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March 17, 2011

Commercial Energy Consumers Association of British Columbia c/o Owen Bird Law Corporation P.O. Box 49130 Three Bentall Centre 2900 – 595 Burrard Street Vancouver, BC V7X 1J5

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Energy Inc. ("FEI")¹ Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")

Response to the Commercial Energy Consumers Association of British Columbia ("CEC") Information Request ("IR") No. 3

On December 1, 2010, FEI filed the Application as referenced above. In accordance with Commission Order No. G-181-10 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to CEC IR No. 3.

If you have any questions or require further information related to this Application, please do not hesitate to contact Shawn Hill at (604) 592-7840.

Yours very truly,

FORTISBC ENERGY INC.

Original signed by Shawn Hill:

For: Diane Roy

Attachment

cc (e-mail only): Erica Hamilton, Commission Secretary Registered Parties

¹ Formerly Terasen Gas Inc.



1. Reference: Exhibit B-9, CEC 2.1.1.1, CEC 2.1.1.3, CEC 2.1.1.4 & CEC 2.1.1.5

Information Request ("IR") No. 3

Please refer to Attachment 1.1.1.

Please refer to Attachment 1.1.3.

Please refer to Attachment 1.1.4.

Please refer to Attachment 1.1.5.

1.1 The response downloaded from the BCUC website did not contain the referred to attachment. Could TGI please provide the attachment?

Response:

FEI apologizes for the inadvertent omission of the Attachments in the electronic file when we submitted the responses to CEC IR No. 2 (Exhibit B-9). On March 10, 2011, FEI refilled Exhibit B-9 including the attachments into the proceeding record and advised registered parties. Note that the hardcopies submission of the response to CEC IR No. 1 correctly included the referenced Attachments.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 2

2. Reference: Exhibit B-9, CEC 2.2.1.1

The "take or pay" provision provides additional comfort that TGI customers as a whole will achieve the expected benefits from additional gas throughput on the TGI system. TGI has "take or pay" agreements with some large customers. TGI believes it is appropriate to require "take or pay" contracts for NGV customers until the business has matured enough to give existing customers comfort that this NGV business is beneficial to all customers.

2.1 Does TGI have a view as to when the NGV business as now planned might be considered mature enough to enable a less restrictive tariff or a tariff more in line with its other customer class tariffs?

Response:

To a large degree, FEI is proposing the additional requirement for a "take or pay" commitment that is not required of other customers in recognition of concerns that have been expressed by some stakeholders with respect to FEI's previous approach to developing NGV markets in BC in the 1990s. These stakeholders similarly expressed concerns about the MX-type test for NGVs that FEI (TGI) had originally proposed in the 2010-2011 RRA, contributing to FEI's decision to examine the "take or pay" model. FEI has not identified a specific point in time where NGV business might be considered as core business such that "take or pay" commitments are not required. The answer will depend on the rate of uptake of the NGV services and the tracking of benefits achieved from development of this market, and the level of comfort that the Commission and stakeholders have with moving towards a model that is more akin to how other customers are added. Assuming successful implementation, this issue should be revisited after 3 to 5 years.

2.2 Does TGI have suggested criteria for testing when the NGV business might be considered sufficiently mature to establish a more normal tariff?

Response:

FEI has not developed such criteria as part of this application but would suggest that the issue be reviewed in light of FEI's progress in achieving the market penetration targets set out in the application after 3 to 5 years from date of approval. Ultimately, FEI believes that it is in the interests of existing customers and potential NGV customers alike to ensure that the rate design remains appropriate as we gain experience, and not more onerous on potential CNG/LNG Service customers than is really reasonably necessary to protect existing customers.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 3

3. Reference: Exhibit B-9, CEC 2.3.1

Current estimates of contract rates for potential CNG and LNG Service agreements range from approximately \$2.00/GJ to over \$10.00/GJ, demonstrating the variance in fueling infrastructure requirements and contract demand amongst CNG and LNG Service customers.

3.1 Please clarify what the \$2.00/GJ includes (specific capital investment, specific O&M, delivery margin, commodity or other etc.)

Response:

The \$2.00/GJ was a preliminary cost of service estimate for an LNG customer, which included a fueling station capital investment of approximately \$2 million and annual O&M of \$60,000 per year. The customers' annual fuel consumption estimate was significant, which resulted in a relatively low contract rate per GJ. This cost did not include Rate Schedule 16 delivery charges, commodity costs, or LNG transport costs. This model is consistent with the Waste Management cost of service model discussed in this proceeding.

