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August 15, 2008

British Columbia Hydro and Power Authority
333 Dunsmuir Street
Vancouver, BC
V6B 5R3

Attention: Ms. Joanna Sofield, Chief Regulatory Officer

Dear Ms. Sofield:

Re: Terasen Gas Inc. and Terasen Gas (Vancouver Island) Inc. (collectively the "Companies" or the "Terasen Utilities")
Energy Efficiency and Conservation Programs Application - Project No. 3698512

Response to the British Columbia Hydro and Power Authority ("BC Hydro") Information Request ("IR") No. 1

On May 28, 2008, the Companies filed the Application as referenced above. In accordance with the British Columbia Utilities Commission Order No. G-102-08 setting out the Preliminary Regulatory Timetable for the Application, the Terasen Utilities respectfully submit the attached response to BC Hydro IR No. 1.

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

Yours very truly,

On behalf of the TERASEN UTILITIES

Original signed

Tom A. Loski

Attachment

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

1. Reference: Exhibit B-1, p.E-6 Table 2, and pp. 63 to 65, Section 6.4.

Table 2 provides that the total proposed EEC expenditure for "residential fuel switching" is $3,699,000 between 2008 and 2010. The EEC Application states at page 63: "It should be noted that the fuel switching activity for the retrofit market is focused on Vancouver Island, and would be based on encouraging residents in the TGVI service area to get off oil, and onto efficient natural gas, resulting in lower GHG emissions".

1.1 Please provide a breakdown of the total EEC residential fuel switching expenditure to show the portion of the total EEC expenditure directed at encouraging fuel switching from wood, propane and fuel oil to natural gas, and the portion of the total EEC expenditure directed at encouraging fuel switching from electric water and space heating, cooking and clothes drying, and other electric appliances/uses to natural gas.

Response:

It is very challenging to separate out proposed expenditures for fuel switching from electricity to natural gas from vs. proposed expenditures for fuel switching from non-electric sources to natural gas, as there are a number of potential energy sources for the proposed TGVI residential retrofit program, and the Companies cannot predict the proportion of participants switching from each energy source. The table below shows proposed expenditure by program and by a range of energy sources.

Measure	Alternate Fuel Source	Proposed EEC Expenditure
TGVI Residential Retrofit		
Energy Star Furnace/Boiler	propane, oil, wood, electricity	$766,000
Enerchoice Fireplace	propane, wood	$326,325
Gas Cooking Range	propane, electricity	$246,167
Gas Dryer	propane, electricity	$246,167
Total		$1,584,659
TGVI Residential New Construction		
FS Natural Gas DHW	electric	$692,652
FS Gas Cooking Range	electric	$50,557
FS Gas Dryer	electric	$37,730
Total		$780,939
TGI Residential New Construction		
FS Gas Cooking Range	electric	$1,013,999
FS Gas Dryer	electric	$319,000
Total		$1,332,999

The proposed expenditure for electricity to natural gas fuel switching for new construction is approximately $2.1 million, while the proposed expenditure for fuel switching for retrofits is $1.6 million, for a total of $3.7 million. Please note that the proposed expenditure for the first measure in each area (TGVI Retrofit, TGVI New Construction and TGI New Construction) is significantly higher than for subsequent measures, as the first measure contains the program development and promotion costs for all measures in that area.

2. Reference: Exhibit B-1, p.11

The EEC application states that "If DSM expenditure and activity were expanded to the degree requested in this Application, cumulative annual savings in nominal (as opposed to present value) GJs are expected to result in savings of approximately 6.4 million GJs by 2016." BC Hydro would like to understand this unit of savings (e.g. whether it is the sum of annual savings over the 2008-2016 period, the volume of annual savings in 2016, or some other unit).

2.1 Please describe the unit of savings.

Response:

The simple sum of the savings year-by-year, for all measures combined, in 2016, is approximately 6.4 million GJs for the time period 2008-2016.

