ERICA M. HAMILTON
COMMISSION SECRETARY
Commission.Secretary@bcuc.com
web site: http://www.bcuc.com

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, B.C. CANADA V6Z 2N3
TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

Log No. 25675, 27770

VIA E-MAIL
daustin@securitieslaw.bc.ca

December 8, 2008

BC HYDRO – 2008 LTAP
EXHIBIT A-13

Mr. David Austin
Independent Power Producers Association of BC
c/o Tupper Johnson & Yeadon
Barristers & Solicitors
1710 – 1177 West Hastings Street
Vancouver, BC V6E 2L3

Dear Mr. Austin:

Re: British Columbia Hydro and Power Authority
Project No. 3698514/Order G-96-08
2008 Long Term Acquisition Plan ("2008 LTAP")

Further to your December 1, 2008 filing of the written evidence of the Independent Power Producers Association of British Columbia for the 2008 LTAP proceeding, enclosed is Commission Information Request No. 1.

Pursuant to Commission Letter L-56-08, please reply to the Commission with an electronic copy and 20 hard copies of your response by Monday, January 5, 2009.

Yours truly,

Original signed by:

Erica M. Hamilton

EC/rt
Enclosure
cc: Registered Intervenors *(BCH-2008 LTAP-RI)*

REQUESTOR NAME: British Columbia Utilities Commission
INFORMATION REQUEST ROUND NO: 1
TO: IPPBC
DATE: December 8, 2008
PROJECT NO: 3698514
APPLICATION NAME: British Columbia Hydro and Power Authority
2008 Long Term Acquisition Plan ("2008 LTAP")
Intervenor Evidence from IPPBC

1.0 Reference: Exhibit C17-5, Direct Testimony of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis

Dr. Jaccard stated that his view of greenhouse gas prices (2005$/tonne $C0_2e$) is based on the report dated July 1, 2008 prepared by J & C Nyboer and Associates Inc. for the National Roundtable on the Environment and the Economy ("NRTEE").

1.1 Please describe the function of the NRTEE and the components of its current membership.

1.2 What was Dr. Jaccard's role in the preparation and review of this report?

1.3 Why has IPPBC not put forward one of the authors of the report as a witness?

1.4 Please explain the role of reports published by the NRTEE in relation to policy-making in the province of British Columbia, Canada and North America.

1.5 This is a draft report dated July 1, 2008. What is the current status of this report and when is a final report expected?

2.0 Reference: Exhibit C17-5, Direct Testimony of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, p. i

The Executive summary stated that the current report is an expansion of the 2007 Report *Getting to 2050: Canada's transition to a low-emission future*. The 2007 Report simulated policies which could be used to attain deep reductions in greenhouse gas emissions over the medium- and long-term.

2.1 Please explain what is meant by "deep reductions".

2.2 Please describe the simulated policies in the 2007 Report.

2.3 Are any of the simulated policies in the 2007 Report comparable to the three price scenarios and the sensitivity analyses used in the B.C. Hydro's greenhouse gas price forecast? If so, please compare the simulated policies with the planning scenarios and sensitivity cases shown in Table 4-1 in Exhibit B-1. If the policy assumptions are not comparable, please describe if any of the BC Hydro's selected scenarios and sensitivity analyses are realistic to attaining the deep reductions in greenhouse gas emissions by 2050 (i.e., a 65% reduction from 2006 levels by 2050).

2.4 Are there probabilities assigned to the various policies simulated in the 2007 Report? If so, what are the relative likelihoods?

2.5 Please discuss how this evidence on carbon prices may be used by the Commission to make determinations regarding the specific orders sought by BC Hydro in Exhibit B-1 (and updated in Exhibits B-1-5 and B-1-6).

2.6 How do the reduction targets modeled in this report relate to actual or expected commitments from federal and provincial governments in Canada to GHG reductions?

2.7 Were the targets applied nationally or on a province by province basis? In other words, does the model set a price assuming the deep targets are met by each province or by Canada as a whole?