3.2 Please compare and contrast the costs/GJ to those required to service a subdivision.

Response:

The question appears to be based on a misunderstanding of the source of the referenced text reading "\$2.00/GJ to over \$10.00/GJ". These rates are prospective rates for NGV refueling service, calculated using the forecast costs of service and the forecast volumes for a prospective station, and would be paid in addition to any rates charged to the customer's account with FEI such as basic charge, and the delivery, midstream and commodity rates. As such, there is no comparison to be drawn between these rates and the cost/GJ required to service a subdivision because this rate would be charged on top of whatever the costs required to service any subdivision the prospective station was built in would be.



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Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 4

4. Reference: Exhibit B-9, CEC 2.4.1

4.1 As the price advantage for natural gas NGVs versus Gasoline Powered Vehicles (GPVs) narrowed, changing the economic incentive to switch fuels, did TGI loose customers from any of its other customer classes?

Response:

Terasen Gas does not have any other customer classes with a likelihood for sensitivity to the price difference between natural gas and gasoline, and thus does not believe that this difference has had a material impact on any other rate classes.

4.1 Please answer this question for other rate classes on the basis of the price difference between natural gas and electricity or other energy source options. In other words is this a risk TGI also has with all of its other natural gas service provision?

Response:

FEI and its customers are always at some level of risk as a result of customers potentially leaving our distribution system for any number of reasons. Some reasons to why customers may leave the system include price of natural gas to other energy forms (example electricity), customer perception towards natural gas and its environment attributes, and government policy which includes a GHG reduction target by 33% by 2020 from 2007 levels.

Residential and commercial customers, for example have the ability switch to electricity as an energy source by using plug in electric heaters to supplement their main energy source for their home or building. In these markets, FEI has experienced customer throughput declines in rate classes in the past particularly during periods of rapid commodity price escalation and volatility. Examples of such periods of commodity escalation volatility were 1999 – 2001 ("the California Energy Crisis") and 2006 ("Hurricane Katrina") However, FEI views the risk of steadily declining use rates as an even greater concern than fuel switching. This decline in use rate is one contributing factor to a decline in throughput volume for the Companies gas network as a whole. An excerpt from the 2010 Long Term Resource Plan Application page 76-81 is provided in Attachment 4.1.

Customers with significant potential to switch to other energy sources such as diesel or wood waste are primarily large industrial customers. In the case of the large industrials, FEI attempts to mitigate against this risk by charging such customers for the capacity they wish to reserve on our system, similar to the "take-or-pay" model proposed for NGV refueling assets. Employing fixed charges or "take-or-pay" ratemaking approaches tends to be effective mainly in the shorter term. Industrial customers can and do reduce their capacity reservations as they reach the end



of their contract periods if they do not wish to use as much gas going forward or if they have opportunities to use other energy sources such as biomass.

4.2 What were the consequences, if any, in terms of stranded investment relative to loss of customers in other customer classes as the price of the natural gas commodity changed significantly?

<u>Response:</u>

Significant increases in commodity price do increase stranded asset risk across all customer classes as customers become increasingly motivated to switch to a different energy source in the event that natural gas becomes less competitive.

In comparison to the entire FEI delivery system, the stranded asset risk of NGV refueling infrastructure is relatively low. This is due partially to the relatively small size of the capital investment required, but even more so to the contractual arrangement obligating the incremental customer to contribute their forecast incremental costs of service over the period of their contract with FEI.

Given the consistent price advantage of natural gas as a transportation fuel, approval of this Application would help to mitigate against the general stranded asset risk to our system from changes in commodity prices as discussed above.



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Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 6

5. Reference: Exhibit B-9, CEC 2.6.2

Where possible, TGI will encourage the customer to commit to as long a term as possible as it will further reduce the amount of unrecovered costs at the end of the initial term and thus reduce risk. TGI requires some negotiating flexibility with respect to negotiating appropriate terms for each customer.

5.1 Please compare this negotiating flexibility being requested to the negotiating flexibility TGI has with respect to main extension tests and potential Contributions in Aid, is there a similar sort of flexibility for other rate classes?

