickness, promptness and immediacy. This theme is present throughout the organization, embodied in the Terasen's Asset Integrity Management Plan (AIMP) to managing the fluidity of the business development realm. Towards asset integrity, FortisBC is also moving towards condition-based maintenance and taking a holistic stance for energy planning through their Integrated Services Plan (ISP) application. Planning ahead is required to deal with the unpredictable nature of business opportunities for projects and to reduce the risks to service quality.

From a human resources perspective, the training and career development opportunities for staff ensure that the evolving workforce meets the needs of the organization. In

governmental relations there is a need to be seen as part of policy planning, rather than just responding to policy implementation. The company wishes to be perceived as having the right ideas/tools/process/people for the job - whether it's the development of a customer solution or choosing sources of energy that are appropriate in certain instances.

A key part of the company's operational success and superior customer service is the ability to "plan ahead", "forecast demand" or be "anticipatory" of the needs of its stakeholders. Many examples of how this plays out exist. For example, from the early days as a gas company Terasen negotiated franchise rights to bring gas to undeveloped areas of the province to ensure that supply would be there as the community grew. FortisBC's strategy for developing relationships with First Nations communities also requires long-term planning as fruitful partnerships develop over time and in styles that are unique and appropriate to each nation. The evolution of safety practices through embedding AIMP into culture moves from a stance of "rudimentary repair" to proactive risk assessment. And possibly the most significant example is the strategic move towards being known as an integrated energy service provider which anticipates the energy needs of the province and the changing energy policies. Similarly, FortisBC's ISP thinking looks at solving demand issues by considering generation, transmission and conservation strategies simultaneously when they have traditionally been treated as discrete plans. Terasen's decision to in-source the customer contact centre to create a better service platform for customers is another example of the company's customer-centric approach, consistent with all Fortis companies.

The brand characteristic of "being anticipatory" also acknowledges the key messages and behaviors concerning safety, relationships and reliability (service, information, etc). In other words, you have to have your "house in order" before you can confidently plan for the future. The company's track record and relationships built over the lifetime of the organization provides the backdrop to this pillar. Additional character traits can also be presented atop this pillar. These could include: speed, nimble, diverse and innovative – all of which help evolve the perception away from slow, singular and monopolistic.

#### Second Pillar: Relationships

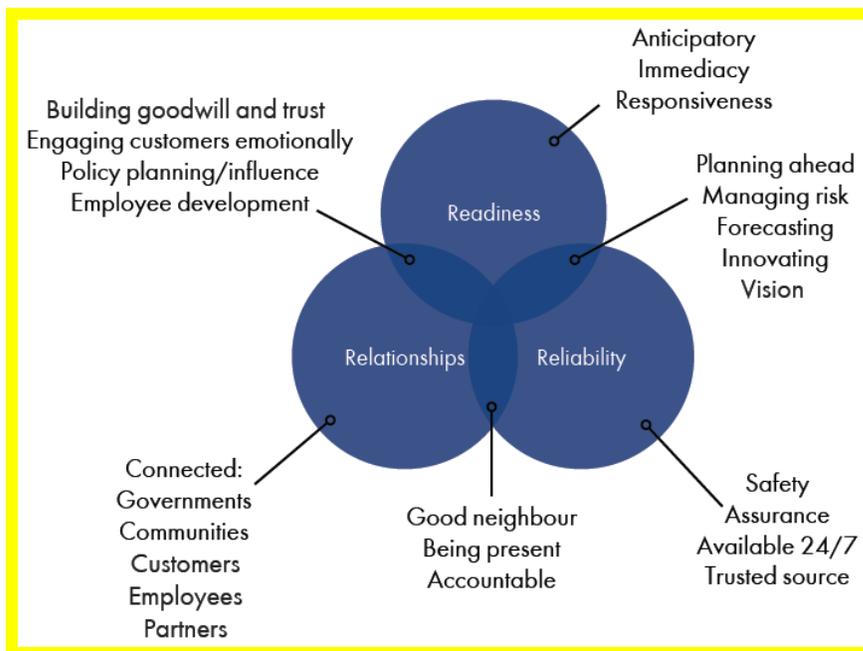
Terasen and FortisBC needs to be seen "everywhere in the community", investing financially or through volunteerism. It was noted that personal relationships are a strategic asset when gaining permission to operate. Examples include increased participation in industry and policy making organizations at all levels of government. There is recognition that while we can't necessarily match the deep pockets of other organizations in terms of philanthropy, the way our company supports the community is more at the grass roots or at the level of neighbour-to-neighbour. A strength of Terasen and FortisBC, and the future combined company is that it can be intimate and close with customers while having the assets and resources of a larger organization. The combined company should continue to make efforts to be seen at all levels of community. Attending special gatherings with First Nations elders, visits to small businesses from the CEO or summits with the Premier all contribute to this brand pillar.

#### Third Pillar: Reliability

Closely tied to the notion of safety in the context of reliable service, the theme of reliability extends to other aspects of relationship building in the community. Both FortisBC and

Terasen would like to do a better job at educating people about all energy matters ranging from behavioral changes through conservation tips; understanding the economics of energy policy; and housing this on their respective websites in forms that everyone from kids to business owners can understand. At community events, FortisBC attracts visitors to their safety demonstrations geared for children as well as first responders. New safety initiatives at FortisBC include a solution to the problem of field operations staff not having regular desktop computer access. A computer display at morning muster stations will display relevant safety information for review and discussion.

Reliability also infers always being present, investing in the community – offering a sense of longevity which competitors or new entrants lack. Being a provider of information also translates into training and skill building, whether it's working with school-age children or creating opportunities for people to develop professionally or gain additional trade skills (e.g. accelerated ticket program in conjunction with BC Safety Authority).



### FortisBC Brand Considerations

Terasen and FortisBC share many of the same characteristics that make up the three brand pillars. Reliability is naturally a cornerstone to both brands in their respective lines of business. Both organizations are also placing emphasis around the notion of Readiness as positioning the joint companies at the forefront of innovative solutions for BC's energy needs is a high priority.

It is worth noting that the Relationships pillar drives FortisBC's brand perception, given its size and roots in smaller communities. As the companies come together, it is recommended that attention is paid to how drivers of strong relationships can be used as a lever to propel the joint brand forward and the notion of Readiness.

#### **d) Support Points**

Support points based on all of Terasen's and FortisBC's key lines of business have been developed to support the key brand message: FortisBC is leading British Columbia to a sustainable energy future (until the name change the individual company names would be used.) The goal is to focus on the most motivating and concrete reasons why the key brand message is true and more so than any other organization in the marketplace.

The support points are listed below in order of priority to substantiate the key brand message. These support points are deemed the most effective ways to help the key stakeholders engage, understand and feel compelled to learn more about FortisBC.

- Energy solutions that optimize conventional and alternative energy sources (including geo-exchange, district energy systems, biogas, waste heat recovery and solar thermal).
- Natural gas for efficiency (homes, business, vehicles).
- Electricity for clean, B.C. generated energy
- Top-notch customer care.
- Energy efficiency and conservation tools and resources.
- Strong employee engagement.
- Strong commitments to communities.

#### **e) Success Stories & Examples**

The following current initiatives have been chosen as proof points that most clearly demonstrate the companies' commitment to the sustainable future of British Columbia, the support points/lines of business above and the CSR plan.

The list will be updated regularly to ensure the most powerful examples are utilized in all communications.

##### Energy Solutions

- The City of Quesnel
- The Village at Fraser Mills in Coquitlam
- Dockside Green in Victoria
- Biogas Recovery From Salmon Arm Regional Landfill

##### Natural Gas

- Mount Hayes Storage Project
- Fraser River South Arm Crossing Upgrade Project
- Spectra Energy Enhanced Transportation Service
- LNG Transportation Fuel Proposal

#### Electricity

- Nationally recognized PowerSense Programs that makes the topic of conservation fun and engaging
- Information sharing about net metering opportunities for customers
- Strong, regulator supported public consultation plans for capital projects and Cost of Service Applications
- Strong working relationships with First Nations communities

#### Customer Care

- Contact Centres in B.C.
- Energy Efficiency & Conservation Program
- PowerSense Program

#### Employee

- Community Giving Day
- Employee volunteerism in hundreds of community organizations

#### Commitments

- Gas odour detection and tips
- Electrical safety – preventing contact with wires
- Positive environmental performance measures
- High value rate calculations and rationale
- Visible, impactful community investment

#### **f) Desired Outcomes**

We believe that the outlined strategy will be successful in delivering seven priority outcomes:

- 1) Increased awareness and demand for integrated energy solutions.
- 2) Increased awareness and demand for natural gas solutions and continued perception of value of electricity within the FortisBC service area.
- 3) Increased customer commitment and community engagement across the province.
- 4) Increased customer participation in energy efficiency and conservation programs.
- 5) Maintenance of excellent safety and environment awareness measures.
- 6) Retention, attraction and motivation top employees in all business areas.
- 7) Consistent use of brand language

All communications will reflect a consistent brand language in order to effectively communicate the key brand message and create one unified voice.

### **g) Brand Language**

The tone of all company communications will most importantly reflect confidence, knowledge and leadership. The brand will also be seen as modern, energetic and ready to take on a variety of challenges now and in the future.

The company will convey trust and respect because of the level of experience and commitment to its customers served over many years by both Terasen and Fortis BC. The brand is a true expert in the energy field and as such, it will be shown to deliver new ideas with the same care and professionalism as both companies have in the past.

### **Design and Tagline**

A new, common brand design for both companies will be rolled out gradually prior to renaming, after which all communications will have a common brand, look and feel. A tagline will need to be developed to support the new name and will be evaluated to support the key brand message. The following objectives have been kept in mind:

- 1) To evolve the visual language as the company repositions itself in the marketplace and enters competitive markets.
- 2) To create a language that has a symbolic reference to 'readiness' and provides a way to speak to the broader product offering.
- 3) To be current and look less like typical utility communications.

The new design and tagline will launch in the fall in combination with the official name change.

A comprehensive graphic standard is also under development in collaboration with the communications department.

### **h) Channels**

All communication channels have been evaluated for their ability to engage with each of our stakeholder groups and to most effectively deliver the key brand message. There are three main considerations for each priority channel of communication: reach, efficiency and effectiveness.

It is important to note that no budget has been allocated to date for promoting integrated energy solutions and natural gas - in comparison to the many millions that BC Hydro spends annually on communications in B.C. Consideration should be given to exploring the benefit of a moderate increase in the public awareness budgets for these lines of business. In the interim, choosing very impactful yet cost-effective channels is critical. Creating buzz through unpaid media/within the community is an important part of the strategy and can be done with minimal dollars if executed creatively.

Each of the priority channels described below contributes to all three of the goals (reach, efficiency and effectiveness). However, each channel has been listed according to the goal it

most powerfully achieves. Each line of business has also been aligned with the most effective channel(s).

## **1) Reach**

### **Mass Media**

Mass media will be used for priority messages that have broad based appeal with virtually all of our stakeholder groups. It will create the most impact in the shortest amount of time.

The primary mass media campaign will be the name change announcement that could be made by the end of the year. In addition to creating awareness of the name it would provide the opportunity to reposition the company before a mass audience. This is best way to reach the most people across the province in an engaging way. Radio and print are strong recommendations and are currently being analyzed for cost and effectiveness with the media agency. Ethnic media is also an important component in the mix. Clear examples and benefits of successfully completed integrated energy solutions are the best way to support the new organization and its key brand message.

Secondly, pertinent safety messages (like gas odour and electrical safety) are very effectively communicated through radio and newspaper and should continue to be used. Quantitative awareness levels are easily measured through research providing a valuable metric and ROI.

## **2) Efficiency**

### **Social Media**

Social media is a critical part of the communications mix to efficiently reach our audiences and becoming increasingly so. It will be particularly important as part of the name change campaign.

Given the technological opportunities available through this medium, it is a very effective channel for delivering our message of innovation that supports the readiness pillar. Also, given the unique opportunities to create true dialogues with our customers, it is an excellent vehicle to support our relationships pillar.

Video is at the heart of the social media strategy given that it helps make complex, technical messages more fun and much easier to understand. This is particularly true in demonstrating integrated energy solutions and their benefits. A longer brand video will be developed as well as a series of short integrated videos to demonstrate integrated energy solutions along with some key project success stories to date. The efficiency of natural gas will also be included as part of the 'new energy solution'.

Twitter, Flickr, Wikipedia, YouTube and Facebook will be used to post announcements of the name change and new energy solutions developments including video, graphics and photographs. Response time to issues is critical and should be a maximum of 30 minutes.

Social media also plays an important role in reflecting our commitment to all of the communities we serve. It provides the perfect opportunity to highlight various community events and demonstrate customer service - particularly with solutions to customer

problems. It is also a great way to educate staff and create a sense of pride and teamwork within the organization. All videos and key information posts should be available to employees before they are sent to the public.

### **Traditional Media**

Traditional media coverage is still an important part of the strategy and innovative bites of information (as per content used in social media) should continue to be supplied to broadcast and print (both mainstream and niche publications) editorial media. The name change will provide the perfect opportunity to leverage the media and highlight the new brand with its commitment to the future of B.C. It is an opportunity that should be used to create as much excitement and innovation as possible. At the same time, the combined history and experience is critical to support the reliability pillar.

### **3) Effectiveness**

#### **Strategic Partnerships**

Partnerships with trusted third party experts will add more credibility to the brand message and increase visibility in the community. When possible, conversations with the media should be initiated to jointly express the shared vision on the future of B.C. energy and the environment.

As part of this strategy, a key target list of potential partnerships needs to be developed along with a process that clearly outlines responsibilities, timing and communication requirements. This target list should include key NGOs and non-profits that are strategically aligned with our key message.

#### **Presentations**

Building on the success of Canadian District Energy Association CDEA materials (June 2010), targeted presentations are required for groups in the following areas: key government committees, builders & developers organizations, schools, universities, hospitals, key NGOs and vehicle fleet managers. All presentations should follow the consistent brand messaging and feel but be tailored to the specific audience. Examples of success in integrated energy solutions are a critical part of all presentations.

Schools are a key opportunity on several levels including teachers/administration, parents and students. Influence in all of the groups is important from a sales perspective and chance to apply additional, local pressure on municipalities to develop greener buildings to meet climate action challenges.

There are several ways to effectively accomplish this including student presentations and fun demonstrations that educate on our commitment to sustainable energy solutions as well as to safety. Take-home materials aimed at both parents and students are an important part of the follow-up.

Parent Advisory Councils are an additional area of focus for educational presentations, relationship building in the community and key contact generation for an increased voice within the local municipality.

## **Events**

All types of events described below are important opportunities to reflect the company name change and new leadership positioning.

Community events play a vital role on many fronts. First, they enable the organization to interact with our customers on a one-on-one basis to reflect our top-notch customer care. They also provide the perfect opportunity to:

- 1) educate on our new initiatives and their benefits,
- 2) reinforce safety messages and
- 3) be seen as a true community partner by donating time and dollars to important local projects.
- 4) build relationships with community leaders

From an employee perspective, they are also critical in building pride and teamwork. Special consideration is required to ensure we are selecting the right events based on employee input and feedback.

Relevant trade shows, conferences and recruitment fairs (including the Union of British Columbia Municipalities, CDEA trade show and the upcoming contact centre events) are key opportunities to demonstrate leadership in sustainable energy solutions. All booths and materials should be highly interactive and innovative (including videos developed for social media that do not require sound to be effective). Video should play a prominent role on large screen monitors placed in at eye level.

Sustainability and innovation must be at the core of every element of the trade show booth - flooring, booth construction materials, paper and inks used in pamphlets, fabrics and accessories. Location of the booth is critical in terms of visibility/traffic and placement amongst competitors. Attention should be given to all factors at the time of booking conformation.

Educational tools are important not only for trade shows participants but also as take-away materials for attendees (especially the trade) to use when educating others on our energy solutions and their benefits, also accessed by electronic bulletin boards

Company events are also effective ways to engage government officials at all levels. More emphasis should be given to the types of government events, timing, invitation list and focus of the presentation. It is imperative that key news and innovations are communicated but the events must also be used as an opportunity to build one-on-one relationships. The April 28, 2010 MLA dinner and premier's meeting in Victoria is viewed as an example of success on all of these fronts.

Post government events, a clear plan with responsibilities and timing should be implemented to conduct follow-up calls with key individuals that express interest in specific areas. To note, consultants are an important part of the process in gaining influence amongst the right people in government. However, they should be used as behind the scenes researchers and strategists rather than as face-to-face representatives of the brand at events.

Last but not least, employee events are a key part of the strategy and the combined leadership and name change is a great start to increased momentum with staff at regular educational and team building events. A new vision for the company will be announced with specific ways each and every employee can contribute to that vision. A structure should be in place to evaluate and recognize contributions throughout the year that best illustrate the vision in a variety of ways (big or small).

Employee events that educate and provide clear examples of success across the organization are critical. The goal should be to ensure that every employee, regardless of department, role or seniority, is knowledgeable about what the company is currently doing, plans to do and can briefly communicate examples of sustainability and innovation.

The regularity of the employee events is what is most important. Size and format are less so. Events can be done online as a monthly company address from the CEO along with selected video illustrating recent key developments.

## **j) Stakeholder Assessment**

### **Terasen**

In order to truly understand the target audiences, an analysis was conducted of all key stakeholder groups. The information is based on existing research findings (including the Terasen May 2010 report) and feedback from employees who manage the relationships with each of the stakeholder groups.

Current perceptions, attitudes, issues, motivations and challenges were identified to ensure that the communications/interactions are better tailored to meet their needs and to engage them to want to learn more.

Eight main groups with common traits have been identified but there may be additional segments with specific needs, within each group. It is assumed that when necessary unique communications will be developed to address any particular needs of a key stakeholder.

### **Residential & Commercial Customers:**

- Overall, there is very high brand awareness amongst all B.C. customers. They are also generally aware that they have a choice in their natural gas supplier.
- Customer satisfaction levels are generally very good with the exception of Vancouver Island. Timing and quality of call centre communication appears to be the greatest concern. However, all areas voiced a need for increased communication on local issues and plans that affect them.
- Larger commercial customers also request more detailed information that is easily accessible including consumption history, rate options, alternative energy and efficiency recommendations, computer modeling programs and current energy market news.
- Price is a critical factor for all. There is some dissatisfaction and confusion among smaller commercial customers on billing and how gas costs are calculated. This is particularly true on Vancouver Island.

- Safety and reliability are also rated as one of the highest concerns. There are currently high levels of awareness as it relates to gas odour but low awareness on the appropriate steps to take when a gas leak is detected.
- The environment continues to be an important factor and will continue to increase again as economy strengthens. They are bombarded and frustrated by climate change issues and fears through the media and are aware of the popular notion of 'green washing'.
- In general, Terasen is not currently viewed as an organization that cares about the environment and seek energy efficiency and conservation programs that reduce cost, demand for natural gas, GHG emissions and meet future energy demands.
- However, about two-thirds of B.C. residents polled report that they are very willing to use alternative energy sources in a new or renovated home and that they believe Terasen should provide alternative energy sources like biogas.

#### **Builders, Developers & HVAC Contractors**

- Given customer demand, they are increasingly interested in more energy-efficient solutions for single-family homes, townhomes, multi-family residential buildings, commercial/retail developments and institutional developments such as schools and hospitals.
- There is limited knowledge about alternative energies, green building techniques and how to align with government regulations and bylaws. Therefore, most are open to education and help in this area.
- Their concerns revolve around up-front costs and how easily they can be passed on to their buyers. As such, they seek additional incentives for implementing energy efficient solutions.
- Diverse range of motivation to seek green alternatives given that the significance of cost varies from customer to customer.
- Timing is also very important and getting through the 'red tape' quickly is always a concern.
- Ultimately driven by the needs and wants of the end B.C. customer - both residential and commercial - while adhering to government regulation to achieve climate change targets.
- Currently dissatisfied with a lack of Terasen flexible scheduling options on Vancouver Island versus the rest of the province.

#### **Policy Makers, Elected Officials & Bureaucrats**

##### **Provincial:**

- Under strong pressure to act responsibility on the world stage to reduce climate change and set targets and policies that will maximize success.
- Looking for partnership opportunities to demonstrate real success in reducing climate change versus policies only.

- Focused on the economy and the fact that taxpayers have little appetite for increased government spending to fund alternative energy projects.
- Sensitive to citizen's fear of environmental problems but also to the idea of change to alternatives (questions of reliability, greater environmental damage, etc).
- Currently leaning towards further electrification.
- Inconsistent thinking with federal government and its comparatively weak climate change policies and targets.'
- The BCUC make-up has evolved over the years from mainly engineering focused to a broader range of skill sets and backgrounds.

#### **Municipal:**

- Overall, much more progressive business orientation than in the past. Interested in revenue sharing business partnerships like district energy systems.
- Feeling additional financial pressure given less funding from the provincial government and decreased appetite to raise taxes particularly in light of the weaker economy. Therefore, looking for innovative ways to fund their operations using more strategic, non-traditional opportunities while holding operating and staffing costs stable.
- Require ongoing negotiations and relationship building to educate and influence policies on new developments and infrastructure projects.
- Do not always see the benefit in the service/expertise of having a third party expert develop and manage the operations of new energy infrastructure.

#### **Industrial Operators & Engineers**

- They are very knowledgeable about alternative energy solutions but perhaps not as concerned about environmental sustainability compared with other stakeholders.
- They tend to be motivated by the 'payback' time period when considering the costs of each of proposed alternative energies.
- In addition, they are very pragmatic and seek technical information and detailed rationale.

#### **Vehicle Fleet Managers**

- The group is largely comprised of municipal return-to-base fleets – waste haulers, buses, trucks, forklifts and other port vehicles.
- They seek to reduce energy costs and GHG emissions from diesel and gasoline.
- Under government pressure to meet emissions reduction targets and open to solutions that help to achieve them without additional cost.
- Believe that electric cars are the ultimate solution and that adopting any other alternative at this point may be jeopardizing their position for electric vehicles in the future.

- Very risk adverse and look for solutions that are tried and true. As such, are motivated by the fact that natural gas for vehicles is a very common solution all over the world, including the USA.

#### **First Nations & Other Key NGO Opinion Leaders**

- Interested in working together to maintain social, economic, environmental and cultural interests of local and global communities.
- Spread out across the province with a diverse range of issues, challenges and opportunities specific to each community.
- Are motivated to preserve and protect a variety of things including historic sites, the environment, cultural traditions and jobs.
- Look for ways to be positive partners with other organizations in order to put themselves in a leadership versus critic position.
- Often work in conjunction with other government parties such as the Ministry of Forests, BC Hydro and the B.C. Multi-Sectoral Aboriginal Leadership Initiative to negotiate appropriate solutions.
- Develop videos that illustrate key partnerships and the value to both parties. Use the videos online, at trade shows and distribute to media for key initiatives that could earn media attention.

#### **Current & Prospective Employees**

- Large staff of 1,300 largely concentrated in the Lower Mainland.
- A large percentage of new employees with one third of total employees being hired since 2007.
- An increasingly larger proportion of younger staff that is very tech savvy and has high technology and speed of information expectations. Transparency, adaptability and flexibility are all key to this group in particular.
- Diverse range of cultures and business areas with a varied level of technical knowledge regarding energy options.
- Combination of two cultures and mindsets: of FortisBC (electricity) and Terasen (natural gas).
- Some misunderstanding that energy efficiency programs are indeed an investment that is good for the business interests of the company.
- Compared with average B.C. citizen, likely have an increased level of motivation to reduce climate change and GHG emissions.
- Generally motivated to constantly improve the corporation's positive public image by acting responsibly within the community and with our environment.
- Feel more job satisfaction when connected to the business and have full information on its objectives, priorities and key initiatives.

- Large percentage (48%) at risk of retiring in the next five years and limited supply of young, skilled workers graduating from trades and technology programs.
- Will continue to increase the proportion within the younger demographic
- Strong culture of volunteerism - for example in 2009 through the company's Warm Hearts Charitable Foundation and Community Giving Day, employees raised \$133K for B.C. non-profits.
- Active members of various communities in B.C. and influential with the public and community organizations.

### **FortisBC**

The following section represents characteristics specific to FortisBC stakeholders.

#### **Residential and Commercial**

- Generally have good relationships with their base business customers, customer satisfaction considered very good.
- Awareness of PowerSense programs is good, but overall uptake could be better. Customer base increases have helped achieve conversion targets which haven't increased at the same rate. Access to information about programs is inconsistent and commercial customers could benefit from simpler, easier to market rebate programs
- FortisBC rates are currently considerably higher than BC Hydro's (approximately 20%). Although the spread is anticipated to diminish within the next five years, having higher rates remains a concern as they impact customer satisfaction and the company's competitive position. In the company's customer satisfaction surveys which are conducted each quarter, customers continue to rate reliability and price as their top two issues of concern. Complexity in pricing schemes (e.g. peak hour variable rates) could pose a risk of confusing customers.
- FortisBC customers may also be concerned about the need for new generation, transmission and distribution lines and substations – activities that traditionally meet with apprehension from property owners and community representatives in the vicinity of the proposed infrastructure locations. As such there is a need to increase this stakeholders' understanding of the regulatory process and increase participation in consultation. This would minimize risks to new project planning and continue build value on existing electricity service.
- FortisBC has succeeded reaching Low-income stakeholders through a PowerSense kit marketed through third-party social services such as the Food Bank.

#### **First Nations**

- FortisBC has enjoys long-term relationships with First Nations bands. In part due to the fact that productive relationships require development over time with the same individuals.

- With over 200 First Nations bands in the region, FortisBC staff are skilled in recognizing the nuances in styles of engagement and the choice of engagement strategy. Some nations are more adept to planning and developing economic plans; others require more assistance to envision projects, the tangible and intangible benefits; and others prefer FortisBC's participation in spontaneous special events.

#### **Current & Prospective Employees**

- Staff of 600 headquartered in Kelowna with offices in the interior.
- Some employees will have been with the company through many acquisitions and name changes (West Kootenay Energy, Utilicorp, Aquila and FortisBC).
- The combination of companies over the years has also resulted in multiple benefit plans and organizational reform that centralizes activities such as HR and Corporate Communications. In some cases, not everyone is aware of what internal corporate services are available

## Lines of Business

### Integrated Energy Solutions

This line of business aligns with the support point: Energy solutions that optimize conventional and alternative energy sources (including geoexchange, district energy systems, biogas, waste heat recovery and solar thermal).

#### Objectives

- Generate interest in integrated energy solutions and secure deals with developers, provincial government, municipalities and facility owners to design and implement projects
- Demonstrate alignment with provincial energy policy
- Educate public about integrated energy solutions and the role the company plays
- Generate awareness, understanding and participation in the biomethane “Green Gas Program”

#### Stakeholder Strategies

##### **Builders, Developers and HVAC contractors**

This stakeholder struggles with balancing costs, regulatory compliance and consumer needs when it comes to offering green building alternatives. As such, the strategy is to help reduce the confusion and offer clear and informative information. As a reliable source and potential partner, the company can help educate and solve problems as this stakeholder works to offer more sustainable buildings.

Materials such as presentations, proposals or project case studies will be consistently branded, feature high-quality images and easy-to-understand diagrams to ensure complex ideas are communicated easily.

In-person communications is preferred and appearances and participation at industry events or conferences will be an important part of creating awareness and relationship building.

##### **Policy Makers, Elected Officials (including First Nations) and Bureaucrats**

The primary strategy will be to take advantage of the combined leadership to contact key stakeholders and build on the successful meetings held with the Premier and MLAs in late April. The new CEO has recently sat on a number of provincial government energy committees primarily focused on electricity and now this will provide the opportunity to have natural gas and other alternates such as district energy systems to be reflected in those discussion and policy decisions.

Government contacts and key committees should continue to be assessed and resources in the various departments in Marketing should be assigned to help foster these relationships. The company’s corporate communications managers should continue to expand their reach

of contacts in the provincial Public Affairs Bureau and with the various municipalities to share messaging and explore opportunities to support mutual goals.

Government officials at all levels but particularly municipal and provincial, would be invited to participate in all alternative energy media activities (news release, event, speaking opportunity) driven by the company as it will help them demonstrate their leadership and further validate the company's activities. These types of events would support each of the brand pillars, highlighting relationships, expertise and that the company is actively delivering future energy solutions.

The sub point of the company being able to finance, own and operate geoexchange and district energy systems is of key importance to this group as the company can help them with two issues: 1) meeting climate action challenges and 2) helping free up provincial capital for other priorities such as health care.

The company will also continue to work with influential media to prepare positive earned media coverage for its integrated energy solutions and use that positive coverage to help influence policy development and generate sales opportunities with provincial government buildings.

Social media such as Twitter can be used to support and comment on government clean energy initiatives as appropriate. The company follows and are followed by a number of key government ministers and the Premier. This is powerful when seen by followers of each group which includes all of the company's key stakeholders such as media, influential British Columbians and even the company's own employees (at home).

#### **General Public**

Increase the use of advertising and public relations to educate and gain awareness of the integrated energy products and that the company is more than natural gas delivery. Social media can be used to further push out and create awareness of key initiatives that the company is pursuing.

Currently the company does not have sufficient resources for brand and image advertising on TV, radio or print; however, a YouTube channel will be launched by the end of the third quarter providing a forum to highlight the company's corporate videos which are now limited to the website and presentations.

Advertising in the business press (from O&M budgets of other corporate areas) could potentially spill over into the residential market given that many business readers are also residential customers.

The company has regular communications with customers through bill messages and newsletters however research has demonstrated that this channel has a very low readership rate at about 10 per cent.

One of the most effective methods for the company to reach customers is to ensure that every one of the company's employees are very well versed on the benefits of the integrated energy systems, how the company is helping to provide solutions to meet climate action challenges and can demonstrate that everything we do for this product line (and everything

else) is supported by the brand pillars. Our employees will then be empowered to be effective ambassadors for the organization and can share their knowledge with all of our contacts.

**Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Also note that these tactics may also apply to other Lines of Businesses, as such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Employee tools	\$ 30,000
- Shared image galleries, proposal library and presentation templates	
- Online event calendar shared with other lines of business	
- Integrated Energy Solutions 101 online tutorial	
Social Media	\$ Part of overall cmns budget
- Following energy technology and policy thought leaders	
- Participate in conversation to promote expertise and to share solutions	
Mass communications	\$ 160,000
- Advertising in relevant trade magazines	
Presentations	\$ 25,000
- Schools	
Green Gas Campaign (2010-2011)	\$400,000
- Print, Online, Direct materials, video and event signage	

**Evaluation**

- Stronger voice in provincial policy development
- Politicians’ participation in company driven media events or stakeholder events
- Increase in sales due to relationships, networking, presentations, or proposals
- Positive media coverage
- Employees that can speak effectively about our business to the public and customers
- “Green Gas” product uptake

## **Natural Gas**

This line of business aligns with the support point: Natural gas for efficiency (homes, business, vehicles).

### Objectives

- Position natural gas as a clean, safe and reliable energy source that produces fewer emissions compared to many other traditional energy sources.
- Demonstrate knowledge and expertise in natural gas as a transportation fuel alternative for fleet vehicles.
- Educate audiences that natural gas is an important contributor to B.C.'s economy.

## **Stakeholder Strategies**

### **Residential & Commercial Customers**

This stakeholder group has trust in natural gas as a safe, reliable source of energy for heating/cooling and cooking in their homes and businesses. It is important to maintain this level of awareness and trust as the energy market becomes more diverse and confusing. Given the enormous pressure on B.C. residents and business owners to understand and adhere to new environmental standards, the focus of communications should be on natural gas as a clean energy alternative for buildings as well as vehicles.

There is still a negative bias within the general public against natural gas as compared to other energy sources such as electricity. Therefore, educational communication needs to be delivered that clearly points out efficiency and emissions benefits to chip away at this negative bias. In addition, natural gas should be positioned as an important part of the new clean energy solution combined with alternative integrated energies such as geoexchange, solar thermal and biogas. By demonstrating natural gas as part of the integrated energy system, the company will achieve a positive halo effect over natural gas and reinforce its leadership positioning in sustainability.

Given the complexity and technicality of this information, the communication formats need to be very simple and easy-to-understand. For the most part, educational video is by far the most effective way to accomplish this via online channels. Success stories that demonstrate the ideal applications for natural gas are important as part of the videos as well as educational charts, graphics and stories in the newsletter and website.

Last but not least, an open dialogue is important with customers in terms of issues, challenges and fears regarding all types of energy. It is important that feedback is easily delivered and responded to in a timely manner. This can be done via the contact centres as well as on the website and with social media. This will help communicate information that is not always easily understood by this audience.

### **Government Officials & Policy Makers**

This group is comprised of both municipal and provincial government officials and policy makers (including BCUC) that have influence over natural gas policies for all applications - homes, business, government building including hospitals and schools and vehicle fleets.

Educational one-on-one presentations with key officials, select committee meetings and company sponsored events are the most effective way of reaching this group. Taking both climate change and economic pressures into consideration, the presentations should provide clear rationale for natural gas as a clear choice against electricity for heating, cooking and vehicles. Presentations for the provincial government should also emphasize that the efficient use of natural gas would assist them in achieving climate action challenges, reduce the amount of electrical generation required in order for the province to achieve electric self-sufficiency by 2016 and that revenue from the sale of natural gas - the largest source of revenue for the province which also employs thousands of British Columbians - continues to be a large contributor to funding infrastructure and services for all British Columbians. In addition, it is important to note that the company is increasingly using natural gas as a base with layers of alternative integrated piped energies such as geexchange and waste heat recovery.

Proven safety, reliability and widespread availability across the province are important points to back up the main environmental and economic benefits. Given the influence this group has throughout the province, this group should be utilized to gain access to decision makers at various municipal departments including fleets.

### **Municipal Return-To-Base Fleets**

This stakeholder group is comprised of managers of municipal waste haulers, buses, trucks, forklifts and other port vehicles. Given the pressure to reduce costs and GHG emissions from diesel and gasoline, they are highly receptive to solutions that will achieve both objectives. Presentations should be developed that are specific to the benefits of liquefied natural gas of each specific type of fleet vehicle.

All educational presentations should include a clear cost-benefit analysis on natural gas versus other energy sources, specifically electricity given that they currently have a general predisposition to adopting this type of energy for the future.

Facts and supporting data on safety, efficiency, emissions and costs are imperative to this very risk-adverse group in all communications. Natural gas fleet examples from the U.S. and other parts of the world are excellent ways to verify the widespread acceptance of natural gas as an ideal choice for fleet vehicles.

### **Natural Gas Transportation Companies**

The strategy for this group should essentially be the same as for the public sector fleet managers above. The key difference is a somewhat heavier emphasis on the economic benefits versus the environmental ones.

Similar presentations should be used to address leaders of these organizations and should include both private and public sector LNG success story examples.

### **Media**

As influencers for all other stakeholder groups, the media is an important part of the equation in demonstrating natural gas as a safe, clean energy solution.

The best way to add credibility to this message is by supplying both news and industry media with regular highlights of recently approved/completed projects that use natural gas as part of an integrated energy solution. These messages should also include CNG and LNG for vehicles and estimated reductions in emissions from natural gas projects across the province.

Again video is an important vehicle to deliver this message but ongoing regular bites of information including photographs are important to keep the company top-of-mind in the sustainable energy solutions area. This will contribute to the overall leadership positioning and pro-active approach to developing new and better energy alternatives that contribute positively to both the environment and economy.

### **Employees**

Given that this group has varying levels of knowledge regarding natural gas as part of the clean energy solution, educational communication is important in order to maximize the company's natural gas ambassadors across the province.

In addition to all of the channels of communication used for the general public, regular employee events are effective ways to demonstrate natural gas benefits and the company's leadership in complimentary forms of alternative energy. It is important that these events are held on a regular basis and that all new information is communicated to employees prior to release to external groups. The expansion of natural gas vehicles in the company's own fleet, including industrial work vehicles should be highlighted and include testimonials from employees using those vehicles for their day-to-day responsibilities.

### Tactics Summary and Budget

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Also note that these tactics may also apply to other Lines of Businesses, as such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Online	\$ Part of overall cmns budget
- Updated and expanded web content.	
- Educational videos on LNG and CNG for vehicles and natural gas a part of the clean energy solution.	
- Regular posts on social media that reflect key natural gas approvals and developments throughout the province.	
- Online ads with industry related websites.	
Sales Collateral	\$ 200,000
- Educational PowerPoint presentations for government officials and managers of vehicle fleets.	
- Brochures, folders and stationary.	
Media Relations	\$ Part of overall cmns budget
- Stories pitched to news and industry media regarding new developments.	
- Pursue opportunities such as "The Taste of BC" TV show to highlight natural gas for cooking and vehicles.	
- Feature politicians and business people in natural gas vehicles as validators.	
Newsletters	\$ Part of overall cmns budget
- Articles in Get Comfortable and Service Line.	
- Large and small scale events.	
Employee	\$ Part of overall cmns budget
- Page on Pipeline - with regular updates.	
- Large and small scale events.	

Description	Budget
- Share educational natural gas (including for vehicles) videos with employees prior to external release and explain the strategy behind the activity.	

**Evaluation**

- Feedback from sales dept and community relations managers.
- Sales increases/ interest for 2010 over 2009.
- Customer comments via contact centres, website and social media.
- Website analytic reports for web pages and online video.
- Research results from customer surveys.

## **Electricity**

This line of business aligns with the support point: Electricity for clean, B.C. generated energy.

### **Objectives**

- 1) Build and maintain customer, stakeholder and First Nations support
- 2) Position FortisBC's commitment to exceptional customer service while delivering safe, reliable electricity at the highest perceived value.
- 3) Help maintain FortisBC's high customer satisfaction levels
- 4) Demonstrate FortisBC's commitment to communicating openly about its activities, consulting with stakeholders about developments that affect them, and contributing to the economic, environmental and social fabric of the communities the company serves
- 5) Enhance FortisBC's strong, recognizable identity within its service territory with a focus on strategic relationship building and awareness of the company's proud history in the province as the oldest electric utility in B.C.
- 6) Demonstrate FortisBC's leadership in energy efficiency and conservation, and engage both customers and employees in energy efficiency and conservation behaviour that helps them save energy and on their bills while helping meet 30 per cent of forecasted load growth.

### **Stakeholder Strategies**

#### **Residential & Commercial Customers**

The company's communications and public affairs budget is cast to reflect activities that provide value and support continued high levels of customer satisfaction. Value is created through strong, transparent community and First Nations relationships supported by regular and timely communications on topics significant to customers including safety, energy efficiency - PowerSense, rates, planned and unplanned outages, and capital projects. Ongoing information sharing about major equipment/facility upgrades and advance consultation on proposed capital projects is critical to success. This approach that has been instrumental in helping manage issues and achieve regulatory approvals for major capital projects.

The customers of FortisBC in many cases are also served by Terasen Gas. Joint communications and stakeholder relations activities in 2010 have worked well to convey information about the new combined leadership structure and the companies' new shared focus and strategy. There is the opportunity to leverage the strength of existing relationships with customers in this service area. By demonstrating natural gas and Terasen-offered alternates such as geo-exchange as part of an integrated energy system, the company will reinforce its diversified energy expertise and its ability to provide innovative solutions for B.C.'s sustainable energy future.

Last but not least, an open dialogue is important with customers in terms of issues, challenges and fears regarding all types of energy. Feedback should be easily delivered and responded to in a timely manner. This can be done via the company's established, in-house contact centre, on the website, social media, and other channels. This will help communicate information that is technical and not always easily understood by this audience.

#### **Government Officials & Policy Makers**

At a provincial level FortisBC is well positioned as the President and CEO is involved with key government energy committees and has strong relationships with key stakeholders.

Personal interaction with key officials or group presentations position FortisBC as an industry leader and focus on: FortisBC's strategic priorities; generating understanding about future power supply resource challenges and the need for capital investments to both maintain the system and serve the growing demand for electricity; building awareness and support for FortisBC energy efficiency programs; and, issues briefings as needed to make sure concerns, issues and interests are responded to in a way that reduces risks.

#### **First Nations**

A significant number of FortisBC power facilities and lines are located on reserve land and in traditional First Nations territories. FortisBC has built strong working relationships with the nine bands and three nations in its service territory.

This strategy requires building relationships and consulting with First Nations and all of our stakeholders, including customers and government, about the company's activities and at the first stages of all major infrastructure projects.

Continual contact and information sharing, as well as direct involvement by the executive has been very effective in establishing strong relationships built on trust and respect with First Nations. Forging these relationships is a long-term investment, both for the company and First Nations.

#### **Media**

Supply news and industry media with regular highlights of recently approved/completed projects and any future projects that partner with Terasen for natural gas or alternates such as geo-exchange, waste heat recovery, solar thermal etc, as part of an integrated energy solution. Media relations announcements in the shared service territory should be coordinated to prevent the companies from scooping one-another. Existing media relationships should be leveraged to the benefit of both FortisBC and Terasen.

Ongoing regular bites of information including photographs are important to facilitate fair and balanced media coverage on issues, and keep the company top-of-mind with this audience in the areas of energy efficiency and sustainable energy solutions. This will contribute to the overall leadership positioning of the company, and a pro-active approach to developing new and better energy alternatives that contribute positively to both the environment and economy.

#### **Employees**

FortisBC employees receive regular information on all key developments and strategic priorities of the business, and are active ambassadors for the company in their

communities. Major energy efficiency campaigns include employee engagement tactics to generate excitement and participation by employees, and strengthen FortisBC and its employees as a role model for energy efficiency.

Since the combined leadership announcement, it is now important to focus on raising the level of awareness and education regarding FortisBC for all Terasen employees and to build a stronger sense of team among employees of both companies. Employee communications initiatives will serve to raise levels of awareness progressively over the next year.

**Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Also note that these tactics may also apply to other Lines of Businesses, as such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Customer Collateral (Newsletters, Annual Report, Brochures, Displays)	\$ 168,000
Media/Government Relations	\$ 18,500
Research	\$ 1,500
Advertising	\$ 65,000
Community investment (corporate donations/sponsorships)	\$ 205,000
Corporate merchandise	\$ 30,000
Employee Staff events Employee recognition (LSA) Newsletters	\$ 135,500
Total	\$ 623,500
Transfer or contribution from somewhere?	(\$40,000)
Total	\$ 583,500

## **Evaluation**

- Feedback from managers.
- Customer comments via contact centres, website and social media.
- Research results from customer satisfaction surveys.

## **Energy Efficiency & Conservation (Terasen)**

This line of business aligns with the support point: Energy efficiency and conservation tools and resources at Terasen.

In 2009, Terasen introduced a \$41.5-million Energy Efficiency and Conservation initiative to enhance the energy efficiency tools and incentives provided to residential customers and businesses across B.C. This initiative was later expanded through 2011, with an additional \$38.5 million.

Over the life of the expanded program, Terasen will help customers eliminate more than 775,000 tonnes of greenhouse gas emissions, saving a total 15.5 million gigajoules of natural gas – enough to fuel approximately 155,000 homes for one year.

### **Objectives**

- Reduce energy consumption and overall GHG emissions while helping meet B.C.'s climate action challenges.
- Manage energy bills more effectively.
- Increase awareness for incentives for upgrades to more energy efficient appliances & equipment in existing buildings.
- Increase awareness for programs for new home construction that use latest energy efficient technologies.

### **Stakeholder Strategies**

#### **Customers**

This group includes a wide range of customers with varying needs and motivations: residential, commercial, industrial, multi-family buildings, office buildings and schools/universities. It also includes those in affordable housing and ways to ensure these customers can participate in energy efficient initiatives or practices.

The overall goal is to generate awareness, stimulate interest and participation in EEC programs and incentive offers by communicating the specific benefits of each program to each type of customer. These benefits must be of personal value and more than simply what is best for the environment in order to truly motivate and engage.

In addition to current customers, communications also focus on students (elementary, high school and university) who have influence on their parents' energy consumption behaviour/purchases and are important targets for long-term brand building.