Attachment 2.1 includes the spreadsheet from BCUC IR 1.40.2 which now includes totals by year.

2.2 How was the cumulative savings of 6.4 million gigajoules by 2016 derived?

Response:

Please see the response to BCH IR 1.2.1, above.

3. Reference: Exhibit B-1, p.41 and p.85 Table 6.13, and p.86 Table 6.13a

The EEC application states that "The Companies propose that additional customer bill savings from the implementation of the tax should be included in the cost-benefit analysis for EEC programs and the analysis presented in Section 6.13 includes carbon tax savings."

3.1 In which demand side management (DSM) cost tests (Ratepayers Impact Measure, Utility Cost, Participant, Total Resource Cost) shown in Table 6.13 and Table 6.13a does Terasen Utilities include carbon tax savings?

Response:

Avoided carbon taxes are included in participant total benefits and therefore included in the Participant Test.

3.2 For each of the DSM cost tests that Terasen Utilities includes carbon tax savings, please describe how additional customer bill savings from the implementation of the carbon tax are included.

Response:

The avoided carbon tax is included as a Participant benefit in the Participant Test only. (

3.3 For any DSM cost test that includes carbon tax savings, please provide Terasen Utilities' rationale for why it is included.

Response:

The avoided carbon tax is included as a participant benefit in the Participant Test because the tax will not be seen at the same rate in the purchases that the participant makes to replace the energy service supplied by natural gas, unlike the provincial sales tax, which is applied at the same rate to all purchases.

4. Reference: Exhibit B-1, p.47

Terasen Utilities have identified the key principles that guided the selection of particular EEC initiatives and programs within the application.

The EEC application states that a key principle is that "EEC expenditures will be efficient, with non-incentive costs not exceeding 50% of the expenditure in a given year."

The EEC application also states that a key principle is that "Programs will have market transformation as their ultimate goal, and program plans will describe how a program will contribute to market transformation."

4.1 Does Terasen Utilities agree that a number of barriers, including awareness, availability, accessibility, affordability and acceptance, impede energy consumers from taking advantage of cost-effective energy efficiency opportunities?

Response:

Yes, the Terasen Utilities do agree that these barriers impede energy consumers from taking advantage of cost-effective energy efficiency opportunities.

4.2 Does Terasen Utilities agree that in pursuing the goal of market transformation, effective program designs will target whichever barriers are prevalent for the targeted market segment and energy efficiency opportunity?

Response:

Yes the Terasen Utilities do agree that in pursuing the goal of market transformation, effective program designs will target whichever barriers are prevalent for the targeted market segment and energy efficiency opportunity.

4.3 In the future, can Terasen Utilities foresee a situation where the barriers to energy efficiency other than affordability would be sufficiently significant such that, in pursuing the goal of market transformation, a program's non-incentive costs would need to be greater than 50% of program expenditures in a given year?

Response:

Within the portfolio of EEC activity outlined in the Application, the goal of the Companies' would be to keep non-incentive costs at less than 50% of program expenditures. It is

difficult to speculate for future portfolios, but it is possible that in the future, in pursuing the goal of market transformation, a program's non-incentive costs may need to be greater than 50% of program expenditures in a given year.

5. Reference: Exhibit B-1, p.56 Table 6.2c and p.99 Table 7.2

The EEC application states that "If partner funding was not available for electrical savings, the natural gas initiatives for the Commercial sector would proceed, but on the basis of providing incentives for natural gas savings alone, rather than combining incentives for natural gas and electrical savings."

5.1 If the assumed partner funding for the Commercial sector is not available, what impact does this have on the Terasen Utilities' Commercial Energy Efficiency gas and electrical savings shown in Table 7.2 of the EEC application?