<u>Response:</u>

No, main extension tests do not have a similar sort of negotiating flexibility. All main extension projects are evaluated according to the ratio of the discounted present value of all the forecast net cash inflows over twenty years divided by the discounted present value of the costs of attaching customers in the first five years of the main extension (i.e. the profitability index). FEI believes that the MX Test works well, and ultimately that may be the case for CNG/LNG Service extensions as well. However, FEI will benefit from having some projects completed before moving to a standardized, pro forma rate model.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 7
Information Request ("IR") No. 3	5

6. Reference: Exhibit B-9, BCUC 2.1.3

TGI believes it is important to avoid intentional cross-subsidization across rate classes through artificial inflation of the costs of service of one rate class over another through contingency funding. Contingency funds can be a valuable tool for ensuring the economical viability of a capital project in the event of potential cost overruns, particularly in projects with a high potential for cost overruns due to volatile supply prices or a lack of fixed price contracts. TGI believes that, given the cost and construction nature of the projects contemplated under the proposed NGV business model, the approach to use contingency funding when appropriate, is prudent.

6.1 Does TGI include contingencies in its mains extension test estimating?

Response:

No, FEI does not include contingencies in its main extension test estimating. In 2010, the Company used geo code pricing to develop cost estimates. Geo code refers to a unit cost methodology which is based upon the geographical region, typical ground conditions and length of service to be installed.

For a small percentage (approximately 10%), the geo code pricing methodology is not the most appropriate estimating method due to unique, site specific requirements. In these circumstances, manual estimates will be used. For those main extensions where manual estimating is determined to be appropriate, the cost estimate of the project is developed by using information contained in the construction services contract with the Company's service provider. FEI does not add a contingency in the case of manual estimating either.



7. Reference: Exhibit B-9, BCUC 2.5.4

- The Economic Test is a discounted cash flow analysis that uses average costs for a main extension and forecasted demand to determine if the revenue based on existing delivery rates from the proposed extension meets the test parameters; and
- 7.1 Please provide the range of variability from average cost for main extensions as used in the Economic Test referred to.

Response:

As discussed in the response to CEC IR3.6.1, geo code pricing is currently used to estimate costs in main extension tests. Geo code refers to a unit cost methodology which is based upon the geographical region, typical ground conditions and length of service to be installed. In 2009, the range of geo code costs across the FEI's service territory varied between \$27/meter to \$62/meter.



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Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 9

8. Reference: Exhibit B-9, BCUC 2.14.1

The change in approach with respect to the KSD is illustrative of how the cost of service based business model is better suited for the early market development needs of the NGV business. Even with the addition of new incremental load provided by the new buses, this customer would not have been able to pass the CS test using a rate of \$5/GJ for fueling service. As a result the new load could not be brought into service. The new approach will result in a higher rate, but one that is justified based on the costs of providing service and one that is still economically beneficial to the customer.

8.1. If KSD or other customer load can be added to the fuelling station in Kelowna would the customer be able to obtain lower rates as the load is increased? Does the cost of service model allow for the flexibility of aggregating growth around fueling station investment?

Response:

The cost of service model underlying the proposed GT&Cs provides flexibility to approach aggregation in this way, but the fueling services agreement with KSD has not been established. Provision for reducing the rate to reflect potential future increases in KSD load is one commercial element that may be included in the agreement depending on the needs of the customer. This may be comparable to the provisions contained in the WM Agreement.

The parties are also interested in adding third party load to the station. In the event that third party load is identified FEI would need to negotiate the specific terms with respect to this additional load. This may be comparable to the provisions contained in Section 5 of the WM Agreement.

5. Use of the Fueling Station By Other Users. Terasen and WM intend to make the Fueling Station available to third party commercial users who shall be mutually agreed to by the Parties (Other Users"). The terms and conditions for providing service to Other Users and the related revenue sharing arrangements will be defined in a separate agreement to be established by the Parties, the terms and conditions of which shall be negotiated in good faith and subject to the necessary BCUC approvals.

This approach allows growth to be served by existing stations in area rather than establishing a duplicative infrastructure. It also allows potential customers who do not operate enough vehicles to warrant a dedicated station to obtain service in a cost competitive manner.

As and when such third party fueling agreements are established FEI will be submitting them to the Commission for approval.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company")Submission Date:Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG")Submission Date:Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and
Liquified Natural Gas ("LNG") Service (the "Application")March 17, 2011Response to Commercial Energy Consumers Association of British Columbia ("CEC")
Information Request ("IR") No. 3Page 10

9. Reference: Exhibit B-9, BCUC 2.19.4

Response:

The addition of the Mt. Hayes LNG facility on Vancouver Island provides additional flexibility with respect to LNG operations by adding a second peak shaving and backup supply resource to the combined TGI and TGVI system.