Given the diverse range of programs and incentives, it is important to simplify the information and focus on the key customer benefit for each particular program. Key considerations should be given to the BC Hydro Power Smart program and communications should try to focus on areas that differentiate versus compete with this well-established multi-million dollar program.

The positive halo effect on the company's sustainable leadership positioning should be considered in all communications, and programs that most powerfully support this positioning should be highlighted.

**Builders, Developers & HVAC Contractors**

The main focus with the trades is on educational materials that help them sell efficiency upgrades or new technologies to their customers. These materials should focus on the programs that maximize the win-win benefit in terms of increased revenue and business for them and long term cost savings for their customers.

**Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Also note that these tactics may also apply to other Lines of Business, and such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Online	\$ 80,000
- Website including application downloads.	
- Videos with energy savings tips.	
- Social media posts with video, short tips and event promotion.	
Advertising	\$ 250,000
- Radio	
- Newspaper and niche magazines.	
Strategic Partnerships	\$ 535,000
- Trusted third parties that can share success stories (for example BC Lions, Vancouver Canucks, Vancouver Giants).	
Events	\$ 294,000
- Industry trade shows.	
- Home shows and community events.	
Print	\$ 200,000
- Bill inserts and brochures.	
- Newsletters.	

## **Evaluation**

- Page views for EEC program web pages and application downloads.
- Number of program applications received.
- Customer feedback and customer satisfaction research results

## **PowerSense (FortisBC)**

This line of business aligns with the support point: Energy efficiency and conservation tools and resources at FortisBC called PowerSense.

PowerSense, FortisBC's demand side management program, is one of longest-running demand side management programs (DSM) in Canada. Since 1989, the PowerSense program has helped FortisBC customers cumulatively save more than 360 GWh of energy, or enough to power 27,700 homes for a year

Leveraging this success, FortisBC has voluntarily committed to increase DSM resources from current levels of meeting approximately 50 percent of electricity needed to support new growth by 2020. This supports the Provincial Government's ambitious conservation targets contained within the 2007 Energy Plan.

On the road to meeting this target, in 2009 increased the amount of load growth offset by DSM initiatives to 30 per cent, up from 25 per cent the year before. FortisBC's 2009/10 capital plan includes a commitment to achieve a 35 per cent target by the end of 2010..

### **Objectives**

- Position FortisBC as an industry leader in energy efficiency and conservation with all customer/stakeholder groups
- Increase awareness, interest and participation in incentive programs and adoption of energy conservation behaviour with FortisBC customers, as well as customers of the following municipal utilities: Grand Forks, Kelowna, Penticton, Summerland and Nelson Hydro.
- Create awareness about how conserving energy helps keep rates lower and lessens the need for new electrical infrastructure and power purchases at peak periods in order to meet customer's future electricity demand.
- Collaborate with government agencies and the other BC energy utilities to work towards the objectives of the BC Energy Plan, and ensure customers are receiving consistent DSM messages.
- Reach the underserved low-income customer market and educate them about opportunities to lower their energy consumption and reduce their bill through energy efficiency improvements.
- Engage employees to act as ambassadors for energy efficiency and think about what they can do at work and home to conserve energy.

### **Stakeholder Strategies**

#### **Customers**

This group includes a wide range of customers with varying needs and motivations: residential, commercial, and industrial, including low-income and rental, business, institutional, irrigation, and builders/developers.

It also includes developing and delivering a conservation program for low-income and rental customers which involves providing specifically tailored tools (i.e. energy efficiency kits co branded with Terasen Gas), programs and outreach to ensure energy efficiency and conservation practices are accessible by removing barriers. This is being achieved through partnerships with municipal, provincial and federal agencies, other utilities and non-profit organizations to leverage investment and align service and program delivery.

The overall goal is to generate awareness, stimulate interest and participation in PowerSense programs and incentive offers through community based public awareness and education campaigns that communicate the specific benefits of each program to each type of customer. These benefits must be of personal value and more than simply what is best for the environment in order to truly motivate and engage.

Residential sector programs support improvements/renovations to existing homes and efficiency enhancements to new home construction. This is achieved through government and utility partnership programs, like LiveSmartBC, for single-family home retrofits and direct financial incentives for single and multi-family developers and builders.

General service sector programs support improvements to existing facilities or upgrades to higher efficiency levels for new construction in the General Service sector, as well as provide funding for audits and engineering studies. The General Service sector consists of non-residential customers such as commercial, institutional, government and small manufacturing facilities.

The industrial sector consists of programs for improvements to existing facilities or upgrades to higher efficiency levels for new facilities in the industrial sector. This sector consists of non-residential customers that have a minimum demand of 500 kilovolt amperes (kVA) and includes sawmills, mining and other processing facilities such as a pulp mill. Industrial program offerings for both existing and new facilities offer rebates for energy efficiency improvements and co-fund engineering studies to identify and implement efficiency measures.

#### **Contractor / Wholesaler**

Recent surveys show that heating contractors, electricians and lighting wholesalers are largely unaware of PowerSense incentive programs. A long-term direct marketing campaign to build partnerships with this sector will be introduced early in the fall of 2010. This will also provide another effective channel to reach customers with PowerSense messaging.

**Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple customer groups.

Description	2010 Budget
Online	\$0
- Website	
Promotional activities	\$100,000
- Point of purchase give-aways	
- Public relations	
Advertising	\$150,000
- Radio, Newspapers, Magazines	
Strategic Partnerships	\$10,000
- Letters to community advocates and service groups	
- Contractors	
- Information sessions coordinated with retailers	
- Wholesale lighting point-of-sale instant rebates	
- Retail point-of-sale instant rebates	
- Fire Department distribution of PS information and product samples	
- Partnerships with NGOs to provide EE information and rebate services	
Outreach	\$231,000
- Community events/trade shows	
- Displays/exhibits	
- Product give-aways (events and radio campaigns)	
- Rewards	
- Donations & sponsorship	
Print	\$40,000
- Bill inserts/customer newsletters and brochures.	

Description	2010 Budget
- Factsheets	
- Point of sale displays	
Other	\$8000
- Photography	
<b>TOTAL</b>	<b>\$539,000</b>

PowerSense is experiencing unprecedented growth in its goals, objectives and programming offers. As such, it is more important than ever to provide effective communications and social marketing strategy and delivery that meets the increased expectations.

Customers are also requesting more education and information about energy efficiency and conservation. To help meet the demand and develop a “conservation culture” a number of events and/or social marketing campaigns are needed. A number of school education programs will also be rolled out and need to be supported in upcoming years

To successfully promote existing PowerSense programs and prepare to meet the aggressive 2011 energy efficiency savings goals, additional employees in the communications group will be required.

### **Evaluation**

- Page views for PowerSense program web pages and application downloads.
- Number of program applications received.
- Volume and tone of earned media received
- Customer participation levels in social marketing campaigns
- Customer and third party feedback
- Results of customer surveys (pre- and post-program surveys)

## **Customer Care**

This line of business aligns with the support point: Top-notch customer care.

### **Objectives:**

- Generate awareness and excitement of new B.C.-based contact centres.
- Maintain reputation as a transparent and trustworthy organization.
- Demonstrate commitment to being a customer-focused organization through accurate, timely and friendly communication.
- Demonstrate commitment to corporate social responsibility and sustainability through the selection of a local workforce and the energy and environmental standards of the new buildings in addition to the sustainable, B.C.-sourced materials used.

## **Stakeholder Strategies**

### **Residential & Commercial Customers**

Given that customer satisfaction levels are generally very good, the main goal is to build on this success and provide even more reasons to believe the company is very committed to its customers. By far, the best way to do this will be through the introduction of the new B.C. based contact centres.

On Vancouver Island there are additional concerns with respect to the current level of customer care (timing and quality of communication). As a result, more focus will be required to drive home the benefits of the new local contact centres and how they will alleviate previous frustrations.

The benefits of the new customer care model should be highlighted as: 1) quicker and more accurate information that is tailored to each local area, 2) greater flexibility to introduce new services, 3) expanded energy efficiency programs and 4) economic benefits for all British Columbians by creating new jobs.

Expanding the contact centre communications, beyond the announcement of the locations, should begin as soon as possible to ensure that customers feel part of the process and to help generate excitement about the improved service as well as local job opportunities. Communications should acknowledge that changes are coming as far in advance as possible and that the company is committed to making them efficiently as possible.

A two-way dialogue is critical in this communication. Feedback about the new centres should be easy for customers to provide and quickly responded to in order to build trust that the new operations will provide an even higher quality of service.

It should be noted that FortisBC has operated its own in-house contact centres since 2007 and focuses on high quality service and system reliability to provide its customers with the greatest sense of value. This is a significant service differentiator as currently FortisBC rates are 17 percent higher than BC Hydro although the that rate spread for the average customer is expected to decline to approximately 12 per cent by 2015. FortisBC is very active in

engaging in the communities it serves and sharing those activities in its communications and public affairs activities with all stakeholders but especially its customers. For both Terasen and FortisBC, the B.C. –based contact centres provide an opportunity to promote high-quality customer care and relationships as a Fortis brand value.

#### **Employees**

All employees, regardless of location and department, need to be aware of the contact centres development/launch timing, changes to existing customer service operations and benefits to customers. In addition, to the company's commitment to corporate social responsibility. This education can then be utilized to communicate with the general public in all of their communities.

Given that this is a significant undertaking for the organization, the launch of the centres should be celebrated to help generate excitement and reinforce the additional benefits province-wide.

Employees in the company should be assured that existing contact centres will remain open and not be replaced by the two new B.C.-based contact centres scheduled for operation in 2012.

#### **Government Officials & Policy Makers**

The new contact centres provide an excellent large-scale example of the company's commitment to the province of B.C. and its economy. The contact centres will increase provincial GDP and tax revenues, which is of obvious benefit to this group.

This point should be leveraged within all presentations and meetings in order to help generate interest and action in other lines of business like energy solutions. Government representatives, particularly at the community and provincial level, should be invited to speak at company sponsored media events scheduled to take place at the key project milestones and would be encouraged to speak to the company's actions that support positive community impact and corporate social responsibility.

**Media**

As influencers for all other stakeholder groups, the media is an important part of the equation in demonstrating the company’s commitment to quality, in-house customer service that provides enhanced value for customers and makes financial sense versus outsourced customer care options.

The best way to add credibility to this message is by supplying both media and community stakeholders with regular highlights of the project milestones from the contact centre project. These messages should also include economic benefits for the contact centre communities and the province as a whole and recruitment opportunities.

Media would be educated on the company’s commitment to corporate social responsibility beyond the local workforce to include the substantial upgrades to the building envelope and mechanical systems, and the replacement of the building’s electrical systems to meet higher energy efficiency standards. Design and construction will follow the principles and guidelines of LEED (Leadership in Energy and Environmental Design) by focusing on recycled and recyclable materials, using natural light, locally sourced wood such as mountain pine beetle impacted wood from Prince George and avoiding unnecessary landfill.

**Tactics Summary and Budget for Terasen’s Customer Care Enhancement project**

*Customer Care budget for FortisBC is included in the electric line of business.*

The following is a summary of tactics described in this section which may apply across multiple stakeholders.

Description	Budget
Online	\$ 20,000
- Website page with news and updates, key milestones, video and photos.	
- Social media posts highlighting key developments with video and photos.	
Print	\$ 700,000
- Bill inserts and Get Comfortable and Service Line newsletters and a mailout to all customers explaining actions they may need to take and changes they will see when the new centres are implemented	
Media Relations	\$ 60,000
- Launch media event at Prince George and Lower Mainland contact centre locations.	

Description	Budget
- Targeted pitches to local media as milestones are achieved in advance of launch.	
Government Relations	\$ Part of overall cmns budget
- Regular updates to local officials.	
Employee	\$ 60,000
- Page on Pipeline - with regular updates, including video designed for external audiences.	
- Regular updates on Headline News, Check it Out, Employee Connections and in Focus.	
- Lunch n' Learn Sessions	
- Road show events by project team members to areas such as Prince George, Kelowna, Victoria and Cranbrook.	
Community Relations	\$ 48,000
- Open house for community leaders at both new contact centres.	
- Brochures at relevant community events including home shows.	

**Evaluation**

- Customer feedback to contact centre, online media and website.
- Volume and tone of media coverage, including letters to the editor.
- Research results in customer surveys.
- Employee feedback.

## **Commitments**

This line of business aligns with the support point: Strong commitments to communities.

### **Objectives**

To support a future CSR plan by achieving the following objectives:

- Increased awareness of public and work safety measures.
- Increased awareness of environmental performance.
- Better understanding on demand, rates and service value.
- Increased awareness of community investment and employee giving / volunteerism.

### **Stakeholder Strategies - Safety**

#### **Customers & General Public**

Safety is the company's number one priority. Through public communications, it is critical that safety information is effectively communicated to ensure that the public is adequately informed about all aspects of natural gas safety and emergency procedures.

Key natural gas safety messages include:

- Natural gas has a rotten egg or sulphur-like odour so that it can easily be detected.
  - Anyone who thinks they smell gas, should act fast, get out of the building and call 1-888-663-9911, 911 or the local fire department.
- Always “Call Before You Dig” to obtain information on the location of buried gas lines and other utilities. Call BC One Call at 1-800-474-6886.
- Customers should ensure that their natural gas appliances are regularly serviced and inspected by a licensed gas contractor registered with the BC Safety Authority.
- Keep your meter clear of ice and snow. Remove any built-up snow by hand until the regulator and shut off valve are clear. When shoveling snow, don't pile it up against or around your meter. If ice builds up on your meter or regulator, call 1-888-224-2710.
- If there is a leak from a pipe, the safest and least impactful solution is often to let the gas rise and dissipate quickly given that it is lighter than air. This is a short term solution until the leak can be totally stopped.
- It is not hazardous to ingest natural gas or the mercaptan which is added to gas to give it its 'rotten egg like' odour.
- Caution should always be taken near any gas source but it is important to note that it can only be ignited in limited gas to air mixtures.

Key electricity safety messages include:

- Electricity safety messages include “Look up and Live” and “a downed power line is deadly” Use caution when working in areas containing overhead power lines to prevent accidents caused by contact with the lines.
- A downed power line is deadly. If your vehicle contacts one, stay in the vehicle and call 911. Follow detailed instructions if you must leave the vehicle. Never touch your vehicle or a machine at the same time as the ground.
- You do not have to touch a power line to be injured or killed.

Given the importance of these safety messages for all British Columbians, mass communications are required to reach as many people as possible. This includes radio and newspaper advertising as well as corresponding editorial and social media posts. Awareness building is key and prompts to seek more detailed information and tips on the website are important.

Messages should be delivered in the most impactful way to maximize potential for audiences to engage, understand and act.

### **Employees**

There is nothing more critical to the business than having each employee return home safe at the end of each workday. The company has rigorous safety standards to prevent injury and all staff and contractors are required to meet these standards.

Internal communications via online, posters and printed materials are important tools to communicate these tips and standards, in addition to training from supervisors. Workshops like 'Dig Safe BC' are also encouraged for all contractors.

Key messages include:

- Each employee must protect his or her health and safety and the safety of others by following established safety practices and procedures.
- Short cuts for expediency, at the expense of health and safety, are unacceptable.
- Every employee has the responsibility to report/act on observed unsafe conditions/acts.

## **Stakeholder Strategies - Environmental Performance**

### **Customers & General Public**

The company is committed to bringing its customers the most reliable and efficient energy services in an environmentally and socially responsible manner. It works with communities and stakeholders openly and honestly to ensure that all activities have no lasting negative effects on the environment. Employees are vigorously trained in environmental standards and practices to ensure compliance with all national, provincial and regional laws and climate change targets.

There are two key environmental areas that require operational focus and external communication: 1) GHG emissions management and 2) management of all land and waterways that are affected by pipelines and electrical lines.

From an emissions management standpoint, key messages include:

- Natural gas is the cleanest burning carbon-based fuel on the market today.
- Switching to natural gas from oil or coal helps reduce overall GHG emissions and helps Canada meet climate change targets.
- Transporting and distributing natural gas has fewer environmental impacts than transporting other energy sources such as oil, wood waste or coal, because pipelines are more energy-efficient than marine transportation, railways or trucks.

Key messages regarding land and water management include:

- A comprehensive environmental review is completed and shared with potential stakeholders prior to the start of any new project - to protect the land, water, fish and wildlife that could be affected by pipelines or electrical lines.
- The Osprey nest management program works with professional biologists to prevent nesting on energized poles and relocate them to keep the birds safe from electrocution.
- As part of the vegetation management program, trees that are too close to power lines are carefully assessed, trimmed or removed to reduce the likelihood of any public safety hazard.

Environmental messages are communicated to the public through the website, social media and bill inserts as well as being an important part of all community events.

#### **Government Officials & Policy Makers**

It is important that the organization is perceived as a pro-active leader in supporting the government's commitment to the environment and climate change goals. Proposals to policy makers that reflect ways to positively contribute to government requirements will go a long way in creating ongoing favourable opportunities for the company.

Environmental performance and initiatives should be communicated as part of an government presentation or event.

#### **Stakeholder Strategies – Rates**

##### **Residential & Commercial Customers**

The company is regulated by the British Columbia Utilities Commission (BCUC) and this includes rate review and approval. Value is a key priority for the company and it employs several strategies to ensure it delivers the best value to all customers for all types of energy.

Given that rate structures are complex and rate increases are sometimes necessary to offset infrastructure improvements, it is important to communicate this information in a simple and direct way. The most effective vehicles to accomplish this are the website and bill inserts.

Key natural gas rate messages include:

- Terasen purchases natural gas and propane and passes the cost of the commodity on to the customer without mark-up.
- Terasen protects customers from market fluctuations by: 1) purchasing gas from a variety of sources under varying terms, 2) locking in the price of gas through the use of futures contracts and 3) purchasing a portion of the supply from the spot market.
- Weather, supply and demand, international events and market speculation all affect natural gas commodity rates.
- Our expanded energy efficiency and conservation programs will provide customers with enhanced tools and incentives to manage their natural gas consumption and reduce their monthly energy bills.

Key electricity rate messages include:

- The company works hard to minimize rate increases through careful management of capital expenditure programs and increased productivity overall.
- Rates are increasing in 2010 as a result of the company's ongoing investment in new and upgraded infrastructure, the higher cost of capital, and from higher power purchase costs due to continued customer growth and increased electrical demand.
- FortisBC purchases a portion of its power requirements from BC Hydro. Therefore any changes to BC Hydro's power costs will affect FortisBC and will require FortisBC to flow-through this price change to customers.
- The FortisBC PowerSense program will continue to help customers manage their energy use and reduce costs.

## **Stakeholder Strategies - Community Investment and Employee Giving / Volunteerism**

### **Customers & General Public**

The company strongly believes in being active partners with the communities it serves and supports a host of community-based initiatives throughout the province. Community programs are designed to directly benefit the local community and to highlight the organization in a positive way.

There are four key messages that stem from the organization's commitment in these areas:

- Safety and accident prevention.
- Education, skill building and training.
- Environmental preservation and protection.
- First Nations culture and unique needs.

All community project requests are reviewed and carefully evaluated to ensure that resources are effectively being used to deliver on the above commitments. Programs include donations, in kind contributions, event sponsorship, presentations/workshops and

booths at events. One of the larger and most important programs is the RENEW job training program which aims to create a much-needed pool of skilled workers in the growing energy industry.

The company also strongly supports the active volunteer involvement of employees in the communities where they live and work. Every year, Terasen employees take part in Community Giving Day, when volunteer time and funds are donated to three selected non-profits in different communities throughout the province. A total of \$30,000 is donated each year.

On the other hand, FortisBC has an employee donations program and all employees have an opportunity to apply for a cash donation towards organizations where they are a volunteer leader (coach, guardian or instructor). In 2009, more than \$19,500 was donated to 30 different organizations.

It is important that the public is aware of all of our community efforts to ensure this part of the business is contributing to the leadership positioning in creating a sustainable future for all British Columbians. All communication within the communities, on the website, in social media and in the annual report should focus on the direct benefit to the community versus the company's contribution in order to reflect the appropriate tone.

**Employees**

Community giving is an important part of the employee retention program. It provides employees with a sense of teamwork, pride and accomplishment.

Internal communications via online vehicles and posters are effective ways to increase awareness, participation and goodwill throughout the organization.

**Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Also note that these tactics may also apply to other Lines of Businesses, as such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Advertising	\$ 980,000
- Radio.	
- Newspaper	
Media Relations	\$ Part of overall cmns budget
- Targeted stories to correspond with advertising timing	
Online	\$ Part of overall cmns budget
- Website	

Description	Budget
- Social media posts.	
Print	\$ 215,000
- Collateral materials including posters and bill inserts	
- Newsletters	
Events	\$ Within the budgets of other lines or business
- Home shows	
- Presentations at schools	
- Street teams at community festivals	
Direct Mail	\$ 5,000
- Targeted at those that live or work in rights of way	
Donations & Sponsorships	
- Non-Profits	
- Community Projects	
Government	
- Presentations	
- Events	

**Evaluation**

- Telephone survey awareness results.
- Results from customer focus groups.

## **Employee Engagement**

This line of business aligns with the support point: Strong employee engagement.

### Objectives

- Combined leadership and renaming of Terasen and FortisBC.
- Retention, attraction and motivation of employees in all lines of business.
- Development of knowledgeable brand ambassadors that clearly understand and support the brand's leadership positioning in energy sustainability.
- Development of the brand pillars and cultures – Culture of Care (Relationships), Culture of Innovation (Readiness), Culture of Excellence (Reliability).

## **Stakeholder Strategies**

### **Employees**

The recent combined leadership structure is the first step of the eventual integration of Terasen and FortisBC. Although, still run as separate legal entities there will be cross reporting in corporate areas where it makes business sense. Employee communications will work to inform employees that this is about making the organization a stronger, better company – not a smaller company as the organization is well positioned for growth and needs all of the team members to help realize this potential. It is important that timely communications to employees work to dispel any misconceptions and create excitement that employees will now be part of B.C.'s largest energy delivery company.

It is anticipated that the Terasen and FortisBC could be renamed as early as the end of 2010 – employee communications would take place just in advance to external announcements to ensure that all employees are aware of the change and could speak knowledgeably and positively about it.

Communications to employees will support our key brand message and business priorities, while making these messages inclusive, meaningful, and easy to internalize – for any employee, in any role around the company. The goal is to inspire all employees to learn more about the business and be proud to discuss it within their communities. This feeling of pride will in turn create a more positive, productive working environment.

The messages will include:

- The company is a leading integrated energy provider, committed to providing responsible, innovative, flexible energy solutions, ensuring natural gas and electricity are readily available, while expanding upon our existing service and product base to integrate innovative energy offerings such as alternative energies, geoexchange, waste heat recovery, solar thermal and biogas.
- Natural gas is a safe and reliable energy source and the cleanest burning carbon-based fuel on the market today; it produces significantly less particulate matter and fewer greenhouse gas (GHG) emissions than other carbon-based fuels like oil and coal.
- Electricity infrastructure is viewed as an integrated system, looking at generation, distribution and demand side management as a whole.
- The energy transmission and distribution systems have an excellent safety record, and we take all possible steps to ensure our pipelines are safe and secure, including monitoring our system 24-hours a day, 365 days a year, and performing regular inspections and maintenance of our infrastructure and equipment.
- Customer service is at the heart of the business, underscoring everything it does, and actively seeks for better ways to serve all customers, and provide them with optimal value.
- The company works hard to help deliver a sustainable future for British Columbia, not only through our provision of reliable integrated energies, but also by giving back to the communities where all employees live and work through our Give Where You Live, Environmental Community Outreach (ECO) and FortisBC's community investment programs, and by mitigating environmental impacts through our operations management plans, GHG reduction initiatives, while building the energy efficiency and options that will empower our customers to minimize their environmental impacts too.
- The company takes pride in our workplace, and in ensuring it remains a preferred place to work, by supporting employees' career development, safety and wellness, community activities, and fostering a workplace culture where everyone has the opportunity to lead, learn and grow.

These messages will be communicated using employee-centred stories and using multiple channels. Open communication is vital so audiences have a way to communicate feedback at any time with a company commitment to responding in a very timely fashion.

### **Tactics Summary and Budget**

The following is a summary of tactics described in this section which may apply across multiple stakeholders. Note that these tactics may also apply to other Lines of Business, and such prioritizing or sharing of budgets will help maximize effectiveness and reduce redundancy.

Description	Budget
Events	\$ Part of renaming budget
- Name change announcement	
- Regular updates including video on project developments, approvals and media coverage	
- Community Giving Day	\$ part of existing Community Giving Day budget
- FortisBC Community Investment announcements and local announcements	
Newsletters	\$ 60,000
- Monthly submissions to Insight/Around The System & Check it Outs	
- Focus and Pipeline stories including Headline News and Employee Connections.	
- Content for FortisBC employee communications – weekly news update and managers pre-packs	
Print	\$ part of budgets from other lines of business
- Posters	
- Promotional collateral including t-shirts, etc	

**Evaluation**

- Feedback via word-of-mouth and communications e-mail inbox.
- Employee Experience Survey results comparison on an annual basis.
- Zoomerang surveys as appropriate.
- Employee retention levels measured against industry standards
- Recruitment statistics
- Customer satisfaction surveys and comment to call centre

**Attachment 38.1**

---

Effective: OCT 16 1997 L-64-1997

BCUC Secretary: Original signed by R.J. Pellatt

*[FortisBC Energy Inc.]*

## **T R A N S F E R P R I C I N G P O L I C Y**

*For Provision of Utility Resources and Services*

*August 1997*

### **SCOPE**

This policy addresses the pricing of resources and services provided by [FortisBC Energy Inc. (FortisBC Energy)] to:

- ◆ Non-Regulated Businesses (NRBs); and
- ◆ Divisions of the Utility providing unregulated products or services (collectively NRBs).

[FortisBC Energy Inc.] will ensure that it receives adequate compensation for the resources and services provided, thereby protecting ratepayers from subsidising unregulated activities.

The Transfer Pricing Policy will be used in conjunction with the [FortisBC Energy Inc.] Code of Conduct for Provision of Utility Resources and Services dated August, 1997. However, this policy does not replace [FortisBC Energy]/NRB contracts and undertakings in existence prior to approval of this Transfer Pricing Policy.

**DEFINITIONS**

<b>[FortisBC Energy Inc.]</b>	<i>May be abbreviated as follows: [FortisBC Energy], the Utility, or the Company, and may also include employees of the Company.</i>
<b>Commission</b>	<i>British Columbia Utilities Commission.</i>
<b>Competitive Market Price (or Market Value)</b>	<i>The price that would be paid for a resource or service in a fully functioning, competitive (unregulated) market. Alternatively, the prices of goods or services that can serve as substitutes for the resources or services being offered may also be used.</i>
<b>Development</b>	<i>The translation of research findings or other knowledge into a plan or design for new or substantially improved materials, devices, products, processes, systems or services prior to the commencement of commercial production or use.</i>
<b>Guidelines</b>	<i>Retail Markets Downstream of the Utility Meter Guidelines published by the British Columbia Utilities Commission in April, 1997.</i>
<b>Non-Regulated Business (NRB)</b>	<i>An affiliate of the Utility not regulated by the Commission or a division of the Utility offering unregulated products or services. “Related NRB” refers to any NRB which uses any resources of the Utility.</i>
<b>Research</b>	<i>Planned investigation undertaken for the purpose and expectation of gaining new scientific or technical knowledge and understanding. Such investigation may or may not be directed towards a specific practical aim or commercial application.</i>
<b>RMDM</b>	<i>Acronym for “Retail Markets Downstream of the Utility Meter”, which may include any utility or energy related activity at or downstream of the utility meter.</i>
<b>Transfer Price</b>	<i>The price established for the provision of Utility resources and services, or the transfer of Utility assets, to an NRB or division of the Utility providing unregulated products and services. Transfer pricing for any Utility resource or service will be determined by applying the [FortisBC Energy] Transfer Pricing Policy approved by the Commission.</i>

## **POLICY**

Transfer Prices charged to NRBs by the Utility will ensure Utility ratepayers are not adversely affected and will be established using the following pricing rules.

### **1. Pricing Rules**

- i. If an applicable [FortisBC Energy] tariff rate exists, the Transfer Price will be set according to the tariff.
- ii. Where no tariff rate exists, the Transfer Price will be set at either the full cost (see Section 2 below) or, where feasible and practical, the Competitive Market Price, whichever is greater.
- iii. In situations where it can be shown that an alternative Transfer Price will provide greater benefits to the ratepayer, the Utility may apply to the Commission for special pricing consideration.

### **2. Determining Full Costs**

For the purposes of this policy, costs for the resources or services being provided by the Utility to an NRB will be based on the Utility's full cost as described below. The definition of full costs will depend on the type of service or resource being provided.

For the most part the types of resources and services that can be provided to NRBs by the Utility are human resources and associated equipment and facilities. The example in Appendix A summarizes how full costs are determined for the different types of services described below in Section 2.1. The determination of full costs, specifically the cost loadings, is based on the approved Code of Business Conduct with respect to Non-Regulated Businesses of [FortisBC Energy] dated March 31, 1995, with modifications reflecting the types of resources and services involved in RMDM.

*If other Utility resources or services are used by an NRB that are not described by this policy, then [FortisBC Energy] will make an application to the Commission on a case-by-case basis. An example of this would be the determination of costs for a Utility asset permanently transferred to an NRB.*

#### **2.1 Type of Service**

There are three types of services: Specific Committed Service, As Required Service and Designated Subsidiary/Affiliate Service. It is important that the type of service is specified before the commencement of any service. This specification is to ensure that the correct cost loadings are applied to any Transfer Price.

i. **Specific Committed Service**

Specific Committed Service is work that is contracted for and billed regardless of whether or not work is actually performed. Typically, this work is ongoing or on a continuing basis (such as accounting) in support of NRB activities. The receiving organization (i.e. the NRB) is, in effect, requiring that the providing organization's department (i.e. [FortisBC Energy]) maintain sufficient staffing levels throughout the year in order to provide this service. The receiving organization must pay for the Specific Committed Service even if the service provided is less than originally contracted.

It is important that the description and scope of the service to be provided be defined before the commencement of such a service, including an indication whether the service is performed at the employee's normal place of work ("on-site") or at the NRB's ("off-site"). A request for Specific Committed Service may be raised or terminated at any time throughout the year. Termination of a Specific Committed Service as a result of an activity change is subject to a sixty (60) day notice period.

At the end of the fiscal year, Specific Committed Services which were not provided (unless the Utility was unable to meet its commitments) will be offset against services used in excess of those committed. Any excess service on a total pooled basis will be billed, but any deficiency will not be refunded. If there is a shortfall in the level of service provided by [FortisBC Energy] a reasonable refund may be made. In the normal course of business, the time estimates for Specific Committed Service are reviewed annually.

To determine the full cost of Specific Committed Service, the following loadings are applied to direct labour costs: concessions loading, benefits loading and general overhead loading. Also facility and/or equipment charges are made if applicable. Appendix A, Column 1 shows an example of determining full cost for Specific Committed Service, both "on-site" and "off-site".

ii. **As Required Service**

As Required Service is work that is not specifically committed to by the receiving organization. The providing organization charges the cost of the actual time incurred to perform the work to the receiving organization. Typically, this is work that is not or cannot be budgeted in advance.

As Required Service must be specified to be either for an extended term (greater or equal to three months) or short term (less than three months) period prior to the commencement of the work. In addition, it must be identified whether the individual providing the services will work at his or her normal place of work ("on-site") or at the NRB's ("off-site").

To determine the full cost of As Required Service, the following loadings are applied to direct labour costs: concessions loading, benefits loading, general overhead loading, supervision loading and an availability charge loading. Also facility and/or equipment charges are made if applicable. Appendix A, Column 2 shows an example of determining full cost for As Required Service.

In certain situations, the Utility will need to retain the immediate right to recall the employee being contracted to the NRB for an As Required Service. In these situations the availability charge will be waived. Prior notification to the Commission is required to waive the availability charge for As Required Service.

iii. **Designated Subsidiary/Affiliate Service**

A Designated Subsidiary/Affiliate is a related company that is designated by [FortisBC Energy] and approved by the Commission to receive reduced loadings in the Transfer Price. The designation relates to the additional benefits that the related company provides to [FortisBC Energy]'s customers, employees or to the economic development of the Province of British Columbia.

A Designated Subsidiary/Affiliate receives services on the same basis as the As Required Service described above. To determine the full cost of Designated Subsidiary/Affiliate Service, the following loadings are applied to direct labour costs: concessions loading, benefits loading and a general overhead loading. Appendix A, Column 3 shows an example of determining full cost for A Designated Subsidiary/Affiliate Service.

The Commission may approve a subsidiary or affiliate with this status but exclude specific activities or projects of that subsidiary (e.g. projects taking place in certain geographic locations). Similarly, certain work to be performed for an NRB relating to a specific service, project or product may be designated by [FortisBC Energy] and approved by the Commission to receive reduced loadings.

**3. Costs Relating to the Transfer of Activities from the Utility to NRB**

**3.1 Transfer Costs**

Activities initially undertaken within the regulated Utility may, from time to time, be transferred to an NRB with Commission approval. Costs associated with transferring an activity to an NRB, and the start-up of NRB activities, shall be borne by the NRB. To the extent that these activities involve Utility resources during the transfer, the NRB shall reimburse the Utility using the appropriate pricing rules as defined in Section 1. Costs relating to the termination of an activity within the Utility shall be borne by the Utility.

### **3.2 Research Costs**

As research is regarded as a continuing activity required to maintain the Utility's business and its effectiveness, such expenses shall be borne by the Utility. However, where it is evident that certain research activities are clearly directed towards specific non-regulated pursuits, the Utility will ensure it is compensated by the NRB according to the pricing rules defined in Section 1, net of any quantifiable benefits received by the Utility.

### **3.3 Development Costs**

Development costs for new products and services transferred to an NRB will be tracked and charged to the NRB according to the pricing rules defined in Section 1, net of any quantifiable benefits received by the Utility.

## **4. Employment Issues**

This section provides the guidelines which [FortisBC Energy] will follow in addressing the issues of employee transfers and human resource sharing between the Utility and NRBs. These guidelines implicitly recognize the fact that Utility ratepayers can realize significant benefits when employees have the opportunity to work for NRBs, by providing Utility employees with opportunities to expand their breadth of experience, enhance their skills and attributes, and continue their career development by taking advantage of the diversity of the [FortisBC Holdings Inc.] organization.

Accordingly, it is not the intent of these guidelines to restrict employee transfers or human resource sharing, but rather to ensure that the benefits gained by employees can be brought back to the Utility and realized by ratepayers, and ratepayers are not negatively impacted. In all cases of Utility employee transfers or human resource sharing, the terms of transfers or sharing must be clearly understood by the Utility, NRB and the employee prior to commencement, and properly documented.

These guidelines distinguish between three distinct types of human resource issues: Rotational Transfers, Non-Rotational Transfers and Human Resource Sharing.

### **4.1 Rotational Transfers**

Rotational Transfers represent a career training and development vehicle, in which employees are transferred between the Utility and an NRB on a full-time basis, for a period of time not to exceed 3 years. In these instances, the salary and associated benefits of the employee in question will be assumed by the NRB for the duration of the rotational transfer period. As this initiative is specifically intended as a career training and development mechanism with expected benefits back to the Utility, the individual will typically be assured of continued employment by the Utility at the conclusion of the transfer period.

## **4.2 Non-Rotational Transfers**

Non-Rotational Transfers represent transfers of personnel between the Utility and an NRB, which are not subject to a maximum time duration. As neither the Utility nor its NRBs are required to provide preference to the other's employees in filling permanent positions, non-rotational transfers typically represent instances in which an employee has successfully responded to a posting or advertisement for a position.

In the interest of retaining qualified individuals within the [FortisBC Holdings Inc.] group of companies, and recognizing that many NRB companies already contract with the Utility for human resource services (including common payroll systems and benefits packages), a non-rotational transfer will typically be considered an employee transfer rather than a termination and re-employment. In this manner, employees will not be subjected to a termination of continued employment status and the Utility and NRB will not be required to assume the administrative burden associated with a termination and new hire process.

As a non-rotational transfer is not specifically classified as a career development and training initiative, there will typically be no assurance of employment security from the Utility, unless such assurance is considered to be in the best interest of the Utility, in which case a specific agreement should be negotiated and documented. Any recruitment or administrative costs associated with a non-rotational transfer will be borne by the entity to which the employee is transferring.

## **4.3 Human Resource Sharing**

These guidelines specifically recognize that human resource sharing initiatives can provide a variety of benefits to the Utility and NRBs. For example, circumstances occasionally occur in which the Utility and one or more NRBs each require an individual with similar skills and attributes, but the time commitment required by each entity is insufficient to justify the hiring of a full-time person. In the absence of a human resource sharing initiative, each individual entity would likely be forced to incur the significant cost associated with securing the services of an external consultant, whereas significant cost savings could be realized by hiring an individual on a full-time basis and entering into a cost sharing arrangement. This cost sharing method may also pay future dividends to the Utility by developing in-house expertise and experience rather than developing this expertise and experience in consultants. Additionally, Utility departments or NRBs that are subject to large fluctuations in human resource requirements may have individuals that are not fully utilized at all times, but for whom termination and subsequent re-hire is not a viable option (e.g. due to uncertainty of future availability, termination costs, retraining costs, etc.). In these instances, human resource sharing provides a mechanism through which the receiving entity can fulfil short term resource demands with a qualified individual, while the employing entity can eliminate inefficient salary and benefit costs.

Human resource sharing initiatives also represent an ideal mechanism through which to realize some of the career development and training benefits associated with a rotational transfer, without having to commit to the absolute loss of an individual's services for a certain period of time.

These guidelines are predicated upon the assumption that although all of the applicable entities benefit from human resource sharing initiatives, the employing entity is assuming the greatest degree of risk due to the need to ensure continued employment or incur termination costs. Therefore, a key principle of the human resource sharing initiative proposed by [FortisBC Energy] is that the employing entity will always retain first rights on the services of the individual in question, assuming reasonable notice is provided to the entity for which the individual is providing services at a given point in time.

Employment costs, including salary and benefits, will be allocated to the various entities on a pro rata basis, in accordance with the number of hours dedicated to each entity, and in a manner consistent with the [FortisBC Energy] Code of Conduct for the Provision of Utility Resources and Services.

## **5. Cost Collection Procedures**

### **5.1 Work Orders**

The Utility will be responsible for setting up the appropriate work order, documenting the work order number and ensuring that the appropriate individuals charge time to it. The providing organization's accounting group (typically [FortisBC Energy]'s Financial Accounting Group) will be responsible for maintaining the work order and collecting the appropriate charges.

### **5.2 Time Sheets**

The individuals performing the service must report all time spent on that service by coding their time to the appropriate work order numbers. This is to occur whether the type of service is Specific Committed, As Required or Designated Subsidiary/Affiliate Service. Time sheets are to be sent monthly to the immediate supervisor or [FortisBC Energy]'s Payroll Department. The NRB shall also review the validity of these time sheets.

### **5.3 Invoicing**

The NRB will be invoiced for the contracted amount in respect of Specific Committed Service and for the appropriate time based on the actual payroll level in respect of As Required Service or Designated/Affiliate Service (subject to confidentiality of salary information) with the applicable loadings applied.

The methodology for determining a salary level is on the basis of the average pay grade in the case of Management and Exempt employees or the exact wage grade in the case of bargaining unit employees.

**6. Accounting for Services**

**6.1 Detailed Operating & Maintenance Expense Forecast**

In the event that [FortisBC Energy] makes an application to the Commission for revenues related to operations and maintenance expenses (O&M), time estimates for Specific Committed Services will need to be estimated or forecast for each of the years covered by the application. These estimates or forecasts should be consistent with the relevant costs and assumptions contained in that application.

In the event that an activity change causes a reduction in the actual level of the Specific Committed Service compared to the annual budget (or revenue requirement application), [FortisBC Energy] will use these amounts to offset additional contributions from the NRBs. Net contributions received by the Utility through Transfer Pricing for As Required Service and Designated Subsidiary/Affiliate will be held in a deferral account for future return to [FortisBC Energy]'s customers.

**6.2 Operating & Maintenance Expense Forecast Determined by Formula**

In the event [FortisBC Energy] makes a multi-year application to the Commission for revenues related to O&M, and the allowed O&M level is determined by means of a formula, for the duration of the test period and in accordance with the terms of the Commission Order #G-85-97, [FortisBC Energy] will be entitled to capture the financial savings, such as cost reductions resulting from intercompany charges for RMDM or other NRB activities.

**7. Review of Transfer Pricing Policy**

The Transfer Pricing Policy will be reviewed on an annual basis as part of the Code of Conduct compliance review. However, [FortisBC Energy] may make application to the Commission for approval of changes to the policy including the pricing rules and the formula for determining full costs as and when required.

**Appendix “A”**

**Example of Determining Full Cost for the Three Types of Service**

(for an employee at a daily base pay of \$300, concession loading of 25.48% and benefits loading of 15.75%)

Column	1		2			3
	Specific Committed Service		As Required Service			Designated Subsidiary I Affiliate
	Off-Site Full-time	On-Site Full-time	On-Site Short Term	Off-Site Short Term	Off Site Extended	
BASE PAY(Daily)	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00
PLUS:						
Concessions @ 25.48%	76.44	76.44	76.44	76.44	76.44	76.44
Benefits @ 15.75%	47.25	47.25	47.25	47.25	47.25	47.25
						423.69
GENERAL OVERHEAD	5%	10%	10%	10%	5%	5%
SUPERVISION	N/A	Direct Charge	20%	N/A	N/A	Direct Charge
AVAILABILITY CHARGE	N/A	N/A	20%	20%	20%	N/A
FACILITIES CHARGE (If Applicable)	N/A	\$100.00	\$100.00	\$100.00	N/A	N/A
EQUIPMENT CHARGE (If Applicable)	Direct Charge	Direct Charge	Direct Charge	Direct Charge	Direct Charge	N/A
<b>TOTAL COSTS PER DAY</b>	<b>\$444.87</b>	<b>\$566.06</b>	<b>\$735.54</b>	<b>\$650.80</b>	<b>\$529.61</b>	<b>\$444.87</b>
Cost Ratios:						
to Base Pay	1.48	1.89	2.45	2.17	1.77	1.48
to Loaded Labour	1.05	1.34	1.74	1.54	1.25	1.05

\* If the agreement between the NRB and Utility includes a right to immediate recall, the availability charge is waived. Prior notification to the Commission is required to waive the availability charge for As Required Service.

