William J. Andrews

Barrister & Solicitor

1958 Parkside Lane, North Vancouver, BC, Canada, V7G 1X5
Phone: 604-924-0921, Fax: 604-924-0918, Email: wjandrews@shaw.ca

September 11, 2008

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC, V6Z 2N3
Attn: Erica Hamilton, Secretary
By Web Posting

Dear Madam:

Re: British Columbia Hydro and Power Authority, 2008 Long Term Acquisition Plan, BCUC Order No. G-96-08, BCUC Project #3698514

Attached please find Information Request #2 on behalf of the B.C. Sustainable Energy Association and the Sierra Club of British Columbia.

Yours truly,

William J. Andrews

Barrister & Solicitor

cc. Distribution List by email

REQUESTOR NAME: B.C. Sustainable Energy Association and Sierra Club British Columbia
INFORMATION REQUEST ROUND NO: 2
TO: BRITISH COLUMBIA HYDRO & POWER AUTHORITY
DATE: September 11, 2008
PROJECT NO: 3698514
APPLICATION NAME: 2008 Long Term Acquisition Plan

2.25.0 Reference: LTAP Planning Cycle and Update Process, BC Hydro response to BCSEA-SCBC IR1.1, and to BCOAPO IR 1.1.1

BC Hydro answered BCSEA-SCBC IR1.1 by referring to its response to BCOAPO IR 1.1.1. However, that response does not answer BCSEA-SCBC IR1.1.2, which is repeated below:

2.25.1 Is there a difference between what BC Hydro is proposing and a three-year LTAP filing cycle? If so, please explain. What are the pros and cons of a three-year LTAP filing cycle compared to what BC Hydro is proposing?

2.26.0 Reference: Wind ROU; B-1 s.3.3.4; Wind Integration Costs, B-1 Sub-appendix F3; BC Hydro responses to BCSEA-SCBC IR1.9.1 and 1.10.1, and to BCUC IR 1.57.1

BC Hydro concludes its response to BCUC IR 1.57.1 by stating:

> "…BC Hydro is undertaking a wind data study to facilitate our understanding of the wind resource characteristics in B.C. Once the study is complete, a series of potential diversification benefit studies will be undertaken." [p.3 of 3]

2.26.1 What is the time frame for these studies?

2.27.0 Reference: DSM Plan and LTAP Action Items; B-1, Appendix K, Sub-appendix K, p. 208; BCSEA-SCBC IR1.19.1.

In response to BCSEA-SCBC IR1.19.1, BC Hydro explained its use of the term "cross effects." It gave examples of reductions in electric load (such as removal of a second refrigerator and more-efficient lighting) that can increase space heating load in winter months.

2.27.1 Does the term "cross effects" also include effects such as reduced heat output from more-efficient lighting in a commercial building causing lower air-conditioning load?

2.27.2 Do BC Hydro's estimated savings in the LTAP from high-efficiency lighting include the cooling savings cross-effects?

2.28.0 Reference: DSM Plan and LTAP Action Items; B-1, Appendix K, Sub-appendix J. p. 206; BC Hydro response to BCSEA-SCBC IR1.20.1; B-1, Appendix K, Sub-appendix L, s.9.2 at p.53 of 58.

BCSEA-SCBC IR1.20.1 asked in part for supporting analysis and workpapers regarding BC Hydro's estimate of potential costs and savings from the pursuit of fuel-switching opportunities in residential electric space and water heating. BC Hydro's response refers to a summary in Appendix K, Sub-appendix L, section 9.2 (Exhibit B-1-4), but it does not provide the supporting analysis and workpapers.

2.28.1 Please provide the supporting analysis and workpapers regarding BC Hydro's fuel-switching summary conclusions set out in Appendix K, Sub-appendix L, section 9.2 (Exhibit B-1-4).

2.29.0 Reference: DSM Plan and LTAP Action Items; B-1, Appendix K, Sub-appendix J. p. 206; BC Hydro response to BCSEA-SCBC IR1.20.1; B-1, Appendix K, Sub-appendix L, s.9.2 at p.53 of 58.

BC Hydro's response to BCSEA-SCBC IR1.20.1 pointed to Appendix K, Sub-appendix L, s.9.2 at p.53 of 58. Exhibit 9.1, for *current* natural gas supply cost forecast, and Exhibit 9.2, for *high* natural gas supply cost forecast, show "Economic," "Upper Achievable," and "Lower Achievable" potential annual savings from fuel-switching. The estimates for "Economic" start in F2006 at 4,164 GWh/y and 1,418 GWh/y, respectively, and rise over time. The estimates for Upper and Lower Achievable are zero. The text describes the zero estimate as reflecting an absence of practical opportunities:

> Study team members, including those from the consultant team, BC Hydro and the External Review Panel, reviewed the results of the fuel-switching Economic Potential forecasts. Based on the results of that review, <u>there was consensus that none of the fuel-switching measures</u> included in either of the two Economic Potential forecasts <u>provided a practical opportunity for BC Hydro to pursue as part of its DSM initiatives</u>. Hence, there was no Achievable Potential for fuel switching under either of the supply cost forecasts. [underline added]

In the Implementation Plan for Energy-Focused DSM, Plan, B-1, Appendix K, p.15 of 213, BC Hydro states that electricity to natural gas fuel-switching programs were screened out due to uncertainty concerning implementation of government policy regarding GHG reductions:

> In the case of programs, some alternatives were screened out due to uncertainty with respect to the greenhouse gas (GHG) regulatory regime or on the basis of cost-effectiveness. <u>Fuel switching from electricity to natural gas was screened out for purposes of this DSM Plan because</u> while the B.C. Government has legislated GHG targets for the Province pursuant to the *Greenhouse Gas Reduction Targets Act* - the *Act* sets into law B.C.'s GHG emissions target of at least 33 per cent below 2007 levels by 2020, and at least 80 per cent below 2007 levels by 2050, with interim targets for 2012 and 2016 to be set by the end of 2008 - <u>there is uncertainty as to how those targets will be met</u>. BC Hydro will continue to monitor GHG legislative and policy developments, and will revisit whether fuel switching should be targeted as part of its next DSM Plan. … [underline added]

2.29.1 Please elaborate on the analysis that led to the 2007 CPR conclusion regarding zero

Upper or Lower Achievable savings from electricity to natural gas fuel-switching. To what extent did the conclusion result from a perceived uncertainty regarding implementation of the government's GHG reductions policy?