The Tilbury facility has storage capacity of 600 MMscf or approximately 656,000 GJ of LNG (conversion factor 0.9145). The Mt. Hayes facility has a storage capacity of 1,500 MMscf or approximately 1,640,000 GJ of LNG. Liquefaction capacity at Tilbury, after recent upgrades, is 5.4MMscfd and the liquefaction capacity at Mt. Hayes is 7.5 MMscfd. The addition of Mt Hayes has increased LNG storage capacity in the system by 250% and production capacity by 140%. TGI believes that the addition of a second LNG facility is a factor that should be considered in determining the appropriate cap for LNG shipments to transportation markets and that the completion of the Mt. Hayes facility may warrant an increase to the 1040 GJ/day limit discussed in the response to BCUC IR2 19.3.

9.1 Given the substantive flexibility offered by the addition of the Mt. Hayes LNG facility would it make sense in this application to make the LNG service rate permanent at a significantly higher level so that TGI has the scope and firm foundation to pursue the potential LNG markets without the uncertainty and expense of additional regulatory approval requirements?

<u>Response:</u>

FEI has not applied for any changes to Rate Schedule 16 in this Application, and considers that this is best left for a future application. The most pressing need once a LNG project is brought forward will be to extend the Rate Schedule 16 offering so as to accommodate the long term supply contracts in which customers are expressing interest. Potential changes to the volume will also be considered at that time depending on how market interest materializes, and will include a review of any additional flexibility of supply offered by the addition of the Mt. Hayes LNG facility. Please also see our response to BCUC IR 3.20.1.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 11

10. Reference: Exhibit B-9, BCUC 2.19.5

Response:

Other supply alternatives beyond Tilbury and Mt. Hayes would include Northwest Natural Gas Company's "(NWN") facility in Portland Oregon and the Chute Creek plant located in Wyoming. Other potential future supply locations for backup supply would include Northwest Pipeline Corporation in Plymouth and NWN in Newport Oregon.

10.1 Might the proposed Kitimat LNG facility become an alternate supply source as well potentially for back-up in the future?

<u>Response:</u>

The Kitimat LNG Terminal may certainly add diversity to the available supply of LNG in the region, as would any other proposed LNG facility in the region. FEI cannot speculate at this time on whether or not that LNG supply would be able to be part of a LNG refueling offering in this Application.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC") Information Request ("IR") No. 3	Page 12

11. Reference: Exhibit B-9, BCUC 2.31.2

Under the proposed GT&Cs, the rate will reflect the cost of service, without a premium to reflect the attributes of natural gas service.

11.1 Does TGI believe that providing the CNG/LNG services as a utility under a cost of service model preserves all of the residual benefits of such services for the end use customers and thereby increases the likelihood the market for such services will grow and benefit existing natural gas customers by comparison to charging based on competitive alternative values?

Response:

FEI believes that it is most appropriate that our rates be set according to the cost of service model. The cost of service model ensures that our new NGV customers cannot be over-charged for the services provided, and offers those NGV customers the same fair treatment that our existing customers enjoy. FEI believes that the model as proposed poses the greatest chance for a successful expansion of the NGV refueling market in British Columbia. The rate design proposed has allowed the construction of the first new NGV refueling station in almost a decade, and many more potential customers are currently expressing interest or negotiating contracts under the proposed rate design. FEI believes that it is only by treating potential NGV customers fairly, and not seeking to confiscate through our rate structures most or all of the potential benefits accruing to potential NGV customers, that FEI will be successful in building additional NGV refueling load for the benefit of our existing customers.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 13

12. Reference: Exhibit B-9, BCUC 2.33.4 & 2.33.5

As stated in BCUC IR 2.33.3 of the 17 Organizations that submitted letters of support, 11 are actual potential customers. TGI has, to date, received five Expressions of Interest to use EEC Incentive to purchase new natural gas vehicles - four of which were for garbage collection and transfer operations.

Reference: BCUC 2.33.4

TGI confirms that, as proposed, NGV load will only be added if it is expected to be cost-effective from the perspective of existing customers. The cost-effectiveness of new NGV load from the perspective of existing customers is ensured by performing two analyses:

- 1) Any system improvements, if required, to provide natural gas to an NGV fueling station would undergo a main extension test. This is consistent with existing TGI practices.
- 2) TGI's cost of service model described in the Application ensures NGV load is costeffective through take-or-pay service agreements with the customer.

BCUC 2.33.5

12.1 Given the cost-effective benefit to existing customers please provide a quantitative assessment of expected EEC incentives to promote the NGV service relative to the benefit?