**Attachment 72.1**

---

**2007 Terasen Gas Inc. Specific Committed Services to Terasen Energy Services Inc.**

#	Area	Position	Hours	Business Unit Subtotal
1	Marketing	VP, Energy Solutions & External Relations	100.0	
2	Marketing	Executive Assistant	160.0	
	<b>Marketing</b>			<b>\$ 33,425.61</b>
3	Strat Comm	Marketing & Customer Communications Manager	20.0	
	<b>Strat Comm</b>			<b>\$ 1,543.11</b>
4	Distribution	Distribution Manager	60.0	
5	Distribution	Distribution Manager	40.0	
6	Distribution	Operations Manager	20.0	
7	Distribution	Distribution Manager	40.0	
8	Distribution	Distribution Manager	40.0	
	<b>Distribution</b>			<b>\$ 18,994.85</b>
9	Measurement	Measurement Clerk	40.0	
	<b>Measurement</b>			<b>\$ 2,204.45</b>
10	Web Services	Web Services Manager	10.0	
11	Web Services	Web Specialist	20.0	
	<b>Web Services</b>			<b>\$ 2,008.75</b>
12	EHS Governance	Sr Mgr, Comm & First Nations Rel, Coast	20.0	
	<b>EHS Governance</b>			<b>\$ 2,247.77</b>
13	Regulatory	Director of Regulatory	20.0	
14	Regulatory	Tariff and Special Contracts Manager	100.0	
15	Regulatory	Tariffs, Rate Design & Proj Coordinator	100.0	
16	Regulatory	Cost of Service Manager	100.0	
17	Regulatory	Manager, Regulatory Compliance & Admin	80.0	
18	Regulatory	Capital Management Office Manager	10.0	
19	Finance	O&M Planning Support Manager	40.0	
20	Finance	Financial Reporting Manager	10.0	
21	Finance	Asset Accounting Analyst	5.0	
	<b>Regulatory &amp; Finance</b>			<b>\$ 38,987.15</b>

**TOTAL: \$ 99,411.68**

2008 Terasen Gas Inc. Specific Committed Services to Terasen Energy Services Inc.

#	Area	Position	Hours
1	Corp & Mktg Comm	Manager, Customer Programs & Research	2.0
2	Corp & Mktg Comm	Designer & Photographer	15.0
3	Corp & Mktg Comm	Writer/Researcher	15.0
4	Corp & Mktg Comm	Communications Coordinator	9.0
5	Corp & Mktg Comm	Marketing & Customer Communications Manager	20.0
	<b>Corp &amp; Mktg Comm</b>		
6	Customer Mgmt & Sales	Customer Account Manager	70.0
7	Customer Mgmt & Sales	Customer Account Manager	500.0
	<b>Customer Mgmt &amp; Sales</b>		
8	Distribution	Operations Manager	10.0
9	Distribution	Distribution Manager	120.0
10	Distribution	Distribution Manager	10.0
11	Distribution	Distribution Manager	10.0
	<b>Distribution</b>		
12	Finance	Asset Accounting Manager	15.0
13	Finance	Asset Accounting Analyst	15.0
14	Finance	Accounta Payable Clerk	14.0
15	Finance	Accounta Payable Clerk	14.0
16	Finance	Accounta Payable Clerk	2.0
	<b>Finance</b>		
17	Gas Supply Mgmt	Energy Services Manager	20.0
	<b>Gas Supply Mgmt</b>		
18	Human Resources	HR Advisor	5.0
	<b>Human Resources</b>		
19	Marketing	Executive Assistant	160.0
20	Marketing	Regional Sales Manager	35.0
21	Marketing	Manager, Customer Care	20.0
22	Marketing	VP,Energy Solutions & External Relations	80.0
	<b>Marketing</b>		
23	Measurement	Measurement Technologies Assistant	10.0
	<b>Measurement</b>		
24	Web Services	Web Specialist	10.0
25	Web Services	Web Services Manager	10.0
	<b>Web Services</b>		
26		Gas Load Control Monitoring	

2009 Terasen Gas Inc. Specific Committed Services to Terasen Energy Services Inc.

#	Area	Position	Hours	Business Unit Subtotal
1	Corp & Mktg Comm	Manager, Customer Programs & Research	2.00	
2	Corp & Mktg Comm	Designer & Photographer	15.00	
3	Corp & Mktg Comm	Writer/Researcher	15.00	
4	Corp & Mktg Comm	Communications Coordinator	9.00	
5	Corp & Mktg Comm	Marketing & Customer Communications Mgr	20.00	
	<b>Corp &amp; Mktg Comm</b>			<b>\$ 4,799.54</b>
6	Customer Mgmt & Sales	Customer Account Manager	70.00	
7	Customer Mgmt & Sales	Customer Account Manager	500.00	
	<b>Customer Mgmt &amp; Sales</b>			<b>44,873.26</b>
8	Distribution	Operations Manager	10.00	
9	Distribution	Distribution Manager	120.00	
10	Distribution	Distribution Manager	10.00	
11	Distribution	Distribution Manager	10.00	
	<b>Distribution</b>			<b>\$ 15,316.37</b>
12	Finance	Asset Accounting Manager	15.00	
13	Finance	Asset Accounting Analyst	15.00	
14	Finance	Financial Accounting Clerk	585.00	
15	Finance	Financial Reporting Manager	54.00	
16	Finance	Accounta Payable Clerk	14.00	
17	Finance	Accounta Payable Clerk	14.00	
18	Finance	Accounta Payable Clerk	2.00	
	<b>Finance</b>			<b>\$ 35,633.55</b>
19	Gas Supply Mgmt	Market Analyst	75.00	
	<b>Gas Supply Mgmt</b>			<b>\$ 7,342.74</b>
20	Human Resources	HR Advisor	5.00	
	<b>Human Resources</b>			<b>\$ 489.52</b>
21	Marketing	Residential Unbundling Project Manager	35.00	
22	Marketing	Regional Sales Manager	35.00	
23	Marketing	Manager, Customer Care	20.00	
24	Marketing	VP, Energy Solutions & External Relations	80.00	
	<b>Marketing</b>			<b>\$ 31,614.64</b>
25	Measurement	Measurement Technologies Assistant	10.00	
26	Measurement	Measurement Analyst 2	24.00	
27	Measurement	Measurement Analyst 2	23.00	
	<b>Measurement</b>			<b>3,258.09</b>
28	Web Services	Web Specialist	10.00	
29	Web Services	Web Services Manager	10.00	
	<b>Web Services</b>			<b>\$ 1,486.17</b>
30		Gas Load Control Monitoring		<b>\$ 4,600.00</b>
31		Resort Billing - IT Support & Copy/printing costs		<b>\$ 11,400.00</b>

TOTAL: **\$ 160,813.86**

**2010 Terasen Gas Inc. Specific Committed Services to Terasen Energy Services Inc.**

#	Area	Position	Hours	Business Unit Subtotal
1	Alternative Energy Svc	Director, Business Development	196.0	
2	Alternative Energy Svc	Mgr, Operations & Project Assessment	785.0	
3	Alternative Energy Svc	Mgr, Business Development & Customer Rel	98.0	
	<b>Alternative Energy Svc</b>			<b>120,001.15</b>
4	Data Acquisition	Measurement Analyst 2	9.0	
5	Data Acquisition	Measurement Analyst 2	9.0	
6	Data Acquisition	Measurement Analyst 2	9.0	
	<b>Data Acquisition</b>			<b>1,663.34</b>
7	Distribution	Project Manager	10.0	
8	Distribution	Distribution Manager	150.0	
9	Distribution	Distribution Manager	10.0	
10	Distribution	Distribution Manager	10.0	
	<b>Distribution</b>			<b>17,913.96</b>
11	Energy Mgt Services	Energy Services Manager	78.0	
	<b>Energy Mgt Services</b>			<b>7,495.59</b>
12	Finance	Asset Accounting Manager	4.0	
13	Finance	Asset Accounting Analyst 2	12.0	
14	Finance	Asset Accounting Analyst 2	18.0	
15	Finance	Financial Accounting Clerk 3	300.0	
16	Finance	Financial Accounting Clerk 4	90.0	
17	Finance	Finance Process and Support Manager	20.0	
18	Finance	Accounts Payable Clerk	20.0	
19	Finance	Accounts Payable Clerk	25.0	
20	Finance	Accounts Payable Clerk	15.0	
	<b>Finance</b>			<b>26,097.53</b>
21	Marketing	Manager, Customer Care	30.0	
	<b>Marketing</b>			<b>4,104.25</b>
22	Measurement	Measurement Technologies Assistant	5.0	
23	Measurement	Measurement Business Analyst	1.0	
	<b>Measurement</b>			<b>353.30</b>
24	Web Services	Web Specialist	7.0	
25	Web Services	Web Specialist	6.0	
	<b>Web Services</b>			<b>816.12</b>

**TOTAL: \$ 178,445.24**

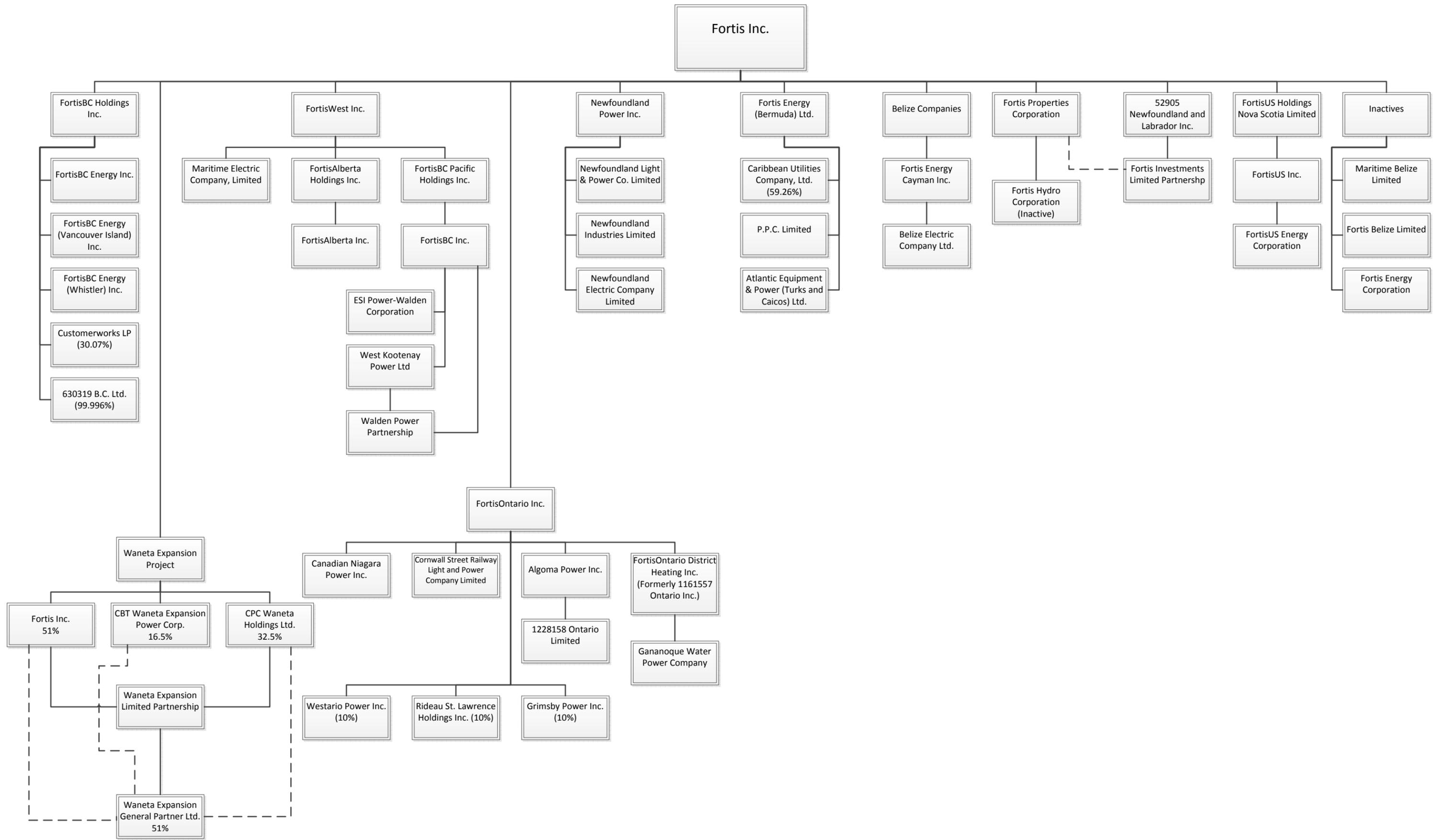
**2011 Terasen Gas Inc. Specific Committed Services to Terasen Energy Services Inc.**

#	Area	Position	Hours	Business Unit Subtotal
1	Alternative Energy Svc	Director, Business Development	196.0	
2	Alternative Energy Svc	Mgr, Operations & Project Assessment	750.0	
3	Alternative Energy Svc	Mgr, Business Development & Customer Rel	98.0	
	<b>Alternative Energy Svc</b>			<b>\$ 127,116.94</b>
4	Measurement	Measurement Technologies Assistant	5.0	
5	Measurement	Measurement Business Analyst	1.0	
	<b>Measurement</b>			<b>\$ 377.43</b>
6	Data Acquisition	Measurement Analyst 2	36.0	
7	Data Acquisition	Measurement Analyst 2	36.0	
8	Data Acquisition	Measurement Analyst 2	36.0	
	<b>Data Acquisition</b>			<b>\$ 7,119.48</b>
9	Finance	Asset Accounting Manager	2.0	
10	Finance	Asset Accounting Analyst 2	18.0	
11	Finance	Financial Accounting Clerk 3	275.0	
12	Finance	Financial Accounting Clerk 4	150.0	
13	Finance	CMO Manager	16.0	
14	Finance	Accounts Payable Clerk	18.0	
15	Finance	Accounts Payable Clerk	24.0	
16	Finance	Accounts Payable Clerk	12.0	
	<b>Finance</b>			<b>\$ 34,154.93</b>
17	Distribution	Distribution Manager	10.0	
18	Distribution	Distribution Manager	150.0	
19	Distribution	Distribution Manager	10.0	
	<b>Distribution</b>			<b>\$ 16,288.27</b>
20	Energy Mgt Services	Energy Services Manager	78.0	
	<b>Energy Mgt Services</b>			<b>\$ 8,115.34</b>
21	Web Services	Web Specialist	1.0	
22	Web Services	Web Specialist	1.0	
	<b>Web Services</b>			<b>\$ 131.84</b>

**TOTAL: \$ 193,304.23**

**Attachment 72.3**

---



**Attachment 82.3**

---

**FILED CONFIDENTIALLY**

**Attachment 92.1**

---



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 243

**79.0 Reference: Thermal Energy**

**Exhibit B-9, BCUC IR 1.158.1**

- 79.1 As FEU has chosen to undertake thermal energy activities which may or may not be activities of a regulated utility, please explain what policies, procedures and controls exist within FEU to ensure that potential thermal activities costs are appropriately allocated to and recovered from either regulated, isolated ratepayers or general natural gas ratepayers? Specifically explain how FEU ensures that there are no conflicts of interests, incentive compensation conflict or lack of understanding amongst employees of how to separate these costs?

**Response:**

All of the thermal energy activities that the FEU are choosing to undertake are regulated activities. The thermal energy activities of the FEU are being provided within the regulated public utility (FEI) as another distinct class of service. The Thermal Energy Services Deferral Account and overhead cost allocation methodology is described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU employee timesheet completion practices have been put in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. The FEU's employees are trained and advised on how to complete time sheets and code expenses appropriately to ensure that costs are captured and allocated appropriately among the classes of service. The FEU do not have incentive compensation policies that would cause a conflict of interest for the appropriate allocation of costs between service classes.

- 79.2 What formal communication was made to all i)marketing departments and ii)accounting personal to clarify the difference between a regulated and non-regulated activity to ensure that thermal activities costs are appropriately accounted for? Please provide copies of this formal communication.

**Response:**

No formal communication was made to marketing or accounting personnel regarding regulated and non-regulated activity with regard to FEI's thermal energy services, nor was one necessary. The thermal energy activities of the FEU are being provided within the regulated public utility (FEI) as another distinct class of service and are regulated activities. Any time spent by FEU's employees would only be an allocation between two regulated classes of services. The FEU's



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 244

employee timesheet completion practices have been put in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility

- 79.3 What modifications were made to internal controls processes including job descriptions and process descriptions to ensure that potential alternative energy costs are identified, isolated, documented and properly accounted for at FEU? Please provide copies of these document both before and after these adjustments have been made.

**Response:**

No modifications to internal control processes, job or process descriptions were required to identify, isolate and ensure that alternative energy costs are properly accounted for. The FEU employee timesheet completion practices were already in place which ensures the appropriate allocation of costs between classes of service within the regulated public utility.

- 79.4 Is the documented cost allocation policy for thermal activities similar to that of transfer pricing methodologies? Please provide a copy of the formal FEU thermal activities cost allocation policies and procedures and describe when and who drafted, reviewed and approved this policy.

**Response:**

There is no documented policy within the FEU that governs cost allocation between classes of service (such as thermal energy services) within the regulated public utility, nor does the FEU believe one is needed. The cost allocation methodology for thermal energy activities that already exists is similar to the transfer pricing methodology except that the transfer pricing methodology applies to services provided by a regulated utility to a non-regulated affiliated company; thermal energy activities are regulated activities. The Thermal Energy Services Deferral Account and overhead cost allocation methodology described in Appendix G, Section 2.4 of Exhibit B-1, and the FEU's employee timesheet completion practices are in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility. Timesheet completion practices did not have to change to accommodate thermal energy services within the FEU for direct charges.



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 245

79.5 Has FEU internal audit tested the identification, isolation, allocation or cost recording of potential thermal activities of FEU?

**Response:**

The FEU internal audit department has not specifically tested the identification, isolation and allocation of costs to thermal energy activities. Internal audit does a review of timesheets and the coding of timesheets and the compliance with the corporate code of conduct which all employees adhere to.

79.6 Who is ultimately responsible for the cost allocations of thermal activities within FEU? Who signs off on the cost allocations of all potential thermal activities of FEU?

**Response:**

Individual employees are responsible for ensuring that direct time is allocated to thermal energy activities. The FEU's employee timesheet completion practices are in place to ensure the appropriate allocation of costs between classes of service within the regulated public utility.

On the thermal energy side, the Director responsible reviews the monthly charges and allocations from the FEU for reasonableness.

79.7 Would FEU be willing to have cost allocation methodology of thermal activities reviewed by an independent third party in 2012? If not, please explain.

**Response:**

The FEU considered a third-party review of the allocation methodology but did not believe the possible incremental benefit of an external study relative to the internal review justified the cost of such a study. Further, the FEU believe the study it undertook, as described in Section 2.4.3, page 4 of Appendix G in Exhibit B-1, is an appropriate study to determine the reasonableness of



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 246

overhead cost allocation. If directed to do so, the FEU would have the cost allocation methodology of thermal energy activities reviewed by an independent third party. However, as noted above, as the FEU believe that the study it undertook is reasonable and appropriate, and third-party review is not needed.

- 79.8 When a cost allocation requires judgment and justification, such as in the case of the New Energy Solutions Video, do FEU a document an explanation for the method of cost allocation performed and is that allocation reviewed by someone whose financial compensation is not directly linked to the financial performance of FEU, such as an internal audit department?

**Response:**

Typically, the FEU do not prepare written documentation for a specific allocation of costs. The FEU follow a process whereby those at the FEU responsible for internal project spending approvals will allocate costs appropriately. The FEU's process for allocation of costs has been verbally communicated through the organization.

The FEU believe that its cost allocations are reasonable and appropriate. Internal Audit may review the cost allocations from time to time, for instance, as part of the process described in BCUC IR 2.79.5.

- 79.9 While the new Energy Solutions Video may have information pertinent to all customers, it also has information that is specific to thermal energy. Why were costs not allocated amongst the two activities?

**Response:**

The new energy solutions video was produced, and the costs for it incurred, in 2009, before the cost allocation mechanisms that exist today had been agreed to in the NSA for the 2010-2011 RRA. At the time the video was produced, it was identified as an important communications piece for all existing FEU customer groups. The FEU maintain that view today.



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response to British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2	Page 247

79.10 If an activity is deemed to have any benefit to general gas ratepayers, even if that impact is relatively small compared to the benefit achieved by thermal energy customers, is it FEU policy to fully allocate the cost to general gas ratepayers? If not, provide the formal policy approved and in place at FEU which is used to allocate costs.

**Response:**

No, the FEU do not have a policy to allocate costs fully to natural gas ratepayers even if only a small portion of the benefits accrue to natural gas ratepayers. The situation discussed in the referenced response to BCUC IR 1.158.1 was regarding the new energy solutions video which the Companies believe had and continues to have considerable benefits for natural gas customers as set out in that response. The FEU do not have a formal approved policy in place to allocate costs of this nature between the natural gas class of service and the thermal energy class of service. However, it is the FEU's practice to charge costs directly to the service that receives the benefit. The allocation of approximately \$0.5 million of overhead and administrative costs from the natural gas O&M to the Thermal Energy Services Deferral Account in addition to direct costs of the thermal energy service activities provides a fair and reasonable allocation of costs to this class of service that is still in an early stage of development.



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 10

**4. Reference: FEU Response to BCUC IR No. 164.2 and 164.3  
Exhibit B-1, Application, Appendix G  
Thermal Energy Projects – Tracking Costs**

FEU states: *"When a Thermal Energy Services project is identified, the FEU create a new Internal Order ("IO") with a separate IO number."*

**Request:**

4.1 At what stage of development is a TES project typically "identified"?

**Response:**

A thermal energy services project is typically identified and assigned an internal order ("IO") number once an internal preliminary assessment has indicated that the project could be viable and customers wish to have project specific development proceed in order to confirm and/or refine preliminary findings and advance the project further.

4.2 How are TES development costs tracked before the IO is created?

**Response:**

As per Order G-141-09 approving the FEI 2010-2011 RRA, thermal energy services development costs are tracked as general business development and recorded in the Thermal Energy Services Deferral Account prior to creation of a project specific internal order.

4.3 How are the following TES costs tracked:

(a) sales and marketing that does not relate to a specific project,

**Response:**

Please refer to the response to Corix IR 2.4.2



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 11

- (b) costs for TES projects that are a mix of TES and other FEU services,

**Response:**

A thermal energy project would not be a mix of FEU services. A thermal energy project delivers thermal energy services and costs for development of the project are charged to the Thermal Energy Services Deferral Account. A customer, however, may receive a mix of FEU service classes for which costs would be tracked separately. Where natural gas is supplied as a fuel to the thermal energy project, the costs for natural gas service are tracked separately.

If an FEU employee works on both classes of service, as with any timesheet allocation, employees are expected to attribute their time on their timesheets to the best of their ability exercising considered judgement in cases where there is overlap in specific tasks.

Please also refer to the response to Corix IR 2.4.2 for additional detail regarding thermal energy services costs.

- (c) development of the TES business concept generally within FEU, and

**Response:**

Please refer to the response to Corix IR 2.4.2.

- (d) FEU work on provincial and federal government policy and legislative initiatives?

**Response:**

The FEU do not work directly on federal government policy and initiatives with respect to thermal energy projects. This may occur indirectly through membership and participation in national associations by the FEU staff; these costs are fully allocated to the Thermal Energy Services Deferral Account.

With respect to provincial government policy and initiatives, the vast majority of FEU work is associated with advancing the position of FEU as an energy solutions provider for the province with emphasis on natural gas. The extent to which this may support the thermal energy class of



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 12

service is captured through the allocation of some of the time of the FEU executive to the deferral account (please refer to FEU's response to BCUC IR 2.80.2).

If work specific to thermal energy initiatives with the province is required, then the FEU staff fully allocated to the Thermal Energy Services Deferral Account will handle the work even though natural gas is often a key component of the thermal energy initiative.

- 4.4 What direction does FEU give to its employees on the tracking of TES time and effort? Provide copies of any written directions or policies that relate to the tracking of TES time and effort.

**Response:**

The development of thermal energy services projects as a regulated class of service within FEI may draw on the expertise of various employees. FEI staff code their time on timesheets in relation to their effort for the Companies' various offerings or classes of service. While there are existing time sheet policies and standards within the FEU that govern this, there is no written direction or policy specific to the thermal energy class of service, nor does the FEU believe that one is required. Please see FEU's responses to BCUC IRs 2.79.1 and 2.79.4 which describe the direction and policies for employees related to tracking time and effort on the thermal energy class of service.

- 4.5 Would the Director of Thermal Energy Services identified in the response to 164.3 call upon the service, advice or information of others in the FEU organization (director or higher) in relation to the development of the TES business generally, or on specific projects? Explain how that might occur and be managed.

**Response:**

FEIs thermal energy services and natural gas services are classes of service within a single regulated public utility. As such, the Director has the ability to draw on resources of other senior management which is reflected in the \$0.5 million administration cost allocation to thermal energy services. These are costs that would be otherwise recovered from natural gas



FortisBC Energy Utilities ("FEU"), comprised of FortisBC Energy Inc. ("FEI" or "Mainland"), FortisBC Energy (Vancouver Island) Inc. ("FEVI" or "Vancouver Island"), FortisBC Energy (Whistler) Inc. ("FEW" or "Whistler"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson"), collectively also referred to as the "Companies" or the "Utilities" 2012-2013 Revenue Requirements and Natural Gas Rates Application	Submission Date: August 19, 2011
Response Corix Multi Utility Services Inc. ("Corix") Information Request ("IR") No. 2	Page 13

ratepayers. Please see the responses to BCUC IRs 2.79.1 through 2.80.9 for further discussion on the allocation of overhead costs for FEI's thermal energy services.

- 4.6 Are there any restrictions within FEU on the gas utility information or resources that may be employed in the development of the TES business? If so, explain what restrictions are in place and how those restrictions are communicated and monitored. Provide any written directions that relate to any segregation of TES business from the gas utility business.

**Response:**

FEI's thermal energy services and natural gas services are classes of service within a single regulated public utility. The FEU believe that it is appropriate for experienced utility staff with access to information and resources of the utility to be made available for the benefit of thermal energy services customers. As such, there are no specific restrictions within the FEU on the information or resources that may be employed in the development of the thermal energy services business.

The FEU has dedicated resources working on thermal energy services which are captured in the Thermal Energy Service Deferral Account, plus an allocation of overheads which is reflected in the \$0.5 million administration cost allocation. Any other direct use of resources would be directly allocated as used, with all costs captured in the Thermal Energy Service Deferral Account.

**Attachment 115.2**

---

**PSECA Initiative**

**3rd OPEN CALL**

<b>Participant</b>	<b>Energy Conserving Measures</b>	<b>Incentive</b>
Capilano College	Demand Control Ventilation & Fan speed control for Theatre	\$ 5,466.00
	Run Down Timers for Exhaust Fans	\$ 1,969.00
	Reduced Cafeteria and Kitchen Ventilation	\$ 8,077.00
	Fan Cycling and O A ventilation override for lecture Theatre	\$ 617.00
	Holiday Scheduling	\$ 9,600.00
	Optimum Start with Full Recirc during warm up	\$ 3,195.00
	VAV isolation for office areas in Birch	\$ 4,541.00
BC Liquor Distribution Branch	RTU Optimization Schedule	\$ 12,725.00
Fraser Health Authority	Building automation/controls upgrade	\$ 42,410.00
	Local Domestic Hot Water for Manor	\$ 872.00
	Upgrade Canopy Heating System	\$ 10,458.00
Fraser Health Authority	Boiler #3 Replacement	\$ 12,733.00
	VFD Install for general supply and exhaust fans	\$ 17,325.00
	VFD Install for ER AHU	\$ 4,401.00
	Replace pneumatic BAS with DDC	\$ 38,516.00
Fraser Health Authority	DDC Retrofit	\$ 81,838.00
	Combine B wing RTU's	\$ 3,165.00
	Steam trap/survey replacment	\$ 12,047.00
	Condensate tank insulation	\$ 1,065.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 26,770.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 12,670.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 4,740.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 4,540.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 5,020.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 3,645.00
Vancouver Island Health Authority	Demand Controlled Kitchen Ventilation	\$ 12,865.00
Vancouver Island Health Authority	Condensate Heat Recovery in Basement Mech. Room	\$ 7,000.00
	Kitchen Hood Demand Control Ventilation	\$ 18,560.00
Vancouver Island Health Authority	Dedicated base load DHW Heat Recovery Chiller	\$ 9,542.00
	Lead Hot Water Boiler Controls Upgrade	\$ 67,518.00
	DDC Re-Commisioning	\$ 4,330.00
Vancouver Island Health Authority	Var. Freq. Drive Install for ER Air Handling Unit	\$ 1,000.00
	Disconnect basement exhaust (B-3) and install CO2 Cntrl	\$ 1,000.00
Royal Roads University	Mechanical Insulation	\$ 1,890.00
	Domestic Hot Water System Upgrades	\$ 9,450.00
	Library Demand Control Ventilation	\$ 19,685.00
	New Steam Boiler for the Castle	\$ 20,000.00
Camosun College	Architectural Insulation	\$ 13,424.00
	Paul Building Heat Pump Conversion	\$ 14,436.00
	DHW Temperature Reduction	\$ 100.00
	Demand Controlled Ventilation	\$ 21,830.00
	Lag Boiler Controls in Young Building	\$ 6,505.00
Vancouver Coastal Health	Adjustable Speed drives for motors	\$ 3,200.00
	New DDC Controls	\$ 2,860.00
Vancouver Coastal Health	New Condensing Boiler	\$ 25,385.00
	DDC Controls upgrade	\$ 14,965.00
Vancouver Coastal Health	Steam Boiler and DHW upgrades	\$ 38,852.00
	Economizer installation	\$ 13,764.00
	DDC Controls upgrade	\$ 22,089.00
Vancouver Coastal Health	Fume Hood Exhaust fan control upgrades	\$ 4,390.00
Real Estate Portfolio Management	High Efficiency Boilers, blocks A and C	\$ 76,852.00
	High Efficiency Domestic Water Heaters Block A	\$ 2,685.00
	High Efficiency Domestic Water Heaters Block B & C	\$ 8,550.00
	High Efficiency Domestic Water Heaters Block D	\$ 5,865.00
	Domestic Water Heater Scheduling	\$ 1,122.00
	Reducation of Kitchen Make- Up Air Unit Run Time	\$ 11,241.00

Real Estate Portfolio Management	On-Demand (Instantaneous) DHW	\$ 2,685.00
	DHW Night Setback	\$ 840.00
	Weather Predictor	\$ 2,000.00
	Demand Controlled Ventilation	\$ 4,040.00
Real Estate Portfolio Management	Morning Warm-Up Damper Routine	\$ 1,000.00
	Outdoor air lockout/Weather Predictor	\$ 800.00
	After Hours Supply Fan/Return Fan and Boiler Setback	\$ 2,000.00
Real Estate Portfolio Management	Variable Speed Drive on Office Building MUA Units	\$ 5,860.00
	SAT Setpoint Reduction	\$ 1,000.00
	Outdoor air Lockout	\$ 810.00
	Weather Predictor	\$ 205.00
	Warehouse Motion Sensor for heating unit control	\$ 1,075.00
Real Estate Portfolio Management	Heating Optimization	\$ 15,710.00
	AH-AMB-DISP to DDC	
	Ventilation Units Schedule Optimization	
	Night Setback	
	Weather Predictor	
<b>K to 12</b>		
School District No. 72 - Campbell River	High Efficiency Boiler	\$ 53,350.00
	Heat Pump Chiller	\$ 134,680.00
School District No. 71 - Comox Valley	High Efficiency Boiler	\$ 18,300.00
	High Efficiency (Condensing) Water Heater	\$ 1,500.00
School District No. 37 - Delta	High Efficiency Boiler	\$ 25,095.00
	High Efficiency Boiler	\$ 24,000.00
	High Efficiency Boiler	\$ 15,000.00
	High Efficiency Boiler	\$ 18,635.00
	High Efficiency Boiler	\$ 11,190.00
	High Efficiency Boiler	\$ 8,540.00
	High Efficiency Boiler	\$ 14,330.00
<b>PSECA Solar</b>		
Interior Health Authority	Solar Water Heating	\$ 55,506.00
Interior Health Authority	Solar Water Heating	\$ 41,630.00
Vancouver Island Health Authority	Solar Water Heating	\$ 69,833.00
Vancouver Island Health Authority	Solar Water Heating	\$ 27,753.00
Royal Roads University	Solar Water Heating	\$ 25,637.00
Selkirk College	Solar Water Heating	\$ 20,815.00
Okanagan College	Solar Water Heating	\$ 17,346.00
Thompson Rivers University	Solar Water Heating	\$ 17,346.00
Thompson Rivers University	Solar Water Heating	\$ 10,407.00
School District No. 34 - Abbotsford	Solar Water Heating	\$ 3,603.00
School District No. 34 - Abbotsford	Solar Water Heating	\$ 3,603.00
School District No. 39 - Vancouver	Solar Water Heating	\$ 2,466.00
School District No. 39 - Vancouver	Solar Water Heating	\$ 2,466.00
School District No. 39 - Vancouver	Solar Water Heating	\$ 2,466.00
School District No. 39 - Vancouver	Solar Water Heating	\$ 2,466.00
School District No. 39 - Vancouver	Solar Water Heating	\$ 2,466.00
School District No. 37 - Delta	Solar Water Heating	\$ 2,466.00
School District No. 37 - Delta	Solar Water Heating	\$ 2,466.00
School District No. 37 - Delta	Solar Water Heating	\$ 3,699.00
School District No. 53 - Okanagan Similkamee	Solar Water Heating	\$ 3,469.00
School District No. 53 - Okanagan Similkamee	Solar Water Heating	\$ 3,469.00
School District No. 68 - Nanaimo Ladysmith	Solar Water Heating	\$ 2,466.00
School District No. 68 - Nanaimo Ladysmith	Solar Water Heating	\$ 2,466.00
School District No. 68 - Nanaimo Ladysmith	Solar Water Heating	\$ 2,466.00
School District No. 71 - Comox Valley	Solar Water Heating	\$ 2,466.00
School District No. 72 - Campbell River	Solar Water Heating	\$ 2,466.00
School District No. 79 - Cowichan Valley	Solar Water Heating	\$ 2,466.00
School District No. 79 - Cowichan Valley	Solar Water Heating	\$ 2,466.00
School District No. 79 - Cowichan Valley	Solar Water Heating	\$ 2,466.00

[Printer-friendly version](#) 



---

## NEWS RELEASE

For Immediate Release  
2010ENV0068-001379  
Nov. 5, 2010

Ministry of Environment

### **\$2.8 MILLION POWERS CLEANER, GREENER PUBLIC BUILDINGS**

VANCOUVER – Solar panels will focus the sun’s energy to heat water and improve energy efficiency at schools, post secondary institutions and hospitals across B.C. thanks to capital funding from the Public Sector Energy Conservation Agreement (PSECA) and its partners, Minister of State for Climate Action John Yap announced today.

“In 2010, B.C. will have the first carbon-neutral public sector in North America where every student will enter a carbon-neutral school and every patient will be cared for in a carbon-neutral hospital,” said Yap. “At the same time, these projects are helping to grow B.C.’s emerging solar technology market and create new jobs for British Columbians.”

Twenty-four schools, nine colleges and universities, and five hospitals share in \$2.8 million from PSECA and its partners, Terasen Gas, SolarBC, and Natural Resources Canada to install solar panels to reduce natural gas or electricity consumption.

“These projects are incredible learning opportunities for students that will feed B.C.’s growing culture of conservation,” said Education Minister George Abbott. “Students get to witness the shift to energy efficiency, learn about the solar thermal systems, and eventually finish school accepting solar energy as a norm rather than the rarely-used energy source it is today.”

The main focus is on education and supporting growth in the solar technology sector. Emissions reductions and energy savings are added benefits, particularly at post secondary institutions and hospitals, where laundering and cleaning happens around the clock.

“Our government is proud to support community projects through ecoENERGY for Renewable Heat and especially to show youth how renewable energy can be part of their everyday lives,” said the Honourable Christian Paradis, Minister of Natural Resources. “This project is a shining example of our commitment to ensuring that renewable energy will form an increasingly important part of our future energy mix.”

“We are pleased to work with our partners to make solar hot water an accessible, affordable and practical energy solution,” said Nitya Harris, executive director of SolarBC. “This will help us realize our vision of a viable solar market with knowledgeable consumers and a network of skilled solar energy professionals throughout B.C.”

BC Hydro was the first PSECA partner and continues to be a key partner in the program. Terasen Gas joined the partnership earlier this year, enabling even greater alternate energy investments.

“We increasingly layer integrated energy solutions such as solar thermal systems over a base of natural gas,” said Doug Stout, vice president of Energy Solutions and External Solutions, Terasen Gas

and FortisBC. “By partnering with PSECA to fund projects we not only help meet the energy needs of public sector agencies today and tomorrow, but we also help address the Province’s greenhouse gas emission reduction targets.”

In 2008, B.C. committed \$75 million to the PSECA over three years to help public sector organizations reduce GHG emissions, energy consumption and operating costs and help ensure all public buildings are carbon neutral for 2010. Funding to date has achieved annual energy cost savings of close to \$7.4 million, GHG reductions of over 18,700 tonnes and conservation of 38.6 GWh of electricity.

For more information on the Public Sector Energy Conservation Agreement, visit:

<http://www.env.gov.bc.ca/cas/mitigation/pseca.html>

-30-

Media Contact:     Suntanu Dalal  
                          Ministry of Environment  
                          250 387-9745

## BACKGROUNDER

### SCHOOL PROJECTS:

- **Cariboo-Chilcotin School District #27:** Williams Lake and Horse Lake Elementary schools
- **Abbotsford School District #34:** Abbotsford Middle school and Robert Bateman Secondary
- **Delta School District #37:** Burnsvie and Seaquam Secondary schools in North Delta and Delta Secondary in Delta
- **Vancouver School District #39:** David Thompson Secondary, Windermere Secondary, Sir Charles Tupper Secondary, Vancouver Technical Secondary and Lord Byng Secondary
- **Okanagan-Similkameen School District #53:** Oliver Elementary and Southern Okanagan Secondary in Oliver
- **Nanaimo-Ladysmith School District #68:** Dover Bay Secondary and John Barsby Community school in Nanaimo and Ladysmith Secondary
- **Qualicum School District #69:** False Bay School on Lasqueti Island
- **Alberni School District #70:** Wickaninnish Community school in Tofino
- **Comox Valley School District #71:** Highland Secondary school in Comox
- **Campbell River School District #72:** Timberline Secondary school in Campbell River
- **Cowichan Valley School District #79:** Chemainus, Cowichan and Frances Kelsey Secondary schools

### POST SECONDARY PROJECTS:

- **Okanagan College:** Skaha Residence in Kelowna and the Center of Excellence in Sustainable Building Technologies and Renewable Energies Conservation at the Penticton campus
- **Royal Roads University:** Millward Building in Victoria
- **Selkirk College:** Kekuli Student Residence in Castlegar
- **The Justice Institute:** Chilliwack Student Residence
- **Thompson Rivers University:** Campus Activity Centre, the Culinary Arts Centre and the 'Old Main' building in Kamloops
- **University of British Columbia:** MBA House

### HOSPITAL PROJECTS:

- **Vancouver Island Health Authority:** Victoria General Hospital, Saanich Peninsula Hospital (Saanichton) and Lady Minto Hospital on Saltspring Island
- **Interior Health Authority:** Penticton Regional Hospital and Summerland Memorial Health Centre Dr. Andrew Pavilion

-30-

Contact: Public Affairs Bureau  
250 953-3834

For more information on government services or to subscribe to the Province's news feeds using RSS, visit the Province's website at [www.gov.bc.ca](http://www.gov.bc.ca).

[Facebook](#)   [Delicious](#)   [Twitter](#)   [E-mail](#)

[Printer-friendly version](#) 



---

## NEWS RELEASE

For Immediate Release  
2010ENV0076-001564  
Dec. 14, 2010

Ministry of Environment

### **PUBLIC BUILDINGS TO SAVE ENERGY AND MONEY**

VICTORIA – Energy upgrades at 23 public sector buildings across the province will conserve enough energy to power 600 homes a year and cut more than 3,000 tonnes of greenhouse gas emissions.

“B.C.’s public sector has made dramatic changes to become carbon-neutral this year and will continue to cut emissions every year after,” said Minister of State for Climate Action John Yap. “With 6,500 buildings, our public sector organizations directly affect the amount of greenhouse gases we’re generating in the province.”

A \$7.6 million investment from B.C.’s Public Sector Energy Conservation Agreement (PSECA) kicks off the 23 energy improvement projects in colleges, universities, hospitals, health care centres and other public sector buildings throughout the province.

“The benefits will extend far beyond the walls of those buildings,” said Ida Chong, Minister of Regional Economic and Skills Development and Science and Universities. “Every publicly-funded facility that conserves energy is performing a service for their staff, their users and the community at large.”

One of the largest projects is at Camosun College’s Lansdowne campus in Victoria, with a \$1.1 million investment in lighting, heating, and air conditioning system retrofits.

“Camosun has had an ambitious energy management project underway for the past four years and this funding to retrofit the Lansdowne campus will help the college deliver on its climate action goals,” said Peter Lockie, Camosun College’s V.P. Finance & Administration. “Work at the Lansdowne campus will build on the measureable results achieved from an earlier retrofit of the Interurban campus that realized a reduction in greenhouse gases of 261 tonnes.”

It is estimated the projects will save more than \$400,000 a year in energy costs.

Since 2008, the B.C. Government has committed \$75 million to the PSECA fund. With additional energy conservation incentives from BC Hydro and Terasen Gas, the capital fund has helped achieve annual energy cost savings of more than \$7.4 million and GHG reductions over 18,700 tonnes.

“Energy conservation is the most effective way to meet our province’s growing electricity needs,” stated Lisa Coltart, executive director of BC Hydro Power Smart and Customer Care. “These kinds of energy conservation projects help our overall clean energy goal of meeting two-thirds of future demand through conservation by 2020.”

“The sustainable use of energy is an important part of our business. Through innovative initiatives like this, we are able to help our public sector customers make important strides towards the Province’s climate action goals,” said Doug Stout, Vice President, Energy Solutions and External Relations at Terasen Gas and FortisBC. “Through our Energy Efficiency and Conservation program, we’re helping customers save 15.5 million gigajoules – enough natural gas for approximately 155,000 homes for one year. And, the PowerSense program at FortisBC has helped electricity customers in the southern interior save nearly 360 million kilowatt hours, enough power for about 28,000 homes each year.”

B.C.’s carbon neutral commitment, enshrined in the [Greenhouse Gas Reduction Targets Act](#), is the first of its kind in North America. All provincial public sector operations, including government ministries and agencies, schools, colleges, universities, health authorities and Crown corporations, have taken steps to be carbon neutral this year. Carbon neutrality involves measuring emissions, reducing them where possible and offsetting the remainder by investing in projects that reduce GHG emissions.

For more information on B.C.’s carbon neutral quest, visit [http://www.livesmartbc.ca/attachments/carbon\\_neutral\\_action\\_reports/CNU\\_2009.pdf](http://www.livesmartbc.ca/attachments/carbon_neutral_action_reports/CNU_2009.pdf)

For more information on the Public Sector Energy Conservation Agreement, visit: <http://www.env.gov.bc.ca/cas/mitigation/pseca.html>

-30-

Media Contact: Colin Grewar  
Media Relations  
Ministry of Environment  
250 387-9630

## BACKGROUND

### POST SECONDARY INSTITUTIONS:

- **Camosun College, Lansdowne Campus, Victoria**
  - Funding: \$1.1M
  - GHG reduction: 258 tonnes
- **Capilano University, North Campus, North Vancouver**
  - Funding: \$466,059
  - GHG reduction: 95 tonnes
- **Royal Roads University, Victoria**
  - Funding: \$1.015 million
  - GHG reduction: 317 tonnes

### HOSPITALS AND CARE CENTRES:

- **Chetwynd Hospital**
  - Funding: \$110,000
  - GHG reduction: 49 tonnes
- **Chilliwack General Hospital**
  - Funding: \$472,850
  - GHG reduction: 336 tonnes
- **Cumberland Health Centre**
  - Funding: \$424,100
  - GHG reduction: 178 tonnes
- **Eagle Ridge Hospital, Port Moody**
  - Funding: \$475,750
  - GHG reduction: 134 tonnes

- **ICORD/Blusson Centre and Jim Pattison Pavilion, Vancouver**
  - Funding: \$85,778
  - GHG reduction: 108 tonnes
- **McBride Hospital**
  - Funding: \$62,960
  - GHG reduction: 51 tonnes
- **Mission Memorial Hospital**
  - Funding: \$249,760
  - GHG reduction: 175 tonnes
- **Mount St. Joseph Hospital, Vancouver**
  - Funding: \$230,125
  - GHG reduction: 136 tonnes
- **Nanaimo Regional General Hospital**
  - Funding: \$558,229
  - GHG reduction: 197 tonnes
- **St. John Hospital, Vanderhoof**
  - Funding: \$53,410
  - GHG reduction: 29 tonnes
- **Shorncliffe Intermediate Care Centre, Sechelt**
  - Funding: \$64,000
  - GHG reduction: 11 tonnes
- **Squamish General Hospital**
  - Funding: \$129,600
  - GHG reduction: 84 tonnes

- **Vancouver Island Health Authority Bundle:** Victoria General Hospital, Lady Minto Hospital (Saltspring Island), Saanich Peninsula Hospital (Saanichton), Royal Jubilee Hospital (Victoria), Priory Hospital (Victoria), Queen Alexandra Centre for Children's Health (Victoria), Aberdeen and Glengarry Residential Care Centres (Victoria)
  - Funding: \$192,931
  - GHG reduction: 144 tonnes
- **Victoria General Hospital**
  - Funding: \$749,506
  - GHG reduction: 319 tonnes

#### **OTHER PUBLIC SECTOR BUILDINGS:**

- **Kamloops Multi-Tenanted Office** (multiple tenants)
  - Funding: \$82,530
  - GHG reduction: 28
- **Kutenai Place, Nelson** (multiple tenants)
  - Funding: \$155,086
  - GHG reductions: 36
- **Liquor Distribution Branch headquarters, Vancouver**
  - Funding: \$269,400
  - GHG reduction: 35 tonnes
- **Ministry of Forests, Regional Office and Warehouse, Nanaimo**
  - Funding: \$82,276
  - GHG reduction: 29
- **North Fraser Pre-Trial Centre, Port Coquitlam**
  - Funding: \$477,900

- GHG reductions: 237
- **Powell River Provincial Courthouse**
  - Funding: \$91,511
  - GHG reduction: 29 tonnes

-30-

Contact:           Public Affairs Bureau  
                          250 387-9630

For more information on government services or to subscribe to the Province's news feeds using RSS, visit the Province's website at [www.gov.bc.ca](http://www.gov.bc.ca).