2.29.2 Please describe in detail the uncertainty as to how the Province's GHG reduction targets will be met (as it pertains to fuel-switching). Is the issue whether the GHG consequences of electricity savings (due to electric to gas fuel-switching) should be defined in terms of the GHG-intensity of avoided electricity supply within B.C. or within the Western electricity region? Is the issue whether the GHG-intensity of avoided electricity supply should be determined as of today's date or as of some long-term period related to the expected duration of electricity savings? Please discuss.

2.30.0 Reference: DSM Plan and LTAP Action Items; B-1, Appendix K, Sub-appendix J. p. 206; BC Hydro response to BCSEA-SCBC IR1.20.3

In response to BCSEA-SCBC IR1.20.3, BC Hydro provides a table showing 2007 Load Forecast Before DSM, electric space heating and electric water heating, as a percentage of residential electricity use per customer, for F2007 and for F2028.

2.30.1 Please provide an enhanced version of the table, showing 'After DSM' (as proposed) figures, in addition to the 'Before DSM' figures.

2.31.0 Reference: DSM Plan and LTAP Action Items; B-1, Appendix K, Sub-appendix J, Table 3, p.207 of 213; BC Hydro response to BCSEA-SCBC IR1.21.1

Asked to provide assumptions and analysis to support the conclusion that incenting geothermal heat pump systems in new residential high-rises would not be cost-effective, BC Hydro states that the initiative analyzed "was assumed to provide 100 per cent of space heating load requirements, to displace baseboard heaters."

2.31.1 Please comment on the statement that sizing a geoexchange system to meet 100% of heating load is not a cost effective approach because the installed cost increases relatively linearly with peak capacity and the cost per unit of annual energy savings is minimized where the geoexhange system is sized to 60 or 70% of the peak load.

2.31.2 What would be the outcome of the cost-effectiveness analysis if the initiative was defined as incenting the installation of geothermal heat pump systems in new residential high-rises on the assumption that the system would be augmented by electric baseboard heating and sized for maximum energy-cost effectiveness?

2.31.3 What was the rationale for the sizing assumption of 100% of peak heating requirements? Does it involve an assumption that the base case would be natural gas space heating and so using electric resistance heating to augment geoexchange heating at times of highest heating demand would add to the electric peak load? How likely is it that the base case alternative to geoexchange heating would be electric resistance heating?

2.32.0 Reference: DSM Portfolio and Risk Analysis, DSM Plan and LTAP Action Items; B-1 s.5.5; Appendix K; DSM Resource Options, B-1 Sub-appendix F17; B-1 Sub-appendix F14

In its responses to BCSEA-SCBC IR1.23.1 and CEC IR1.6.1, BC Hydro discusses the reasons for its selection of DSM Option A over DSM Option B.

2.32.1 Please confirm that according to Table 5-16, Relative Value of DSM Option B as compared to DSM Option A, the likelihood of occurrence of the Low Gap, Low Gas scenario in which the incremental DSM costs would outweigh the benefits is 0.1% and that the likelihood of occurrence of all other scenarios combined in which DSM Option B shows a net present value benefit over DSM Option A is 99.9%.

2.32.2 Acknowledging a distinction between quantifiable and non-quantifiable characteristics, please provide, or reference in the filed material, all *quantifiable* characteristics by which DSM Option A outperforms DSM Option B.

2.32.3 Please itemize all of the *non-quantifiable* characteristics by which, in BC Hydro's view, DSM Option A outperforms DSM Option B.

2.32.4 In its response to BCSEA-SCBC IR1.23.1, BC Hydro cites "deliverability risk and the degree of reliance on DSM" as "a major consideration" regarding its preference for DSM Option A over DSM Option B. Are "deliverability risk" and "the degree of reliance on DSM" two different factors? If so, please explain the difference.

2.32.5 In terms of quantifiable and non-quantifiable characteristics, is (or are) "deliverability risk and the degree of reliance on DSM" a quantifiable characteristic(s), a non-quantifiable characteristic(s) or both? Please explain.

2.32.6 In terms of quantifiable and non-quantifiable characteristics, are characteristics that are included in BC Hydro's probability tree analysis considered quantifiable?

2.32.7 Please confirm that BC Hydro included DSM deliverability risk in its application of the probability tree analysis that led to Table 5-16.

2.32.8 In its response to CEC IR1.6.1, BC Hydro says that it concluded that DSM Option A represents "all cost-effective DSM using the BCUC's definition of cost-effectiveness." Does that mean that BC Hydro evaluates DSM measures according to two different sets of criteria, one including the Total Resource Cost and the Ratepayer Impact Measure, and the other being the BCUC's definition of cost-effectiveness?

2.32.9 Please confirm that the DSM programs that are included in DSM Option B and are not included in DSM Option A do meet the TRC criterion.

End of document