Response:

Please refer to the cost-benefit analysis in Section 4 (page 35) of Appendix A-1 in the Application. FEI created estimates of EEC incentives necessary to support the projected NGV volumes under each scenario. These incentive amounts were based on a ratio of EEC incentives relative to FEI's capital investment for fueling stations.

Under the Commission Order G-36-09 and Commission Order G-141-09, EEC programs must reach an average weighted TRC of 1.0 or greater on a portfolio level, and the Innovative

Technologies program area will have an additional criteria that on a stand along basis it must have a weighted average TRC of 1.0 or more. . A positive TRC indicates there are positive energy savings with a cost-effective program.

In the EEC annual report for 2010 to be filed by the end of March 2011, FEI will provide details on why approved EEC funding can and should be used for NGV initiatives and will seek the Commission's concurrence with such use. Please refer to our response CEC 3.12.4 for additional information.



12.2 Is there a net positive present value for existing customers supporting growth of this market, independent of the GHG benefit values?

Response:

Yes. Please refer to the cost-benefit analysis in Section 4 (page 33) of Appendix A-1 in the Application. This analysis demonstrates a net cost of service benefit to existing customers, on a present value basis, of \$337,000 in 2012 increasing to \$22 million in 2030.

12.3 If there is a net positive benefit to existing customers for promoting development of this market are there constraints on the availability of EEC funding, which may limit and constrain the development of this market to the detriment of existing natural gas customers?

<u>Response:</u>

All EEC funding levels beyond 2010 and 2011 have not been approved at this time. A request for additional funding will be included in FEI's upcoming Revenue Requirement Application to be filed with the BCUC in May, 2011. The net benefits to existing customers resulting from cost-effective load additions were described in Section 3.1 of the Application. Under the Reference Case, existing natural gas customers experience a 15.2% reduction, or \$82.5 million, in delivery rates in 2030. However, any potential constraints in EEC funding for NGVs would likely result in lower adoption rates of heavy duty NGVs. Please see our response to BCUC IR 3.7.1.

12.4 Would it be useful in this application if TGI were provided more flexibility in providing incentives in addition to the flexibility it is seeking with regard to negotiating cost of service contracts/rates?

<u>Response:</u>

This response will also address CEC IRs 3.12.5, 3.13.1, 3.13.2 and 3.15.2.

FEI believes that the existing EEC framework, established in the EEC Decision and augmented in the NSA for the 2010-2011 RRA, provides FEI with flexibility to pursue, refine and manage cost effective EEC programs involving NGV initiatives. FEI believes that it has the requisite approvals to provide EEC funding for NGV. As such, this Application does not request the approval of any EEC program or expenditure, nor does it request any additional flexibility or



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC") Information Request ("IR") No. 3	Page 15

discuss any barriers to any EEC programs or expenditures. The EEC spending has been discussed in this Application in order to create a full picture of the NGV market that is developing in British Columbia. FEI believes that EEC should not otherwise be addressed in this Application. Please see BCUC 1.4.1 for more details.

The Commission's discussion regarding EEC funding for NGVs that was included in the Decision accompanying Commission Order G-6-11 in this Application has introduced uncertainty with respect to FEI's ability to provide EEC incentive funding for NGVs. FEI has, as a result, put several NGV projects on hold. To avoid losing momentum on development of NGV markets at a time when the NGV market appeared to be gaining traction, FEI believes that this EEC issue needs to be addressed at the earliest opportunity. FEI believes that the EEC annual report is the appropriate forum to address the NGV funding issue raised by the Commission. This is because the EEC expenditure in question occurred in 2010. Thus, in the EEC annual report for 2010 to be filed by the end of March 2011, FEI will provide details on why approved EEC funding can be used for NGV initiatives and will seek the Commission's concurrence with such use.

12.5 If such additional flexibility in providing incentives would be useful could TGI please provide an outline of what may be the appropriate terms for such flexibility, which the Commission could approve in this application (ie. What might be the appropriate test for how much to provide)?

Response:

Please refer to our response to CEC IR 3.12.4.



 FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company")
 Submission Date:

 Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG")
 Submission Date:

 Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and
 March 17, 2011

 Response to Commercial Energy Consumers Association of British Columbia ("CEC")
 Page 16

Information Request ("IR") No. 3

13. Reference: Exhibit B-8, BCSEA 2.13.1

Response:

Pursuant to Commission Order No. G-6-11, TGI has restructured the WM agreement to remove all reference to EEC Funding and Vehicle Reimbursement from the fueling service agreement. The fueling service agreement must now be re-executed. The restated agreement was presented to WM for their review on January 19th, 2011. TGI is still awaiting a final decision regarding whether the restructured agreement will be executed.