[Facebook](#)

[Delicious](#)

[Twitter](#)

[E-mail](#)



[Printer-friendly version](#) 



---

## NEWS RELEASE

For Immediate Release  
2011ENV0007-000102  
Feb. 7, 2011

Ministry of Environment  
Terasen Gas

### **School districts warm to renewable energy technology**

VICTORIA – B.C. school districts have an interest in saving money and being conscientious about energy use – and the Delta School District is among those leading the charge by tapping into B.C.’s Public Sector Energy Conservation Agreement fund.

Terasen Gas and the B.C. Government are providing \$6.9 million for 35 energy projects in ten school districts to help reduce greenhouse gas emissions, energy consumption and costs.

“By working together, we’re able to realize significant savings opportunities,” said John Yap, Minister of State for Climate Action. “It starts with thinking about how we use and conserve energy and then implementing renewable technologies such as geothermal exchange and solar thermal air technologies.”

The projects range from energy infrastructure upgrades to solar wall installations to state-of-the-art geexchange systems buried beneath 11 Delta School District playing fields to capture the heating and cooling properties of the earth.

“Energy conservation and environmental responsibility are fundamental values for Terasen Gas. We are committed to developing innovative energy solutions to help meet the current and future energy needs of B.C. school districts,” said Doug Stout, vice president, Energy Solutions and External Relations at Terasen Gas and FortisBC. “Our collaboration with the Delta School District is an excellent example of what can happen when many parties come together to find creative uses of integrated energy solutions. Through projects such as these, we can inspire students across B.C. to be conscientious about the energy they use.”

“We are extremely pleased to see our project come to life,” said Dale Saip, board chairperson, Delta School District. “The teamwork and shared vision of our organizations has resulted in an incredible learning opportunity for our kids and our community. We are grateful to Terasen and the Province of B.C. for their commitment to a better future in Delta and school districts throughout the province.”

The combined annual energy savings from the 35 projects are estimated at nearly \$720,000 and annual greenhouse gas (GHG) reductions of almost 2,800 tonnes, which is the same as removing over 600 cars from the road annually.

“The teachable moments being created are an invaluable side benefit,” said Minister of Education Margaret MacDiarmid. “The energy projects and the discussions I know many teachers are having in their classrooms are piquing student curiosity and sending a great message about the choices we can make for the environment and our future.”

The Public Sector Energy Conservation Agreement is a provincial partnership with Terasen Gas, BC Hydro, SolarBC, and Natural Resources Canada. Partners provide capital funding and/or technical support for public sector energy proposals. Another \$12 million in capital funding will be distributed later this year.

To date, the fund has helped achieve annual energy cost savings of more than \$7.4 million and GHG reductions of over 18,700 tonnes.

#### About Terasen Gas

Terasen Gas is composed of the operations of Terasen Gas Inc., Terasen Gas (Vancouver Island) Inc., and Terasen Gas (Whistler) Inc. Terasen Gas is a leading integrated energy solutions provider, focused on the safe and reliable provision of natural gas, propane and alternative energy solutions. Terasen Gas serves approximately 939,000 residential and commercial customers in more than 125 B.C. communities. Terasen Gas employs more than 1,280 people in British Columbia and is indirectly wholly owned by Fortis Inc., the largest investor-owned distribution utility in Canada. Fortis Inc. shares are listed on the Toronto Stock Exchange and trade under the symbol FTS. Additional information can be accessed at [www.fortisinc.com](http://www.fortisinc.com) or [www.sedar.com](http://www.sedar.com).

## BACKGROUND

### DELTA SCHOOL DISTRICT PROJECTS

- Terasen Gas will be working with the Delta School District to replace eight conventional boilers with high efficiency, condensing boilers and install 11 state-of-the-art geexchange systems.
- Terasen Gas estimates that the total environmental benefit of the Delta School District project would be an approximate:
  - 55 per cent reduction in energy consumption (equivalent to enough natural gas to heat about 365 homes for one year)
  - 69 per cent reduction in greenhouse gases (equivalent to the removal of almost 450 cars from the road annually)
- Terasen Gas would own, operate and maintain all of the new heat generation equipment and would charge the Delta School District a rate approved by the British Columbia Utilities Commission for the energy's delivery.
- All 19 projects would be completed in less than two years, and could eventually be expanded to take on other buildings which have already received thermal energy retrofits.
- As a leading integrated energy provider, Terasen Gas builds and operates geexchange systems for multi-residential, commercial, and industrial developments.
  - Geexchange systems are one of our principal integrated energy solutions and can be implemented in both new construction and retrofits.
  - Extracting energy from the earth provides a renewable source of heating and cooling.
  - Geexchange systems provide many benefits for the public sector, developers, building owners and end users ranging from indoor comfort, to protecting the environment, to stable rates that provide a level of financial certainty regarding the price of energy.

### GEOEXCHANGE PROJECTS in School District #37 (Delta):

- Delta Secondary
- Delview Secondary
- English Bluff Elementary
- Neilson Grove Elementary
- North Delta Secondary
- Pinewood Elementary
- Richardson Elementary
- South Delta Secondary
- South Park Elementary
- Board of Education Office
- Delta Manor Education Centre

**HIGH EFFICIENCY BOILER UPGRADES** in School District #37:

- Annieville Elementary
- Beach Grove Elementary
- Chalmers Elementary
- Cliff Drive Elementary
- Heath Elementary
- Holly Elementary
- Ladner Elementary
- District Operations Centre

**SOLAR AIR PROJECTS:**

- J.A. Laird Elementary, School District #6 (Rocky Mountain)
- Williams Lake Secondary School, School District #27 (Cariboo-Chilcotin)
- Queen Elizabeth Secondary School District #36 (Surrey)
- Semiahmoo Secondary , School District #36 (Surrey)
- Fleetwood Park Secondary, School District #36 (Surrey)
- Elgin Park Secondary, School District #36 (Surrey)
- Smithers Secondary, School District #54 (Bulkley Valley)
- Walnut Park Elementary, School District #54 (Bulkley Valley)
- Agassiz Elementary-Secondary, School District #78 (Fraser-Cascade)

**ENERGY UPGRADES:**

- Edgewater Elementary, School District #6 (Rocky Mountain)
- Tatla Lake Elementary-Secondary, School District #27 (Cariboo-Chilcotin)
- Kelly Creek Community School, School District #47 (Powell River)
- Keating Elementary School, School District #63 (Saanich)
- Sidney Elementary School, School District #63 (Saanich)
- Arden Elementary, School District #71 (Comox Valley)
- Timberline Secondary School, School District #72 (Campbell River)

-30-

Contact:

Colin Grewar,  
Ministry of Environment  
250 387-9630

Marcus Wong  
Corporate Communications Manager  
Terasen Gas  
Phone: 778 571-3263  
Email: [marcus.wong@terasengas.com](mailto:marcus.wong@terasengas.com)  
Follow us at: [www.twitter.com/terasengas](http://www.twitter.com/terasengas)

For more information on government services or to subscribe to the Province's news feeds using RSS, visit the Province's website at [www.gov.bc.ca](http://www.gov.bc.ca).

[Facebook](#)[Delicious](#)[Twitter](#)[E-mail](#)

**Attachment 118.1**

---



## Program Details from DSMdat

---

### Applied Filters:

**Keywords:** No values selected  
**Country:** No values selected  
**State:** No values selected  
**Sponsors:** No values selected  
**Sector:** No values selected  
**Purpose:** No values selected  
**Channel:** No values selected  
**Incentive Method:** No values selected  
**Incentivized Measure:** No values selected  
**Status:** No values selected

## COMMERCIAL AND INDUSTRIAL HVAC & VFD MEASURES PRESCRIPTIVE PROGRAM

Program Status	Pilot	Program ID
Active	No	5075

**Date Last Reviewed**  
2011-09-16T00:00:00

### Sponsors & Locations

Appalachian Power	WV
-------------------	----

### Overview

Program offers prescriptive incentives to business customers to facilitate the implementation of cost effective energy efficiency improvements at commercial facilities.

[Program website](#)

### Eligibility

Commercial and Industrial Customers

## C&I PRESCRIPTIVE PROGRAM TERMS AND CONDITIONS

### Incentives

A maximum of \$150,000 in rebate dollars per account number for each program year is allowed.

Any requested rebate amount in excess of \$150,000 will be reviewed on a case-by-case basis.

C & I PERSPECTIVE PROGRAM - HVAC MEASURES			
Equipment Type	Size Range	Minimum Qualifying Efficiency	Incentive per ton (\$)
PTAC	All Sizes	13.08 - (0.2556xBTUh/1000) EER	30
Unitary and Split Air Conditioning Units and Air Source Heat Pumps	<65,000 BTUh (5.4 tons)	15.0 SEER	40
	≥65.000 BTUh (5.4 tons) and <240,000 BTUh (20 ton)	12.0 EER	40
	≥240.000 BTUh (20 tons) and <760,000 BTUh (63.33 ton)	10.8 EER	40
	≥760,000 BTUh (63.33 ton)	10.2 EER	40

## C & I PERSPECTIVE PROGRAM - HVAC MEASURES

Water Cooled Chillers	≤150 tons, centrifugal	0.7 kw/ton and 0.57 IPLV	30
	≤150 tons, screw	0.79 kw/ton and 0.62 IPLV	30
	>150 tons and ≤300 tons, centrifugal	0.63 kw/ton and 0.51 IPLV	30
	>150 tons and ≤300 tons, screw	0.72 kw/ton and 0.57 IPLV	30
	>300 tons, centrifugal	0.58 kw/ton and 0.47 IPLV	30
	>300 tons, screw	0.64 kw/ton and 0.51 IPLV	30
Air Cooled Chillers	All Sizes, reciprocation or screw	3012 IPLV	30
Ground Source Heat Pump	All Sizes	12.0 EER	50
VFD	HVAC Fan, HVAC Pump, Process Pump	N/A	40/hp
Programmable Thermostat	5 day, 7 day, 5-1-1 day	N/A	25/thermostat

## C&I PRESCRIPTIVE PROGRAM APPLICATION HVAC & VDF

### **Measure Details & Requirements**

#### **Program Rules and Equipment Eligibility Requirements**

1. Work must be completed via self-install or by a contractor who is registered in the AEP and Appalachian Power contractor network.
2. New construction projects are not eligible.
3. Customer must be classified as and served under a commercial rate.
4. All installed measures must be new. No refurbished measures will be accepted.
5. The equipment shall meet or exceed the minimum efficiency level defined on the rebate chart for the size of unit installed (SEER, EER, HSPF, COP, IPLV, kW/ton)
6. VFDs must be installed on motors of 50 hp or less.
7. The Customer must have an active account in WV with either Wheeling Power Company dba American Electric Power or Appalachian Power Company.
8. If this application is a rebate reservation, the funds will be reserved for a period of not more than 180 days.
9. If this application is for a completed project, the application must be received within 90 days of project completion.
10. The approved rebate will be processed and mailed within 45 days of the application's receipt.
11. All rebate applications are subject to inspection.
12. Rebate checks will only be mailed to the customer's mailing address as provided on this application.
13. The amount and availability of rebates are subject to change.
14. The project may be self installed or completed by a contractor who is registered with the AEP/Appalachian Power contractor network.

15. Only one account number per application is accepted. If upgrades are made across multiple account numbers, then separate applications must be made reflecting the quantities associated with each account number.

16. A maximum of \$150,000 in rebate dollars per account number for each program year is allowed. Any requested rebate amount in excess of \$150,000 will be reviewed on a case-by-case basis.

17. Projects that are not eligible for an incentive include:

- a. Fuel switching
- b. Changes in operation, maintenance practices, or control modifications
- c. Projects that shift peak usage rather than energy savings
- d. On-site electricity generation

### C&I PRESCRIPTIVE PROGRAM APPLICATION HVAC & VDF

**Resources:** Electricity

**Sectors:** Business, Business - commercial, Business - industrial

**Purposes:** Energy efficiency | conservation

**Channels:** Contractors and builders, End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Air distribution | ventilation, Appliances and electronics, Controls, Ground source heat pumps, Space cooling, Space heating, Thermostats

## Commercial Geothermal Rebate Program

**Program Status**

Active

**Pilot**

No

**Program ID**

2530

**Date Last Reviewed**

2011-10-13T00:00:00

**Sponsors & Locations**

## Overview

Program offers rebates to business and farm customers who install a geothermal heating system in a newly constructed building or retrofit an existing building.

[Program website](#)

## Eligibility

Business and farm customers

[Program website](#)

## Incentives

All businesses that qualify will receive a 15 per cent rebate on the eligible cost of a geothermal heating system, to a maximum rebate of \$100,000. In order for a project to qualify for the program, the customer must apply and receive pre-approval.

[Program website](#)

## Measure Details & Requirements

- 1) The program only applies to new construction, renovation and retrofit projects
- 2) Rebates are not available for projects in progress or already completed. Existing buildings currently heated by natural gas are not eligible for the Feasibility Study Rebate or a system installation rebate
- 3) Electrically heated buildings constructed in areas served by natural gas will be eligible for the program
- 4) One system installation rebate will be allowed for each eligible project
- 5) Installed forced air (water-to-air) geothermal heat-pump units must be certified by CSA or ARI/ISO 13256-1. Installed fluid-to-fluid geothermal heat pumps must be manufacturer rated in accordance with ARI/ISO 1325
- 6) Direct Expansion (DX), standing-column well, air source, internal source or other heat-pump systems that are not covered by CSA 448 are not eligible for participation in the program
- 7) Participating buildings must be heated for the entire heating season (September–May) and use the installed geothermal heat-pump system as the building's primary heating source
- 8) A geothermal heat-pump system sized to provide up to 100 per cent of the base building transmission and infiltration heating loads will be eligible for a system installation rebate

**Resources:** Electricity, Gas

**Sectors:** Business, Business - agricultural, Business - commercial

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Geothermal, Ground source heat pumps, Space cooling, Space heating

## Commercial Heat Pump Program

<b>Program Status</b>	<b>Pilot</b>	<b>Program ID</b>
Active	No	1644

**Date Last Reviewed**  
2010-09-28T00:00:00

### Sponsors & Locations

Omaha Public Power District	NE
-----------------------------	----

### Overview

Offers business customers rebates for installing geothermal and water-source heat pumps. Also offers a full spectrum of turn-key geothermal and water-source heat pump design solutions for commercial facilities.

[Program website](#)

### Eligibility

Business customers.

[Program website](#)

### Incentives

One-time incentive of \$50 per nominal ton for the installation of the following types of electric heat pump HVAC systems in commercial and industrial facilities:

Air-Source Heat Pumps with A Minimum SEER of 13.0

Water-Source Heat Pumps

## Geothermal Heat Pumps

OPPD uses its own thermal conductivity tester to measure the geothermal performance of soil at the site before designing a well field. OPPD also offers many geothermal well field design options, including testing, design, procurement, installation, construction management, and financing.

[Program website](#)

**Resources:** Electricity

**Sectors:** Business, Business - commercial, Business - industrial

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Financing, Technical | design assistance, Rebates

**Incentivized Measures:** Ground source heat pumps, Space cooling, Space heating

## ConserFund

<b>Program Status</b>	<b>Pilot</b>	<b>Program ID</b>
Active	No	2136

<b>Date Last Reviewed</b> 2010-05-19T00:00:00
--

### Sponsors & Locations

South Carolina Energy Office	SC
------------------------------	----

### Overview

ConserFund provides loans to state agencies, public colleges or universities, school districts, local governments, and nonprofit organizations for energy-efficiency improvements.

[Program website](#)

### Eligibility

State agencies, public colleges or universities, school districts, local governments, and private nonprofit organizations.

[Program website](#)

## **Incentives**

Annual interest rate is a fixed rate set below the Wall Street Journal prime rate. Loans are for 100 percent of eligible project costs. Borrowers may finance projects from \$25,000 up to \$500,000 per fiscal year. Financing agreements have a maximum term of ten years. Free preliminary energy audits and project planning assistance are offered through the Rebuild South Carolina Program.

[Program website](#)

Eligible energy savings projects include:

- Replacement or modification of lighting systems;
- Replacement or modifications of heating, ventilation, and air conditioning systems;
- Building envelope modifications (doors, windows, insulation, roofs, etc.);
- Automated or computerized energy-control systems;
- Cogeneration systems that produce electricity and process steam heat for use primarily within a building or complex of buildings; and
- Other energy conservation measures that provide long-term energy cost savings.

For most eligible energy conservation measures, financing shall only be for retrofits of existing buildings. However, ConserFund may be used to:

- Finance energy recovery systems;
- Ground source heat pumps; and
- Biomass, solar, and other alternative/renewable energy systems in both new construction facilities and existing facilities.

[Program website](#)

**Resources:** Electricity, Gas

**Sectors:** Government | schools | institutions

**Purposes:** Energy efficiency | conservation, Renewable energy

**Channels:** End-users

**Incentive Methods:** Audits, Financing, Free | giveaways

**Incentivized Measures:** Air distribution | ventilation, Biomass, Building shell, Combined heat and power, Custom, Energy management systems, Geothermal, Ground source heat pumps, Heat recovery, Lighting, Photovoltaics, Solar thermal, Space cooling, Space heating

## Dollar and Energy Saving Loans

**Program Status**

Active

**Pilot**

No

**Program ID**

2091

**Date Last Reviewed**

2010-12-09T00:00:00

**Sponsors & Locations**

Nebraska Energy Office	NE
------------------------	----

**Overview**

Offers low-interest loan to residents, businesses, and public institutions.

[Program website](#)

**Eligibility**

Residents, businesses, and public institutions in Nebraska.

[Program website](#)

**Incentives**

Low-interest loan, up to 10 years.

Borrower maximums:

Residential limits single-family homes (including townhouses and condominiums): \$35,000

Multi-family buildings: \$75,000

Energy Star Partners: \$150,000

Nebraska business and non-profits: \$100,000

Farms and Ranches (borrowers must produce at least \$1,000 of agricultural products during a calendar year): \$75,000

Local governments and all political subdivisions, except public schools, school districts and state government: \$175,000

ENERGY STAR Certified Equipment for Home: \$10,000

ENERGY STAR Certified Office Equipment: \$25,000

[Program website](#)

Typical eligible improvements:

# Refrigerator, Freezer, Dishwasher, Dehumidifier or Clothes Washer Replacements

# Certain Commercial Appliance Replacements

# Room Air Conditioner and Room Heat Pump

# Insulation added to walls, floors, ceilings, attics and other building envelope surfaces

- # Windows, Glass Doors and Exterior Doors
- # Storm Windows and Doors
- # Skylight Replacements
- # Broken Windows
- # Windows and Doors to be replaced with solid walls
- # Reflective Window Film
- # Building Air Leaks to be sealed with caulk and weather-stripping or thresholds
- # High Efficiency Space Heating Equipment
- # Forced air gas furnace
- # Steam or hot water boiler
- # Combination water and space heater
- # Radiant heating
- # High Efficiency Space Cooling Equipment
- # Central air conditioner
- # Air source heat pump
- # Ground water or ground coupled heat pump
- # Packaged terminal heat pump or air conditioner
- # Programmable Thermostats and other controls
- # High Efficiency Water Heating Equipment
- # Duct, Pipe and Water Heater Insulation
- # Whole House Fans, Heat or Energy Recovery Ventilator and Outdoor Combustion Air Intake Duct
- # Fireplace Inserts
- # High Efficiency Lighting and Controls
- # Dedicated Alternate Fuel Vehicles and Fueling Facilities
- # Telecommunications Equipment such as network access equipment, video and audio conferencing products and other equipment which save energy by reducing the need for physical transportation
- # ENERGY STAR Certified Home Electronics and Office Equipment
- # Other Energy Efficiency and Waste Minimization projects can be financed in some situations. Contact the Energy Office for details

[Program website](#)

**Resources:** Electricity, Gas, Water

**Sectors:** Business, Government | schools | institutions, Residential

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Financing

**Incentivized Measures:** Agricultural equipment, Air distribution | ventilation, Appliances and electronics, Boilers, Building shell, Combination heating, Controls, Custom, Ground source heat pumps, Lighting, Office equipment, Space cooling, Space heating, Water heating

## Electricity Retrofit Incentive Program

**Program Status**

Active

**Pilot**

No

**Program ID**

1576

**Date Last Reviewed**

2010-11-24T00:00:00

### Sponsors & Locations

Ontario Power Authority	ON
-------------------------	----

### Overview

Offers commercial, industrial, agricultural, and institutional customers custom rebates for installing new energy-efficient equipment in existing facilities.

[Program website](#)

### Eligibility

Business, commercial, industrial and agricultural customers of participating LDCs

[Program website](#)

### Incentives

This track has predefined technologies with corresponding per-unit or performance-basis savings measures. These projects will tend to involve replacements and upgrades to existing systems. The incentive is based on what is installed.

Prescriptive Measures:

Fryers and Griddles:

\$1,000 incentive for replacing electric fryer with an Energy Star® qualified natural gas fryer

\$850 to \$2,400 per griddle when an electric griddle (two feet to six feet) is replaced with a gas griddle with a minimum cooking efficiency of 38%

Solar Hot Water Collector: \$240/m<sup>2</sup> of installed collector area

Drain Water Heat Recovery: \$250

Non-electric hot water heaters: \$2 per thousand BTU/h replace an electric storage tank water heater with non-electric storage or tankless

Ground Source Heat Pumps: \$250/ton with a min cooling COP of 3.5

Desiccant dehumidifiers: \$1.5/CFM

Chillers: \$250.ton

Dual and Natural Ventilation: For livestock, the incentives are determined based on barn capacity and livestock type. In the case of greenhouses - flowers-vegetables - the ERIP incentive is based on the size of the production area within the building

The custom track is for businesses using a more specific solution to electricity efficiency retrofitting. For these projects, all technology equipment and systems are evaluated on the basis of their power and energy performance improvement. The incentive offered is based specifically on the level of improvement.

[Program website](#)

## **Program Procedures**

All fluorescent bulbs and ballasts replaced by program partners will be responsibly disposed of through the Take Back the Light program, which is funded by the Ontario Ministry of the Environment and led by the Recycling Council of Ontario.

[Program website](#)

Other technologies for which incentives are available through the prescriptive track include ventilation fans, swine creep heat and controls, livestock waterers, unitary air conditioning units, fluorescent lighting systems (T8, T5, CFL), metal halide lighting systems, LED "EXIT" signs, occupancy sensors, and three-phase premium-efficiency motors. (Incentives are not listed on website).

[Program website](#)

**Resources:** Electricity, Gas, Water

**Sectors:** Business, Business - agricultural, Business - commercial, Business - industrial, Business - small, Government | schools | institutions

**Purposes:** Energy efficiency | conservation, Load building, Renewable energy

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Agricultural equipment, Air distribution | ventilation, Controls, Custom, Food service - commercial, Ground source heat pumps, Heat recovery, Lighting,

Lighting - CFL, Lighting - LED, Miscellaneous technologies, Motors, Solar thermal, Space cooling, Thermostats, Water heating, Water heating - tankless

## Geothermal Heat Pump Incentive Program

**Program Status**

Active

**Pilot**

No

**Program ID**

2350

**Date Last Reviewed**

2011-08-25T00:00:00

### Sponsors & Locations

Connecticut Clean Energy Fund

CT

### Overview

Provides rebates for homeowners, commercial building owners, and real estate developers for installing geothermal heat pumps.

[Program website](#)

### Eligibility

Residential and commercial customers.

[Program website](#)

### Incentives

Type of project	rebate amount
Residential (new construction)	\$1,050 per ton of air-conditioning capacity
Residential (retrofits of existing building)	\$1,200 per ton
Commercial for-profit	\$1,050 per ton
Not-for-profit	\$1,750 per ton

Maximum project size per installation is:

Residential - 6 tons

Nonresidential - 100 tons (schools - 150 tons)

The incentive will be reduced as the program progresses toward its installed capacity goal of over 3,000 tons.

Projects must be completed and operating by April 30, 2012 to receive rebate.

[Program Brochure PDF](#)

**Resources:** Electricity

**Sectors:** Business, Government | schools | institutions, Residential

**Purposes:** Energy efficiency | conservation

**Channels:** Building owners and operators, Contractors and builders, End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Ground source heat pumps

## Geothermal Program for K-12 Schools

<b>Program Status</b>	<b>Pilot</b>	<b>Program ID</b>
Active	No	2397

**Date Last Reviewed**  
2010-03-04T00:00:00

### Sponsors & Locations

Alabama Department of Economic and Community Affairs	AL
--	----

### Overview

The Energy Division is currently soliciting proposals from K-12 public school systems or private schools in Alabama for the purchase and installation of closed-loop ground source heat pumps in schools located within their jurisdiction or on their campus. Deadline for submissions

has been extended to February 26, 2010.

[Program website](#)

### **Eligibility**

K-12 schools.

[Program website](#)

### **Incentives**

Grant between \$27,000 and \$135,000.

[Program website](#)

**Resources:** Electricity, Gas

**Sectors:** Government | schools | institutions

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Grants

**Incentivized Measures:** Ground source heat pumps

## Ground Source Heat Pump Rebate

### **Program Status**

Active

### **Pilot**

No

### **Program ID**

1535

### **Date Last Reviewed**

2011-08-29T00:00:00

### **Sponsors & Locations**

Connexus Energy	MN
-----------------	----

### **Overview**

Offers commercial customers rebates for the purchase of ground source heat pumps.

[Program website](#)

### **Eligibility**

Agricultural, commercial and industrial customers.

[2011 application form](#)

## Incentives

Rebate amount is \$400 per ton for qualifying residential GSHPs. Rebate quantities are limited.

[2011 application form](#)

## Measure Details & Requirements

- GSHP must be installed within the Connexus Energy electrical service area.
- Installing contractor must be registered through HVACReduction.net or natex.org.
- Limit one rebate per customer account.

[2011 application form](#)

## Timeframe

Offer valid for new GSHPs purchased and installed between January 1, 2011 and December 31, 2011, or while funds last.

[Program website](#)

**Resources:** Electricity

**Sectors:** Business, Business - agricultural, Business - commercial, Business - industrial

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Ground source heat pumps

## Heat pump conservation rebates (MN)

<b>Program Status</b>	<b>Pilot</b>	<b>Program ID</b>
Active	No	1797

**Date Last Reviewed**  
2010-09-28T00:00:00

## Sponsors & Locations

Otter Tail Power	MN
------------------	----

## Overview

Offers rebates for air-source and ground-source heat pumps.

[Program website](#)

## Eligibility

Customers in Minnesota.

[Program website](#)

## Incentives

**AIR-SOURCE HEAT PUMP REBATE:** incentive of \$20 per 1,000 heating Btu for air-source heat pumps labeled as Energy Star systems or that show proof of the following ratings:

- Split-system installations must be rated with a minimum SEER (seasonal energy efficiency rating) of 14.5, an HSPF (heating season performance factor) of 8.2, and an 12 EER (energy efficiency ratio) to qualify for a rebate of \$20 per 1,000 heating Btu.

- Package terminal heat pump installations must be rated with a minimum SEER of 14, an HSPF of 8.0, and an 11.0 EER to qualify for a rebate of \$20 per 1,000 heating Btu.

**GEOTHERMAL HEAT PUMP REBATE:** incentive of \$50 per 1,000 Btu of heating capacity for open- or closed-loop geothermal heat pumps labeled as Energy Star systems or that show proof of a minimum COP (coefficient of performance) rating of 3.3.

[Program website](#)

**Resources:** Electricity, Gas

**Sectors:** Business, Government | schools | institutions, Residential

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Ground source heat pumps, Space cooling, Space heating

## New Construction Program

Program Status	Pilot	Program ID
Active	No	781
<b>Date Last Reviewed</b>		
2011-03-29T00:00:00		

## Sponsors & Locations

## Overview

Provides business customers both financial and technical assistance to incorporate energy-efficiency measures into the design, construction, and operation of new and substantially renovated buildings, such as commissioning and green building services.

**New Construction:** Defined as a new building, or space within a new building, for which a licensed professional architect or engineer has prepared and certified building plans.

**Substantial Renovation:** Defined as one of the following types of projects for which a licensed professional architect or engineer has prepared and certified building plans.

1. Change of use and reconstruction of an existing building or the space within it
2. Construction work requiring that the building or space within it be out of service for at least 30 consecutive days
3. Reconstruction of a vacant structure or the space within it

[Program website](#)

## Eligibility

Eligible applicants for electric or gas incentives are New York State electricity or firm gas distribution customers of a participating utility company and who pay into the System Benefits Charge.

Eligible applicants must have legal authority to make energy efficiency improvements in the property they occupy or will occupy.

Eligible applicants are defined as the building owner of the property, a tenant/leaseholder with at least five years remaining on the lease, or non-residential condominium owners occupying and holding title to space within the subject building, or non-residential cooperative shareholders having the right to occupy space within the subject building.

All applicants including those in a negotiated rate class, must pay the System Benefits Charge in order to be eligible for this program.

[Frequently Asked Questions](#)

## Incentives

Note: Incentives listed below are for projects NOT located in Consolidated Edison's service territory. Con Ed incentives are very similar, but incentive levels are slightly higher. See the incentive document for details.

### TECHNICAL ASSISTANCE

Basic Technical Assistance Services:

- Energy Analysis: Requires the use of a Technical Assistant consultant currently under contract to NYSERDA to assist applicants and their design teams to identify energy efficiency opportunities.
- NYSERDA will pay the first \$5,000 and will cost share 50% of the balance up to a total contribution of \$75,000.
- NYSERDA will increase the maximum funding amount for technical services by an additional \$25,000 (\$100,000 total) to identify Demand Response opportunities.

#### Green Building Services:

- NYSERDA will provide financial assistance for the applicant's green building consultant for projects seeking green building assistance. Applicants may use a green building consultant of their choice or NYSERDA can help identify a provider for these services.
- For green building technical services on projects that achieve LEED or NY-CHPS certification, NYSERDA will pay an additional amount equal to NYSERDA's share of energy analysis TA services, up to a total additional NYSERDA contribution of \$25,000.

#### Building Commissioning Services:

- NYSERDA will provide financial assistance for the applicant's commissioning consultant for projects seeking commissioning assistance. Applicants may use a commissioning provider of their choice, or NYSERDA can help identify a consultant for these services.
- Commissioning is required if incentive award is over \$100,000. Commissioning is also required for all lighting systems that incorporate advanced daylighting dimming or switching controls.
- NYSERDA will increase its financial incentives by 10% to offset the applicant's cost of commissioning, up to a maximum NYSERDA contribution for \$25,000.

#### Design Team Incentives (for Whole Building Design and Green Building projects):

1. Designs 3% to 9% above designated baseline\* - \$25 per peak summer kW saved, maximum \$3,400
2. Designs 9.1% to 16% above designated baseline\* - \$40 per peak summer kW saved, maximum \$5,000
3. Designs 16.1% to 23% above designated baseline\* - \$55 per peak summer kW saved, maximum \$6,700
4. Designs 23.1% to 30% above designated baseline\* - \$70 per peak summer kW saved, maximum \$10,400
5. Designs 30.1% or more above designated baseline\* - \$90 per peak summer kW saved, maximum \$15,400

#### FINANCIAL INCENTIVES

Note: Total project incentive cap \$850,000 (not including bonus incentives).

#### Pre-Qualified Measure:

- Pre-set incentives are offered for select pre-qualified measures
- Maximum \$200,000 per project

#### Custom Measure

- For incentive consideration each measure must exceed designated baseline\* by a minimum of 3%.
- \$0.10 per kWh saved; \$225 per summer peak kW saved
- Maximum \$200,000 per project, including any pre-qualified measures
- Incentive capped at 50% of incremental cost
- With the exception of lighting systems, incentives are not available for measures that reduce paybacks to less than one year
- Incentives for pre-qualified geothermal heat pump systems are set at \$400 per installed ton

#### Whole Building Design:

- For incentive consideration overall Whole Building Design must exceed designated baseline\* by a minimum of 3%.
  - Maximum \$200,000 per single measure and \$750,000 per project
  - Incentive capped at 60% of incremental cost (75% for LEED or NY-CHPS certified buildings)
  - With the exception of lighting systems, incentives are not available for measures that reduce paybacks to less than one year
  - Incentives for geothermal heat pump systems are set at \$400 per ton, capped at \$200,000 per building
1. Designs 3% to 9% above designated baseline\* - \$0.11 per kWh saved; \$230 per summer peak kW saved
  2. Designs 9.1% to 16% above designated baseline\* - \$0.12 per kWh saved; \$240 per summer peak kW saved
  3. Designs 16.1% to 23% above designated baseline\* - \$0.13 per kWh saved; \$250 per summer peak kW saved
  4. Designs 23.1% to 30% above designated baseline\* - \$0.14 per kWh saved; \$260 per summer peak kW saved
  5. Designs 30.1% or more above designated baseline\* - \$0.16 per kWh saved; \$280 per summer peak kW saved

#### Green Building Option (LEED or NY-CHPS certification):

- For projects which achieve LEED or NY-CHPS certification, incentives through the Whole Building Design approach apply as well as the additional incentives described in this section.
- Incentive increased by 10% for projects with at least 3 EAc-1 LEED points, or at least 2 Energy 3.1.3 NY-CHPS points
- Maximum incentive increase is \$50,000
- Incentive cap increased to 75% of incremental cost

## BONUS INCENTIVES

### Applicant LEED Incentives:

- Incentive is available to offset soft costs for certification, for LEED projects with at least 3 EAc-1 points.
  1. Project is less than 50,000 square feet (sf) - \$5,000
  2. Project is equal to or larger than 50,000 sf - \$10,000

### Demand Response:

- For applicants who are registered in the NYISO ICAP-SCR (Installed Capacity Special Case Resource) program.
  - \$50 per kW curtailed summer on-peak load or 60% of incremental costs, whichever is less
  - \$3,000 for PSC-approved, advanced interval meter

### Energy Storage/Electric to Non-Electric Cooling:

- kW reduction is based on electric chiller 2% more efficient than ASHRAE 90.1-2007 requirements. kW reduction must offset summer on-peak kW load.
  - \$300/kW
  - Incentive capped at 50% of incremental cost

### Industrial & Process Efficiency:

- Refer to Industrial & Process Efficiency insert for description and incentives.

### Super-Efficient Chiller:

- Chillers that exceed ASHRAE 90.1-2007 centrifugal chiller full load requirement by at least 2%, and Net Part Load Value (NPLV) by at least 25%, may add one of two bonuses to the base incentive.
  - Full load \$1,000/kW **\*\*OR\*\*** NPLV \$275/kW
  - Incentive capped at \$2,000,000 per chiller, or 50% of incremental cost, whichever is less
  - Bonus only applies where the super efficient chiller is water-cooled, electrically operated and greater than 300 tons

## INDUSTRIAL AND PROCESS EFFICIENCY INCENTIVES

### Flexible Technical Assistance (FlexTech)

- The FlexTech Program is available to help applicants identify and determine the Return on Investment (ROI) of process improvements and make informed energy-related decisions.
- NYSERDA will typically cost share up to 50% of the study cost, up to \$1,000,000

### Performance Based Incentives:

- This is a custom measure program that provides financial incentives to offset up to 50% of the cost of projects that improve energy efficiency and productivity of manufacturing processes and data centers in new or substantially renovated facilities.
- The incentives are based upon the first year's kWh savings due to installed measures. Savings can be evaluated on per unit of production or computing basis to encourage efficient growth. NYSERDA's staff and consulting team will work with the applicant to establish an appropriate baseline and Measurement and Verification (M&V) plan for each project.
- Incentives are calculated by multiplying the projected annual energy savings (in kWh) by the incentive rates below:
  - o \$0.12/kWh in upstate territories
  - o \$0.16/kWh in Con Edison territory
- Incentives are capped at \$5 million per facility, not to exceed 50% of the project cost.
- Projects must qualify for a minimum incentive of \$10,000
- M&V is required for projects with projected savings of greater than 500,000 kWh.

### Incentives

**Resources:** Electricity, Gas

**Sectors:** Business, Business - commercial, Business - new construction, Government | schools | institutions, Residential - multifamily

**Purposes:** Demand response, Energy efficiency | conservation, Peak load management

**Channels:** Architects | engineers | designers, Building owners and operators

**Incentive Methods:** Building rating | labeling, Technical | design assistance, Rebates

**Incentivized Measures:** Commissioning, Air distribution | ventilation, Comprehensive treatment, Controls, Custom, Ground source heat pumps, Industrial processes, Lighting, Motors, Space cooling, Space heating, Water heating

## New Jersey SmartStart Buildings

**Program Status**

Active

**Pilot**

No

**Program ID**

2318

**Date Last Reviewed**

2010-11-18T00:00:00

**Sponsors & Locations**

New Jersey Board of Public Utilities	NJ
--------------------------------------	----

**Overview**

Provides design and technical support as well as financial incentives to commercial and/or industrial customers and governmental buildings that are beginning new construction projects, renovating existing space, or upgrading equipment to meet higher efficiency standards.

[Program website](#)

**Eligibility**

Commercial and industrial business customers, as well as government-owned buildings that receive electric and/or gas service from one of the regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

[Program website](#)

**Incentives**

All equipment incentives require pre-approval.

**Electric Chillers**

Water-cooled chillers (\$12 - \$170 per ton)

Air-cooled chillers (\$8 - \$52 per ton)

**Gas Cooling**

Gas absorption chillers (\$185-\$450 per ton)

Gas Engine-Driven Chillers (Calculated through Custom Measure Path)

Desiccant Systems (\$1.00 per cfm - gas or electric)

**Electric Unitary HVAC**

Unitary AC and split systems (\$73 - \$92 per ton)

Air-to-air heat pumps (\$73 - \$92 per ton)

Water-source heat pumps (\$81 per ton)

Packaged terminal AC & HP (\$65 per ton)

Central DX AC Systems (\$40 - \$72 per ton)

Dual Enthalpy Economizer Controls (\$250)

Ground Source Heat Pumps

Closed Loop & Open Loop (\$450-750 per ton)

Gas Heating

Gas-fired boilers Gas-fired boilers  $\geq$  300 MBH - 1500 MBH (\$1.75 per MBH)

Gas-fired boilers  $\geq$  1500 MBH -  $\leq$  4000 MBH (\$1.00 per MBH)

Gas-fired boilers  $>$  4000 MBH (Calculated through Custom Measure Path)

Gas furnaces (\$300-\$400 per unit)

Variable Frequency Drives

Variable air volume (\$65 - \$155 per hp)

Chilled-water pumps (\$60 per hp)

Compressors (\$5,250 to \$12,500 per drive)

Natural Gas Water Heating

Gas water heaters  $\leq$  50 gallons (\$50 per unit)

Gas-fired water heaters  $>$  50 gallons (\$1.00 - \$2.00 per MBH)

Tankless water heaters replacing a free standing water heater  $>$  82% energy factor (\$300 per heater)

Gas-fired booster water heaters (\$17 - \$35 per MBH)

Premium Motors

Fractional (Three-phase motors (\$45 - \$700 per motor)

Prescriptive Lighting

T-5 and T-8 lamps with electronic ballast in existing facilities (\$15 per fixture, 1-4 lamps)

T-8 to reduced wattage T-8 (28W/25W 4') retrofit with ballast replacement (\$10 per fixture, 1-4 lamps)

Hard-wired compact fluorescent (\$25 - \$30 per fixture)

Metal halide w/pulse start (\$25 per fixture)

LED Exit signs (\$10/\$20 per fixture)

T-5 and T-8 High Bay Fixtures (\$16 - \$284 per fixture)

Lighting Controls

Occupancy Sensors

Wall mounted (\$20 per control)

Remote mounted (\$35 per control)

Daylight dimmers (\$25 per fixture controlled, \$50 per fixture for office applications only)

Occupancy controlled hi-low fluorescent controls (\$25 per fixture controlled)

HID or Fluorescent Hi-Bay Controls

Occupancy hi-low (\$75 per fixture controlled)

Daylight dimming (\$75 per fixture controlled)

Other Equipment Incentives\*

Performance Lighting (\$1.00 per watt per square foot below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1-2004 for New Construction and Complete Renovation.)

Custom electric and gas equipment incentives (not prescriptive)

\*Equipment incentives are calculated based on type, efficiency, size, and application and are evaluated on a case-by-case basis.

[Program website](#)

**Resources:** Electricity, Gas, Water

**Sectors:** Business, Business - commercial, Business - industrial, Business - new construction, Government | schools | institutions

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Technical | design assistance, Rebates

**Incentivized Measures:** Air distribution | ventilation, Boilers, Controls, Custom, Ground source heat pumps, Lighting, Motors, Refrigeration - commercial, Refrigeration - industrial, Space cooling, Space heating, Water heating, Water heating - tankless

## Prescriptive Incentives for Your Business

**Program Status**

Active

**Pilot**

No

**Program ID**

2269

**Date Last Reviewed**

2011-03-02T00:00:00

**Sponsors & Locations**

DTE Energy	MI
------------	----

**Overview**

Provides incentives for an array of electricity and gas-saving technologies, including energy-efficient lighting, motors and drives, controls, heating ventilation and air conditioning, refrigeration and more.

Note: Secondary program website is <https://websafe.kemainc.com/ProjectCenter/Default.aspx?tabid=2241>

[Program website](#)

**Eligibility**

This program is available to commercial and/or industrial business customers of DTE Energy. Customers that are billed on non-residential rates are classified as business customers.

Note: This program is not available to DTE Energy customers in multifamily buildings or complexes consisting of five or more units per building. These customers are eligible to participate in the Multifamily Program for energy saving upgrades to both tenant and common areas.

[Program website](#)

**Incentives**

Provides prescriptive rebates for a wide array of technologies. See the technology section below for details.

Customers installing electric eligible measures may receive up to \$150,000 per facility per program year for electric measures; the total customer cap (across all facilities saving electricity) is \$500,000 per program year. Customers installing eligible gas measures may receive up to \$25,000 per facility per program year for gas measures; the total customer cap (across all facilities saving gas) is \$100,000 per program year.

