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March 19, 2018

**VIA ELECTRONIC MAIL**

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C. V6Z 2N3

**Attention: Patrick Wruck, Commission Secretary and Manager, Regulatory Support**

Dear Sirs/Mesdames:

**Re: British Columbia Hydro and Power Authority Waneta 2017 Transaction Application ~ Project No. 1598933**

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "CEC"). Attached please find the CEC's first set of Information Requests with respect to Intervener Evidence regarding the above Application.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

**OWEN BIRD LAW CORPORATION**

Christopher P. Weafer

CPW/jj
cc: CEC
cc: BC Hydro
cc: Registered Interveners

# COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA

## INFORMATION REQUEST NO. 1 ON INTERVENER EVIDENCE

## British Columbia Hydro and Power Authority Waneta 2017 Transaction Application
## Project No. 1598933

## March 19, 2018

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## 1. Reference: Exhibit C6-6, page 1

1. Introduction

There have been some significant changes in the electricity industry that are not fully reflected in B.C. Hydro's ("*BCH*") calculation of the Long Run Marginal Cost ("*LRMC*") that is used in the business case for the proposed acquisition of the remaining two thirds interest in the Waneta Generating project ("*Waneta Business Case*"). As noted in BCH's evidence[1]:

> "LRMC is a proxy for the avoided cost of purchasing new greenfield clean or renewable resources. The determination and usage of BC Hydro's LRMC is outlined in Chapter 3 of BC Hydro's Fiscal 2017 to Fiscal 2019 RRA."

In the British Columbia Utilities Commission's ("*BCUC*") Final Report to the Government of B.C. ("*Final Report*") regarding the Site C Inquiry, there is an extensive analysis of the evolving electricity industry and the impact this evolution has had, and is expected to have, on the cost of the alternatives to the Site C project. Illustrative Draft Alternative Portfolios ("*Alternative Portfolio*") were modeled and used as a comparator to this project. In addition to the industry changes, the Alternative Portfolio contained common financial assumptions for the Site C project and the Alternative Portfolio.

In his capacity as the Executive Director of the Clean Energy Association of B.C. ("*CEABC*") and on behalf of the CEABC, Mr. Jae Mather provides details of some of these common financial assumptions and unreflected industry changes, primarily as noted in the Site C Final Report, but also as updated by a recent competitive bidding process for renewable generation in Alberta. The use of these updated assumptions and changes in the Waneta Business Case would lead to a more balanced comparison with the renewable generating alternatives.

For reference Mr. Mather's resume is appended as Attachment 1.

1.1 Please provide CEABC's recommendation of the appropriate LRMC to be used and provide justification.

1.2 Please provide quantification of the overall change to the Waneta business case that CEABC recommends as a result of all the evidence provided, and provide justification.

## 2. Reference: Exhibit C6-6 page 2 and page 4

2. Site C Determinations

In the Final Report there are a number of Determinations that if included in the Waneta Business Case would lead to a more balanced comparison with the renewable generating alternatives. It is recognized that some of the Determinations are evidence of trends rather than hard business case inputs. However, given the Waneta Business Case is for a 40 year term, trends are as important as hard inputs. The selection by BCH of the Waneta project as an investment opportunity will effectively be *"locking out"* other alternatives that are becoming superior on an exponential trend line.

Although the Waneta project is much smaller in scale than Site C the underlying asset being purchased is, similar to Site C - a complex and longer term asset for which most of the benefits will not be realized for 20 to 30 years. It represents "locking in" to an old technology, during a period while the competing alternative technologies are improving exponentially.

2.1 Please provide a description of each of the other alternatives that are becoming superior.

2.2 Please describe the metrics used to define the superiority of the other alternatives.

2.3 Please provide evidence of the 'exponential trend' lines that are demonstrating superiority of the other alternatives.

2.4 Please discuss the trend towards electric vehicles and its likely impact on the BC Hydro load forecast.

2.5 How would a low, medium and high electric vehicle scenario affect the' lock out' of other alternatives.

2.6 Please provide CEABC's views as to how much weight the Commission should place on the trends rather than 'hard inputs' and provide justification for the weight.

## 3. Reference: Exhibit C6-6, page 2-3

***2.1 "The Panel finds the capital and operating costs and capacity assumptions used for wind generation in the Illustrative Draft Alternative Portfolio to be reasonable. However, the Panel agrees with BC Hydro that it is appropriate to apply a cost adder to capital and operating costs to account for network upgrades[2].***

*The Panel notes that BC Hydro believes the assumed unit energy cost figure for wind to be too low. However, it also considers that other submissions have highlighted further cost reductions that may be possible beyond the levelized cots assumed in the Illustrative Draft Alternative Portfolio (for example CanWEA, CEABC, McCullough). The Panel agrees with CanWEA and CEABC in finding that the NREL 2017*

*Annual Technology Baseline represents an appropriate resource for estimating the levelized cost of wind, and believes that this estimate strikes an appropriate balance with regard to future cost forecasts.*

*BC Hydro submitted that a $6/MWh network upgrade cost should be added to the cost of wind power. The Panel notes that the Cost of Incremental Firm Transmission (CIFT) is not included in BC Hydro's portfolio analysis, but rather BC Hydro models specific transmission upgrade requirements and their associated costs. The Panel therefore finds that it is appropriate to update the Illustrative Draft Alternative Portfolio so that capital costs and operating costs also account for transmission and road costs with values derived from the project specific cost estimates from BC Hydro's resource options spreadsheet. The Panel considers the network upgrades would have a lifetime of 50 years, therefore capital cost adders are not assumed to apply to the first tranche of refurbished wind generation.*

***Regarding the cost of wind integration, the Panel determines that the cost in the Illustrative Draft Alternative Portfolio should be reduced from $2.50/MWh to $1.0/MWh. The Panel also determines that Site C should receive a "wind integration credit" of $1/MWh for each MWh of wind generation it is able to integrate."***

3.1 Should the Commission develop and/or utilize a specific cost for wind generation and wind integration in its determinations related to the Waneta dam purchase? Please explain why or why not.