The customer has verbally expressed strong concerns regarding disclosure of the agreements on a non-confidential basis as being harmful to its commercial and competitive interests. Despite this, given that the customer has invested heavily in NG vehicles and maintenance facilities, TGI expects that WM will reluctantly execute the restated agreements to avoid losses relating to these investments. This course of action has strained the business relationship between WM and TGI. In addition it makes it less likely that WM will act as a positive reference customer for TGI in the further development of NGV markets in BC.

Upon receipt of the executed agreement TGI will follow through on the other elements of the Order.

13.1 Does the revised agreement to be re-executed include any provisions enabling TGI to provide EEC funding and or other incentive funding, as TGI may be enabled to do so by the Commission, for the benefit of developing this NGV market and benefiting existing natural gas customers.

Response:

Please refer to our response to CEC IR 3.12.4.

13.2 Given the strong government support for the TGI NGV initiatives and the requirement for the utility to support the BC Government energy objectives, including GHG reduction objectives please identify what barriers TGI faces in providing appropriate energy efficiency and conservation incentives.

<u>Response:</u>

Please refer to our response to CEC IR 3.12.4.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 17

14. Reference: Exhibit B-8, BCSEA 2.20.1

First, historically, TGI has not released EEC incentive amounts on an individual customer basis in Terasen's annual reports and other regulatory review proceedings. TGI reports the total incentive amounts at the program level, at the program area level and at the portfolio level. The companies have not historically reported on incentive amounts given to individual customers. To be consistent with this practice, TGI asserts confidentiality regarding the dollar value of the incentive funding provided to WM.

Second, TGI also believes that it's not appropriate to reveal customer incentive amounts as it is harmful to the interests of all customers. For example, in the case of NGV incentives, truck dealers may be influenced to price their natural gas vehicle offerings at an undue level that assumes customers are receiving other incentives. This type of price inflation would negate benefits associated with incentive funding.

14.1 Does TGI release the individual CIA amounts for main extension projects publicly or the specific individual test evaluations?

Response:

TGI does not release individual CIA amounts, or specific individual test evaluations. Our reporting to the Commission focuses on annual main extension data in aggregate and the top five main extensions in terms of cost.

14.2 What does TGI believe are the necessary information provision requirements needed to satisfy regulatory oversight without breaching reasonable confidentiality expectations of individual customers (Please specifically relate these to the Commissions specific oversight responsibilities as TGI understands them)?

Response:

FEI believes that the existing oversight established in the EEC program, whereby the Commission approves funding for broad categories of program areas and requires a given TRC on a portfolio basis is the most appropriate requirement. FEI also believes that it is important to continue working with stakeholders to refine existing programs and introduce new programs that follow the underlying principles established in the EEC Order G-36-09. Please refer to BCUC 1.4.1 for more details.



FortisBC Energy Inc. (formerly Terasen Gas Inc) ("FEI" or the "Company") Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")	Submission Date: March 17, 2011
Response to Commercial Energy Consumers Association of British Columbia ("CEC")	Page 18

15. Reference: Exhibit B-8, BCSEA 2.22.1

EEC program as a whole exceeds the cost-effectiveness guidelines as set out in previous Commission decisions. Additionally TGI has the ability to move funds to any intra and inter program areas with supporting rationale so that the overall portfolio of programs can be designed and implemented efficiently with the approved funding envelope.

15.1 Does TGI believe that the Commission's regulation of BC Hydro's Power Smart initiatives involves review of individual programs and specific sub-projects within individual programs or has the regulation been primarily about ensuring that savings are being achieved and that the appropriate tests are being met, such as the TRC test for the portfolio and the summary program components of the portfolio?

Response:

It is the Company's view that the Commission's regulation of Power Smart is primarily about whether funding levels are appropriate, and whether those funds are being spent in a costeffective manner. It is further the view of the Companies that this is the appropriate role for the Commission and that the utilities possess sufficient expertise in demand side management to develop and implement demand side management programs that are appropriate and that benefit customers.

15.2 Please discuss the state of the information on the record for this proceeding for the purpose of determining whether or not NGV incentives represent Innovative Technology funding.

Response:

Please refer to our response to CEC IR 3.12.4.