**LIGHTING**

CFLs and LEDs Retrofit - \$1.50 to \$8.00/lamp; \$20 to \$35/fixture

Standard Linear Fluorescent Retrofit (T12 to T8 or T5) - \$3 to \$13/fixture

U-Lamp Fluorescent Retrofit (T12 to T8): \$3 to \$4/fixture

Conversion to High Output (HO) Linear Fluorescents (T12 to T8HO or T5HO) - \$5 to \$18/fixture

High Performance (HP) and Low Wattage (LW) linear fluorescent LW T8 lamps - \$0.75/lamp

High Performance (HP) and Low Wattage (LW) linear fluorescent LW T8 fixtures - \$2 to \$25/fixture

Interior HID Conversion to Fluorescent Fixtures - \$30 to \$150/fixture

Exterior and Garage HID Conversions to LED or Induction - \$45 to \$180/fixture

LED Exit Signs Electronic Fixtures (Retrofit Only) - \$12.50/fixture

LED auto traffic signal - \$20/signal

LED pedestrian signal - \$15/signal

Occupancy Sensors ( $\leq$  500 Watts Controlled) - \$20.00/Sensor

Occupancy Sensors ( $>$  500 Watts Controlled) - \$50.00/Sensor

Central Lighting Control - \$600.00/10,000 SF

Switching Controls for Multilevel Lighting - \$500.00 10,000 SF

Daylight Sensor Controls - \$900.00/10,000 SF

Exterior Lighting Bi-level Control w/ Override, 150W to 1000W HID - \$50.00/Fixture

Light Tube - \$35.00/Tube

De-lamping - \$3 to \$10/lamp removed

## HVAC (ELECTRIC)

Unitary and Split Air Conditioning Systems - \$10 or \$15/ton depending on size and SEER or EER

Air Source Heat Pumps - \$10 to \$30/ton depending on size and SEER or EER

Water Loop Heat Pumps - \$8 or \$10/ton depending on size and EER

Room air conditioners (ENERGY STAR) - \$10 or \$25/ton depending on size

Package terminal air conditioners - \$5/ton

Package terminal heat pumps - \$10/ton

Ground source heat pump - \$22.50/ton if EER = 17, \$30/ton if EER = 19

Ground source heat pump: air source base - \$150/ton if EER = 17, \$175/ton if EER = 19

Programmable thermostat (A/C) - \$20/unit

Energy management system - \$5/1,000 sqft of conditioned floor area

Hotel guestroom energy management control (A/C) - \$30/room

Chilled Water Reset - Air Cooled - \$1/ton

Chilled Water Reset - Water Cooled - \$0.50 or \$1/ton depending on size

Variable Frequency Drive - VAV Supply or Return Air Fan - \$60 each

Variable Frequency Drive - Secondary Chilled Water Pump - \$60 each

Economizer - \$8/ton

Cool roof - \$20/1,000 sqft roof area

High performance glazing (windows) - \$30/100 sqft of glazing

Window film - \$30/100 sqft of glazing

Centrifugal Chiller - \$5 to \$45/ton

Screw Chiller - \$10 to \$50/ton

#### HVAC (GAS)

Steam Traps - Leaking Steam Trap Repair or Replacement - \$50.00/Trap

Space Heating Boilers - High Efficiency Boilers - \$2.00/MBH

Pipe Wrap - Steam Boiler - \$6.0/linear Foot

Infrared Heaters - \$2.50/MBH

Chiller Water Reset - \$1.00/ton

Variable Frequency Drive on Secondary Chilled Water Pump - \$10.00/Pump HP

Roof Insulation - \$100.00/1,000 SF Roof Area

Programmable Thermostat (Gas Heat) - \$50.00/Thermostat

Energy Management System - \$5.00 1,000 SF of Conditioned Floor Area

Demand Control Ventilation - \$50.00/1,000 SF

Hotel Guestroom Energy Management Control (Gas Heat)/\$35.00 Room

#### GAS WATER HEATERS/HEATING

Pipe Wrap - Hot Water Boiler - \$4.00/Linear foot

Gas Water Heater ( 75 gal, > 75,000 Btu/hr) - \$50.00/heater

Gas Tankless Water Heater - \$150.00/Heater

High Efficiency Pool Heater (gas heat) - \$2.00/MBH

Pool Covers - \$0.25/SF surface area

High Efficiency Clothes Washer (Gas Water Heat, Electric Dryer) - \$50.00/Washer

High Efficiency Clothes Washer (Gas Water Heat, Gas Dryer) - \$50.00/Washer

#### NEMA PREMIUM EFFICIENCY MOTORS

Rebates for motors 1 to 250 horsepower - \$1.50 to \$3.00/HP

#### MISCELLANEOUS (ELECTRIC)

Beverage Vending Machine Controllers - \$50.00/machine

Plug Load Occupancy Sensor - \$37.50/sensor

Intelligent Surge Protector - \$8.00/protector

High Efficiency Heat Pump Water Heater 10 to 50 MBH - \$1,500.00 /heater

High Efficiency Heat Pump Water Heater 51 to 100 MBH - \$3,000.00 /heater

High Efficiency Heat Pump Water Heater 101 to 300 MBH - \$5,000.00 /heater

High Efficiency Heat Pump Water Heater 301 to 500 MBH - \$7,000.00 /heater

High Efficiency Heat Pump Water Heater > 500 MBH- \$9,000.00 /heater

Energy Efficient Ice Machines Energy Efficient Ice Machines 500 to 1000 lbs - \$250.00/  
machine

Energy Efficient Ice Machines 1001 to 1500 lbs - \$500.00/machine

High Efficiency Clothes Washer (Electric Water Heat, Electric Dryer) - \$50.00/washer

High Efficiency Clothes Washer (Electric Water Heat, Gas Dryer) - \$50.00/washer

#### INDUSTRIAL PROCESS (ELECTRIC)

High Efficiency Process (non-HVAC) Pumps - \$20/HP

Variable Frequency Drive on Process (non-HVAC) Pumps - \$60/HP

Compressed Air Engineered Nozzle - \$100.00 Nozzle

Barrel Wraps for Injection Molders & Extruders - \$1.00 Machine Ton

Insulated Pellet Dryer Ducts - 3" diameter - \$10.00 Linear Foot

Insulated Pellet Dryer Ducts - 4" diameter - \$15.00 Linear Foot

Insulated Pellet Dryer Ducts - 5" diameter - \$20.00 Linear Foot

Insulated Pellet Dryer Ducts - 6" diameter - \$25.00 Linear Foot

Insulated Pellet Dryer Ducts - 8" diameter - \$30.00 Linear Foot

#### FOOD SERVICE (ELECTRIC)

ENERGY STAR Commercial Solid Door Refrigerators ( ENERGY STAR Commercial Solid Door  
Refrigerators (20 - 48 cu ft) \$200.00 Refrigerator

ENERGY STAR Commercial Solid Door Refrigerators ( > 48 cu ft) \$300.00 Refrigerator

ENERGY STAR Commercial Solid Door Freezers ( ENERGY STAR Commercial Solid Door  
Freezers ( 20 - 48 cu ft) \$100.00 Freezer

ENERGY STAR Commercial Solid Door Freezers ( > 48 cu ft) \$100.00 Freezer

ENERGY STAR Steam Cookers (3 Pan, Electric) \$450.00 Cooker  
ENERGY STAR Steam Cookers (4 Pan, Electric) \$600.00 Cooker  
ENERGY STAR Steam Cookers (5 Pan, Electric) \$750.00 Cooker  
ENERGY STAR Steam Cookers (6 Pan, Electric) \$900.00 Cooker  
ENERGY STAR Hot Holding Cabinets (Half Size) \$300.00 Cabinet  
ENERGY STAR Hot Holding Cabinets (Three Quarter Size) \$400.00 Cabinet  
ENERGY STAR Hot Holding Cabinets (Full Size) \$600.00 Cabinet  
Anti-Sweat Heater Controls \$80.00 Door  
Floating Head Pressure Controls \$8.00 Ton  
ECM Motor for Reach-in Refrigerated Display Case \$60 per motor  
Evaporator Fan Motor Control on ECM or PSC for Walk-in Coolers and Freezers: \$30 per controller  
LED refrigerated case lighting: \$30 per door  
Night Covers (Vertical): \$1.25 per linear ft x Hrs/day

#### FOOD SERVICE (GAS) AND MISCELLANEOUS

ENERGY STAR Steam Cookers (5 Pan, Gas) \$750.00 cooker  
ENERGY STAR Steam Cookers (6 Pan, Gas) \$900.00 cooker  
Convection Ovens (new or replacement) \$300.00 oven  
Combination Ovens new or replacement) \$900.00 oven  
Rack Oven Single (new or replacement) \$400.00 oven  
Rack Oven Double (new or replacement) \$800.00 oven  
ENERGY STAR Fryer (new or replacement) \$225.00 fryer  
Large Vat Fryer (new or replacement) \$300.00 fryer  
Griddles (new or replacement) \$200.00 griddle  
Furnace Tube Inserts (Gas) \$75.00 furnace  
Pre-Rinse Sprayers (gas water heat) \$30.00 sprayer  
[Program website](#)

#### **Measure Details & Requirements**

Final Applications must be received within 60 days after project completion or by December 15, 2011 for the 2011 program year, whichever comes first.

[Program website](#)

**Resources:** Electricity, Gas, Water

**Sectors:** Business, Business - commercial, Business - industrial, Government | schools | institutions

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Air distribution | ventilation, Appliances and electronics, Repair | tune-up, Boilers, Building shell, Compressed air, Controls, Energy management systems, Food service - commercial, Ground source heat pumps, Industrial processes, Laundry - commercial, Lighting, Lighting - CFL, Lighting - LED, Miscellaneous plug loads, Miscellaneous technologies, Motors, Pumps, Refrigeration - commercial, Space cooling, Space heating, Thermostats, Vending machines, Water heating, Water heating - heat-pump, Water heating - tankless

## Renewable Energy

**Program Status**

Active

**Pilot**

No

**Program ID**

2819

**Date Last Reviewed**

2011-02-09T00:00:00

### Sponsors & Locations

PPL Electric Utilities	PA
------------------------	----

### Overview

Offers residential rebates for the installation of solar PV arrays and/or ground source heat pumps.

The solar photovoltaic array portion of this program is fully subscribed and is no longer accepting rebate applications or reservations.

[Program website](#)

### Eligibility

All PPL Electric Utilities customers can take advantage of any of the rebates offered through any of the programs and for any customer group.

[Program website](#)

### Incentives

\$217 per ton to a maximum rebate of \$1,200 per customer.

[Program website](#)

**Resources:** Electricity

**Sectors:** Business, Government | schools | institutions, Residential

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Ground source heat pumps

## Smart \$aver Program for Business - Indiana

<b>Program Status</b>	<b>Pilot</b>	<b>Program ID</b>
Active	No	2282

**Date Last Reviewed**  
2011-02-16T00:00:00

### Sponsors & Locations

Duke Energy	IN
-------------	----

### Overview

Offers commercial and industrial electric customers a rebate for purchasing and installing energy efficient lighting (including controls and sensors), heating and cooling equipment, chillers, thermal storage, motors, pumps, VFDs, food service equipment, and process equipment during new construction or in an existing facility.

[Program website](#)

### Eligibility

Duke Energy commercial or industrial retail electric customer with a demand of 500 kW or less.

[Program website](#)

### Incentives

Maximum of \$50,000 per year per facility. Incentives are paid on a first-come first-served basis. Rebates vary based on size and efficiency ratings.

## LIGHTING (from application form LF 28-509 R10/08)

T8 with electronic ballast rebates range from \$3 to \$60 (retrofit only)

T5 with electronic ballast rebates range from \$5 to \$75 (retrofit only)

320W Metal Halide pulse start - \$25

CFL rebates range from \$2 to \$50

21" tubular skylight/light tube - \$125

LED exit signs - \$12

High performance T8 bulbs - \$4 to \$12

Low Watt HPT8 - \$0.50 to \$14

T12 8ft fixture replaced by T8 Hi Performance - \$6 to \$30

## COOLING

Packaged terminal air conditioning - \$20/ton

Unitary air conditioning, unitary heat pumps, rooftop air conditioning and rooftop heat pump rebates - \$40/ton to \$45/ton.

Ground source heat pump rebates - \$30/ton.

## MOTORS

All motors must operate for more than 1500 hours per year.

1 to 5 hp - \$10/hp

7.5 to 20 hp - \$8/hp

25 to 100 hp - \$5/hp

125 to 250 hp - \$4/hp

2011 timeline for motors: motors must be purchased by March 31 2011, installed by June 30, 2011, and applications must be submitted by Sept 30, 2011.

## PUMPS

All pumps must operate for more than 1500 hours per year.

7.5 hp - \$250

10 hp - \$260

15 hp - \$300

20 hp - \$400

[Program website](#)

**Resources:** Electricity

**Sectors:** Business, Business - commercial, Business - industrial, Business - new construction, Business - small

**Purposes:** Energy efficiency | conservation

**Channels:** End-users

**Incentive Methods:** Rebates

**Incentivized Measures:** Ground source heat pumps, Lighting, Lighting - CFL, Lighting - LED, Motors, Pumps, Space cooling

© 1986-2011 E Source Companies LLC. All rights reserved.

**Attachment 119.1**

---

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

**PROGRAM OVERVIEW**

**In partnership with the Government of British Columbia, FortisBC Energy Inc. and FortisBC Energy Vancouver Island Inc. (collectively “FortisBC”) have made incentive funding available to public sector organizations to encourage investment in energy efficiency projects. Successful participants in the Public Sector Energy Conservation Agreement, operated by the Ministry of Environment, are eligible to receive incentive funding from FortisBC, subject to all the following Eligibility Requirements and General Terms and Conditions.**

**PROGRAM ELIGIBILITY REQUIREMENTS**

In order to be eligible for capital incentive funding under the Program (“Funding”), Applicants must complete the entire application (the “Application”) and satisfy the following requirements:

- Proposed projects must be quantitatively analyzed using industry standard engineering techniques, tools and/or software and the results submitted to, and approved by, FortisBC in the form of an Energy Study. Proposed projects must be located within the FortisBC Energy Inc. or FortisBC Energy (Vancouver Island) Inc. service territories. Proposed projects must be subject to one of the following Rate Schedules, as amended from time to time: 2, 2.1, 2.2, 2U, 3, 3U, 4, 5, 23, 7, AGS, SCS-1, SCS-2, LCS-1, LCS-2, LCS-3.
- Proposed projects must demonstrate reduced natural gas consumption for space and potable hot water heating in existing buildings or facilities. Manufacturing/transformational process and similar heating loads are not eligible except where waste heat from processes is used to offset space or domestic hot water heating requirements. Proposed projects must not achieve natural gas savings by switching to higher carbon energy sources, electric resistance heating, or to electric boilers.
- Products and equipment installed pursuant to the proposed project must be new, CSA approved or certified by a recognized accredited independent organization.
- Products, equipment and their applications and installations must meet or exceed the requirements of the *Energy Efficiency Act* (British Columbia), as amended from time to time, and any applicable regulatory requirements in British Columbia, as determined by FortisBC, in its sole discretion.
- The proposed building or facility must remain a natural gas consumer after the proposed energy saving measures have been implemented.
- The proposed building or facility must be owned by the Applicant or leased by the Applicant under a Long Term Lease. “Long Term Lease” means a commercial lease with a term of 120 months or more, with an option to renew for at least a further 60 months, which lease will continue for at least 36 months prior to expiry at the time of the Application.
- Upon request, the Applicant will provide, in a form satisfactory to FortisBC, in its sole discretion, proof of ownership or details and landlord confirmation of a Long Term Lease with respect to the proposed building or facility. Proof of ownership may include a recent title search.

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

- The Applicant must be a customer of FortisBC in good standing, the accounts of which are not in arrears at the time of payment of Funding.

**GENERAL TERMS AND CONDITIONS**

**1. General**

- 1.1. **By its submission of an Application, the Applicant agrees to all terms and conditions herein.**
- 1.2. **The decisions of FortisBC Energy Inc. and/or FortisBC Energy (Vancouver Island) Inc. (together, “FortisBC”) with respect to the Program and this Application, including but not limited to, decisions relating to the proposed Energy Saving Measures, Applicant eligibility, energy saving potential of the proposed Energy Saving Measures, and amount of Funding, are final and binding on all Applicants. If FortisBC, in its sole discretion, rejects an Application or any part thereof, FortisBC will, upon request, provide the Applicant with reasons for such rejection.**
- 1.3. **The Applicant acknowledges and agrees that in order to qualify for Funding under the Program, the Applicant must receive approval from FortisBC with regards to an Energy Study respecting the building or facility that is the subject of this Application, and such Energy Study identifies those Energy Saving Measures for which the Applicant requests Funding.**

**2. Funding**

- 2.1. Upon approval of the Energy Study in its sole discretion, FortisBC will identify and communicate to the Applicant the Energy Saving Measures approved by FortisBC and the amount of Funding available to the Applicant with respect to the installation of such Energy Saving Measures, subject to the terms and conditions herein. Upon receipt of the Application and approval letter identifying the Funding available, the Applicant will read and accept these terms and conditions, complete the Application, sign the Applicant Declaration and return the form to FortisBC. The completed Application and signed Applicant Declaration must be returned to FortisBC within 3 months from the date of the approval letter.
- 2.2. Subject to the terms and conditions herein, the Energy Saving Measures eligible to receive Funding and the associated Funding amounts are identified in the approval letter. The amount of Funding available to the Applicant pursuant to this Application will be limited to, and will not exceed, the amount approved by FortisBC as identified in the approval letter.
- 2.3. Within **180 days** of the approved Energy Saving Measures becoming operational, the Applicant will provide to FortisBC the following:
  - 2.3.1. with respect to the Energy Saving Measures, copies of supporting itemized invoices and documentation detailing the following: contractor/vendor name, address, phone and invoice numbers; purchaser

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

- name and address where installed; date of purchase; manufacturer makes(s) and model no(s) and quantities; itemization of costs;
- 2.3.2. all requested supporting documentation as described in Section 2.5; and
  - 2.3.3. executed Completion Declaration form.
- 2.4. In the event the Applicant fails to submit to FortisBC all information and documentation set out in section 2.3 within **180 days** of the approved Energy Saving Measures becoming operational, any and all obligations of FortisBC with respect to the Program and the Applicant will terminate, and any obligations of FortisBC to the Applicant, including any obligation to advance Funding will cease.
- 2.5. At the request of FortisBC, in its sole discretion, the Applicant will supply supporting evidence that the Energy Saving Measure(s) have been installed, in accordance with this Agreement, which evidence may include:
- 2.5.1. written Declaration of Substantial Completion by the architect, mechanical engineer and electrical engineer where applicable;
  - 2.5.2. a copy of the Occupancy Permit
  - 2.5.3. equipment shop drawings, installation permits, start up reports, and the results of any commissioning tests;
  - 2.5.4. inspection activity reports and final acceptances by building inspectors and/or the British Columbia Safety Authority where applicable; and
  - 2.5.5. any other applicable permits.
- 2.6. FortisBC will advance the Funding in full to the Applicant upon receipt and approval of all information set out in section 2.3, including all requested supporting information set out in section 2.5 (subject to the restrictions set out in this section 2) and completion of the following items to the satisfaction of FortisBC, in its sole discretion:
- 2.6.1. on-site inspection/audit by FortisBC of the installation of the approved Energy Saving Measures; and
  - 2.6.2. final acceptance and written approval of FortisBC of the installation of the Energy Saving Measures;
- where FortisBC shall complete such items within 60 days of receipt and approval of all information set out in section 2.3.
- 2.7. Pursuant to item 2.6.2, the Applicant does hereby grant a non-exclusive license to FortisBC and its authorized employees, contractors and agents to access the premises in which the approved Energy Saving Measures have been installed for the purposes of performing an on-site inspection of such Energy Saving Measures. The approved Energy Saving Measures must be complete and operational at the time of the inspection. All approved Energy Saving Measures must be available and/or accessible for inspection. FortisBC agrees to provide 48 hours prior notice to the Applicant in order to make arrangements for access to the premises.

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

**3. Installation Requirements of Energy Saving Measures**

- 3.1. The approved Energy Saving Measures must be installed by the Applicant and operational within 18 months of approval of the Application by FortisBC.
- 3.2. The Applicant will install all Energy Saving Measures in accordance with all applicable laws, orders, regulations, ordinances standard, codes and other rules, licenses and permits of all lawful authorities.
- 3.3. If the Applicant proposes to install the Energy Saving Measure(s) in a building or facility that is held by the Applicant pursuant to a Long Term Lease, the Applicant will provide to FortisBC the written consent of the landlord/owner prior to installation of such Energy Saving Measures. Written consent shall clearly indicate the term of the lease, the number of months remaining prior to expiry and a confirmation that the Applicant is entitled to implement the approved Energy Saving Measure(s).
- 3.4. The Applicant agrees to operate the Energy Saving Measures for a period of at least 36 months following installation.
- 3.5. The Applicant agrees to allow periodic inspections of the Energy Saving Measures and the premises on which they are installed, by representatives of FortisBC, during normal business hours, anytime from the date of the Application until 36 months after the Energy Saving Measures are complete and operational.
- 3.6. FortisBC will have no right, title or interest in the equipment or systems which comprise the Energy Saving Measures which are eligible for and which ultimately receive Funding.

**4. Warranties and Agreements**

- 4.1. The Applicant represents, warrants and agrees that:
  - 4.1.1. the Applicant's authorized representative has read the Program Eligibility Requirements and the Applicant fully meets all such requirements to participate in the Program set out therein;
  - 4.1.2. all products, equipment and materials forming the Energy Saving Measures installed by the Applicant pursuant to this Program will fully qualify and comply with the Program Eligibility Requirements; and
  - 4.1.3. all information submitted by the Applicant to FortisBC pursuant to the Application and otherwise communicated to FortisBC with respect to the Program will be true and correct.

**5. Adjustment and Repayment of Funding**

- 5.1. The Applicant will immediately notify FortisBC in writing if the Applicant receives contributions or contribution commitments toward completion of the approved Energy Saving Measures through financial incentive programs from organizations other than FortisBC ("Third Party Contributions"), and the Applicant will advise FortisBC of the nature and extent of the Third Party Contributions.

## FORTISBC PSECA INITIATIVE

### GENERAL TERMS AND CONDITIONS

- 5.2. The maximum eligible incentive is 100% of the Incremental Cost of the Energy Saving Measures approved by FortisBC pursuant to this Application, where the "Incremental Cost" means the additional cost born by the Applicant to implement the approved Energy Saving Measure(s) in lieu of a less efficient, otherwise equivalent option (the "Baseline"). Generally, the Baseline shall be those equipment, system designs, and operating strategies as required by all applicable codes, laws or standards. The Incremental Cost shall include additional costs to purchase equipment for the Energy Saving Measure(s), as well as additional labour cost to install/implement the Energy Saving Measure(s). Energy Saving Measures which cost less than the Baseline are not eligible for Funding. If at any time, the combined total of the Funding and all Third Party Contributions exceed 100% of the incremental cost of the Energy Saving Measures the Applicant will, upon demand by FortisBC, repay FortisBC for the full amount of the excess within 30 days of such demand, which amount will not exceed the total amount of Funding received by the Applicant.
- 5.3. The Applicant will advise FortisBC promptly if, during the course of the design, tender or construction of the Energy Saving Measures, changes are made which eliminate or substantially change the design and operation of the approved Energy Saving Measures. The Applicant must have the approved Energy Study updated to reflect such modifications, must forward the results to FortisBC for review and the Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will make adjustments to the Funding pursuant to the amended Energy Study accordingly, in its sole discretion.
- 5.4. The Funding is conditional upon FortisBC' on-site inspection, final acceptance and written approval of the installed Energy Saving Measures. If FortisBC determines, at its sole discretion, that the installed Energy Saving Measures differ substantially from the approved Energy Saving Measures, the Applicant must have the approved Energy Study updated to reflect such modifications, and must forward the results to FortisBC for review. The Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will, at its sole discretion, make adjustments to the Funding accordingly. Should the Applicant fail to have the approved Energy Study updated, FortisBC will adjust the Funding accordingly, in its sole discretion.
- 5.5. The Funding is conditional upon the building or facility in which the approved Energy Saving Measures are installed remaining a natural gas consuming customer for a minimum period of 36 months from the date of payment of the Funding. In the event that such building or facility ceases to be a natural gas customer prior to the expiry of the said 36 month period, the Applicant shall forthwith repay to FortisBC a pro rata payment equivalent to 1/36th of the total incentive, multiplied by the number of months or partial months remaining in the 36 month period.
- 5.6. The Applicant agrees that any repayment amounts incurred pursuant to these terms and conditions will be billed to the Applicant via a separate invoice, payable within 90 days of receipt.

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

**6. Measurement & Verification**

- 6.1. The Applicant agrees to periodic inspection of the Energy Saving Measures and the premises wherein they are installed by FortisBC or its authorized representatives to verify that the Energy Saving Measures have been installed and are operational, and to cooperate with FortisBC thereafter to gather information necessary to assess the success of the Program. FortisBC agrees to provide 48 hours prior notice to the Applicant in order to make arrangements for access to the premises.
- 6.2. The Applicant agrees that FortisBC, at its sole discretion, may require the Energy Saving Measures which receive Funding pursuant to this Agreement be subjected to a measurement and verification protocol. FortisBC shall communicate this requirement to the Applicant in writing.
- 6.3. Upon receiving written notification of the above, the Applicant shall work with FortisBC to develop a measurement and verification plan, which plan must include the estimated costs for implementing the plan. Upon approval of the measurement and verification plan by FortisBC, the Applicant will implement the plan forthwith. FortisBC will pay for 50% of the cost to implement the approved measurement and verification plan. The Applicant agrees that it will not unreasonably withhold its approval of and cooperation with such a plan.

**7. Termination and Repayment**

- 7.1. In the event that the Applicant fails to comply with any of these terms and conditions, or becomes insolvent or bankrupt, FortisBC may, in addition to any other right or remedy available to it, terminate any relationship with the Applicant created pursuant to these terms and conditions and any obligation to provide Funding by giving notice to the Applicant.
- 7.2. Upon such termination, the Applicant will repay FortisBC in full for any Funding provided by FortisBC to the Applicant and such amount shall constitute a debt due and owing to FortisBC.

**8. Liability and Indemnity**

- 8.1. Notwithstanding that FortisBC or its employees, representatives or agents may have reviewed the information contained in the Application and any associated Energy Study, it is understood and agreed that FortisBC, not being a contractor, system designer or manufacturer of any of the features incorporated into the Energy Saving Measures, makes no representations or warranties with respect to the Energy Saving Measures whatsoever, express or implied, as to the quality of design or installation, workmanship, merchantability and fitness for a particular purpose, nor with respect to the expected or anticipated natural gas consumption, nor does FortisBC warrant that any Energy Saving Measures approved for Funding will satisfy the requirements of any law, rule specification or contract.

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

- 8.2. The Applicant does hereby indemnify and save harmless FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. and their respective directors, officers, agents, and employees from all liability, damages, claims, demands, expenses and costs for claims, costs for injury or death of any person, damage to or destruction of property, and all economic loss suffered by any person arising from or occurring by reason of the Program or actual or alleged preparation or installation or use of the approved Energy Saving Measures, including any actions or omissions by third party consultants or contractors in the preparation or installation of such Energy Saving Measures.
- 8.3. FortisBC will not be responsible for any tax liability imposed on the Applicant as a result of any payment of Funding.
- 8.4. FortisBC does not endorse any particular consultant, manufacturer, product, system, design, contractor, supplier or installer in promoting this Program.
- 8.5. The Applicant acknowledges and agrees that he/she is responsible for the disposal of all hazardous materials that may result from the installation or Energy Saving Measures, and such disposal will be conducted in accordance with all applicable government regulations and the Applicant agrees that FortisBC has no responsibility with respect to same.
- 8.6. Approval of this Application or the provision of Funding does not constitute approval of the British Columbia Safety Authority, approval of a building inspector, or any other required approval.

**9. Additional Terms and Conditions**

- 9.1. The Application, these terms and conditions and any agreements formed by acceptance of the Application by FortisBC pursuant to written approval (the "Contract Documents") will be governed by and interpreted in accordance with the laws of the Province of British Columbia.
- 9.2. The Contract Documents embody the entire Agreement between the parties with regard to the subject matters dealt with herein, and no understanding or agreements, oral or otherwise, exist between FortisBC and the Applicant except as contained in the Contract Documents.
- 9.3. Subject to section 9.7 below, unless otherwise earlier according to sections 2.4 or 7, the Contract Documents will expire upon completion of the disbursement of the Funding as described in section 2 of this Agreement.
- 9.4. The Contract Documents may not be modified except in writing signed by both parties.
- 9.5. The Applicant does hereby agree to allow FortisBC to publish the Applicant's business name, a general description of the Energy Saving Measures implemented and installed and resulting energy performance and payback period for the purpose of promoting its Commercial Energy Efficiency Programs. The Applicant will review and approve any promotional material prior to publication,

**FORTISBC PSECA INITIATIVE**  
**GENERAL TERMS AND CONDITIONS**

such approval not to be unreasonably withheld. The Applicant further agrees not to use FortisBC' name or any of its trademarks without the express written consent of same, such approval not to be unreasonably withheld.

- 9.6. Subject to section 9.5, FortisBC will keep confidential any confidential business, technical or financial information or records made available to FortisBC by the Applicant in connection with matters arising under the Program, and will not disclose such information except as may be required by law.
- 9.7. Sections 5, 7.2, 8, 9.1 and 9.2 and any rights and obligations of the parties under this Agreement which are by their nature continuing, will survive expiry or termination of this Agreement.
- 9.8. A notice that either party may be required or may desire to give the other party will be in writing and will be given to and received by the addressee on the day when it is delivered, by hand, by courier, or by prepaid mail, at the following addresses:

If to FortisBC:

FortisBC Energy Inc.

Attention: Energy Efficiency and Conservation

16705 Fraser Highway

Surrey, BC V4N 0E8

If to Applicant: at the name and address provided by the Applicant in the Application

Either party may from time to time change its address for notice by giving notice to the other party.

# Efficient Boiler Program

Terms and conditions



Saving you money. We've got our best people on it.



## Table of contents

Section	Page
<b>The incentives</b>	1
<b>The benefits</b>	1
<b>Program terms and conditions</b>	2
1.0 Overview	2
2.0 Participant eligibility criteria	2
3.0 Program process	3
4.0 Eligible boilers	4
5.0 Incentives	5
6.0 Additional terms and conditions	6
7.0 Documentation	8
8.0 Contact information	8

## The incentives

Efficient boiler incentives are made up of two parts: a purchase incentive which is based on the type of boiler purchased, plus either a new construction incentive or a retrofit incentive.

### Purchase incentive

For all participants, the incentive applies to the incremental purchase price of a natural gas near-condensing or condensing boiler over the purchase price of a standard-efficiency boiler. The purchase price incentive is based on space-heating and ventilating load. They will be calculated as follows:

- near-condensing boilers: \$4,000 per boiler plus \$3 per MBH plant input
- condensing boilers: \$6,000 per boiler plus \$9 per MBH plant input

The purchase price of a standard-efficiency boiler will be estimated using \$7 per MBH of the input required to meet the space-heating load.

In addition to the purchase price incentives above, FortisBC will also contribute additional incentives to your upgrade project as outlined below.

### New construction

FortisBC will contribute 50 per cent of engineering fees to a maximum of \$1,500 toward the cost of estimating the annual gas usage for space-heating using a standard-efficiency boiler system versus

a higher efficiency boiler system. Purchase price incentive payments are limited to a maximum of 75 per cent of the purchase price premium over a standard boiler.

### Retrofit of existing buildings

The program will pay your contractor up to a maximum of \$400 for performing an estimate of the peak space-heating load. It will also pay 50 per cent of the cost of necessary venting modifications up to a maximum of \$2,000. During the first year of operation you are also entitled to a monitoring incentive of \$1,500 plus \$1 per gigajoule of total natural gas saved. Purchase price incentive payments are limited to a maximum of 50 per cent of the purchase price premium over a standard-efficiency boiler.

## The benefits

### Greater savings

- operating savings from lower energy expenditures
- up to 40 per cent lower fuel costs over a standard-efficiency boiler

### Higher performance

- improved operating efficiency through correct boiler sizing

### Energy efficiency assistance

- assistance in determining your facility's potential for energy improvements
- help in finding ways to save money and improve your facility's operation

### Space efficiency and comfort

- requirement for less space in mechanical rooms
- excellent opportunity to increase occupant comfort and reduce building maintenance

### Increased marketability

- improved efficiency appealing to customers who recognize the value it adds to their investment

### Environmental benefits

- lower gas usage resulting in fewer CO, CO<sub>2</sub> and NO<sub>x</sub> emissions
- responsible use of one of the cleanest burning fossil fuels

# Program terms and conditions

*Note: Subject to change without notice.*

## 1.0 Overview

- 1.1 The Efficient Boiler Program (the program) from FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc., collectively "FortisBC", is designed to stimulate investment in appropriately sized energy-efficient space-heating boilers that will reduce natural gas usage and associated operating costs. The program is targeted to both new construction and replacement markets.
- 1.2 The program offers all market participants an incentive payment to partially offset the higher purchase price of higher efficiency boilers, a contribution to the cost of accurately estimating the building's space-heating load.
- 1.3 In new construction, the program contributes to the engineering fees for estimating the building's annual natural gas usage for space-heating with a standard efficiency boiler and comparing it to that with a higher efficiency boiler. It also partially offsets the higher boiler purchase price incurred by a developer, builder or owner. FortisBC will also recognize the developer's, builder's or owner's commitment to energy efficiency on behalf of tenants, end users and subsequent owners.
- 1.4 In the replacement market, the program compensates a mechanical contractor to accurately estimate the peak space-heating load. It also reduces the building owner's higher purchase price for an energy-efficient boiler, including an allowance for required venting upgrade modifications. It also promotes proper ongoing operation and maintenance of the heating plant to reduce annual space-heating costs, maintain efficiency and lower life cycle costs by paying building owners a monitoring incentive and a natural gas-saving bonus.
- 1.5 By taking part in this offer, your boiler may use less natural gas and produce fewer emissions. You agree FortisBC may record any resulting emission reductions you have along with those of other participating customers and credit them to our Greenhouse Gas Management Program.

## 2.0 Participant eligibility criteria

- 2.1 The applicant must be a building developer, builder, building owner or owner's designated representative.
- 2.2 The facility where the boiler is installed must be in the FortisBC service territory in the Lower Mainland, Vancouver Island, Sunshine Coast, or the Interior of B.C. (not available in Whistler).
- 2.3 The facility where the boiler is installed must use natural gas purchased according to one of the following FortisBC Rate Schedules: 2, 2U, 3, 3U, 23, 5, 25, AGS, SCS-1, SCS-2, LCS-1, LCS-2 or LCS-3.
- 2.4 Only eligible boilers under the program qualify for the incentive (see Section 4.0 for the boiler eligibility criteria).
- 2.5 The incentive will only be paid for space-heating boilers. When the boiler is used for space-heating as well as other applications such as domestic hot water and pool heating, the domestic hot water load and the pool heating load will be subtracted from the boiler input to determine the space-heating load for incentive calculations.
- 2.6 Standby or backup space-heating boiler plants will not normally qualify under this program. Standby or backup boilers are defined as boilers that normally only operate during peak heating load. However, a boiler plant that is not the primary source (i.e., does not provide over 50 per cent) of space-heating for the facility, can qualify if the facility uses natural gas for domestic hot water and make-up air units.

## 3.0 Program process

### All market participants

- 3.1 Applicant's contractor or qualified professional determines the capacity of the space-heating plant, type of boiler (i.e., condensing or near-condensing), capacity and number of boilers required to meet the space-heating requirements of the building.
- 3.2 Applicant completes Efficient Boiler Program Application Form and submits it along with required documentation (See Section 7.0) to FortisBC.
- 3.3 FortisBC reviews application for completeness.
  - (i) If application is complete, FortisBC estimates the incentive that is payable to the applicant.
  - (ii) If application is incomplete, FortisBC will ask applicant for additional information.
  - (iii) If required documents are not completed and submitted within one month of the application date the application may be cancelled.
- 3.4 Applicant receives a letter from FortisBC stating whether the application was approved or rejected. If approved, an estimate of the incentive(s) payable to the applicant will be attached to the letter.
- 3.5 Applicant purchases and installs the boiler within 12 months from the date of approval (provided in Section 3.4) by FortisBC.
- 3.6 Applicant submits required documentation to FortisBC within one month of boiler installation. (See Section 7.0 for documentation.)
- 3.7 FortisBC reviews documents for completeness.
  - (i) If all documents are in order and the applicant has met all the requirements of the program and the boiler capacity has not changed from original application, FortisBC issues a boiler incentive cheque to the applicant.
  - (ii) If all documents are in order and the applicant has met all the requirements of the program, but the installed boiler capacity and/or purchase price has changed since the application was first submitted, FortisBC recalculates the incentive and issues a cheque for the revised boiler incentive.

### New construction market participants

- 3.8 The contribution of FortisBC to the engineering fees required to estimate annual gas usage will be included in the boiler incentive cheque issued to the applicant.

### Replacement market participants

- 3.9. The contributions of FortisBC to the contractor's cost to estimate the peak space-heating load, and to the cost of the required venting upgrades, will be included in the boiler incentive cheque issued to the applicant.
- 3.10 FortisBC will send the reporting requirements for the monitoring incentive and gas-saving bonus to the applicant with the incentive cheque.
- 3.11 Applicant prepares the reports that are required for the monitoring incentive and gas-saving bonus.
- 3.12 Applicant submits the reports to FortisBC. One report is submitted six months after boiler installation; the second report is submitted 12 months after boiler installation.
- 3.13 FortisBC reviews the reports for completeness.
  - (i) If applicant meets the reporting requirements, FortisBC calculates the monitoring incentive and gas-saving bonus and issues a cheque. Cheque is issued after FortisBC receives the two complete sequential six-month reports.
  - (ii) If applicant has not met the reporting requirements, FortisBC advises applicant that reporting requirements have not been met and applicant does not qualify for monitoring incentive and gas-saving bonus.

## 4.0 Eligible boilers

### All boilers

- 4.1 Must be a natural gas space-heating boiler system (propane boilers in Revelstoke can also qualify). Multiple boiler modules housed in a single jacket constitute one boiler.
- 4.2 The minimum boiler input rating is 300,000 Btu/hr.
- 4.3 The maximum boiler input rating is 5,000,000 Btu/hr.
- 4.4 The minimum space-heating plant input rating is 300,000 Btu/hr.
- 4.5 The maximum space-heating plant input rating is 10,000,000 Btu/hr.
- 4.6 The incentive will only be paid for space-heating boilers. (See Section 2.5 for details.)
- 4.7 Boiler efficiency ratings must be independently tested in accordance with BTS-2000 Testing Standard for Efficiency of Commercial Space-heating Boilers from the Hydronics Institute Division of AHRI ([www.ahrinet.org](http://www.ahrinet.org)) or CSA 4.9 Gas-Fired Low Pressure Steam and Hot Water Boilers.
- 4.8 Third-party documentation of boiler combustion efficiencies must be provided for boiler eligibility. Acceptable documentation includes either
  - (i) combustion efficiency test reports from testing laboratories accredited by the Canadian Standards Association (CSA International) or the American National Standards Institute or from the Hydronics Institute Division of AHRI;
  - (ii) a combustion efficiency certification letter from CSA International; or
  - (iii) inclusion in the I=B=R Ratings for Boilers, Baseboard Radiation and Finned Tube (Commercial) Radiation Directory, January 2008 Edition, with the steady state combustion efficiency rating published in the directory ([www.ahrinet.org](http://www.ahrinet.org)).
- 4.9 Boiler must be installed in accordance with the manufacturer's specification and must comply with applicable laws, codes, standards and ordinances.
- 4.10 The boiler must be new. Used or rebuilt boilers do not qualify for the incentive.
- 4.11 Boilers must be covered by a standard or optional minimum two-year parts and labour warranty.

## Near-condensing boilers

### 4.12 Definition of near-condensing boiler:

- (i) has a minimum steady state combustion efficiency of 85 per cent as tested throughout the turn down range in accordance with BTS-2000<sup>i</sup> or CSA 4.9<sup>ii</sup>
- (ii) has a factory installed intermittent ignition
- (iii) has a forced draft or induced draft burner that properly controls excess air
- (iv) conforming boilers will have continuous capacity modulation (not staged burner output control) to enable AHRI at reduced output down to 50 per cent or less of maximum continuous output. This turndown will be achieved by continuously varying fuel and air input quantities

## Condensing boilers

### 4.13 Definition of condensing boiler:

- (i) has a minimum steady state combustion efficiency of 88 per cent throughout the turn down range as tested in accordance with BTS-2000<sup>i</sup> or CSA 4.9<sup>ii</sup>
- (ii) a Category IV boiler that vents through a Class II Type BH stack or a stack that complies with the manufacturer's recommendations
- (iii) conforming boilers will have continuous capacity modulation (not staged burner output control) to enable operation at reduced output down to 50 per cent or less of maximum continuous output. This turndown will be achieved by continuously varying fuel and air input quantities
- (iv) the boiler can continuously withstand heating system return water temperatures that do not exceed 49°C

## List of eligible boilers

- 4.14 A list of eligible boilers is available on our website at [fortisbc.com](http://fortisbc.com). This list may be updated during the course of the program.

*i - BTS 2000 Testing Standard for Efficiency of Commercial Space-heating Boilers, Hydronics Institute Division of AHRI - 2000*

*ii - Gas-Fired Low Pressure Steam and Hot Water Boilers, Canadian Standards Association*

## 5.0 Incentives

### All market participants

- 5.1 Boiler purchase price incentives will be calculated as follows:
  - (i) near-condensing boilers: \$4,000 per boiler plus \$3.00 per MBH plant input for space-heating load
  - (ii) condensing boilers: \$6,000 per boiler plus \$9.00 per MBH plant input for space-heating load
- 5.2 The purchase price of a standard efficiency boiler will be estimated using \$7.00 per MBH of input for space-heating load.
- 5.3 The boiler purchase price is the applicant's purchase price of the boiler net of any vendor rebates excluding installation labour, venting and accessories.
- 5.4 FortisBC reserves the right to limit the number of incentive payments it provides for the program.

### New construction market participants

- 5.5 In new construction, FortisBC will pay 50 per cent of a qualified professional's fees to compare the estimated annual natural gas usage for space-heating using a standard efficiency boiler to that with a higher efficiency boiler to a maximum of \$1,500. This will be payable to the applicant at the time the boiler purchase price rebate is paid to the applicant and will not be paid unless an eligible boiler is actually installed. Proof of payment must be submitted with the application. The energy modelling must be completed by a qualified professional using DOE, EE4, TRACE, HAP or equivalent program and must compare the space-heating energy use of the building using a standard efficiency boiler and a higher efficiency boiler.
- 5.6 In new construction, boiler purchase price incentive payments are limited to a maximum of 75 per cent of the premium over a standard efficiency boiler.

### Replacement market participants

- 5.7 In replacement applications, FortisBC will pay a maximum \$400 of the cost incurred to estimate the peak space-heating load. This will be payable to the applicant at the time the purchase price incentive is paid and will not be paid unless an eligible boiler is actually installed. Proof of payment must be submitted with the application.
- 5.8 In replacement applications, boiler purchase price incentive payments are limited to a maximum of 50 per cent of the premium over a standard efficiency boiler.
- 5.9 In replacement applications, the total amount of the boiler purchase price incentive and the venting replacement incentive is subject to a maximum limit equal to the price of the installed boiler.
- 5.10 In replacement applications, FortisBC will pay a monitoring incentive of \$1,500 plus \$1.00/GJ of gas-saving bonus for each GJ of annual weather-normalized reduction in total natural gas consumption. The weather-normalized gas consumption in the 12-month period following the boiler installation will be compared to the weather-normalized gas consumption during the 12-month period prior to the boiler installation. The applicant must report the data from the following inspections:
  - (i) perform combustion analysis and record combustion efficiency, %CO<sub>2</sub>, %O<sub>2</sub>, ppm NO<sub>x</sub> and flue gas temperature every six months
  - (ii) perform a diagnostic check of the controls weekly
  - (iii) perform visual check of system components weekly
  - (iv) record boiler water outlet temperature weekly
  - (v) record boiler water inlet temperature weekly
  - (vi) record boiler room temperature weekly
- 5.11 Applicant must submit reports that include the data listed above to FortisBC six months and 12 months after the boiler installation to qualify for the monitoring incentive and gas-saving bonus.