Response:

If the assumed partner funding for the Commercial sector is not available, electrical savings would be lowered, however the exact amount is challenging to quantify. For new construction especially, and especially in the Commercial sector which includes multi-unit residential buildings, a program that only addresses natural gas savings will have fewer participants than a program that addresses natural gas and electricity savings. How many fewer participants, however, cannot be quantified.

6. Reference: Exhibit B-1, p.63, Section 6.4

The application states that "Terasen Utilities firmly believe that the use of natural gas where available for high-efficiency end-use appliances in place of electricity will result in lower GHG emissions overall in the region, as it makes more of BC's "green" electricity resource available to its best use to displace coal and low efficiency gas fired generation throughout the region." And that "Coal and gas fired generation are on the margin throughout the western interconnection. New combined cycle gas turbines operate at only approximately 50% efficiency, whereas newer natural gas water heaters and space heaters can operate as high as 95% efficiency."

6.1 What is Terasen Utilities' evidence that decreased electricity consumption in B.C. resulting from Terasen Utilities' EEC activities would result in exports to the Western interconnection?

Response:

Policy Action #10 of the BC Energy Plan states that "The Province recognizes the ongoing importance of trade for maximizing the Value of BC Hydro's heritage resources and of optimizing its system and this activity will continue." These trade revenues will be allocated to BC Hydro ratepayers to keep electricity rates low for all British Columbians. Decreased electricity demand within BC will provide opportunities for the Province to keep electricity rate low through increased exports and trade activity.

Recent legislation such as California's Senate Bill No. 107 requiring the amount of electricity generated per year from eligible renewable energy resources equals at least 20% of the total electricity sold to retail customers in California per year by December 31, 2010 supports the Terasen Utilities belief that excess clean energy from British Columbia will be in demand in other western jurisdictions. Other states such as Washington and Oregon have also recently enacted challenging renewable portfolio standards. Further, the western states involvement in the Western Climate initiative that includes GHG emissions reductions for individual states and provinces will also create a demand for clean BC power.

Further evidence that there is a demand for British Columbia's power in the region is illustrated in the Pacific Gas & Electric's BC Renewable Study Phase 1. The study indicates:

> *There is a strong complementary relationship between the seasonal demands of summer-peaking CA and winter-peaking BC. This relationship provides a foundation for mutual benefit. Developing new renewable generation resources in BC and strengthening transmission links in the region will support BC's self-sufficiency policy as well as help meet BC and CA's environmental and energy objectives*[1]*.*

[1] Pacific Gas and Electric Company BC Renewable Study Phase 1, June 20, 2008, p.2.

Finally, as referenced in BCSEA IR1, 17.1, the Commission's October 26, 2007 Decisions in the Matter of BC Hydro's 2007 Rate Design – Phase 1, the Commission agreed with the Terasen Utilities' assertion that the direct use of natural gas for space and water heating in BC will make additional energy available to displace coal or gas-fired generation at the margin in the Pacific Northwest.

7. Reference: Exhibit B-1, p.87 Table 6.13b

The EEC application states that "the Companies seek approval to include attribution savings in its cost-benefit tests in the future, at the point in time which new regulations go into effect. Specifically, the Companies propose that once a proposed regulation and implementation date for minimum efficiency standards for an appliance or building or energy system is announced by a regulating body, the Companies be permitted to attribute savings to market transformation programs for that particular appliance, building or energy system in its cost-benefit tests at that time. The attribution rates proposed by the Company, which it is seeking approval for with this Application, for any such future regulation are outlined in Table 6.13b below."

7.1 Assume a Terasen Utilities program enables the advancement of a new regulation by four years and the new regulation mandates the minimum efficiency of a technology with a measure life of 10 years. Assume that the incremental and cumulative savings from the implementation of the regulation are as shown in the table below, where year 1 is the first year of the regulation, year 2 is the second year of the regulation, and so on. Using Terasen Utilities' proposed method of attribution, please fill in the table below with both the incremental and cumulative savings attributed to the Terasen Utilities program that enabled the regulation.