In Decision Order G-6-11, the Commission Panel accepts FEI's position that the incentive payments are outside the scope of the review of the WM Agreement. The Companies have determined that the EEC Annual Report is the most appropriate forum for discussing matters related to the use of Innovative Technologies funding for NGVs, and will include such a discussion in the forthcoming 2010 EEC Annual Report.

Attachment 4.1





MARKET TRENDS

4.2.1

Though identifying and investigating trends in historical data is an important part of forecasting the demand for natural gas, understanding the changes occurring in the marketplace and how they will impact the overall demand for energy is equally important. To that end, this section discusses market trends the Utilities have considered while developing its forecast of customer additions, average use per customer, annual demand, and also design day demand.

4.2.1.1 Population Growth

The most important trend to be considered when preparing the demand forecasts is the anticipated growth in population. Current projections from B.C. Stats estimate the province will add approximately 1.5 million new residents over the course of the next 20 years which will bring the current population of 4.5 million to 6.0 million by 2030. Population growth provides an indicator of the need for new housing and energy demand in B.C. and is one of the factors that inform provincial forecasts of household formations, housing starts and housing mix. These housing factors closely correlate to customer growth for the Terasen Utilities and thus provide key inputs into the customer forecast. The aggregate effect on the Utilities is expected to be an increase of approximately 150,000 customers over this same period, bringing the total number of customers to slightly above 1.1 million by the end of the planning period.

4.2.1.2 Residential Use Trends

Declining residential use per customer rates is a phenomenon affecting mature natural gas utilities across North America⁸⁶. This same trend has been observed in most of the Terasen Utilities' service territories except TGW. For TGW, no discernable pattern has been identified, most likely due to the resort nature of the community and varying use patterns of land and homeowners and renters. The main drivers of this continuing decline include the renewal of

⁸⁶ Residential Natural Gas Consumption, Heading Toward an Inflection Point. September, 2009. Cambridge Energy Research Associates Inc. 12p.

existing furnace stock, changes to building codes and standards, and also a shift in housing type from single family dwellings to multifamily dwellings. Upon identifying the main drivers and assessing the corresponding impact, the Terasen Utilities' forecasting methodologies in this Resource Plan reasonably forecast future residential average use per customer. Each of the main drivers is discussed in the following sections.

Renewal of Existing Furnace Stock

Natural Gas or Piped Propane, 2008 REUS

The most significant driver of declining residential average use per customer in B.C. is the replacement of low-efficiency natural gas furnaces with higher efficiency models. Changes to the building code in 1990 mandated mid-efficiency furnaces as the minimum requirement for homes built since that time. Changes to building code legislation stipulated that high-efficiency furnaces be required for new construction as of 2008. For retrofit activity, the same minimum efficiency requirement was put in place as at December 2009.

In 2008, the Utilities conducted a Residential End Use Study ("2008 REUS" – see Appendix B-1) where residential customers were surveyed, with the primary goal being to understand how the Utilities' residential customers use energy in their homes. The survey included questions regarding the appliances present in homes and their respective efficiency ratings, housing type, and numerous other dwelling characteristics. Table 4-1 illustrates the estimated furnace efficiency shares by region that were derived from the 2008 REUS. Standard efficiency furnaces account for the largest proportion (45%) of gas furnaces still in use, followed by midefficiency furnaces (39%), and high efficiency furnaces (16%).

Furnace Efficiency	LM	INT	TGVI	TGW	FN	2008 TG	2008 TGI	2002 TGI
Unweighted base*	297	513	231	72	113	1226	923	942
Standard efficiency (less than 78% AFUE)	52.1	38.0	19.0	20.7	29.2	45.0	47.0	54.5
Mid-efficiency (78% to 85% AFUE)	34.0	44.2	56.5	42.8	49.5	39.0	37.7	28.9
High efficiency (90% AFUE or higher)	13.9	17.7	24.5	36.5	21.2	16.0	15.3	16.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Caution is advised in interpreting data for samples of less than 50. Results are directional only.

Table 4-2 summarizes the age profile for furnaces in use in the Terasen Utilities' five regions. Average furnace age varied from 10.1 years to 15.4 years depending upon the region. The average age of furnaces owned by our customers is 14 years. These types of characteristics, especially when monitored over time, provide a solid basis from which to estimate the impact of retrofit activity on natural gas appliances.