2.8 Please confirm this study assumes all reductions are achieved in Canada and allows no trade in carbon credits. Please discuss, with reference to other studies, the price of carbon that may be required to achieve global reduction targets, assuming the price is applied uniformly in a) developed countries only; b) developed and developing countries.

2.9 If carbon price were established to achieve a similar level of deep reductions for the U.S. and Canada combined, would prices likely be higher or lower than the ones estimated in this study? Explain.

3.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Executive Summary, p. i

"…the adoption of carbon capture and storage by electric utilities, the upstream oil and gas sector and other industrial sectors is likely to be the most significant. Carbon capture and storage – represented by the orange wedge – accounts for about 40% of the emissions reductions from the reference case forecast in 2050. Fuel switching to renewable energy and to electricity accounts for 25% and 20%, respectively; and improvements in energy efficiency account for about 10 % of the emissions reductions."

3.1 To what extent are the policies in British Columbia already reflective of the measures considered in this report? What specifically would be expected to happen in B.C. under the price levels suggested in this report that are not reflected in current or announced policies in British Columbia?

3.2 Where does waste heat recovery fit within the various measures? Were waste heat recovery options explicitly modeled in the study?

3.3 Is the model able to evaluate the possibility of greater penetration of renewable fuels such as biomass in the provision of space heating and domestic hot water?

4.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Executive Summary, p. i

The report states: "Nuclear power was constrained to its current share of total primary energy, because the adoption of nuclear is more of a political decision than an economic one."

4.1 Please explain the distinction. Does this mean nuclear power would be an economic method of achieving deep reductions nationally? How would the inclusion of nuclear power alter the prices proposed in this report?

5.0 Reference: Exhibit C17-5 Direct Testimony of Dr. Mark Jaccard, and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Executive Summary, p. v

5.1 The report states: "Provinces with better hydroelectric potential enjoy considerable expansions of hydroelectric generation." In the policy scenario does the simulation model consider the capacity requirements of British Columbia or only the energy requirements? Please discuss.

5.2 How does the model consider the intermittent nature of those renewable resources that may not have the same capacity capability as thermal or large scale hydraulic resources?

6.0 Reference: Exhibit C17-5 Direct Testimony of Dr. Mark Jaccard, and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Methodology, p. 2

The description at Step 3 states "Prospective technologies compete for new capital stock requirements based on financial considerations (capital cost, operating cost), technological considerations (fuel consumption, lifespan), and consumer preferences (perception of risk, status, comfort), as revealed by behavioral-preference research."

The model appears to include a stock replacement sub-model with the speed of replacement related closely to assumptions regarding prices for capital and operating costs. Please describe more fully this relationship with prices and please compare and contrast this methodology with that employed by Marbek and Habart in determining the potential for energy savings in the BC Hydro's Conservation Potential Review and its Load Forecast.

7.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Model Limitations and Uncertainties, pp. 3-5

7.1 The report states: "…the current version of CIMS does not equilibrate government budgets and the markets for employment and investment. Also, its representation of the economy's inputs and outputs is skewed toward energy supply, energy intensive industries, and key energy end uses in the residential, commercial/institutional, and transportation sectors. As a result, it is likely to underestimate the full structural response of the economy to energy and climate

change policies." Does this suggest the model would tend to overestimate equilibrium carbon prices on average? Under what conditions would it underestimate them?

7.2 The report states: "CIMS requires external forecasts of macroeconomic activity in each sub sector, population growth forecasts, and fuel price forecasts on which to base the analysis. These forecasts are uncertain and could affect the results of the simulations." How would a prolonged downturn of the nature of what we have recently observed with respect to oil prices and economic output affect the study conclusions?

8.0 Reference: Exhibit C17-5 Direct Testimony of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, p. 13, Table 5

8.1 Please explain the basis for the assumed changes in electricity prices between 2010 and 2020, and in particular please explain why real electricity prices are forecast to decline by about over 10% in real terms in that period for most provinces and sectors, Ontario excluded.