## 6.0 Additional terms and conditions

### All market participants

- 6.1 One application form must be submitted per each gas account (gas meter) in your facility, that serves the qualifying boiler plant or plants you want to apply for.
- 6.2 The building's heat load must be calculated and the heating plant must be sized in accordance with ASHRAE Standard 90.1 to ensure the heating plant is not oversized.

### Equipment requirements

- 6.3 HVAC systems must be sized to meet the needs of the conditioned spaces.
- 6.4 Equipment installed outdoors or in unconditioned spaces must be designed by the manufacturer for such installation.
- 6.5 HVAC equipment and components included in the scope of Model National Energy Code for Buildings (MNECB) Table 5.2.13.1 must comply with the relevant local appliance/equipment energy efficiency act or the relevant standard listed.

### Hydronic systems

- 6.6 All hydronic systems must be designed so they can be balanced.
- 6.7 Multiple boiler systems must prevent heat loss through boilers when they are not in operation through the use of such items as draft dampers or shut-off valves interlocked with burners.
- 6.8 Pipes containing fluids with design operating temperatures outside the 13°C to 40°C range must be insulated as per MNECB Table 5.4.2.3. Some exemptions apply.
- 6.9 Boiler hot water distribution piping outside the building envelope must be insulated to the maximum requirements as per MNECB Table 5.4.2.3. Insulation must be protected where it may be subjected to mechanical damage, weathering or condensation.
- 6.10 Seasonal pumping systems, such as heated and chilled water pumping systems, must have automatic controls or readily accessible and clearly labelled manual controls to shut down the pumps when they are not required.

## Additional requirements

- 6.11 All boiler installations with a maximum rated input of 400,000 Btu/hr or higher must be approved by the BC Safety Authority (See Section 7.2 (ii)).
- 6.12 The manufacturer or an authorized factory representative must either perform or supervise equipment start-up and provide a written report to FortisBC indicating that the installation meets manufacturer's requirements. The report must include:
  - (i) boiler inlet return water temperature °C
  - (ii) boiler outlet supply water temperature °C
  - (iii) boiler room temperature °C
  - (iv) exhaust gas temperature °C
  - (v) %CO<sub>2</sub> in the exhaust
  - (vi) %O<sub>2</sub> in the exhaust
  - (vii) % steady state combustion efficiency
  - (viii) boiler clogged firing rate (Btu/hr)
- 6.13 The applicant agrees to periodic inspections of the applicant's premises by FortisBC or its representative to verify that the boiler has been installed and is in operation, and to cooperate with FortisBC thereafter to gather information necessary to assess the success of the program.
- 6.14 Applicant agrees to allow FortisBC to publish their business name, a general description of the system upgrade undertaken and resulting energy performance and payback period.

## New construction market participants

- 6.15 In new construction, a qualified professional must be retained to estimate:
  - (i) the facility's peak space-heating load based upon the January 2.5 per cent °C winter design temperature for your location (reference Table C-2 National Building Code)
  - (ii) a standard-efficiency boiler's peak annual gas consumption (GJ)
  - (iii) the higher efficiency boiler's annual gas consumption (GJ)

## Replacement market participants

- 6.16 In replacement markets, the contractor must prepare an estimate of the facility peak space-heating load based upon the January 2.5 per cent °C winter design temperature for your location (reference Table C-2 National Building Code).

## Program deadlines

- 6.17 The program, including the eligible boiler criteria and eligible boiler list, may be amended or modified at any time without notice and the program may be terminated at any time without notice.
- 6.18 Funding for this program is limited. FortisBC may, in its sole discretion, determine how this funding will be shared between the new construction market and the replacement market. This may mean that FortisBC will continue to accept new construction market applications after the program has been terminated for the replacement market or the converse.
- 6.19 Applications must be submitted to FortisBC and pre-approved by FortisBC prior to the purchase and installation of the boiler.
- 6.20 Final documents must be submitted within one month of boiler installation.
- 6.21 If FortisBC amends or modifies the program after an application is received and pre-approved by FortisBC, the applicant cannot resubmit an application for the same boiler plant under the amended or modified program.

## Representations and warranties

- 6.22 Applicant acknowledges the program eligibility criteria and warrants that it fully qualifies and will comply with such criteria.
- 6.23 Applicant warrants that all information contained in the application and the information attached thereto is true and correct.
- 6.24 Applicant covenants that it will notify FortisBC immediately if there is any material change in the application and information attached thereto after it is approved by FortisBC.
- 6.25 Applicant acknowledges that by taking part in the program, their boiler may use less natural gas and produce fewer emissions. Applicant agrees that FortisBC may record any resulting reductions in emissions along with those of participating customers and credit them to the FortisBC Greenhouse Gas Management Program.

## Default or fraud

- 6.26 The incentive approved is based on the information in the application documents. If there are any changes to the information in the application documents after it is approved, FortisBC in its sole discretion may void the application documents and FortisBC will be released from any and all obligations under the program.
- 6.27 Applicant agrees to the terms and conditions of the program. If the applicant fails to perform according to these terms and conditions, then upon notice of default from FortisBC, the applicant shall refund the full amount of the incentive upon request from FortisBC.

## Liability

- 6.28 FortisBC shall have no ownership interest in the boiler.
- 6.29 FortisBC, not being the designer or manufacturer of the boiler, makes no representation or warranty, express or implied as to the fitness, design or capability of the material, equipment or workmanship in the boiler, nor any warranty that the boiler will satisfy the requirements of any law, specification, or contract, which may be made against or incurred by FortisBC, its contractors, agents and employees in any way relating to, or arising out of, the program.
- 6.30 Applicant indemnifies and saves harmless FortisBC, its contractors, agents, and employees from all liability and all claims, damages, expenses and costs.
- 6.31 FortisBC does not endorse any particular manufacturer, product, system, design, supplier or installer in promoting the program.

## Tax implication

- 6.32 FortisBC will not be responsible for any tax liability imposed on the applicant as a result of payments of the incentive. For HST Registrants, incentives received by the applicant include HST which must be remitted by the applicant to the Receiver General of Canada.

## 7.0 Documentation

### All market participants

- 7.1 FortisBC is not responsible for lost, delayed, damaged, illegible or incomplete applications.
- 7.2 The following documents must be submitted to FortisBC:
- (i) prior to approval:
    - completed application form
  - (ii) after boiler installation:
    - a confirmation letter must be submitted stating that the boiler(s) have been installed
    - the following documents must be submitted with the confirmation letter:
      - gas permit and, if applicable, an approval certificate with a Certificate of Inspection from the BC Safety Authority
      - copy of the start-up report by the manufacturer or an authorized factory representative
    - copy of boiler and vent material sales invoice

### New construction market participants

- 7.3 The following documents from a qualified professional must also be submitted within one month of the date of application prior to approval otherwise the application may be cancelled.
- (i) estimate of the peak space-heating load
  - (ii) report on projected natural gas usage for space heating
  - (iii) invoice for completing the report on projected natural gas usage for space heating
  - (iv) proof the invoice has been paid

## Replacement market participants

- 7.4 The following documents from the contractor must also be submitted within one month of the date of application prior to approval otherwise the application may be cancelled.
- (i) estimate of the peak space-heating load
  - (ii) invoice for completing the estimate of the peak space-heating load
  - (iii) proof the invoice has been paid
- 7.5 The following documents must also be submitted after boiler installation:
- (i) confirmation letter must be submitted indicating the interest to participate with the monitoring phase of the program
  - (ii) first report with the data from Section 5.10 above must be submitted 6 months after boiler installation
  - (ii) second report with the data from Section 5.10 above must be submitted 12 months after boiler installation

## 8.0 Contact information

Toll-free: **1-866-884-8833**

Fax: **1-604-592-7618**

E-mail: **commercialrebates@fortisbc.com**

Mail: Efficient Boiler Program  
Energy Efficiency and Conservation  
FortisBC  
16705 Fraser Highway  
Surrey BC V4N 0E8

FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. do business as FortisBC. The companies are indirect, wholly owned subsidiaries of Fortis Inc. FortisBC uses the FortisBC name and logo under license from Fortis Inc.

(01/11 10.397.5)

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**ENERGY STUDY FUNDING - OVERVIEW AND ELIGIBILITY**

**PROGRAM OVERVIEW**

FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. (together, “FortisBC”) wish to work with owners and long-term tenants of existing buildings in British Columbia to encourage greater energy efficiency in the province’s existing building stock. The **Commercial Custom Design Program – Retrofit** (the “Program”) provides an opportunity to qualifying commercial, institutional and light industrial building owners and qualifying long-term lease holders (each, an “Applicant”) to minimize their operating costs and improve whole building performance of their facilities through the more efficient use of natural gas for space and domestic water heating.

The purpose of the Program is to provide funding assistance to natural gas energy efficiency projects that are beyond the scope of other incentive programs currently offered by FortisBC. Such projects may include, but are not restricted to, energy saving measures (“Energy Saving Measures” that will:

- improve building envelope performance;
- use more efficient equipment or systems;
- recover and reuse energy that is currently lost;
- capture and use solar energy for heating air or water;
- reduce the rate of energy consumption by systems or equipment in low occupancy periods;
- and
- eliminate unnecessary energy usage by shutting off idling or unneeded equipment

In order to qualify for funding under the Program, Applicants must obtain an energy study for the building or facility for which funding is sought, and which meets the criteria set forth herein (each, an “Energy Study”). FortisBC is pleased to offer funding assistance to qualifying Applicants to assist with the costs of completing an Energy Study.

**PROGRAM ELIGIBILITY REQUIREMENTS**

In order to be eligible for Energy Study funding under the Program (“Energy Study Funding”), Applicants must complete the entire Energy Study Funding application (the “Application”) and satisfy the following requirements:

- Proposed projects must have to potential to save at least 650 GJ of natural gas per year. This requirement is to be assessed in a discussion with an authorized FortisBC Commercial Custom Design Program representative.
- Proposed projects must be located within the FortisBC Energy Inc. or FortisBC Energy (Vancouver Island) Inc. service territories. Proposed projects must be subject to one of the following Rate Schedules, as amended from time to time: 2, 2.1, 2.2, 2U, 3, 3U, 4, 5, 22, 23, 25, 27, 7, AGS, SCS-1, SCS-2, LCS-1, LCS-2, LCS-3.
- Proposed projects must seek to reduce natural gas consumption for space and potable hot water heating in existing buildings or facilities. Manufacturing/transformational process and similar heating loads are not eligible except where waste heat from processes is used to offset space or domestic hot water heating requirements.
- Buildings and facilities wherein the proposed Energy Saving Measures will be implemented must be commercial, institutional, multi-unit residential (MURB), light industrial or agricultural in nature.
- Such buildings or facilities must use natural gas as a space heating or domestic hot water heating fuel source, either solely or in tandem with other lower carbon energy sources after the proposed Energy Saving Measures have been implemented or installed.
- Proposed projects must not seek to achieve natural gas savings by switching to higher carbon energy sources, electric resistance heating, or to electric boilers.
- Proposed Energy Saving Measures must specify the use of products and/or equipment that are new, CSA approved or certified by a recognized accredited independent organization.

## COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT

### ENERGY STUDY FUNDING - OVERVIEW AND ELIGIBILITY

- Proposed Energy Saving Measures and all their components, applications and installations must meet or exceed the requirements of the *Energy Efficiency Act* (British Columbia) and the *Energy Efficiency Act* (Canada), as amended from time to time, and any applicable regulatory requirements in British Columbia, as determined by FortisBC, in its sole discretion.
- The proposed building or facility must be owned by the Applicant or leased by the Applicant under a Long Term Lease. “Long Term Lease” means a commercial lease with a term of 120 months or more, with an option to renew for at least a further 60 months, which lease will continue for at least 36 months prior to expiry at the time of the Application.
- Upon request, the Applicant will provide, in a form satisfactory to FortisBC, in its sole discretion, proof of ownership or details and landlord confirmation of a Long Term Lease with respect to the proposed building or facility. Proof of ownership may include a recent title search.
- The Applicant must be a customer of FortisBC in good standing, the accounts of which are not in arrears at the time of payment of Energy Study Funding.

**In order to qualify for Energy Study Funding, the Applicant must receive approval in writing from an authorized FortisBC Commercial Custom Design Program representative before beginning or completing the Energy Study or the installation of any proposed Energy Saving Measures. FortisBC, in its sole discretion, reserves the right to approve or reject any Application.**

COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT  
ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS

**GENERAL TERMS AND CONDITIONS**

**1. General**

- 1.1. **By its submission of an Application, the Applicant agrees to all terms and conditions herein, as amended from time to time.**
- 1.2. **The decisions of FortisBC with respect to the Program and this Application, including but not limited to, decisions relating to the proposed Energy Saving Measures, Applicant eligibility, energy saving potential of the proposed Energy Saving Measures, and amount of Energy Study Funding, are final and binding on all Applicants. If FortisBC, in its sole discretion, rejects an Application or any part thereof, FortisBC will, upon request, provide the Applicant with reasons for such rejection.**
- 1.3. **The Applicant acknowledges and agrees that in order to qualify for Energy Study Funding under the Program, the Applicant must develop and submit an Energy Study proposal (“Proposal”) to FortisBC for review and approval; review its proposed project with an authorized FortisBC Commercial Custom Design Program representative; and receive written approval of the proposed scope and cost of the Energy Study (“Energy Study Approval Letter”) before beginning or completing the Energy Study. The Proposal must be prepared in accordance with the requirements outlined in the *Energy Study Guide – Retrofit Projects*, and must identify those Energy Saving Measures which will be the focus of the Energy Study for which the Applicant requests Energy Study Funding.**
- 1.4. **The Applicant acknowledges and agrees that in order to qualify for Energy Study Funding, the Report (as defined in section 2.9) developed pursuant to these general terms and conditions must be approved in writing by an authorized FortisBC Energy Commercial Custom Design Program representative before installation of any Energy Saving Measures and the Applicant will not order or purchase any of the materials or equipment required to implement such Energy Saving Measures without the prior written consent of FortisBC. Approval of the Energy Study Report will be communicated to the Applicant in writing.**

**2. Conduct of Energy Study and Energy Study Report**

- 2.1. **The Applicant will conduct the Energy Study, or cause the Energy Study to be conducted in accordance with the requirements for a retrofit project Energy Study as set out in the *Energy Study Guide – Retrofit Projects*.**
- 2.2. **Upon the Applicant’s receipt of the Energy Study Approval Letter, the Applicant must read through and accept these general terms and conditions, complete the Application and sign the Applicant Declaration and return all completed documentation to FortisBC within 3 months from the date of the Energy Study Approval Letter.**
- 2.3. **Upon the Applicant’s written acceptance of these general terms and conditions, the Applicant will, subject to the requirements herein, engage the services of one or more consultants (individually or collectively, the “Consultant”) to perform an Energy Study of the proposed Energy Savings Measures (as described in the FortisBC approved Proposal). **The Applicant agrees that it will not enter into any agreement with the Consultant with respect to performance or conduct of an Energy Study prior to receipt of the Energy Study Approval Letter and the Applicant’s written acceptance of these general terms and conditions.** If more than one Consultant is engaged, the Applicant will establish a lead to coordinate the Energy Study and consolidate all information obtained in the course of the Energy Study.**

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS**

- 2.4. The Consultant must possess the skills, qualifications and experience as set forth in FortisBC’s ***Commercial Custom Design Program Consultant Eligibility Criteria*** (“Consultant Criteria”). The Applicant will select the Consultant to perform the Energy Study in one of two ways:
- 2.4.1. select the Consultant from FortisBC’s list of approved consultants who have been pre-screened and found to meet the Consultant Criteria; or
  - 2.4.2. if the Applicant wishes to utilize a Consultant who has not been pre-screened by FortisBC, the Applicant must cause the proposed Consultant to submit information to FortisBC with respect to the proposed Consultant’s skills, qualifications and experience such as FortisBC may request, to allow FortisBC to determine whether the proposed Consultant meets the requirements set forth in the Consultant Criteria. FortisBC will advise both the Applicant and the proposed Consultant in writing within 30 days of receipt of all requested information whether or not the proposed Consultant is accepted or rejected.
- 2.5. **If the Applicant wishes to select a Consultant in accordance with Section 2.4.2, the Applicant agrees that it will not enter into any agreement with the Consultant with respect to performance or conduct of an Energy Study without the prior written approval of FortisBC of the proposed Consultant’s credentials.**
- 2.6. The Applicant acknowledges and agrees that the selection, engagement and termination of the services of the Consultant, including but not limited to, any fees, costs or charges, are at the discretion of the Applicant and are the sole responsibility of the Applicant.
- 2.7. FortisBC will have no obligation to the Applicant beyond the provision of Energy Study Funding as outlined under section 3 below. The Applicant acknowledges and agrees that FortisBC assumes no other responsibilities or obligations in connection with the services or recommendations of the Consultant or any projects carried out by the Applicant upon the recommendation of the Consultant.
- 2.8. FortisBC and the Applicant agree to provide all reasonable cooperation and support to each other in their mutual objective to successfully implement the Energy Study, and to develop and implement the Energy Saving Measures at the Applicant’s building or facility.
- 2.9. The Applicant will ensure that the Consultant prepares an Energy Study report with respect to those proposed Energy Saving Measures approved by FortisBC (the “Report”) and submits the Report to FortisBC for its review. The Applicant will cause the Report to be formatted and presented in accordance with the requirements as set out in the ***Energy Study Guide – Retrofit Projects***.
- 2.10. The Applicant will cause the Report to be completed and submitted to FortisBC for review within **12 months** of the Applicant’s written acceptance of these general terms and conditions as defined by the execution of the Applicant Declaration on the Energy Study Application.
- 2.11. The Applicant acknowledges and agrees that it is a condition precedent (among others) that, in order to qualify for the payment of any funding with respect to the Energy Study or any Energy Saving Measures identified in the Energy Study, the Applicant must not have ordered or purchased any of the materials or equipment required to implement such Energy Saving Measures without the prior written consent of FortisBC.

## COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT

### ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS

- 2.12. The Energy Study and Report must identify and analyse those Energy Saving Measures for which the Applicant has sought and received FortisBC approval for funding assistance, as described in the Proposal.
- 2.13. The Applicant will submit the Report to FortisBC prior to the Applicant completing tender drawings or otherwise purchasing the materials and equipment necessary to implement the Energy Saving Measures contemplated in the Report. If there are changes to the Energy Saving Measures, building or facility design or any other part of the Report, the Report must be updated post tender with post-tender costs and any other changes.
- 2.14. FortisBC will conduct a review of the Report to verify its form and contents, prior to acceptance of the Report. If FortisBC, acting reasonably, rejects the Report it will provide the Applicant with reasons for such rejection.

### 3. Energy Study Funding

- 3.1. Subject to the terms and conditions herein, the approved Energy Study cost and scope of work eligible to receive Energy Study Funding, and the associated Energy Study Funding amounts will be identified and communicated to the Applicant in writing in the Energy Study Approval Letter. The amount of Energy Study Funding available to the Applicant pursuant to this Application will be limited to, and will not exceed, the amount approved by FortisBC Energy as identified in the Energy Study Approval Letter.
- 3.2. FortisBC will provide the Applicant with initial funding in an amount equal to 50% of the FortisBC-approved Energy Study Funding set forth in the Energy Study Approval Letter (the “Initial Funding”). The Initial Funding excludes GST/HST. The Initial Funding will be advanced in full upon:
  - 3.2.1. Completion of the Energy Study and submission of the Report to FortisBC for review;
  - 3.2.2. FortisBC’s written approval of the Report;
  - 3.2.3. Submission, by the Applicant, of copies of invoices with proof of payment for costs incurred in connection with the conduct of the Energy Study and preparation of the Report;
- 3.3. In the event the Applicant fails to submit the copies of invoices with proof of payment for costs incurred in connection with the conduct of the Energy Study and preparation of the Report **within 180 days** of FortisBC’s approval of the Report, any obligation on the part of FortisBC to advance any funding will terminate and FortisBC will have no further obligation with respect to the Applicant.
- 3.4. FortisBC will provide the Applicant with additional funding in an amount equal to the remaining 50% of the FortisBC approved Energy Study Funding set forth in the Energy Study Approval Letter (“Additional Funding”) only if the following requirements are met, in accordance with the Capital Incentive General Terms and Conditions
  - 3.4.1. The Applicant is accepted into the Capital Cost Incentive component of the Program which provides additional funding towards the implementation of approved Energy Saving Measures; and
  - 3.4.2. The Applicant implements such approved Energy Saving Measures (as communicated to the Applicant by FortisBC).
- 3.5. The Applicant acknowledges and agrees that it will not be entitled to receive, and FortisBC will not be obligated to provide, Additional Funding if the combined total of funding received

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS**

from FortisBC with respect to the Energy Study and all third party contributions with respect to same will equal or exceed 100% of the cost of the Energy Study.

**4. Warranties and Agreements**

4.1. The Applicant acknowledges and agrees that:

4.1.1. the Applicant has read the Program Eligibility Requirements set forth above and fully qualifies to participate in the Program;

4.1.2. all information submitted by the Applicant to FortisBC pursuant to the Application and otherwise communicated to FortisBC with respect to the Program is be true and correct.

4.1.3. the Applicant has not ordered or purchased any of the materials or equipment required to implement the proposed Energy Saving Measures without the prior written consent of FortisBC.

4.2. The Applicant acknowledges and agrees that FortisBC reserves the right to amend these terms and conditions or terminate this Program at any time.

4.3. Subject to section 8.5, FortisBC will keep confidential any confidential business, technical or financial information or records made available to FortisBC by the Applicant in connection with the Energy Study or matters arising under this Agreement, and will not disclose such information except as may be required by law.

**5. Adjustment and Repayment of Funding**

5.1. The Applicant will immediately notify FortisBC in writing if the Applicant receives contributions or contribution commitments towards completion of the approved Energy Study through financial incentive programs from organizations other than FortisBC (“Third Party Contributions”), and the Applicant will advise FortisBC of the nature and extent of the Third Party Contributions.

5.2. The maximum amount of Energy Study Funding available from FortisBC is the lesser of \$50,000 or 100% of the cost of the Energy Study as approved by FortisBC pursuant to this Application. If at any time, the combined total of the Energy Study Funding and all Third Party Contributions exceed 100% of the FortisBC approved cost of the Energy Study, the Applicant will, upon demand by FortisBC, repay FortisBC for the full amount of the excess within 30 days of such demand, which amount will not exceed the total amount of Energy Study Funding received by the Applicant. Such amount will constitute a debt due and owing to FortisBC.

**6. Termination**

6.1. The Energy Study Funding is conditional upon FortisBC’s review, final acceptance and written approval of the Report. If FortisBC, acting reasonably, determines, at its sole discretion, that the Report differs substantially from the requirements of the **Energy Study Guide – Retrofit Projects**, the Applicant must revise the approved Energy Study to meet such requirements, and must forward a revised copy of the Report to FortisBC for review. FortisBC will withhold payment of Energy Study Funding until such time that it approves the Report, in its sole discretion. Should the Applicant fail to submit a Report pursuant to this section, FortisBC may terminate this Agreement upon notice to the Applicant

6.2. In the event that the Applicant fails to comply with any term or condition of this Agreement, or becomes insolvent or bankrupt, FortisBC may, in addition to any other right or remedy available to it, terminate this Agreement upon notice to the Applicant.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS**

**7. Liability and Indemnity**

- 7.1. Notwithstanding that FortisBC or its employees, representatives or agents may have reviewed the information contained in the Application and any associated Energy Study, it is understood and agreed that FortisBC, not being a contractor, system designer or manufacturer of any of the features incorporated into the Energy Saving Measures, makes no representations or warranties with respect to retention of the Consultant, or the Energy Study, the Report or the Energy Saving Measures whatsoever, express or implied, as to the quality of analysis, design or installation, workmanship, merchantability and fitness for a particular purpose, nor with respect to the expected or anticipated natural gas consumption, nor does FortisBC warrant that any Energy Saving Measures described in the Energy Study or Report or other communications prepared by the Consultant will satisfy the requirements of any law, rule specification or contract.
- 7.2. The Applicant does hereby indemnify and save harmless FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. and their respective directors, officers, agents, and employees from all liability, damages, claims, demands, expenses and costs for claims, costs for injury or death of any person, damage to or destruction of property, and all economic loss suffered by any person arising from or occurring by reason of the Program or actual or alleged preparation of the approved Energy Study or Report, including any actions or omissions by the Consultant, third party consultants or contractors in the preparation of the approved Energy Study and Report.
- 7.3. FortisBC will not be responsible for any tax liability imposed on the Applicant as a result of any payment of Funding.
- 7.4. FortisBC does not endorse any particular consultant, manufacturer, product, system, design, contractor, supplier or installer in promoting this Program.

**8. Additional Terms and Conditions**

- 8.1. The Application, these terms and conditions and any agreements formed by acceptance of the Application by FortisBC (the “Contract Documents”) will be governed by and interpreted in accordance with the laws of the Province of British Columbia.
- 8.2. The Contract Documents embody the entire Agreement between the parties with regard to the subject matters dealt with herein, and no understanding or agreements, oral or otherwise, exist between FortisBC and the Applicant except as contained in the Contract Documents.
- 8.3. Subject to section 8.8, unless otherwise terminated according to sections 3.3 or 6, the Contract Documents will expire upon completion of the disbursement of the Funding total as described in section 3 of this Agreement.
- 8.4. The Contract Documents may not be modified except in writing signed by both parties.
- 8.5. The Applicant does hereby agree to allow FortisBC to publish the Applicant’s business name, a general description of the system upgrade undertaken and resulting energy performance and payback period for the purpose of promoting the Commercial Custom Design Program. The Applicant will review and approve any promotional material prior to publication. Such approval will not be unreasonably withheld. The Applicant further agrees not to use FortisBC or any of its trademarks without the express written consent of same. Such approval will not be unreasonably withheld.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**ENERGY STUDY FUNDING GENERAL TERMS & CONDITIONS**

- 8.6. The Applicant agrees to acknowledge the assistance provided by FortisBC in all publications, publicity material and other forms of release or communication pertaining to the project. All such communications mentioning FortisBC must first be submitted to and approved in writing by FortisBC before publication.
- 8.7. FortisBC will keep confidential any confidential business, technical or financial information or records made available to FortisBC by the Applicant in connection with matters arising under this Application, and will not disclose such information except as may be required by law.
- 8.8. Sections 5, 6, and 7 and any rights and obligations of the parties under this Agreement which are by their nature continuing, will survive expiry or termination of this Agreement.
- 8.9. A notice that either party may be required or may desire to give the other party will be in writing and will be given to and received by the addressee on the day when it is delivered, by hand, by courier, or by prepaid mail, at the following addresses:

If to FortisBC:

FortisBC Energy Inc.

Attention: Energy Efficiency and Conservation

16705 Fraser Highway

Surrey, BC V4N 0E8

If to Applicant: at the name and address provided by the Applicant at page 1 of the Application.

Either party may from time to time change its address for notice by giving notice to the other party.

## COMMERCIAL CUSTOM DESIGN PROGRAM – NEW CONSTRUCTION

### CAPITAL COST INCENTIVE OVERVIEW AND PROGRAM ELIGIBILITY

#### PROGRAM OVERVIEW

FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. (together “FortisBC”) wish to work with building owners and developers in British Columbia to encourage greater energy efficiency in the construction of new commercial buildings within the province. The **Commercial Custom Design Program – New Construction** (the “Program”) provides an opportunity to qualifying commercial, institutional and light industrial building owners and developers (each, an “Applicant”) to minimize the future operating costs and improve whole building performance of their facilities through the more efficient use of natural gas for space and domestic water heating.

The purpose of the Program is to provide funding assistance to natural gas energy efficiency projects that are beyond the scope of other incentive programs currently offered by FortisBC. Such projects may include, but are not restricted to energy saving measures (“Energy Saving Measures”) that will:

- improve building envelope performance;
- recover and reuse energy that is currently lost;
- use more efficient equipment or systems;
- capture and use solar energy for heating air or water;
- reduce the rate of energy consumption by systems or equipment in low occupancy periods; and
- eliminate unnecessary energy usage by shutting off idling or unneeded equipment.

Before applying to this Program, Applicants are required to have obtained an energy study for the building or facility which is the subject of this application, and which meets the following requirements (each, an “Energy Study”):

- conforms to the requirements of the FortisBC Commercial Custom Design Program **Energy Study Guide – New Construction Projects** or the BC Hydro Power Smart New Construction Program **Minimum Requirements for New Construction Energy Study**;
- completed before application to this Program; the date of completion of the Energy Study must not be more than 12 months prior to its submission for review to FortisBC;
- identifies those Energy Saving Measures for which the Applicant requests funding assistance under this Program; and
- accepted and approved in writing by a FortisBC Commercial Custom Design Program Representative, or a BC Hydro Power Smart New Construction Program representative.

#### PROGRAM ELIGIBILITY REQUIREMENTS

In order to be eligible for funding assistance under the Program (“Funding”), Applicants must complete the entire application (the “Application”) and satisfy the following requirements:

- Proposed projects must have a minimum floor area of 85,000 square feet, or 7900 square meters.
- Proposed projects must be quantitatively analyzed using industry standard whole building simulation software and the results submitted to, and approved by FortisBC or the BC Hydro Power Smart New Construction Program, in the form of an Energy

## COMMERCIAL CUSTOM DESIGN PROGRAM – NEW CONSTRUCTION

### CAPITAL COST INCENTIVE OVERVIEW AND PROGRAM ELIGIBILITY

Study. For Energy Study requirements please refer to Commercial Custom Design Program **Energy Study Guide - New Construction Projects** or the BC Hydro Power Smart New Construction Program **Minimum Requirements for New Construction Energy Study**.

- Proposed projects must be located within the FortisBC Energy Inc. or FortisBC Energy (Vancouver Island) Inc. service territories.
- Proposed projects must be subject to one of the following Rate Schedules, as amended from time to time: 2, 2.1, 2.2, 2U, 3, 3U, 4, 5, 7, 22, 23, 25, 27, AGS, SCS-1, SCS-2, LCS-1, LCS-2, LCS-3.
- Proposed projects must demonstrate reduced natural gas consumption for space and potable hot water heating in new buildings or facilities. Manufacturing/transformational process and similar heating loads are not eligible except where waste heat from processes is used to offset space or domestic hot water heating requirements.
- Buildings and facilities wherein the proposed Energy Saving Measures will be implemented must be commercial, institutional, multi-unit residential (MURB), light industrial or agricultural in nature.
- Such buildings or facilities must use natural gas as a space heating fuel source, either solely or in tandem with other lower carbon energy sources after the proposed Energy Saving Measures have been implemented or installed.
- Proposed projects must not achieve natural gas savings by switching to higher carbon energy sources, electric resistance heating, or to electric boilers.
- Proposed Energy Saving Measures must specify the use of products and/or equipment that are new, CSA approved or certified by a recognized accredited independent organization.
- Proposed Energy Saving Measures and all their components, applications and installations must meet or exceed the requirements of the Energy Efficiency Act (British Columbia) and the Energy Efficiency Act (Canada), as amended from time to time, and any applicable regulatory requirements in British Columbia, as determined by FortisBC, in its sole discretion.
- The proposed building or facility must be owned or be under development for the purpose of resale to the end owner, by the Applicant.
- The Applicant must not have any accounts with FortisBC which are in arrears at the time of payment of Funding.

**In order to qualify for Funding, the Applicant must receive approval in writing from an authorized FortisBC Commercial Custom Design Program Representative and accept these General Terms & Conditions before installation of any Energy Saving Measures. FortisBC, in its sole discretion, reserves the right to approve or reject any Application.**

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT  
CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

**GENERAL TERMS AND CONDITIONS**

**1. General**

- 1.1. **By its submission of an Application, the Applicant agrees to all terms and conditions herein, as amended from time to time.**
- 1.2. **The decisions of FortisBC Energy Inc. and/or FortisBC Energy (Vancouver Island) Inc. (together, “FortisBC”) with respect to this Application, including but not limited to, decisions relating to the proposed Energy Saving Measures, Applicant eligibility, energy saving potential of the proposed Energy Saving Measures, and amount of Funding, are final and binding on all Applicants. If FortisBC, acting reasonably, rejects an Application or any part thereof, FortisBC will, upon request, provide the Applicant with reasons for such rejection.**
- 1.3. **The Applicant acknowledges and agrees that in order to qualify for capital incentive Funding under the Commercial Custom Design Program, the Applicant has received approval from FortisBC or the BC Hydro Power Smart New Construction Program of an Energy Study with respect to the building or facility that is the subject of this Application, that such an Energy Study has been completed and such Energy Study identifies those Energy Saving Measures for which the Applicant requests Funding. The Applicant will provide a copy of such Energy Study to FortisBC upon FortisBC’s request, within 30 days of the request being made.**
- 1.4. **The Applicant acknowledges and agrees that in order to qualify for Funding, the Applicant must receive approval in writing from an authorized FortisBC Commercial Custom Design Program Representative and accept these General Terms & Conditions before installation of any Energy Saving Measures and the Applicant will not order or purchase any of the materials or equipment required to implement such Energy Saving Measures prior to the written approval of FortisBC. Written approval shall be communicated to the Applicant via the Capital Incentive Approval Letter (the “Approval Letter”).**

**2. Funding**

- 2.1. **Upon approval of the Energy Study in its sole discretion, FortisBC will identify and communicate to the Applicant the Energy Saving Measures approved by FortisBC and the amount of Funding available to the Applicant with respect to the installation of such Energy Saving Measures, subject to the terms and conditions herein. Upon receipt of the Application and the Approval Letter identifying the Funding available, the Applicant will read and accept these terms and conditions, complete the Application, sign the Applicant Declaration and return the form to FortisBC. The completed Application and signed Applicant Declaration must be returned to FortisBC within 3 months from the date of the Approval Letter. The Applicant may then commence installation of the Energy Saving Measures forthwith.**

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

- 2.2. Subject to the terms and conditions herein, the Energy Saving Measures eligible to receive Funding and the associated Funding amounts are identified in the Approval Letter. The amount of Funding available to the Applicant pursuant to this Application will be limited to, and will not exceed, the amount approved by FortisBC as identified in the Approval Letter.
- 2.3. Within **180 days** of the approved Energy Saving Measures becoming operational, the Applicant will provide to FortisBC the following:
- 2.3.1. executed Completion Declaration Form;
  - 2.3.2. a completed invoice reconciliation document in the form as attached to the Approval Letter; and
  - 2.3.3. all requested supporting documentation as described in Section 2.5.
- 2.4. In the event the Applicant fails to submit to FortisBC all information and documentation set out in section 2.3 within **180 days** of the approved Energy Saving Measures becoming operational, any and all obligations of FortisBC with respect to the Program and the Applicant will terminate, and any obligations of FortisBC to the Applicant, including any obligation to advance Funding will cease.
- 2.5. At the request of FortisBC, in its sole discretion, the Applicant will supply supporting evidence that the Energy Saving Measures have been installed, in accordance with these terms and conditions, which evidence may include:
- 2.5.1. with respect to the Energy Saving Measures, copies of supporting itemized invoices and documentation detailing the following: contractor/vendor name, address, phone and invoice numbers; purchaser name and address where installed; date of purchase; manufacturer makes(s) and model no(s) and quantities; itemization of costs;
  - 2.5.2. written Declaration of Substantial Completion by the architect, mechanical engineer and electrical engineer where applicable;
  - 2.5.3. a copy of the Occupancy Permit;
  - 2.5.4. equipment shop drawings, installation permits, start up reports, and the results of any commissioning tests;
  - 2.5.5. inspection activity reports and final acceptances by building inspectors and/or the British Columbia Safety Authority where applicable; and
  - 2.5.6. any other applicable permits.
- 2.6. FortisBC will advance the Funding in full to the Applicant upon receipt and approval of all documentation set out in section 2.3, including all requested supporting information set out in section 2.5 (and completion of the following items to the satisfaction of FortisBC, in its sole discretion:
- 2.6.1. on-site inspection/audit by FortisBC of the installation of the approved Energy Saving Measures; and
  - 2.6.2. final acceptance and written approval of FortisBC of the installation of the Energy Saving Measures;

where FortisBC shall complete such items within 60 days of receipt and approval of all information set out in section 2.3.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

**3. Installation Requirements of Energy Saving Measures**

- 3.1. The approved Energy Saving Measures must be installed by the Applicant and operational within 18 months of the date of the Applicant's signature of the Applicant Declaration. .
- 3.2. The Applicant will install all Energy Saving Measures in accordance with all applicable laws, orders, regulations, ordinances standard, codes and other rules, licenses and permits of all lawful authorities. HVAC and control system designs should adhere to applicable ASHRAE guidelines and calculation procedures.
- 3.3. The Applicant agrees to operate the Energy Saving Measures for a period of at least 36 months following installation.
- 3.4. The Applicant agrees to allow periodic inspections of the Energy Saving Measures and the premises on which they are installed, by representatives of FortisBC, during normal business hours, anytime from the date of the Application until 36 months after the Energy Saving Measures are complete and operational as determined by FortisBC in its sole discretion.
- 3.5. FortisBC will have no right, title or interest in the equipment or systems which comprise the Energy Saving Measures which are eligible for and which ultimately receive Funding.

**4. Warranties and Agreements**

- 4.1. The Applicant represents, warrants and agrees that:
  - 4.1.1. the Applicant's authorized representative has read the Program Eligibility Requirements and the Applicant fully meets all such requirements to participate in the Program set out therein;
  - 4.1.2. all products, equipment and materials forming the Energy Saving Measures installed by the Applicant pursuant to this Program will fully qualify and comply with the Program Eligibility Requirements; and
  - 4.1.3. all information submitted by the Applicant to FortisBC pursuant to the Application and otherwise communicated to FortisBC with respect to the Program will be true and correct.
- 4.2. The Applicant acknowledges and agrees that FortisBC reserves the right to amend these terms and conditions without notice or terminate this Program at any time.

**5. Adjustment and Repayment of Funding**

- 5.1. The Applicant will immediately notify FortisBC in writing if the Applicant receives contributions or contribution commitments toward completion of the approved Energy Saving Measures through financial incentive programs from organizations other than FortisBC ("Third Party Contributions"), and the Applicant will advise FortisBC of the nature and extent of the Third Party Contributions.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

- 5.2. The maximum eligible incentive is 100% of the Incremental Cost of the Energy Saving Measures approved by FortisBC pursuant to this Application, where the “Incremental Cost” means the additional cost born by the Applicant to implement the approved Energy Saving Measures in lieu of a less efficient, otherwise equivalent option (the “Baseline”). Generally, the Baseline shall be those equipment, system designs, and operating strategies as required by all applicable codes, laws or standards. The Incremental Cost shall include additional costs to purchase equipment for the Energy Saving Measures, as well as additional labour cost to install/implement the Energy Saving Measures. Energy Saving Measures which cost less than the Baseline are not eligible for Funding. If at any time, the combined total of the Funding and all Third Party Contributions exceed 100% of the Incremental Cost of the Energy Saving Measures the Applicant will, upon demand by FortisBC, repay FortisBC for the full amount of the excess within 30 days of such demand, which amount will not exceed the total amount of Funding received by the Applicant.
- 5.3. The Applicant will be responsible for all commitments and costs to implement the approved Energy Saving Measures and all cost overruns are the sole risk of the Applicant will be borne by the Applicant. Any cost underruns in excess of 10% of the costs described in the FortisBC approved Energy Study, as determined on an aggregate basis by FortisBC at its sole discretion, will be shared equally by the Applicant and FortisBC. FortisBC may deduct from the Funding or otherwise recover from the Applicant any amount owing to FortisBC in respect of cost underruns.
- 5.4. The Applicant will advise FortisBC and/or BC Hydro Power Smart promptly if, during the course of the design, tender or construction of the Energy Saving Measures, changes are made which eliminate or substantially change the design and operation of the approved Energy Saving Measures. In the event of such changes, the Applicant must have the approved Energy Study updated to reflect such modifications, must forward the results to FortisBC and/or BC Hydro Power Smart for review and the Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will make adjustments to the Funding pursuant to the amended Energy Study accordingly, in its sole discretion.
- 5.5. The Funding is conditional upon FortisBC’s on-site inspection, final acceptance and written approval of the installed Energy Saving Measures. If FortisBC determines, at its sole discretion, that the installed Energy Saving Measures differ substantially from the approved Energy Saving Measures, the Applicant must have the approved Energy Study updated to reflect such modifications, and must forward the results to FortisBC for review. The Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will, at its sole discretion, make adjustments to the Funding accordingly. Should the Applicant fail to have the approved Energy Study updated, FortisBC will adjust the Funding accordingly, in its sole discretion.
- 5.6. The Funding is conditional upon the building or facility in which the approved Energy Saving Measures are installed remaining a natural gas consuming customer for a minimum period of 36 months from the date of payment of the Funding. In the event that such building or facility ceases to be a natural gas

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

customer prior to the expiry of the said 36 month period, the Applicant shall forthwith repay to FortisBC a pro rata payment equivalent to 1/36th of the total incentive, multiplied by the number of months or partial months remaining in the 36 month period.

- 5.7. The Applicant agrees that any repayment amounts incurred pursuant to these terms and conditions will be billed to the Applicant via a separate invoice, payable within 90 days of receipt.

**6. Measurement & Verification**

- 6.1. The Applicant agrees to periodic inspection of the Energy Saving Measures and the premises wherein they are installed by FortisBC or its authorized representatives to verify that the Energy Saving Measures have been installed and are operational, and to cooperate with FortisBC thereafter to gather information necessary to assess the success of the Program.
- 6.2. The Applicant agrees that FortisBC, at its sole discretion, may require the Energy Saving Measures which receive Funding pursuant to this Agreement be subjected to a measurement and verification protocol. FortisBC shall communicate this requirement to the Applicant in writing.
- 6.3. Upon receiving written notification of the above, the Applicant shall work with FortisBC to develop a measurement and verification plan, which plan must include the estimated costs for implementing the plan. Upon approval of the measurement and verification plan by FortisBC, the Applicant will implement the plan forthwith. FortisBC will pay for 50% of the cost to implement the approved measurement and verification plan. The Applicant agrees that it will not unreasonably withhold its approval of and cooperation with such a plan.

**7. Inspection of Premises and Energy Saving Measures**

- 7.1. Pursuant to sections 2.6, 3.4 and 6, the Applicant does hereby grant a non-exclusive license to FortisBC and its authorized employees, contractors and agents to access the building, facility or premises in which the approved Energy Saving Measures are to be or have been installed for the purposes of performing an on-site inspection of such building, facility or premises and the Energy Saving Measures. If the approved Energy Saving Measures are the subject of inspection, the Energy Saving Measures must be complete, operational and accessible at the time of the inspection. FortisBC agrees to provide 48 hours prior notice to the Applicant in order to make arrangements for access to the building, facility or premises for such inspection purposes.

**8. Termination and Repayment**

- 8.1. In the event that the Applicant fails to comply with any of these terms and conditions, or becomes insolvent or bankrupt, FortisBC may, in addition to any other right or remedy available to it, terminate any relationship with the Applicant created pursuant to these terms and conditions and any obligation to provide Funding by giving notice to the Applicant.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

- 8.2. Applicants who have purchase materials or equipment required to implement the Energy Savings Measures identified in the Energy Study prior to receipt of the Approval Letter must provide FortisBC with a copy of a Pre-Approval to Purchase Letter, provided by FortisBC or BC Hydro within 30 days of request by FortisBC. FortisBC may terminate any relationship with the Applicant created pursuant to these terms and conditions and any obligation to provide Funding by giving notice to the Applicant, should it not receive a copy of the Pre-Approval to Purchase Letter within the required time frame.
- 8.3. Upon termination, the Applicant will repay FortisBC in full for any Funding provided by FortisBC to the Applicant and such amount shall constitute a debt due and owing to FortisBC.