3.1.1. If yes, how should the Commission develop and apply this information?

3.2 If no, please provide a clear explanation as to how CEABC believes the Commission should factor the above information into its determinations regarding Waneta.

## 4. Reference: Exhibit C6-6, page 3-4

2.2 *"The Panel finds that utility scale solar projects have the potential to reduce the NPV of the Illustrative Alternative Portfolio, and notes the "behind-the-meter" residential and commercial solar also have the potential place downward pressure on BC Hydro's load forecast over time[3]."*

2.3 *"Regarding the use of single cycle gas turbines, the Panel finds that they could be a cost effective source of new capacity, however they have a GHG impact if fueled by natural gas. The Panel notes, however, that the GHG impact could be small if they are only operated as peaking plants for a few hours each year, and BC Hydro could potentially offset any GHG emissions by reducing its operation of IG in order to support the Powerex trade exports[4]."*

2.4 *"The Panel finds that it is reasonable to exclude pumped storage from the Illustrative Alternative Portfolio. While pumped storage is a commercially feasible means of providing capacity, the Panel is concerned with the large size of the project (1,000 MW with a capital cost of $1.32 billion), facility development time of around 8 to 10 years, and environmental considerations specific to pumped storage[5]."*

2.5 *"The Panel finds that the utility scale battery storage has reached the early stages of commercial feasibility. However, the Panel agrees with BC Hydro and submitters that the cost estimates for batteries included in the October 11 Illustrative Alternative Portfolio model were understated and batteries should therefore be screened out of the Alternative Portfolio as a means of meeting short term capacity gaps[6].*

*However, over the longer term the Panel considers that batteries could become a cost competitive supply of capacity for BC Hydro as increased volumes drive down costs. For example, a report prepared for the US Department of Energy categorized 2015 as the start for a new period of utility scale battery deployment, with the 145 MW lithium ion projects coming online, more than the previous five years combined...*

*Regarding vehicle-to-grid applications, the Panel considers that they are currently at an early stage of development with small-scale utility and micro-grid pilot projects underway to establish proof-of-concept. The Panel therefore finds that they should not be included in the Alternative Portfolio. However, the Panel considers the vehicle-to-grid innovations could become a low cost source of capacity over the long term as BC Hydro would not have to own its own batteries..."*

2.6 *"The Panel has concluded the following with regard to assumptions for capacity focused DSM in the Illustrative Alternative Portfolio[7]:*

- ***The Panel finds the assumptions for capacity reductions from optional time-based rates to be reasonable;***
- ***The Panel has considered its appropriate to reduce the estimated capacity savings from Capacity DSM Programs and update the cost assumptions; and***
- ***The Panel finds that greater capacity savings can be achieved form Industrial Load Curtailment that assumed in the Illustrative Alternative Portfolio."***

4.1 Please provide a detailed explanation as to relevance of each of the above items and how the Commission should factor each item into its Waneta deliberations.

A) Utility scale solar projects;

B) Single Cycle Gas Turbines;
C) Pumped storage; and
D) Utility scale pumped storage.

4.2 Please provide quantification of and evidence for any changes the CEABC believes are appropriately made to the Waneta business case related to the above.

## 5. Reference: Exhibit C6-6, page 5

3. Other Assumptions

In addition to the above determinations, certain other assumptions were expressed in the Alternative Portfolio that should be included in the Waneta Business Case.

**3.1 Financing costs** – *"The financing costs of the Alternative Portfolio are assumed to be the same as BC Hydro's financing cost for Site C (100% debt financing at a cost 3.43%)..."*[8]

CEABC agreed that this uniform financing cost assumption removed some of the inherent bias against the Alternative Portfolio. However, it still does not account for the vastly higher risks associated with the much larger, more complex, and longer term projects like Site C and now the Waneta Business Case.

Although the Waneta project is much smaller in scale than Site C the underlying asset being purchased is, similar to Site C - a complex and longer term asset for which most of the benefits will not be realized for 20 to 30 years. It represents "locking in" to an old technology, during a period while the competing alternative technologies are improving exponentially.

It would therefore be more appropriate to have a higher financing cost assumption in the Waneta Business Case than for the competing alternatives.

5.1 What financing cost assumption does CEABC propose? Please provide quantification and justification the CEABC recommendation.

## 6. Reference: Exhibit C6-6, page 5

**3.2 Wind refurbishment** – In the Alternative Portfolio it was assumed that: *"...Wind farms are assumed to be refurbished at the end of 25 years at a cost of 30% less than the cost of a new wind farm."*[9]

The CEABC agrees that this is a reasonable assumption that may actually be higher depending on the circumstances of a particular project. It should be included in the Waneta Business Case.

6.1 Please elaborate on how the Commission should incorporate wind refurbishment costs into the Waneta business case.
6.2 Please provide quantification with justification for the change the recommended change.
6.3 How should the Commission weight the change?