8.2 Please explain the basis for assumed constant real electricity prices from 2020 on.

8.3 What would be the results of the simulation if real electricity prices had been assumed to increase by 2% annually per year from 2010 onward for (1) all provinces and sectors and (2) in British Columbia only?

8.4 How does the reference electricity price forecast for B.C. in this table compare to the retail price forecast filed by BC Hydro in Exhibit B-3 of this proceeding (BCUC 1.7.1)?

9.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Context, pp. 19-20

The report states a key assumption in the analysis was: "The policy does not change the world price for crude oil or the continental price for natural gas, and do not change the overall output of these sectors (although, since domestic demand can change, the net exports of these commodities can change)."

9.1 Please discuss whether it is realistic to expect deep reduction targets in Canada in the absence of similar policies in other countries, including the U.S., whether policies in other countries might not also affect the prices of crude oil and natural gas, and the effect changes in those prices would have on the analysis.

10.0 Reference: Exhibit C17-5 Direct Testimony of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, p. 23, Table 12

The report shows substantial switching to electric from natural gas as a residential heating source.

10.1 Please explain how this is consistent with the introduction of the two tier residential rate in British Columbia where the second tier is based on long run incremental cost.

11.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Table 18, p. 25

11.1 What is the current penetration of electric baseboards and heat pumps in British Columbia?

11.2 Assuming British Columbia already has a high penetration of electric heat, would a shift to heat pumps (with a higher coefficient of performance) be expected to increase or decrease overall demand for electricity for space heating in British Columbia by 2050?

11.3 Would the forecast of much higher electricity prices in British Columbia be expected to alter a) the use of electric baseboards in B.C.; and b) the substitution of electric baseboards with heat pumps?

12.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Electricity Generation, p. 62

12.1 The report highlights carbon capture and storage as a key action to reduce the direct greenhouse gas emissions from the electricity sector. At what price for CO_2 does carbon capture and storage become competitive in B.C.?

13.0 Reference: Exhibit C17-5, Evidence of Dr. Mark Jaccard and Draft Report: A Technology Roadmap to Low Greenhouse Gas Emissions in the Canadian Economy: A Sectoral and Regional Analysis, Electricity Generation, p. 69

The report states: "We have not simulated how changes in the inter-provincial or international trade of electricity could contribute to the emissions reductions from the province. It may be possible for provinces with hydroelectric potential to increase generation and export excess production to provinces with higher greenhouse gas intensities."

13.1 To what extent might greater inter-provincial trade of electricity result in lower carbon prices to achieve the same deep reductions modeled in this report?

14.0 Reference: Exhibit C17-5, Direct Testimony of Mr. Chris Ball, p. 4 of 4

Mr. Ball states that the intention of his evidence is simply to illustrate how the terms and conditions proposed for any call for power will have a great impact on the pricing that can be expected from that call. He further states that the bid prices resulting from this Clean Power Call Request for Proposal should not be compared to other price referents, such as the Resource Options Update or the prices from other calls in other jurisdictions, unless a very careful examination and reconciliation is made of the specific terms and conditions used for those other referents.

14.1 Is Mr. Ball of the view that the Commission should have made comments on the Terms and Conditions of the 2008 Clean Power Call? If not, please explain the purpose of his evidence.

14.2 If Mr. Ball does not believe that the bid prices resulting from the 2008 Clean Power Call Request should be compared to the ROU Update, does Mr. Ball believe that the 2008 LTAP ROU and the F2006 Call levelized bid prices could be compared as was carried out in Exhibit B-1-1, Appendix F-13?

14.3 Is the IPPBC seeking any specific determination in this proceeding relating to this evidence?

14.4 Please discuss how this evidence could be used by the Commission with respect to the specific orders sought by BC Hydro in Exhibit B-1 (and updated in Exhibits B-1-5 and B-1-6).