**9. Liability and Indemnity**

- 9.1. Notwithstanding that FortisBC or its employees, representatives or agents may have reviewed the information contained in the Application and any associated Energy Study, the Applicant acknowledges and agrees that FortisBC, not being a contractor, system designer, manufacturer or installer of any of the features incorporated into the Energy Saving Measures, makes no representations or warranties with respect to the Energy Saving Measures whatsoever, express or implied, as to the quality of design or installation, workmanship, merchantability and fitness for a particular purpose, nor with respect to the expected or anticipated natural gas consumption, nor does FortisBC warrant that any Energy Saving Measures approved for Funding will satisfy the requirements of any law, rule specification or contract.
- 9.2. The Applicant does hereby indemnify and save harmless FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. and their respective directors, officers, agents, and employees from all liability, damages, claims, demands, expenses and costs for claims, costs for injury or death of any person, damage to or destruction of property, and all economic loss suffered by any person arising from or occurring by reason of the Program, receipt of Funding or actual or alleged preparation or installation or use of the approved Energy Saving Measures, including any actions or omissions by third party consultants or contractors in the preparation or installation of such Energy Saving Measures.
- 9.3. FortisBC will not be responsible for any tax liability imposed on the Applicant as a result of any payment of Funding.
- 9.4. FortisBC does not endorse any particular consultant, manufacturer, product, system, design, contractor, supplier or installer in promoting this Program.
- 9.5. The Applicant acknowledges and agrees that the Applicant is responsible for the disposal of all hazardous materials that may result from the installation or Energy Saving Measures, and such disposal will be conducted in accordance with all applicable government regulations and the Applicant agrees that FortisBC has no responsibility with respect to same.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

9.6. Approval of this Application or the provision of Funding does not constitute approval of the British Columbia Safety Authority, approval of a building inspector, or any other required approval.

**10. Additional Terms and Conditions**

10.1. The Application, these terms and conditions and any agreements formed by acceptance of the Application by FortisBC pursuant to the Approval Letter (the “Contract Documents”) will be governed by and interpreted in accordance with the laws of the Province of British Columbia.

10.2. The Contract Documents embody the entire Agreement between the parties with regard to the subject matters dealt with herein, and no understanding or agreements, oral or otherwise, exist between FortisBC and the Applicant except as contained in the Contract Documents.

10.3. Subject to section 10.8 below, unless otherwise earlier according to sections 2.4 or 8, the Contract Documents will expire upon completion of the disbursement of the Funding as described in section 2 of this Agreement.

10.4. The Contract Documents may not be modified except in writing signed by both parties.

10.5. The Applicant does hereby agree to allow FortisBC to publish the Applicant’s business name, a general description of the Energy Saving Measures implemented and installed and resulting energy performance and payback period for the purpose of promoting the Program. The Applicant will review and approve any promotional material prior to publication, such approval not to be unreasonably withheld. The Applicant further agrees not to use FortisBC’ name or any of its trademarks without the express written consent of same, such approval not to be unreasonably withheld.

10.6. The Applicant agrees to acknowledge the assistance provided by FortisBC in all publications, publicity material and other forms of release or communication pertaining to the project. All such communications mentioning FortisBC must first be submitted to and approved in writing by FortisBC before publication.

10.7. Subject to section 10.5, FortisBC will keep confidential any confidential business, technical or financial information or records made available to FortisBC by the Applicant in connection with matters arising under the Program, and will not disclose such information except as may be required by law.

10.8. Sections 5, 8.3, 9, 10.1 and 10.5 and any rights and obligations of the parties under this Agreement which are by their nature continuing, will survive expiry or termination of this Agreement.

10.9. A notice that either party may be required or may desire to give the other party will be in writing and will be given to and received by the addressee on the day when it is delivered, by hand, by courier, or by prepaid mail, at the following addresses:

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT  
CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

If to FortisBC:

FortisBC Energy Inc.

Attention: Energy Efficiency and Conservation

16705 Fraser Highway

Surrey, BC V4N 0E8

If to Applicant: at the name and address provided by the Applicant in the Application

Either party may from time to time change its address for notice by giving notice to the other party.

## COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT

### CAPITAL COST INCENTIVE OVERVIEW AND PROGRAM ELIGIBILITY

#### PROGRAM OVERVIEW

FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. (together “FortisBC”) wish to work with owners and long-term tenants of existing buildings in British Columbia to encourage greater energy efficiency in the province’s existing building stock. The **Commercial Custom Design Program – Retrofit** (the “Program”) provides an opportunity to qualifying commercial, institutional and light industrial building owners and qualifying long-term lease holders (each, an “Applicant”) to minimize their operating costs and improve whole building performance of their facilities through the more efficient use of natural gas for space and domestic water heating.

The purpose of the Program is to provide funding assistance to natural gas energy efficiency projects that are beyond the scope of other incentive programs currently offered by FortisBC. Such projects may include, but are not restricted to energy saving measures (“Energy Saving Measures”) that will:

- improve building envelope performance;
- use more efficient equipment or systems;
- recover and reuse energy that is currently lost;
- capture and use solar energy for heating air or water;
- reduce the rate of energy consumption by systems or equipment in low occupancy periods; and
- eliminate unnecessary energy usage by shutting off idling or unneeded equipment.

Before applying to this Program, Applicants are required to have obtained an energy study for the building or facility which is the subject of this application, and which meets the following requirements (each, an “Energy Study”):

- conforms to the requirements of the FortisBC Commercial Custom Design Program **Energy Study Guide – Retrofit Projects**;
- completed before application to this Program (the date of completion of the Energy Study must not be more than 12 months prior to its submission for review to FortisBC);
- identifies those Energy Saving Measures for which the Applicant requests funding assistance under this Program; and
- accepted and approved in writing by a FortisBC Commercial Custom Design Program Representative.

#### PROGRAM ELIGIBILITY REQUIREMENTS

In order to be eligible for funding assistance towards capital upgrades under the Program (“Funding”), Applicants must complete the entire Capital Incentive application (the “Application”) and satisfy the following requirements:

- Proposed projects must be quantitatively analyzed using industry standard engineering techniques, tools and/or software and the results submitted to, and approved by, FortisBC in the form of an Energy Study. For Energy Study requirements please refer to Commercial Custom Design Program **Energy Study Guide - Retrofit Projects**.
- Proposed projects must be located within the FortisBC Energy Inc. or FortisBC Energy (Vancouver Island) Inc. service territories. Proposed projects must be

## COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT

### CAPITAL COST INCENTIVE OVERVIEW AND PROGRAM ELIGIBILITY

subject to one of the following Rate Schedules, as amended from time to time: 2, 2.1, 2.2, 2U, 3, 3U, 4, 5, 7, 22, 23, 25, 27, AGS, SCS-1, SCS-2, LCS-1, LCS-2, LCS-3.

- Proposed projects must demonstrate reduced natural gas consumption for space and potable hot water heating in existing buildings or facilities. Manufacturing/transformational process and similar heating loads are not eligible except where waste heat from processes is used to offset space or domestic hot water heating requirements.
- Buildings and facilities wherein the proposed Energy Saving Measures will be implemented must be commercial, institutional, multi-unit residential (MURB), light industrial or agricultural in nature.
- Such buildings or facilities must use natural gas as a space heating or domestic hot water heating fuel source, either solely or in tandem with other lower carbon energy sources after the proposed Energy Saving Measures have been implemented or installed.
- Proposed projects must not achieve natural gas savings by switching to higher carbon energy sources, electric resistance heating, or to electric boilers.
- Proposed Energy Saving Measures must specify the use of products and/or equipment that are new, CSA-approved or certified by a recognized accredited independent organization.
- Proposed Energy Saving Measures and all their components, applications and installations must meet or exceed the requirements of the *Energy Efficiency Act* (British Columbia) and the *Energy Efficiency Act* (Canada), as amended from time to time, and any applicable regulatory requirements in British Columbia, as determined by FortisBC, in its sole discretion.
- The proposed building or facility must be owned by the Applicant or leased by the Applicant under a Long Term Lease. “Long Term Lease” means a commercial lease with a term of 120 months or more, with an option to renew for at least a further 60 months, which lease will continue for at least 36 months prior to expiry at the time of the Application.
- Upon request, the Applicant will provide, in a form satisfactory to FortisBC, in its sole discretion, proof of ownership or details and landlord confirmation of a Long Term Lease with respect to the proposed building or facility. Proof of ownership may include a recent title search.
- The Applicant must be a customer of FortisBC in good standing, the accounts of which are not in arrears at the time of payment of Funding.

**In order to qualify for Funding, the Applicant must receive approval in writing from an authorized FortisBC Commercial Custom Design Program Representative and accept these General Terms & Conditions before installation of any Energy Saving Measures. FortisBC, in its sole discretion, reserves the right to approve or reject any Application.**

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT  
CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

**GENERAL TERMS AND CONDITIONS**

**1. General**

- 1.1. **By its submission of an Application, the Applicant agrees to all terms and conditions herein, as amended from time to time.**
- 1.2. **The decisions of FortisBC Energy Inc. and/or FortisBC Energy (Vancouver Island) Inc. (together, “FortisBC”) with respect to this Application, including but not limited to, decisions relating to the proposed Energy Saving Measures, Applicant eligibility, energy saving potential of the proposed Energy Saving Measures, and amount of Funding, are final and binding on all Applicants. If FortisBC, acting reasonably, rejects an Application or any part thereof, FortisBC will, upon request, provide the Applicant with reasons for such rejection.**
- 1.3. **The Applicant acknowledges and agrees that in order to qualify for Funding under the Program, the Applicant has received approval from FortisBC of an Energy Study with respect to the building or facility that is the subject of this Application, that such an Energy Study has been completed and such Energy Study identifies those Energy Saving Measures for which the Applicant requests Funding. The Applicant will provide a copy of such Energy Study to FortisBC upon FortisBC’s request, within 30 days of the request being made.**
- 1.4. **The Applicant acknowledges and agrees that in order to qualify for Funding, the Applicant must receive approval in writing from an authorized FortisBC Commercial Custom Design Program Representative and accept these General Terms & Conditions before installation of any Energy Saving Measures and the Applicant will not order or purchase any of the materials or equipment required to implement such Energy Saving Measures without the prior written approval of FortisBC. Written approval shall be communicated to the Applicant via the Capital Incentive approval letter (“Approval Letter”).**

**2. Funding**

- 2.1. Upon approval of the Energy Study in its sole discretion, FortisBC will identify and communicate to the Applicant the Energy Saving Measures approved by FortisBC and the amount of Funding available to the Applicant with respect to the installation of such Energy Saving Measures, subject to the terms and conditions herein. Upon receipt of the Application and the Approval Letter identifying the Funding available, the Applicant will read and accept these terms and conditions, complete the Application, sign the Applicant Declaration and return the form to FortisBC. The completed Application and signed Applicant Declaration must be returned to FortisBC within 3 months from the date of the Approval Letter. The Applicant may then commence installation of the Energy Saving Measures forthwith.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

- 2.2. Subject to the terms and conditions herein, the Energy Saving Measures eligible to receive Funding and the associated Funding amounts are identified in the Approval Letter. The amount of Funding available to the Applicant pursuant to this Application will be limited to, and will not exceed, the amount approved by FortisBC as identified in the Approval Letter.
- 2.3. Within **180 days** of the approved Energy Saving Measures becoming operational, the Applicant will provide to FortisBC the following:
- 2.3.1. executed Completion Declaration Form.
  - 2.3.2. a completed invoice reconciliation document in the form as attached to the Approval Letter; and
  - 2.3.3. all requested supporting documentation as described in Section 2.5.
- 2.4. In the event the Applicant fails to submit to FortisBC all information and documentation set out in section 2.3 within **180 days** of the approved Energy Saving Measures becoming operational, any and all obligations of FortisBC with respect to the Program and the Applicant will terminate, and any obligations of FortisBC to the Applicant, including any obligation to advance Funding will cease.
- 2.5. At the request of FortisBC, in its sole discretion, the Applicant will supply supporting evidence that the Energy Saving Measures have been installed, in accordance with these terms and conditions, which evidence may include:
- 2.5.1. with respect to the Energy Saving Measures, copies of supporting itemized invoices and documentation detailing the following: contractor/vendor name, address, phone and invoice numbers; purchaser name and address where installed; date of purchase; manufacturer makes(s) and model no(s) and quantities; itemization of costs;
  - 2.5.2. written Declaration of Substantial Completion by the architect, mechanical engineer and electrical engineer where applicable;
  - 2.5.3. a copy of the Occupancy Permit;
  - 2.5.4. equipment shop drawings, installation permits, start up reports, and the results of any commissioning tests;
  - 2.5.5. inspection activity reports and final acceptances by building inspectors and/or the British Columbia Safety Authority where applicable; and
  - 2.5.6. any other applicable permits.
- 2.6. FortisBC will advance the Funding in full to the Applicant upon receipt and approval of all documentation set out in section 2.3, including all requested supporting information set out in section 2.5 and completion of the following items to the satisfaction of FortisBC, in its sole discretion:
- 2.6.1. on-site inspection/audit by FortisBC of the installation of the approved Energy Saving Measures; and
  - 2.6.2. final acceptance and written approval of FortisBC of the installation of the Energy Saving Measures;

where FortisBC shall complete such items within 60 days of receipt and approval of all information set out in section 2.3.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

**3. Installation Requirements of Energy Saving Measures**

- 3.1. The approved Energy Saving Measures must be installed by the Applicant and operational within 18 months of the date of the Applicant's signature of the Applicant Declaration.
- 3.2. FortisBC may conduct a pre-installation inspection of the project as described in the Application, to verify the existing condition of the building(s) / facilities and existing equipment.
- 3.3. The Applicant will install all Energy Saving Measures in accordance with all applicable laws, orders, regulations, ordinances standard, codes and other rules, licenses and permits of all lawful authorities. HVAC and control redesigns should adhere to applicable ASHRAE guidelines and calculation procedures.
- 3.4. If the Applicant proposes to install the Energy Saving Measures in a building or facility that is held by the Applicant pursuant to a Long Term Lease, the Applicant will provide to FortisBC the written consent of the landlord/owner prior to installation of such Energy Saving Measures. Written consent shall clearly indicate the term of the lease, the number of months remaining prior to expiry and a confirmation that the Applicant is entitled to implement the approved Energy Saving Measures.
- 3.5. The Applicant agrees to operate the Energy Saving Measures for a period of at least 36 months following installation.
- 3.6. The Applicant agrees to allow periodic inspections of the Energy Saving Measures and the premises on which they are installed, by representatives of FortisBC, during normal business hours, anytime from the date of the Application until 36 months after the Energy Saving Measures are complete and operational.
- 3.7. FortisBC will have no right, title or interest in the equipment or systems which comprise the Energy Saving Measures which are eligible for and which ultimately receive Funding.

**4. Warranties and Agreements**

- 4.1. The Applicant represents, warrants and agrees that:
  - 4.1.1. the Applicant's authorized representative has read the Program Eligibility Requirements and the Applicant fully meets all such requirements to participate in the Program set out therein;
  - 4.1.2. all products, equipment and materials forming the Energy Saving Measures installed by the Applicant pursuant to this Program will fully qualify and comply with the Program Eligibility Requirements; and
  - 4.1.3. all information submitted by the Applicant to FortisBC pursuant to the Application and otherwise communicated to FortisBC with respect to the Program will be true and correct.

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

- 4.2. The Applicant acknowledges and agrees that FortisBC reserves the right to amend these terms and conditions without notice or terminate this Program at any time.

**5. Adjustment and Repayment of Funding**

- 5.1. The Applicant will immediately notify FortisBC in writing if the Applicant receives contributions or contribution commitments toward completion of the approved Energy Saving Measures through financial incentive programs from organizations other than FortisBC (“Third Party Contributions”), and the Applicant will advise FortisBC of the nature and extent of the Third Party Contributions.

- 5.2. The maximum eligible incentive is 100% of the Incremental Cost of the Energy Saving Measures approved by FortisBC pursuant to this Application, where the “Incremental Cost” means the additional cost born by the Applicant to implement the approved Energy Saving Measures in lieu of a less efficient, otherwise equivalent option (the “Baseline”). Generally, the Baseline shall be those equipment, system designs, and operating strategies as required by all applicable codes, laws or standards. The Incremental Cost shall include additional costs to purchase equipment for the Energy Saving Measures, as well as additional labour cost to install/implement the Energy Saving Measures. Energy Saving Measures which cost less than the Baseline are not eligible for Funding. If at any time, the combined total of the Funding and all Third Party Contributions exceed 100% of the Incremental Cost of the Energy Saving Measures the Applicant will, upon demand by FortisBC, repay FortisBC for the full amount of the excess within 30 days of such demand, which amount will not exceed the total amount of Funding received by the Applicant.

- 5.3. The Applicant will be responsible for all commitments and costs to implement the approved Energy Saving Measures and all cost overruns are the sole risk of the Applicant and will be borne by the Applicant. Any cost underruns in excess of 10% of the costs described in the FortisBC approved Energy Study, as determined on an aggregate basis by FortisBC at its sole discretion, will be shared equally by the Applicant and FortisBC. FortisBC may deduct from the Funding or otherwise recover from the Applicant any amount owing to FortisBC in respect of cost underruns.

- 5.4. The Applicant will advise FortisBC promptly if, during the course of the design, tender or construction of the Energy Saving Measures, changes are made which eliminate or substantially change the design and operation of the approved Energy Saving Measures. In the event of such changes, the Applicant must have the approved Energy Study updated to reflect such modifications, must forward the results to FortisBC for review and the Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will make adjustments to the Funding pursuant to the amended Energy Study accordingly, in its sole discretion.

- 5.5. The Funding is conditional upon FortisBC’s on-site inspection, final acceptance and written approval of the installed Energy Saving Measures. If FortisBC determines, at its sole discretion, that the installed Energy Saving Measures

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

differ substantially from the approved Energy Saving Measures, the Applicant must have the approved Energy Study updated to reflect such modifications, and must forward the results to FortisBC for review. The Applicant shall be responsible for the full cost of the updates to the Energy Study. FortisBC will, at its sole discretion, make adjustments to the Funding accordingly. Should the Applicant fail to have the approved Energy Study updated, FortisBC will adjust the Funding accordingly, in its sole discretion.

- 5.6. The Funding is conditional upon the building or facility in which the approved Energy Saving Measures are installed remaining a natural gas consuming customer for a minimum period of 36 months from the date of payment of the Funding. In the event that such building or facility ceases to be a natural gas customer prior to the expiry of the said 36 month period, the Applicant shall forthwith repay to FortisBC a pro rata payment equivalent to 1/36th of the total incentive, multiplied by the number of months or partial months remaining in the 36 month period.
- 5.7. The Applicant agrees that any repayment amounts incurred pursuant to these terms and conditions will be billed to the Applicant via a separate invoice, payable within 90 days of receipt.

**6. Measurement & Verification**

- 6.1. The Applicant agrees to periodic inspection of the Energy Saving Measures and the premises wherein they are installed by FortisBC or its authorized representatives to verify that the Energy Saving Measures have been installed and are operational, and to cooperate with FortisBC thereafter to gather information necessary to assess the success of the Program.
- 6.2. The Applicant agrees that FortisBC, at its sole discretion, may require the Energy Saving Measures which receive Funding pursuant to this Agreement be subjected to a measurement and verification protocol. FortisBC shall communicate this requirement to the Applicant in writing.
- 6.3. Upon receiving written notification of the above, the Applicant shall work with FortisBC to develop a measurement and verification plan, which plan must include the estimated costs for implementing the plan. Upon approval of the measurement and verification plan by FortisBC, the Applicant will implement the plan forthwith. FortisBC will pay for 50% of the cost to implement the approved measurement and verification plan. The Applicant agrees that it will not unreasonably withhold its approval of and cooperation with such a plan.

**7. Inspection of Premises and Energy Saving Measures**

- 7.1. Pursuant to sections 2.6, 3.2, 3.6 and 6, the Applicant does hereby grant a non-exclusive license to FortisBC and its authorized employees, contractors and agents to access the building, facility or premises in which the approved Energy Saving Measures are to be or have been installed for the purposes of performing an on-site inspection of such building, facility or premises and the Energy Saving Measures. If the approved Energy Saving Measures are the subject of

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

inspection, the Energy Saving Measures must be complete, operational and accessible at the time of the inspection. FortisBC agrees to provide 48 hours prior notice to the Applicant in order to make arrangements for access to the building, facility or premises for such inspection purposes.

**8. Termination and Repayment**

- 8.1. The Applicant acknowledges that FortisBC is a “public utility” as defined in the Utilities Commission Act, R.S.B.C 1996, c. 473, and further acknowledges and agrees that payment of the Funding as set forth in section 2 is subject to the approval of the British Columbia Utilities Commission (“BCUC”) on terms satisfactory to FortisBC, acting in its sole discretion. In the event that the BCUC withdraws approval or changes the terms and conditions of such approval either with respect to this Program or energy efficiency funding generally, on terms and conditions not satisfactory to FortisBC, in its sole discretion, FortisBC may terminate any and all agreements with the Applicant with respect to this Program upon 30 days notice and the Applicant acknowledges and agrees that FortisBC shall be under no obligation to pay any further Funding to the Applicant.
- 8.2. In the event that the Applicant fails to comply with any of these terms and conditions, or becomes insolvent or bankrupt, FortisBC may, in addition to any other right or remedy available to it, terminate any relationship with the Applicant created pursuant to these terms and conditions and any obligation to provide Funding by giving notice to the Applicant.
- 8.3. Upon such termination, the Applicant will repay FortisBC in full for any Funding provided by FortisBC to the Applicant and such amount shall constitute a debt due and owing to FortisBC.

**9. Liability and Indemnity**

- 9.1. Notwithstanding that FortisBC or its employees, representatives or agents may have reviewed the information contained in the Application and any associated Energy Study, the Applicant acknowledges and agrees that FortisBC, not being a contractor, system designer, manufacturer or installer of any of the features incorporated into the Energy Saving Measures, makes no representations or warranties with respect to the Energy Saving Measures whatsoever, express or implied, as to the quality of design or installation, workmanship, merchantability and fitness for a particular purpose, nor with respect to the expected or anticipated natural gas consumption, nor does FortisBC warrant that any Energy Saving Measures approved for Funding will satisfy the requirements of any law, rule specification or contract.
- 9.2. The Applicant does hereby indemnify and save harmless FortisBC Energy Inc. and FortisBC Energy (Vancouver Island) Inc. and their respective directors, officers, agents, and employees from all liability, damages, claims, demands, expenses and costs for claims, costs for injury or death of any person, damage to or destruction of property, and all economic loss suffered by any person arising from or occurring by reason of the Program, receipt of Funding or actual or alleged preparation or installation or use of the approved Energy Saving

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**

**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

Measures, including any actions or omissions by third party consultants or contractors in the preparation or installation of such Energy Saving Measures.

- 9.3. FortisBC will not be responsible for any tax liability imposed on the Applicant as a result of any payment of Funding.
- 9.4. FortisBC does not endorse any particular consultant, manufacturer, product, system, design, contractor, supplier or installer in promoting this Program.
- 9.5. The Applicant acknowledges and agrees that the Applicant is responsible for the disposal of all hazardous materials that may result from the installation or Energy Saving Measures, and such disposal will be conducted in accordance with all applicable government regulations and the Applicant agrees that FortisBC has no responsibility with respect to same.
- 9.6. Approval of this Application or the provision of Funding does not constitute approval of the British Columbia Safety Authority, approval of a building inspector, or any other required approval.

**10. Additional Terms and Conditions**

- 10.1. The Application, these terms and conditions and any agreements formed by acceptance of the Application by FortisBC pursuant to the Approval Letter (the “Contract Documents”) will be governed by and interpreted in accordance with the laws of the Province of British Columbia.
- 10.2. The Contract Documents embody the entire Agreement between the parties with regard to the subject matters dealt with herein, and no understanding or agreements, oral or otherwise, exist between FortisBC and the Applicant except as contained in the Contract Documents.
- 10.3. Subject to section 10.8 below, unless otherwise earlier terminated according to sections 2.4 or 7, the Contract Documents will expire upon completion of the disbursement of the Funding as described in section 2 of this Agreement.
- 10.4. The Contract Documents may not be modified except in writing signed by both parties.
- 10.5. The Applicant does hereby agree to allow FortisBC to publish the Applicant’s business name, a general description of the Energy Saving Measures implemented and installed and resulting energy performance and payback period for the purpose of promoting the Program. The Applicant will review and approve any promotional material prior to publication, such approval not to be unreasonably withheld. The Applicant further agrees not to use FortisBC’s name or any of its trademarks without the express written consent of same, such approval not to be unreasonably withheld.
- 10.6. The Applicant agrees to acknowledge the assistance provided by FortisBC in all publications, publicity material and other forms of release or communication

**COMMERCIAL CUSTOM DESIGN PROGRAM – RETROFIT**  
**CAPITAL COST INCENTIVE GENERAL TERMS AND CONDITIONS**

pertaining to the project. All such communications mentioning FortisBC must first be submitted to and approved in writing by FortisBC before publication.

- 10.7. Subject to section 10.5 FortisBC will keep confidential any confidential business, technical or financial information or records made available to FortisBC by the Applicant in connection with matters arising under the Program, and will not disclose such information except as may be required by law.
- 10.8. Sections 5, 8.3, 9, 10.1 and 10.2 and any rights and obligations of the parties under this Agreement which are by their nature continuing, will survive expiry or termination of this Agreement.
- 10.9. A notice that either party may be required or may desire to give the other party will be in writing and will be given to and received by the addressee on the day when it is delivered, by hand, by courier, or by prepaid mail, at the following addresses:

If to FortisBC:

FortisBC Energy Inc.

Attention: Energy Efficiency and Conservation

16705 Fraser Highway

Surrey, BC V4N 0E8

If to Applicant: at the name and address provided by the Applicant in the Application

Either party may from time to time change its address for notice by giving notice to the other party.

**Attachment 121.1**

---



BC Housing

BC Housing  
1701-4555 Kingsway  
Burnaby V5H 4V8

Fortis BC  
16705 Fraser Highway  
Surrey, BC V4N 0E8  
[www.fortisbc.com](http://www.fortisbc.com)

Attention: Leanne Carey

Dear Ms. Carey

The letter is to confirm that MCW Custom Energy Solutions and AMERESCO both have contracts with BC Housing to provide energy retrofit services and pay invoices on BC Housing's behalf.

BC Housing has paid for the purchase and installation of boilers billed to MCW at the following site:

- A10-0292 – 6220 Blundell Road, Richmond

BC Housing has paid for the purchase and installation of boilers billed to AMERESCO at the following sites:

- A10-0270 – 1115 Nelson St, Vancouver
- A10-0271 – Blanchard St, Victoria

Please let me know if you have any questions on this information.

Thank you,

Jennifer Sanguinetti, P.Eng., P.E., LEED AP (BD+C)  
Director, Smart Buildings and Energy Management  
BC Housing  
[jsanguinetti@bchousing.org](mailto:jsanguinetti@bchousing.org)

**Attachment 126.1**

---

# Custom Design Program – *In Development*



- Freedom
- Creativity
- Customer-centric

2010 Power Smart Forum

## THE INCENTIVES

### Energy study funding

- Max \$50,000

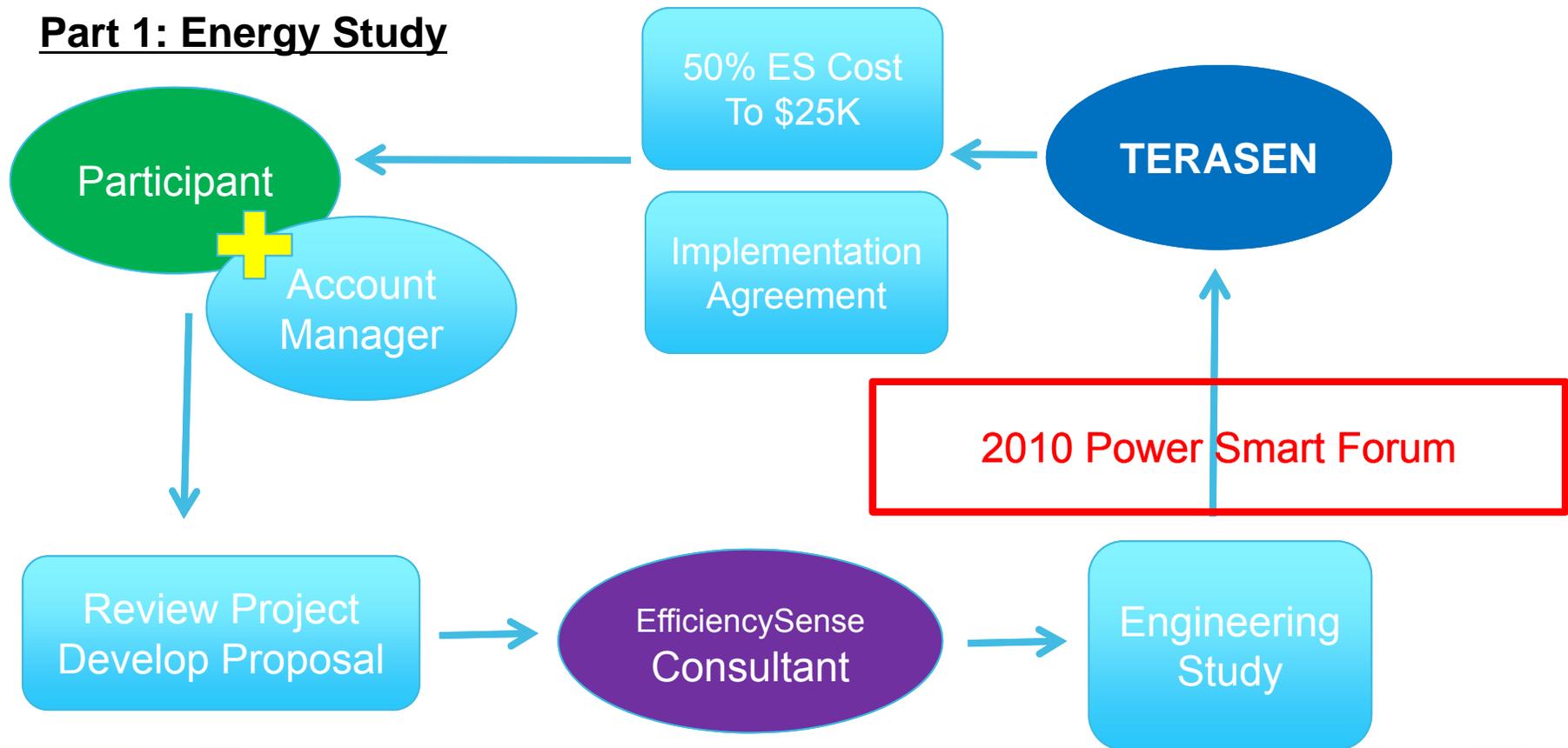
### Capital cost incentive

- \$5/GJ avoided gas consumption
- On 50% of Measure life or 10 years max
- 100% of Incremental cost maximum



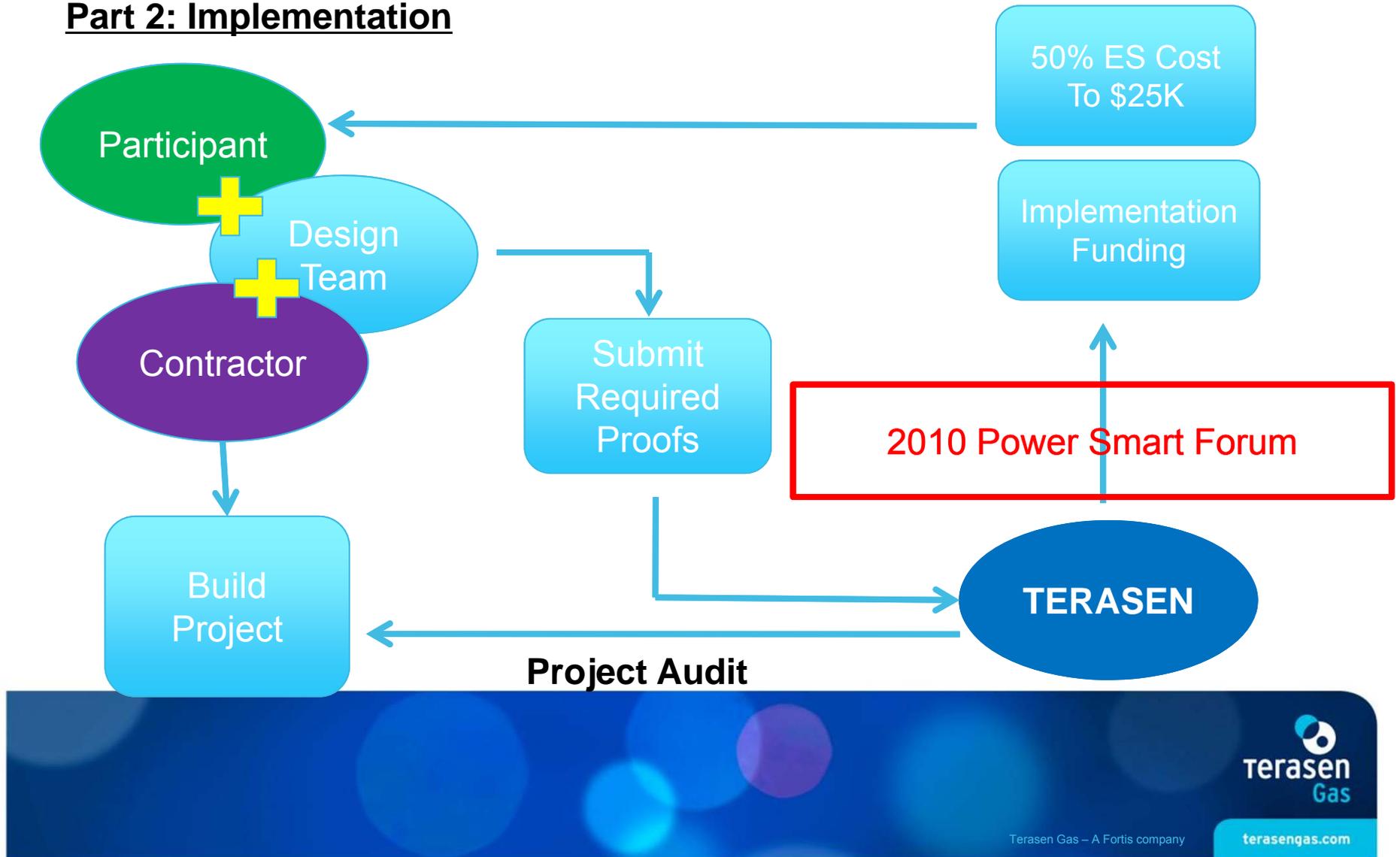
# Custom Design Program – *In Development*

## Part 1: Energy Study

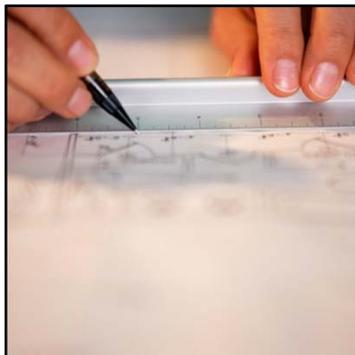


# Custom Design Program – *In Development*

## Part 2: Implementation



# Custom Design Program – *In Development*



- Freedom
- Creativity
- Customer-centric

Whistler Architects Engineers & Developers information event

## THE INCENTIVES

### Energy study funding

- Max \$50,000

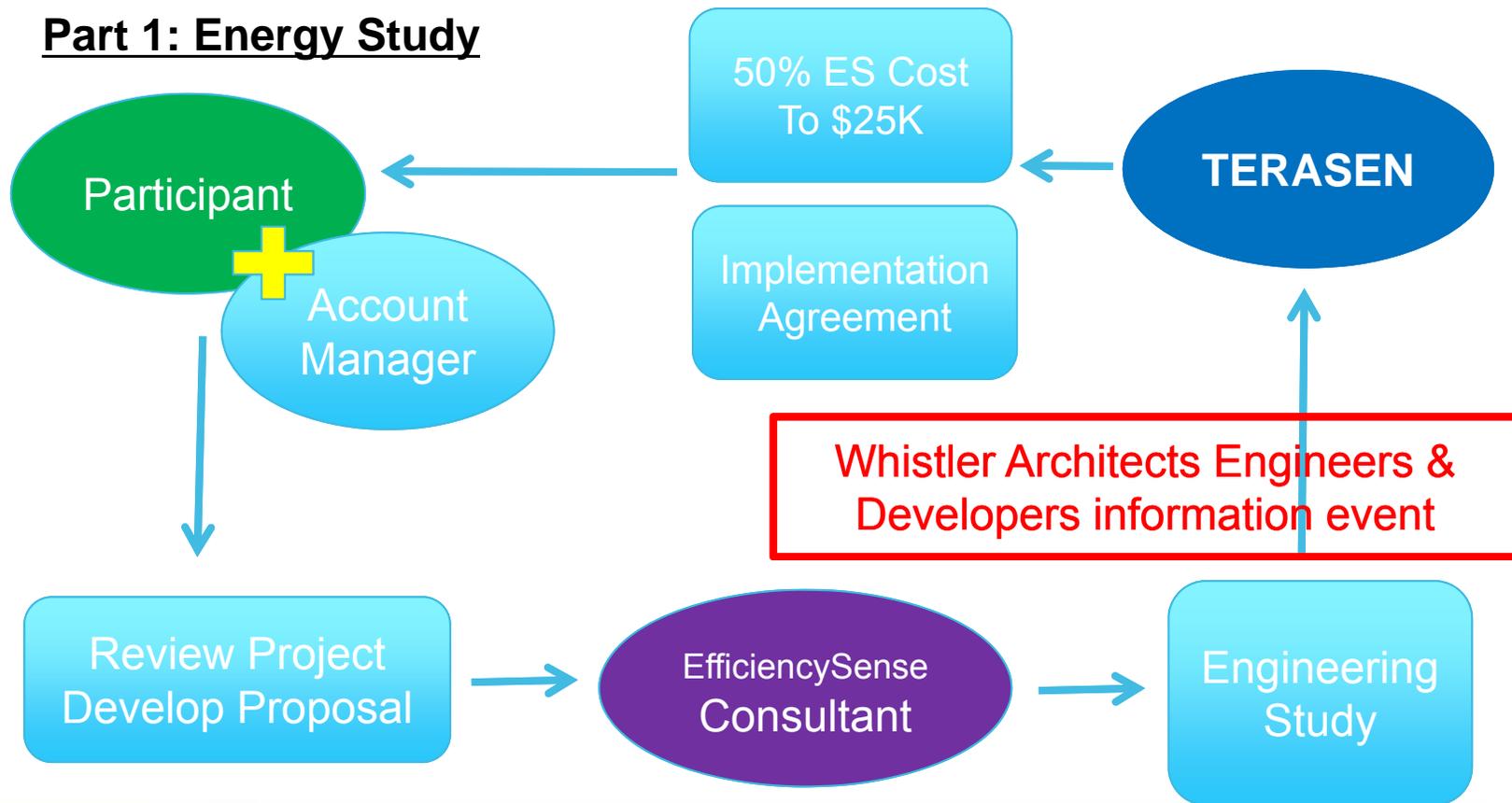
### Capital cost incentive

- \$5/GJ avoided gas consumption
- On 50% of Measure life or 10 years max
- 100% of Incremental cost maximum



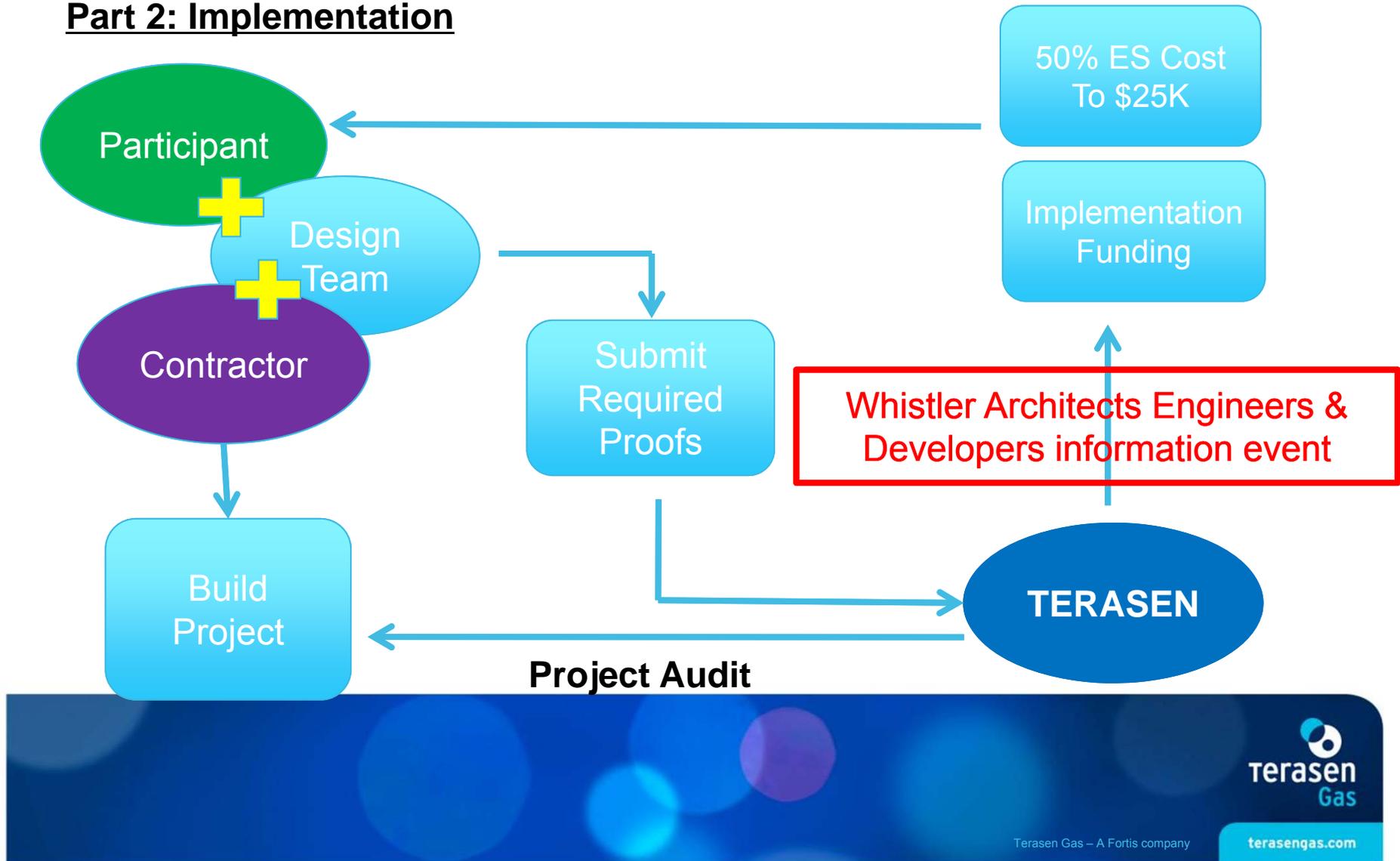
# Custom Design Program – *In Development*