	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Savings from Implementation of Regulation (GJs)											
Incremental	100	125	140	160	180	175	180	140	160	175	125
Cumulative	100	225	365	525	705	880	1060	1200	1360	1535	1560
Savings Attributed to Terasen Program (GJs)											
Incremental											
Cumulative											

Response:

Please see the completed table below.

	Year										
	1	2	3	4	5	6	7	8	9	10	11
Savings from Implemention of Regulation (GJs)											
Incremental	100	125	140	160	180	175	180	140	160	175	125
Cumulative	100	225	365	525	705	880	1060	1200	1360	1535	1660
Savings Attributed to Terasen Program (GJs)											
Incremental	50	50	42	32	18	0	0	0	0	0	0
Cumulative	50	100	142	174	192	192	192	192	192	192	192

** please note that the Companies have confirmed with BC Hydro that there was a typo in the source document for the cumulative savings from the implementation of regulation in year 11, and that the cumulative savings should 1660 GJs as presented here, rather than 1560 GJs as presented in the original document

7.2 If a DSM program enables the advancement of a regulation by five years and the measure life of the regulated energy efficiency measure is 10 years, is it not valid to attribute 100% of the incremental savings over the 10 year measure life from the five year advancement period to the DSM program? Why or why not?

Response:

Please see the Companies' response to BCUC IR 1.51.1, excerpted below:

> *"The Companies believe that the proposed attribution rates are reasonable. The partial and declining attribution of energy savings resulting from the introduction of regulation of minimum efficiency levels, or codes and standards, at 50% in the first year and declining by 10% for four years thereafter recognizes that there are other market actors contributing to the introduction of regulations or codes and standards."*

8. Reference: Exhibit B-1, p.99, Section 7.2

The EEC Application states that the carbon dioxide equivalent (CO2e) factor used to calculate the GHG impact of electricity savings over the life of the measures proposed for implementation over the 2008 – 2010 timeframe was 550 tonnes/GWh.

8.1 Please confirm that given 2007 Energy Plan Policy Action Nos. 18, 19 and 20 and the *Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act*, the appropriate CO_2e factor for electricity generated within British Columbia (B.C.) is zero tonnes of CO_2e/GWh. An extract of the 2007 Energy Plan setting out the text of Policy Action Nos. 18, 19 and 20 is attached to this Information Request.

Response:

The Companies agree that the Policy Action Nos. 18, 19, and 20 laid out in the 2007 Energy Plan state that existing and new electricity generating facilities in BC need to be compliant with a zero tonnes of CO2e/GWh emission rate by 2016. The *Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act* states that the first compliance period for net-zero GHG emissions is 2016.

The Companies believe that both pre and post 2016, the reduction of regional GHG emissions supports the Western Climate Initiative's mandate of identifying, evaluating and implementing collective and cooperative ways to reduce greenhouse gases in the region[2]. As a member of the Western Climate Initiative, GHG emissions and actions taken to reduce emissions should be looked at from a regional perspective rather than from only a provincial view and that actions taken within the province support the overall reduction of greenhouse gases in the region.

It is the Companies' position that 550/GWh emissions factor is a reasonable assessment for the regional electricity production today and post 2016. According to the Northwest Power and Conservation Council, the marginal source of electricity generation for the Pacific Northwest is made up of primarily natural gas and coal fired generation[3]. Further, BC Hydro's 2005 Resource Options report the Greenhouse Gas Emission Factor (Tonnes CO2 equivalent/GWh) for a 560 MW Super Pulverized Coal Combustion Plant and 250 MW Combined Cycle Gas Turbine Plant are 855 and 350 tonnes per GWh respectively. In BC Hydro's 2007 Conservation Potential Review Summary Report a GHG factor of 550 tonnes per GWh was assigned for planning purposes up to 2016 for BC Hydro's electricity imports[4]. Although there is an expected migration from coal fired plants to natural gas fired plants in the future, the Companies believe that for planning purposes 550 tonnes per GWh is an acceptable emissions factor for marginal electricity generation in the region. Thus, by using natural gas for certain direct use applications,