15.0 Reference: Exhibit C17-5, Evidence of Chris Ball

15.1 Mr. Ball provides four scenarios in which the Terms and Conditions for firm energy in the Clean Power Call would increase the expected bid price from a typical IPP for the firm energy price. Mr. Ball uses a hydroelectric example. To what extent would the general impacts also hold for other types of green energy such wind or biomass energy?

15.2 Mr. Ball notes that his evidence "…is not to say that the total price being paid by BC Hydro for all the energy it receives would be significantly higher in Scenario D than in Scenario A (when both firm and non-firm energy is considered). In fact the overall cost of all the energy received will be very much the same in all scenarios. However, the bid prices for firm energy will be significantly higher for Scenario D (and this will be the case even if the prices are levelized)." Please elaborate the specific concerns of the IPP community with terms and conditions that increase the apparent cost of firm energy while not affecting the average cost of firm and non firm energy.

15.3 Does Mr. Ball disagree with BC Hydro's a) general definition of firm energy; b) general need for firm energy over non-firm energy; c) and/or specific method for evaluating the firmness of IPP projects? Please elaborate.

15.4 Mr. Ball states: "Another very substantive fear, but one which is difficult to quantify in a simple numerical example such as used here, is the fact that these complex pricing terms introduce a significant amount of additional risk and uncertainty, which may result in these projects being unable to get financing at the levels of leverage they might otherwise attract." Please discuss alternatives, with examples of mechanisms used in other bid processes if possible, to the pricing terms being used by BC Hydro that would address the concerns of IPPs while still being useful in distinguishing among IPP projects that provide power with different firmness and/or value to BC Hydro.

15.5 On page 1 of 4 of Mr. Ball's evidence, he quoted Chapter 3 page 3-11 of the Application (Exhibit B-1) relating to the ROU examining the financial aspect of the supply side option: financial information including direct costs, levelized UEC, levelized unit capacity costs UCC, project lead times and project life. Does Mr. Ball accept the UEC values of small hydro projects as presented in Table3-10 in Exhibit B-1?

15.6 On page 4-22 of the Application, BC Hydro indicated that the 2008 Electricity Price Forecast is used to determine compensation for non-firm energy produced by successful bidders in the Clean Power Call. BC Hydro further indicated that the 2008 Electricity Price Forecast will also be used to determine the relative values of monthly on-peak and off-peak energy produced by successful bidders in the Clean Power Call. What are Mr. Ball's views, if any, of the electricity price forecast in the 2008 LTAP analysis used to determine the values of the pricing terms and conditions?

16.0 Reference: Exhibit C17-5, Evidence of Stephane Landry

Mr. Landry states: "BC Hydro's natural gas price scenario significantly underestimates the realistic price paths for natural gas."

16.1 Please discuss how this evidence could be used by the Commission with respect to the specific orders sought by BC Hydro in Exhibit B-1 (and updated in Exhibits B-1-5 and B-1-6).

17.0 Reference: Exhibit C17-5, Evidence of Stephane Landry, Assessment

Mr. Landry states: "The assumptions surrounding the Californian Energy Commission ("CEC") high case scenario are more in tune with the current consensus view of fundamentals affecting long-term natural gas price."

17.1 Please provide dates for the CEC high case scenario and for the various prices labeled in the table as "Evidence."

17.2 When the evidence says recommended base case please explain if that is a recommended levelized price (reflecting all years and a discount rate) over the planning horizon or reference year price or something else. If it is a levelized price, please indicate the discount rate the evidence has assumed.

17.3 Given BC Hydro has used all three scenarios in its analysis, please explain the significance of adopting the high case as the base case. What would Mr. Landry propose as a new high case?

18.0 Reference: Exhibit C17-5, Evidence of Stephane Landry, Price Tables

18.1 Please explain whether the bottom line numbers in these price tables are simple averages of prices for all of the preceding years or if these reflect a levelized price.