## Part 1: Energy Study



# Custom Design Program – *In Development*

## Part 2: Implementation



# Custom Design Program – Available Soon!



## FortisBC *INCENTIVES*

### Energy study funding

- Max \$50,000



### Capital cost incentive

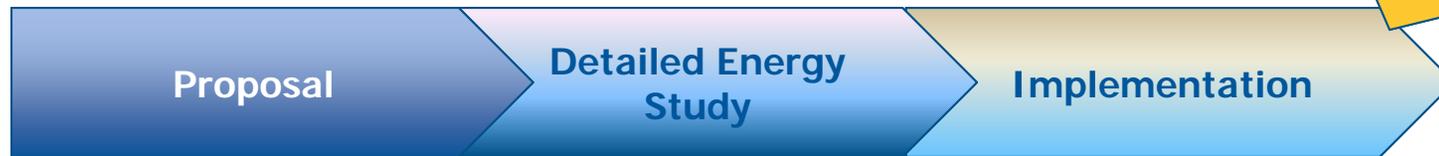
- \$5/GJ avoided gas consumption
- On 50% of measure life or 10 years max
- 100% of incremental cost maximum



Parksville Architects Engineers & Developers information event



# Custom Design Program



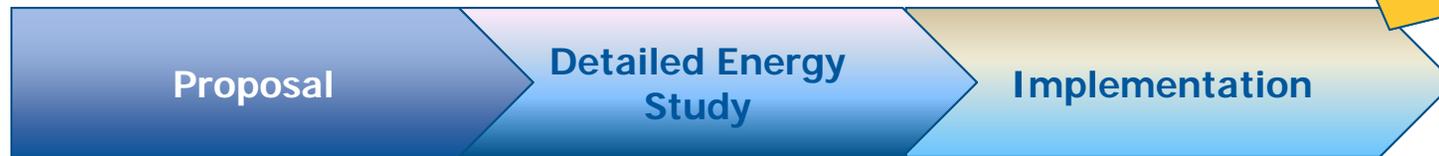
- Energy Study funding
  - maximum \$50,000
- Capital cost incentive
  - \$/ GJ avoided gas consumption
  - on 50% of measure life or 10 years maximum
  - 100% of incremental cost maximum

\$

\$

**Kelowna Architects Engineers & Developers information event**

# Custom Design Program



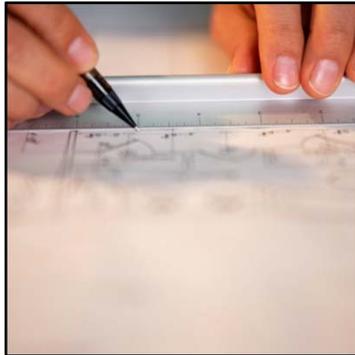
- Energy Study funding
  - maximum \$50,000
- Capital cost incentive
  - \$/ GJ avoided gas consumption
  - on 50% of measure life or 10 years maximum
  - 100% of incremental cost maximum

\$

\$

**Nelson Architects Engineers & Developers information event**

# Custom Design Program – *In Development*



- Freedom
- Creativity
- Customer-centric

Council of Education Facility Planners  
International BC Convention

## THE INCENTIVES

### Energy study funding

- Max \$50,000

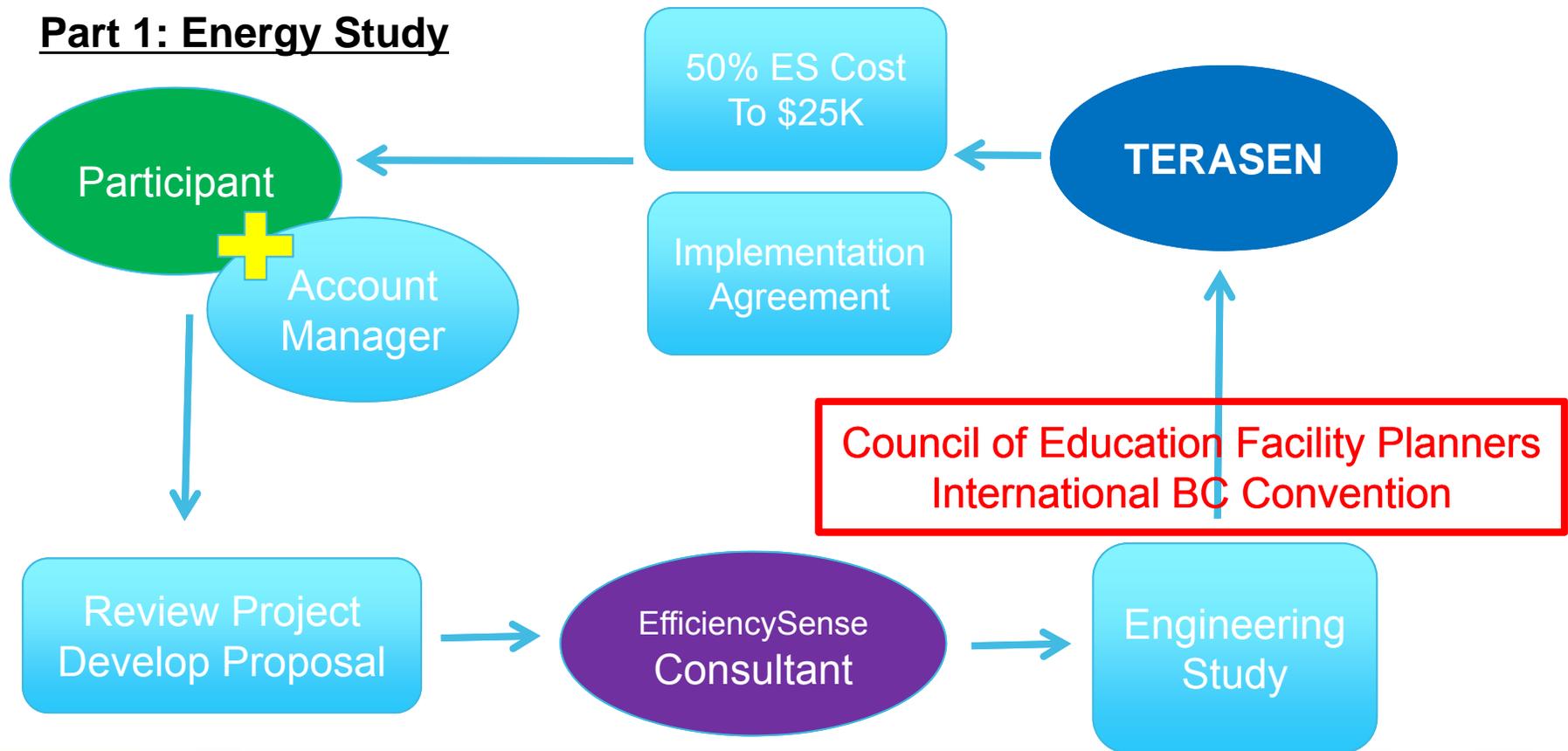
### Capital cost incentive

- \$5/GJ avoided gas consumption
- On 50% of Measure life or 10 years max
- 100% of Incremental cost maximum



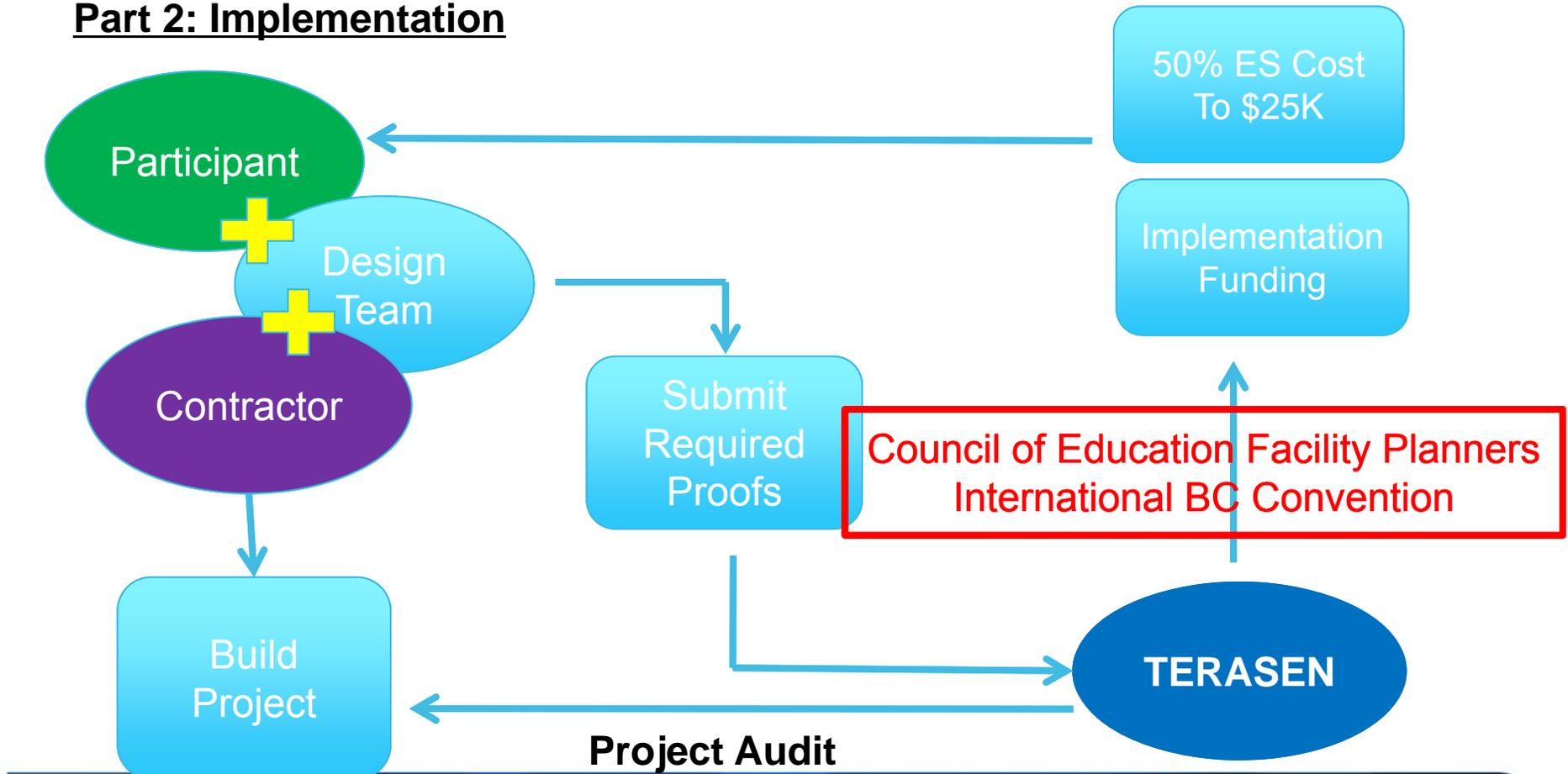
# Custom Design Program – *In Development*

## Part 1: Energy Study



# Custom Design Program – *In Development*

## Part 2: Implementation



# Custom Design Program – Available Soon!



## FortisBC *INCENTIVES*

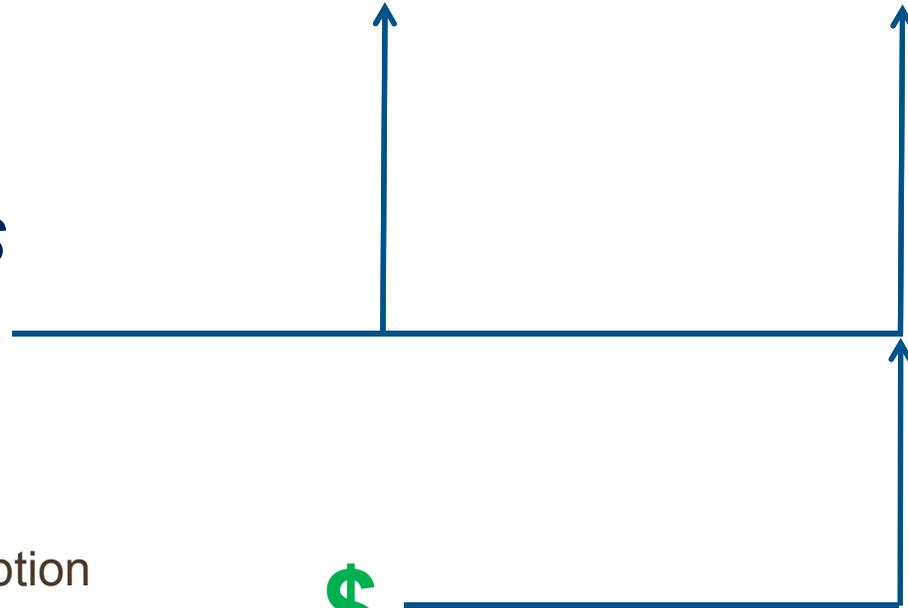
### Energy study funding

- Max \$50,000



### Capital cost incentive

- \$5/GJ avoided gas consumption
- On 50% of measure life or 10 years max
- 100% of incremental cost maximum



Canadian Health Care Engineering  
Society BC Convention



## **Attachment 128.7**

---

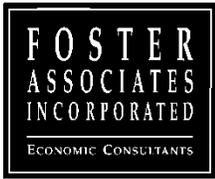
### **REFER TO LIVE SPREADSHEETS**

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

**Attachment 134.1**

---



4550 Montgomery Avenue, Suite 350N, Bethesda, Maryland 20814  
TEL: (301) 664-7852\* FAX: (301) 664-7810

---

TO: Shawn Hill

October 28, 2011

From: Kathleen C. McShane

Re: **DIFFERENTIAL RATES OF RETURN**

This memo is in response to your request for assistance regarding the issue of setting different allowed rates of return for different lines of business or different service classes within the same corporate entity.

## **DIFFERENTIAL RETURNS FOR DIFFERENT LINES OF BUSINESS**

### **Canada:**

In Canada, the stand-alone principle has been a hallmark of regulation as regards the establishment of allowed rates of return. Reliance on the stand-alone principle for purposes of rate of return is, to use the language of the predecessor to the Alberta Utilities Commission:

designed to remove the effects of diversification by utilities into non-regulated activities. Using the stand-alone principle in this case, a utility is regulated as if the provision of the regulated service were the only activity in which the company is engaged. This application of the principle ensures that the revenue requirement of regulated utility operations is not influenced up or down by the operations of a parent or 'sister' company. Thus the cost (or revenue requirement) of providing utility service reflects only the expenses, capital costs, risks and required returns associated with the provision of the regulated service.<sup>1</sup>

---

<sup>1</sup> Alberta Energy and Utilities Board, *Genco and Disco 2000 Pool Price Deferral Accounts Proceeding*, Decision 2001-92, December 12, 2001, pp. 24-25.

In Alberta, different rates of return have been adopted for the different functions of utilities' electric utility business within the same corporate entity (transmission, distribution and heritage generation) since the electric utility industry was restructured in 1996. For example, ATCO Electric Inc., a subsidiary of CU Inc., operates both electric transmission and electric distribution businesses within the same corporate entity.<sup>2</sup> The different rates of return for the regulated transmission and distribution functions are reflected in different capital structures. ATCO Gas and Pipelines Inc. operates both a gas transmission and gas distribution business. The two lines of business have different allowed capital structures.<sup>3</sup>

In Ontario, to my knowledge, the only utility that operates different lines of business within the same corporate entity is Hydro One (electric transmission and distribution). In principle, rates of return between the two services could be different, as the two lines of business are operated separately, but the Ontario Energy Board determined that there was insufficient evidence to conclude that the risks of the two lines of business were sufficiently different to justify different rates of return.

In the most recent Ontario Power Generation rate application, as per an OEB directive, the question of whether there should be different equity ratios for the company's two regulated generation "technologies", hydroelectric and nuclear, was addressed. The OEB acknowledged that there were differences in risk between the two technologies, but that there were no methodologies which permitted a robust determination of the differentials and that, for rate setting purposes, there may not be any material benefits to ratepayers in the long-term of setting different capital structures.

---

<sup>2</sup> The same is true of EPCOR Distribution and Transmission Inc. and Enmax Power Corporation.

<sup>3</sup> Prior to 1998, Canadian Utilities Limited had two separate subsidiaries, Canadian Western Natural Gas and Northwestern Utilities, each of which was a combined gas distribution and transmission business with separate operating territories. In 1998, the utilities were restructured, combined into a single corporate entity, ATCO Gas and Pipelines Inc., separated for rate purposes into four divisions, two distribution and two transmission. The two distribution operations have the same allowed capital structure as do the two transmission operations.

At the National Energy Board, up until 1997, Westcoast's mainline transportation and gas processing operations had the same allowed ROE and capital structure. In 1997, the two were separated; the allowed common equity ratio of the mainline transportation operations was set at 30% (versus 35% previously for the combined operations). The gas processing operations have since been subject to light-handed regulation, with no specified ROE or capital structure.

Also at the NEB, the three different segments of Enbridge Pipelines Inc., the "Older System", Line 8 and Line 9, have each been treated for regulatory purposes, including rate of return, on a stand-alone basis. Line 9 has been treated as a stand-alone operation since its inception, when it was constructed with government support to provide oil transportation service from Western Canada to Montréal during the oil crisis in the 1970s. Known as the Montréal Extension at the time, Line 9 extends from Sarnia, Ontario to Montréal. Line 9 continued to be treated as a stand-alone operation when it was reversed in the 1990s to provide westbound transportation of off-shore crude to Ontario refineries under a long-term Facilities Service Agreement with specific customers. Line 8 (called the Oil Products Transportation System), which has a separate rate base, ROE and capital structure from the other two pipeline segments, is also subject to a separate Facilities Service Agreement. The separate regulatory models and rates of return for the three segments are all the result of negotiated agreements between Enbridge Pipelines Inc. and the relevant shippers on the segments, not a litigated rate proceeding.

### **United States:**

There are a number of combination utilities in the U.S. whose gas, electric and steam operations are housed in the same corporate entity. It is not uncommon for these utilities to seek rate changes for the different utility lines of business at the same time. To assess the extent to which regulators have allowed differential rates of return for the different utility lines of business, we identified all rate decisions issued by the same regulator on the same date for separate utility businesses of the same legal entity since 2000. Of the 86 relevant situations identified, in eight

instances in seven regulatory jurisdictions, regulators set different allowed ROEs for the gas and electric utility operations of the same corporate entities.<sup>4</sup>

## **LINE OF BUSINESS/CLASS OF SERVICE VERSUS RATE CLASSES WITHIN A LINE OF BUSINESS/CLASS OF SERVICE**

While it is not uncommon to adopt separate rates of return for different lines of utility business (or class of service, to use the B.C terminology), I am not aware of any situations in which a single regulator has adopted separate rates of return for rate classes or individual services within the utility line of business/class of service. In the case of Union Gas, for example, which offers separate tariffs for regulated storage, transmission and distribution, as well as separate tariffs for distribution to different customer classes, there is only one capital structure and return on equity, intended to compensate for the overall risk of the total regulated business. Many gas pipelines, e.g., TransCanada PipeLines, offer a wide variety of transportation related services, e.g., firm transportation under long-term contract, storage, interruptible, etc., but there are not separate rates of return assigned to each of the services. Electric transmission utilities offer network services and point-to-point transmission services, but there is a single capital structure and return on equity for the entire transmission line of business.

It is widely accepted that different utilities which operate within the same line of business/class of service (e.g., different utilities which offer natural gas service or different utilities which offer electric service) are exposed to different levels of business risk as a result of, among other factors, different customer profiles. For example, Gaz Métro is regarded as a higher risk gas distributor than Enbridge Gas, in part due to its comparatively larger industrial customer base. However, it would be difficult, if not impossible, to estimate separate costs of capital for Gaz Métro's industrial customer service than for its residential customer service. First of all, each customer class contributes to the system. While the existence of a small number of large industrial customers with alternative sources of energy may create higher risk relative to a system with a more balanced customer profile, that same class, *ceteris paribus*, creates the ability

---

<sup>4</sup> Colorado, Illinois, Indiana, Iowa, Louisiana, Maryland and Nevada. There may be other instances where the allowed rates of return of the different lines of utility business were intended to reflect different levels of risk, but, due to the different timing of rate filings, they were not readily identifiable.

of the system to operate at a higher load factor and thus at relatively lower unit costs. Setting a higher rate of return for industrial customers could, in fact, create, perverse incentives for those customers to leave the system in favour of an alternative form of energy, adversely impacting the costs to remaining customers. In this context, setting differential rates of return for different classes of service could actually raise the overall cost of capital for the entire utility line of business.

## QUALIFICATIONS OF KATHLEEN C. McSHANE

Kathleen McShane is President and senior consultant with Foster Associates, Inc., where she has been employed since 1981. She holds an M.B.A. degree in Finance from the University of Florida, and M.A. and B.A. degrees from the University of Rhode Island. She has been a CFA charterholder since 1989.

Ms. McShane worked for the University of Florida and its Public Utility Research Center, functioning as a research and teaching assistant, before joining Foster Associates. She taught both undergraduate and graduate classes in financial management and assisted in the preparation of a financial management textbook.

At Foster Associates, Ms. McShane has worked in the areas of financial analysis, energy economics and cost allocation. Ms. McShane has presented testimony in more than 200 proceedings on rate of return and capital structure before federal, state, provincial and territorial regulatory boards, on behalf of U.S. and Canadian gas distributors and pipelines, electric utilities and telephone companies. These testimonies include the assessment of the impact of business risk factors (e.g., competition, rate design, contractual arrangements) on capital structure and equity return requirements. She has also testified on various ratemaking issues, including deferral accounts, rate stabilization mechanisms, excess earnings accounts, cash working capital, and rate base issues. Ms. McShane has provided consulting services for numerous U.S. and Canadian companies on financial and regulatory issues, including financing, dividend policy, corporate structure, cost of capital, automatic adjustments for return on equity, form of regulation (including performance-based regulation), unbundling, corporate separations, stand-alone cost of debt, regulatory climate, income tax allowance for partnerships, change in fiscal year end, treatment of inter-corporate financial transactions, and the impact of weather normalization on risk.

Ms. McShane was principal author of a study on the applicability of alternative incentive regulation proposals to Canadian gas pipelines. She was instrumental in the design and preparation of a study of the profitability of 25 major U.S. gas pipelines, in which she developed estimates of rate base, capital structure, profit margins, unit costs of providing services, and various measures of return on investment. Other studies performed by Ms. McShane include a comparison of municipal and privately owned gas utilities, an analysis of the appropriate capitalization and financing for a new gas pipeline, risk/return analyses of proposed water and gas distribution companies and an independent power project, pros and cons of performance-based regulation, and a study on pricing of a competitive product for the U.S. Postal Service. She has also conducted seminars on cost of capital and related regulatory issues for public utilities, with focus on the Canadian regulatory arena.

#### **PUBLICATIONS, PAPERS AND PRESENTATIONS**

- *Utility Cost of Capital: Canada vs. U.S.*, presented at the CAMPUT Conference, May 2003.
- *The Effects of Unbundling on a Utility's Risk Profile and Rate of Return*, (co-authored with Owen Edmondson, Vice President of ATCO Electric), presented at the Unbundling Rates Conference, New Orleans, Louisiana sponsored by Infocast, January 2000.
- *Atlanta Gas Light's Unbundling Proposal: More Unbundling Required?* presented at the 24<sup>th</sup> Annual Rate Symposium, Kansas City, Missouri, sponsored by several commissions and universities, April 1998.
- *Incentive Regulation: An Alternative to Assessing LDC Performance*, (co-authored with Dr. William G. Foster), presented at the Natural Gas Conference, Chicago, Illinois sponsored by the Center for Regulatory Studies, May 1993.
- *Alternative Regulatory Incentive Mechanisms*, (co-authored with Stephen F. Sherwin), prepared for the National Energy Board, Incentive Regulation Workshop, October 1992.
- "The Fair Return", (co-authored with Michael Cleland), *Energy Law and Policy*, Gordon Kaiser and Bob Heggie, eds., Toronto: Carswell Legal Publications, 2011.

**EXPERT TESTIMONY/OPINIONS**  
**ON**  
**RATE OF RETURN AND CAPITAL STRUCTURE**

*Alberta Natural Gas*  
1994

*Alberta Utilities Generic Cost of Capital*  
2011

*AltaGas Utilities*  
2000

*Ameren (Central Illinois Public Service)*  
2000, 2002, 2005, 2007 (2 cases),  
2009 (2 cases)

*Ameren (Central Illinois Light Company)*  
2005, 2007 (2 cases), 2009 (2 cases)

*Ameren (Illinois Power)*  
2004, 2005, 2007 (2 cases), 2009 (2 cases)

*Ameren (Union Electric)*  
2000 (2 cases), 2002 (2 cases), 2003,  
2006 (2 cases)

*ATCO Electric*  
1989, 1991, 1993, 1995, 1998, 1999, 2000,  
2003, 2010

*ATCO Gas*  
2000, 2003, 2007

*ATCO Pipelines*  
2000, 2003, 2007, 2011

*ATCO Utilities*  
2008

*Bell Canada*  
1987, 1993

*Benchmark Utility Cost of Equity (British Columbia)*  
1999

*Canadian Western Natural Gas*  
1989, 1996, 1998, 1999

*Centra Gas B.C.*  
1992, 1995, 1996, 2002

*Centra Gas Ontario*  
1990, 1991, 1993, 1994, 1995

*Direct Energy Regulated Services*  
2005

*Dow Pool A Joint Venture*  
1992

*Edmonton Water/EPCOR Water Services*  
1994, 2000, 2006, 2008

*Electricity Distributors Association*  
2009

*Enbridge Gas Distribution*  
1988, 1989, 1991, 1992, 1993, 1994, 1995,  
1996, 1997, 2001, 2002

*Enbridge Gas New Brunswick*  
2000, 2010

***Enbridge Pipelines (Line 9)***  
2007, 2009

***Enbridge Pipelines (Southern Lights)***  
2007

***Epcor Water Services Inc.***  
2011

***FortisBC***  
1995, 1999, 2001, 2004

***Gas Company of Hawaii***  
2000, 2008

***Gaz Métro***  
1988

***Gazifère***  
1993, 1994, 1995, 1996, 1997, 1998, 2010

***Generic Cost of Capital, Alberta (ATCO  
and AltaGas Utilities)***  
2003

***Heritage Gas***  
2004, 2008, 2011

***Hydro One***  
1999, 2001, 2006 (2 cases)

***Insurance Bureau of Canada  
(Newfoundland)***  
2004

***Laclede Gas Company***  
1998, 1999, 2001, 2002, 2005

***Laclede Pipeline***  
2006

***Mackenzie Valley Pipeline***  
2005

***Maritime Electric***  
2010

***Maritimes NRG (Nova Scotia) and (New  
Brunswick)***  
1999

***MidAmerican Energy Company***  
2009

***Multi-Pipeline Cost of Capital Hearing  
(National Energy Board)***  
1994

***Natural Resource Gas***  
1994, 1997, 2006, 2010

***New Brunswick Power Distribution***  
2005

***Newfoundland & Labrador Hydro***  
2001, 2003

***Newfoundland Power***  
1998, 2002, 2007, 2009

***Newfoundland Telephone***  
1992

***Northland Utilities***  
2008 (2 cases)

***Northwestel, Inc.***  
2000, 2006

***Northwestern Utilities***  
1987, 1990

***Northwest Territories Power Corp.***  
1990, 1992, 1993, 1995, 2001, 2006

***Nova Scotia Power Inc.***  
2001, 2002, 2005, 2008, 2011

***Ontario Power Generation***  
2007, 2010

***Ozark Gas Transmission***  
2000

***Pacific Northern Gas***  
1990, 1991, 1994, 1997, 1999, 2001, 2005,  
2009

***Plateau Pipe Line Ltd.***  
2007

***Platte Pipeline Co.***  
2002

***St. Lawrence Gas***  
1997, 2002

***Southern Union Gas***  
1990, 1991, 1993

***Stentor***  
1997

***Tecumseh Gas Storage***  
1989, 1990

***Telus Québec***  
2001

***Terasen Gas***  
1992, 1994, 2005, 2009

***Terasen Gas (Whistler)***  
2008

***TransCanada PipeLines***  
1988, 1989, 1991 (2 cases), 1992, 1993

***TransGas and SaskEnergy LDC***  
1995

***Trans Québec & Maritimes Pipeline***  
1987

***Union Gas***  
1988, 1989, 1990, 1992, 1994, 1996, 1998,  
2001

***Westcoast Energy***  
1989, 1990, 1992 (2 cases), 1993, 2005

***Yukon Electrical Company***  
1991, 1993, 2008

***Yukon Energy***  
1991, 1993

**EXPERT TESTIMONY/OPINIONS  
ON  
OTHER ISSUES**

<u>Client</u>	<u>Issue</u>	<u>Date</u>
Heritage Gas	Criteria for a Mature Utility	2011
Alberta Utilities	Management Fee on CIAC	2011
Maritimes & Northeast Pipeline	Return on Escrow Account	2010
Nova Scotia Power	Calculation of ROE	2009
New Brunswick Power Distribution	Interest Coverage/Capital Structure	2007
Heritage Gas	Revenue Deficiency Account	2006
Hydro Québec	Cash Working Capital	2005
Nova Scotia Power	Cash Working Capital	2005
Ontario Electricity Distributors	Stand-Alone Income Taxes	2005
Caisse Centrale de Réassurance	Collateral Damages	2004
Hydro Québec	Cost of Debt	2004
Enbridge Gas New Brunswick	AFUDC	2004
Heritage Gas	Deferral Accounts	2004
ATCO Electric	Carrying Costs on Deferral Account	2001
Newfoundland & Labrador Hydro	Rate Base, Cash Working Capital	2001
Gazifère Inc.	Cash Working Capital	2000
Maritime Electric	Rate Subsidies	2000
Enbridge Gas Distribution	Principles of Cost Allocation	1998
Enbridge Gas Distribution	Unbundling/Regulatory Compact	1998
Maritime Electric	Form of Regulation	1995
Northwest Territories Power	Rate Stabilization Fund	1995
Canadian Western Natural Gas	Cash Working Capital/ Compounding Effect	1989
Gaz Métro/ Province of Québec	Cost Allocation/ Incremental vs. Rolled-In Tolling	1984

**Attachment 134.2**

---



4550 Montgomery Avenue, Suite 350N, Bethesda, Maryland 20814  
TEL: (301) 664-7852\* FAX: (301) 664-7810

---

TO: Shawn Hill

November 2, 2011

From: Kathleen C. McShane

Re: Deferral Accounts

This memo is in response to your request for assistance regarding the question of whether there are utilities which set their tariff rates and cost recovery on the basis of deferral accounts as contrasted with traditional rate base accounts and operating accounts.

In New Brunswick, Enbridge Gas New Brunswick (EGNB), as a greenfield gas distribution utility, was permitted by the predecessor to the New Brunswick Energy and Utilities Board to create a revenue deficiency deferral account, which capture deviations between actual revenues and the revenue requirement during the development period (*IN THE MATTER OF an Application by Enbridge Gas New Brunswick Inc. for Approval of its Rates and Tariffs*, Decision NB PUB 299, June 23, 2000). During the development period, rates are set to compete with alternative energy sources. When the development period is determined by the regulator to be over, rates will be set on a cost of service basis, where the cost of service will include recovery of amounts that have been accrued in the revenue deficiency account. EGNB also has a separate rate base deferral account (i.e., earns the weighted average cost of capital) for capitalized operating and maintenance costs incurred as an investment in the development of the market, but which are not considered to be part of property, plant and equipment (*IN THE MATTER of a Board Order Resulting from a hearing to Review Enbridge Gas New Brunswick Inc.'s Financial Results as at December 31<sup>st</sup>, 2002 and December 31<sup>st</sup>, 2003*, September 2, 2005).

In Nova Scotia, the Utility and Review Board similarly permitted Heritage Gas to create a revenue deficiency account for the same purpose (Decision NSUARB-NG-HG-R-04, July 29, 2004). Similar to EGNB, as a greenfield utility with a small customer base, Heritage Gas has incurred significant costs related to developing the business and constructing the “back bone” distribution network which it is as yet unable to recover in rates. As the utility customer base grows, rates are expected to be set to amortize and recover amounts that have been accrued in the revenue deficiency account.

Maintaining deferral accounts for accrual of development costs is a common practice for pipelines. If the proposed pipeline is built, then prudently incurred development costs will be recovered in tolls. If the pipeline is not built, the development costs are likely to be borne by the shareholder, although there have been exceptions, as indicated below.

In RH-2-79, Foothills Pipe Lines (Yukon) Ltd. (Foothills (Yukon)) applied to the National Energy Board to include in its rate base amounts related to pre-construction costs for northern pipeline projects some of which were incurred before the Foothills (Yukon) project came into existence. Foothills (Yukon) argued that the incurred costs were valuable to Foothills, and equivalent expenditures would have had to be incurred had the earlier expenditures not been made. Some of the incurred expenditures were site specific, but Foothills contended that the knowledge and expertise gained reduced the expenditures that would otherwise have been incurred by Foothills (Yukon). The NEB found that the pre-construction expenses of the sponsor companies were eligible to be included in the rate base of Foothills (Yukon) Ltd. and its subsidiaries (*Reasons for Decision, Foothills Pipe Lines (Yukon) Ltd.*, RH-2-79, Phase 1, July 1979).

In the early 1980s, Trans Québec & Maritimes Pipelines Inc. incurred development costs for the extension of its pipeline beyond Québec City, which were placed in a deferral account. The NEB approved recovery of most of those costs even though the costs related to an extension which was never undertaken (*Reasons for Decision, Trans Québec & Maritimes Pipelines Inc.*, RH-4-85, September 1985).

The proposed Mackenzie Valley Pipeline, approved by the National Energy Board in December 2010, has been accruing its development costs in a deferral account. When and if the pipeline is constructed, the pipeline has proposed and expects to recover the incurred development costs in tolls. If the pipeline is never constructed, the development costs will be borne by the pipeline proponents.

**Attachment 144.1**

---

Effective: OCT 16 1997 L-64-1997

BCUC Secretary: Original signed by R.J. Pellatt

*[FortisBC Energy Inc.]*

## **C O D E O F C O N D U C T**

*For Provision of Utility Resources and Services  
August 1997*

### **SCOPE**

This Code of Conduct (Code) governs the relationships between [FortisBC Energy Inc. (FortisBC Energy)] and Non-Regulated Businesses (NRBs) for the provision of Utility resources, and conforms with the British Columbia Utilities Commission (Commission) “Retail Markets Downstream of the Utility Meter” (RMDM) Guidelines of April, 1997. The Commission Code of Conduct Principles from the Guidelines are attached as Appendix ‘A’.

This Code will govern the use of Utility resources for unregulated activities (products or services for which there are no Commission approved tariffs) including shared services, employment or contracting of Utility personnel, and the treatment of customer, utility, or confidential information. The Code will also determine the nature of the relationship between the Utility and NRBs and the treatment by the Utility of its’ NRBs.

The primary responsibility for administering this Code lies with [FortisBC Energy], although the Commission has jurisdiction over matters referred to in this Code. The Commission acknowledges that the Utility in the administration of the Code may have to take into account particular circumstances in respect to a particular product or service which is being provided or transferred out of the Utility, and where these issues are at variance with this Code Commission approval will be required. The Code also provides that the Commission may review complaints in relation to the Code.

The [FortisBC Energy] Transfer Pricing Policy, dated August 1997, will be used in conjunction with this Code to establish the costs and pricing for Utility resources and services.

This Code supersedes and replaces the [FortisBC Energy] Code of Business Conduct dated March 31, 1995. However, this Code does not replace contracts and undertakings between [FortisBC Energy] and NRB affiliates in existence prior to approval of the Code.

## [FortisBC Energy] Code of Conduct

---

### DEFINITIONS

<b>[FortisBC Energy Inc.]</b>	<i>May be abbreviated as follows: [FortisBC Energy], the Utility, or the Company, and may also include employees of the Company.</i>
<b>Commission</b>	<i>British Columbia Utilities Commission.</i>
<b>Guidelines</b>	<i>Retail Markets Downstream of the Utility Meter Guidelines published by the British Columbia Utility Commission in April, 1997.</i>
<b>Non-Regulated Business (NRB)</b>	<i>An affiliate of the Utility not regulated by the Commission or a division of the Utility offering unregulated products and services. “Related NRB” refers to any NRB which is an affiliate of the Utility and which uses any resources of the Utility.</i>
<b>Ratepayers</b>	<i>Ratepayers in most cases are considered as a whole rather than one group or rate class.</i>
<b>RMDM</b>	<i>Acronym for “Retail Markets Downstream of the Utility Meter”, which may include any utility or energy related activity at or downstream of the utility meter.</i>
<b>Transfer Pricing</b>	<i>The price established for the provision of Utility resources and services, or the transfer of Utility assets, to an NRB or division of the Utility providing unregulated products and services. Transfer pricing for any Utility resource or service will be determined by applying the [FortisBC Energy] Transfer Pricing Policy approved by the Commission.</i>

## **APPLICATION OF COMMISSION PRINCIPLES**

### **1. Transfer Pricing**

The Utility will conform with the Commission approved [FortisBC Energy] Transfer Pricing Policy.

### **2. Shared Services and Personnel**

- a) This Code recognizes the need for and potential benefits to the Utility of employee transfers and human resource sharing.
- b) [FortisBC Energy] may provide shared services to NRBs, including supervision and management, while ensuring that ratepayers will not generally be negatively impacted by Utility involvement. The costs of providing such services will be as agreed upon by both parties and be in accordance with the Commission approved [FortisBC Energy] Transfer Pricing Policy.
- c) NRBs may contract for any Utility personnel using the Commission approved [FortisBC Energy] Transfer Pricing Policy, providing the Utility complies with Section 4 of this Code, Provision of Information by [FortisBC Energy Inc.], and no conflict of interest exists which will negatively impact on ratepayers.

### **3. Transfer of Assets or Services**

The price for all transfers of assets or services shall be determined in accordance with the [FortisBC Energy] Transfer Pricing Policy approved by the Commission, and the Utility must be able to demonstrate that the benefits to the ratepayer are greater than the cost. The transfer price will reflect the potential for risk (stranded assets, future costs, etc.) and the recall availability of shared or transferred personnel to ensure the Utility receives the appropriate benefit from expertise resident in the Utility. [FortisBC Energy] will comply with acceptable business practices if it wishes to purchase assets, goods or services from an NRB.

An appropriate allocation of development costs for products or services as defined in the [FortisBC Energy] Transfer Pricing Policy, will be included in the transfer price.

### **4. Provision of Information by [FortisBC Energy Inc.]**

[FortisBC Energy] will not provide to an NRB any information that would inhibit a competitive energy services market from functioning.

The following should act as a guideline for employees confronted with issues related to the sharing of confidential information:

- a) This Code precludes [FortisBC Energy] from releasing confidential customer specific information without the consent of that customer. If a customer agrees to a general release of customer specific information, that information must be made available to any market participant who requests it and is willing to pay costs associated with the

provision of the information, without discrimination as to access, timing, cost or content. If a customer requests customer specific information be provided to a specific market participant, only that participant may receive the information, subject to payment of associated costs incurred to provide the information.

- b) [FortisBC Energy] may disclose to any market participant that requests it and is willing to pay the appropriate transfer price customer information that is aggregated or summarized in such a way that confidential information would not ordinarily be ascertained by third parties.
- c) [FortisBC Energy] may provide or sell any non-customer specific information to any market participant that requests it and is willing to pay the appropriate transfer price.

### **5. Preferential Treatment**

[FortisBC Energy] will not state or imply that favoured treatment will be available to customers of the Utility as a result of using any service of an NRB. In addition, no Company personnel will condone or acquiesce in any other person stating or implying that favoured treatment will be available to customers of the Company as a result of using any product or service of an NRB.

### **6. Equitable Access to Services**

Except as required to meet acceptable quality and performance standards, and except for some specific assets or services which require special consideration as approved by the Commission, [FortisBC Energy] will not preferentially direct customers seeking competitively offered services to an NRB or a specific retailer.

### **7. Compliance and Complaints**

- a) [FortisBC Energy] will advise all of its employees of their expected conduct pertaining to this Code, with annual updates for employees who may be directly involved with NRB activities.
- b) [FortisBC Energy] will monitor employee compliance with this Code by conducting an annual compliance review, the results of which will be summarized in a report to be filed with the Commission within 60 days of the completion of this review.
- c) Complaints by third parties about the application of this Code, or any alleged breach thereof, should be addressed in writing to the Company's [Executive Vice-President, Finance, Regulatory and Energy Supply], who will bring the matter to the immediate attention of the Company's senior management and promptly initiate an investigation into the complaint. The complainant, along with the Commission, will be notified in writing of the results of the investigation, including a description of any course of action which will be or has been taken promptly following the completion of the investigation. The Company will endeavour to complete this investigation within 30 days of the receipt of the complaint.

- d) Where [FortisBC Energy] determines that the complaint is unfounded, the Company may apply to the Commission for reimbursement of the costs of the investigation from the third party initiating the complaint or where this is not possible, for inclusion of those costs in rates.

### **8. Financing and Other Risks**

[FortisBC Energy] will not undertake any financing or other financial assistance on behalf of an NRB that exposes utility ratepayers to additional costs or risks, unless appropriate compensation is received by [FortisBC Energy] for such financing or other financial assistance, and such financing or other financial assistance is approved by the Commission.

### **9. Use of Utility Name**

[FortisBC Energy Inc.] agrees that newly established NRBs engaging in RMDM activities will not use the Utility's name as the primary identifier within British Columbia, and will not use the Utility name in a manner that indicates that Utility resources will support the NRB.

### **10. Distribution System Access**

[FortisBC Energy] will treat all requests for distribution system access for the purpose of direct commodity marketing equitably and in accordance with the requirements approved for direct commodity marketing in British Columbia.

### **11. Amendments**

In order to ensure that this Code remains workable and effective, the Company will review the provisions of this Code on an ongoing basis and as required by the Commission, but with a maximum of three years between reviews.

Amendments to this Code may be made from time to time as approved by the Commission.

*Appendix 'A'*

**COMMISSION CODE OF CONDUCT PRINCIPLES**

The Commission has established the following principles in the Guidelines which [FortisBC Energy] intends to apply to RMDM activities and the Utility's relationships with NRBs.

- i) The regulated company will not provide to the NRB any market-sensitive or confidential information that would inhibit a competitive energy services market from functioning. If customers agree to a release of customer information to the NRB, it should be provided to other market participants under the same terms and conditions and for the same price. Should an individual customer make a specific request to have information released to a particular third party, it will be released to that party only. The utility will be able to recover from the customer the costs associated with the provision of this information.
- ii) No regulated company personnel will state or imply that favoured treatment will be available to customers of the company as a result of using any service of an NRB. In addition, no regulated company personnel will condone or acquiesce in any other person stating or implying that favoured treatment will be available to customers of the company as a result of using any service of an NRB.
- iii) No regulated company personnel will preferentially direct customers seeking competitively offered services to an NRB. If a customer, or potential customer, requests from the regulated company information about products or services offered by an NRB or its competitors in downstream markets, the regulated company may provide such information, including a directory of retailers of the product or service, but shall not promote any specific retailer in preference to any other retailer.
- iv) The regulated company will formally advise all employees of expected conduct related to these principles and it will undertake to perform periodic audits of the relationships to ensure compliance with these principles. These audits will be performed no less than once a calendar year and filed with the Commission.
- v) Complaints by non-affiliated parties about the application of these principles, or any alleged breach thereof, will be brought to the immediate attention of the senior management of the regulated company and subsequently a report of the complaints, and action taken, will be filed with the Commission. The report will be filed with the Commission within one month of the complaint being made.
- vi) The financing of the utility and NRB will be accounted for entirely separately with the financing costs reflecting the risk profile of each entity. No cross-guarantees or any form of financial assistance whatsoever should be provided directly or indirectly by a utility to its NRB without approval of the Commission.

## [FortisBC Energy] Code of Conduct

---

- vii) Use of the utility name by a related NRB will require approval by the Commission to ensure that its use will not interfere with the Commission's ability to protect ratepayers.

In those cases where retail customers have direct market access to the commodity, the utility's code of conduct will also include the following provision,

The regulated company will treat all requests for distribution system access for the purpose of direct commodity marketing equitably and according to the requirements approved for direct commodity marketing in British Columbia.