Table 4-2: Age of Furnace by Region

Age of Gas Furnace (years)	LM	INT	TGVI	TGW	FN	2008 TG	2008 TGI	2002 TGI
Unweighted base	350	590	274	87	121	1422	1061	1500
Median	12.0	10.0	10.0	10.0	7.0	10.0	10.0	n/a
Mean	15.4	12.5	10.5	10.2	10.1	14.0	14.3	13.4
Standard deviation	21.0	8.7	3.8	0.9	1.6	12.0	13.8	n/a

Natural Gas or Piped Propane, 2008 REUS

This analysis of furnace age indicates a large portion of the standard efficiency furnaces will be retiring and be replaced with high efficiency furnaces in the coming years. This will have a significant impact on the Utilities' residential average use per customer, particularly in the Lower Mainland which has the largest customer base and the oldest stock of heating equipment among the Utilities service areas. Depending on the housing type and region, we estimate that a typical standard efficiency furnace consumes approximately 17 to 20 GJ⁸⁷ more per year than higher efficiency furnaces. A shift in the existing mix of furnaces from standard efficiency (currently the largest portion) to high efficiency will lead to a significant decrease in residential average use per customer.

Figure 4-2 illustrates the anticipated changes in furnace efficiency shares for single family dwellings in the Lower Mainland region⁸⁸. Once standard efficiency furnaces are phased out from the Utilities' existing residential customer base, the rate of decline is expected to become more gradual. Based on the 2008 REUS, we estimate that standard efficiency furnaces will be completely phased out from its existing customer base sometime between 2017 and 2020 depending on the region. The Utilities estimate the decline in overall residential average use per customer from shifting furnace efficiency to be an approximate 2% per year for the next 3 to 5 years.

⁸⁷ Based on analysis from 2008 REUS.

⁸⁸ Based on the 2008 REUS assuming a maximum life of 30 years for standard efficient furnaces





Figure 4-2: Furnace Efficiency Share in Single Family Dwelling-LML

The Utilities anticipate that the last of the standard-efficiency furnaces will come out of service by 2017 for single family dwellings in this region based on replacement at the expected end of useful life of the asset. Although some customers may choose to increase maintenance costs for old equipment to avoid replacement costs, it is not unreasonable to assume that by 2030 all of the standard and mid-efficient furnaces in single family dwellings located in this region will have been replaced by high-efficiency technology. This type of analysis has been incorporated while estimating use per customer forecast for the 20 year planning period.

> Shift in Housing Type

Housing type is another factor impacting residential use per customer rates. Figure 4-3 shows the shift that has occurred over the past decade in the predominant housing type, from single family to multi-family dwellings. This continuing shift toward the multi-family housing type in B.C. is driven by affordability and limited availability of land for single family home construction. Canadian Mortgage and Housing Corporation ("CMHC") forecasts that the trend is expected to continue for 2010 and 2011. It is not unreasonable to assume that this pattern in housing type will continue for the foreseeable future.





Source: CMHC

An analysis of 2009 customer data indicates that the Utilities were successful in bringing natural gas service to approximately 80%⁸⁹ of completed residential units (all types) reported by CMHC within the Utilities' service territories.

As a percentage of CMHC completions, the Utilities estimate that the vast majority (approx. 95%+) of SFDs installed natural gas service while 60 to 70% of MFD units completed were attached in some form; either with natural gas being piped to the individual units or serving some common application that benefits all residents of the housing complex. The challenge in assessing the level of penetration into the MFD markets lies in the fact that approximately 80% of the estimated attached MFD units are served by a single common meter. Situations where a common meter provides natural gas to an entire MFD building makes it difficult to determine how much of that consumption is attributable to individual suites as opposed to serving common loads.

This shift in new housing type has important implications for overall residential average use per customer. As illustrated in Figure 4-4 below, the average annual consumption for space heating purposes, regardless of energy type, is significantly lower for multifamily dwellings than for single family dwellings.



⁸⁹ Based on analysis from the Terasen Utilities' customer information system and validated with 2008 REUS results.



Figure 4-4: Space Heating Consumption – All Energy Types



Source: NRCan

The impact of the continued dominance of multifamily dwellings in the housing market is an estimated decline in residential average use per customer by approximately 0.1 to 0.2 GJ per year. Figure 4-5 illustrates the estimated impact by gradually changing the mix of housing type while holding the typical average annual consumption per housing type and also annual customer additions constant.

It is important to note the values in this analysis are not meant to reflect forecasted values, but are chosen to gauge the independent impact a shift of housing types within the housing market has on the overall residential annual demand. Though not insignificant, the results suggest that housing type plays a considerably smaller role in declining residential usage rate than does the replacement of low-efficiency furnaces.



Figure 4-5: Impact of Shifting Housing Type on Use Rate for Space heating