[2] http://www.westernclimateinitiative.org/
[3] Northwest Power and Conservation Council, June 2008. Marginal Carbon Dioxide Production Rates of the Northwest Power System. 23p.
[4] BC Hydro, 2007 Conservation Potential Review, Summary Report, Date Nov. 20 2007. p. 12.

regardless of the Province's internal GHG regulations the region will produce fewer greenhouse gases pre- and post-2016.

See also BCSEA SCBC IR 1.17.1.

9. Reference: Exhibit B-2, Responses to BCUC IR 1.7.1 and BCUC IR 1.15.2.2

The response to BCUC IR 15.2.2 states that "it would appear that the government has established these as absolute targets for GHG emissions reductions".

9.1 Please confirm that the *Greenhouse Gas Reduction Targets Act* sets out legally binding targets for B.C. greenhouse gas (GHG) emissions of at least 33 per cent below 2007 levels by 2020, and at least 80 per cent below 2007 levels by 2050. Please attach a copy of the *Greenhouse Gas Reduction Targets Act* to Terasen Utilities' response.

Response:

Confirmed – Section 2 (1) of the Act. The Act is available at: http://www.leg.bc.ca/38th3rd/1st_read/gov44-1.htm

9.2 Please confirm that the Western Climate Initiative's regional aggregate GHG reduction goal is to be 15 per cent below 2005 levels by 2020.

Response:

Confirmed.

10. Reference: Exhibit B-2, Response to BCUC IR 1.15.2.3

10.1 Please confirm that, absent a regional perspective, expenditures directed at encouraging fuel switching from electric water and space heating, cooking and clothes drying, and other electric appliances/uses to natural gas would increase GHG emissions in British Columbia?

Response:

In the Terasen Utilities' view GHG emissions should not be looked at without a regional perspective in mind. However, for the purposes of responding to the question the Companies will make that assumption.

Although GHG emissions would be increased at the point of use (i.e. the appliance), Terasen Gas believes overall GHG emissions associated with electricity demand in BC would still be reduced through the reduction of importing electricity generated using coal or natural gas. The reduction of regional GHG emissions supports the Western Climate Initiative's mandate of identifying, evaluating and implementing collective and cooperative ways to reduce greenhouse gases in the region[5]. As a member of the Western Climate Initiative GHG emissions and actions taken to reduce emissions should be looked at from a regional perspective rather than from only a provincial view.

[5] http://www.westernclimateinitiative.org/

11. Reference: Exhibit B-2, Response to BCUC IR 1.19.1.

The response states that attribution of savings from municipal programs receiving co-funding from partners should be attributed "based on proportional contributions by funding and program partners".

11.1 If a municipal program receives co-funding from an electric utility and a natural gas utility, would it be reasonable to attribute any electricity savings to the electric utility and any natural gas savings to the natural gas utility?

Response:

Yes that would be a reasonable approach, if the electric utility is covering the incentives for the electric savings, and the natural gas utility is covering the incentives for natural gas savings.

11.2 Can Terasen Utilities envision a scenario in which the co-funding from each of two partners is critical to the municipal program, such that the program would not occur without co-funding from both partners?

Response:

That is certainly possible. However, in the absence of a more concrete scenario, the Companies would prefer not to speculate upon whether or not a particular program aimed at municipalities might occur with or without funding from both partners.

11.3 In the scenario depicted in 11.2, would it be reasonable to attribute 100 per cent of the program savings to each partner?

Response:

It is possible that it would be reasonable to attribute 100 per cent of the program savings to each partner, however, in the absence of a more concrete scenario, the Companies would prefer not to comment definitively on the reasonable attribution of savings.

Attachment 2.1

REFER TO ATTACHED SPREADSHEET