REQUESTOR NAME: **Clean Energy Association of B.C. (CEBC)**

INFORMATION REQUEST ROUND NO: **1**

TO: **BRITISH COLUMBIA HYDRO & POWER AUTHORITY**

DATE: November 17, 2015

PROJECT NO:

APPLICATION NAME: **2015 Rate Design Application (2015 RDA)**

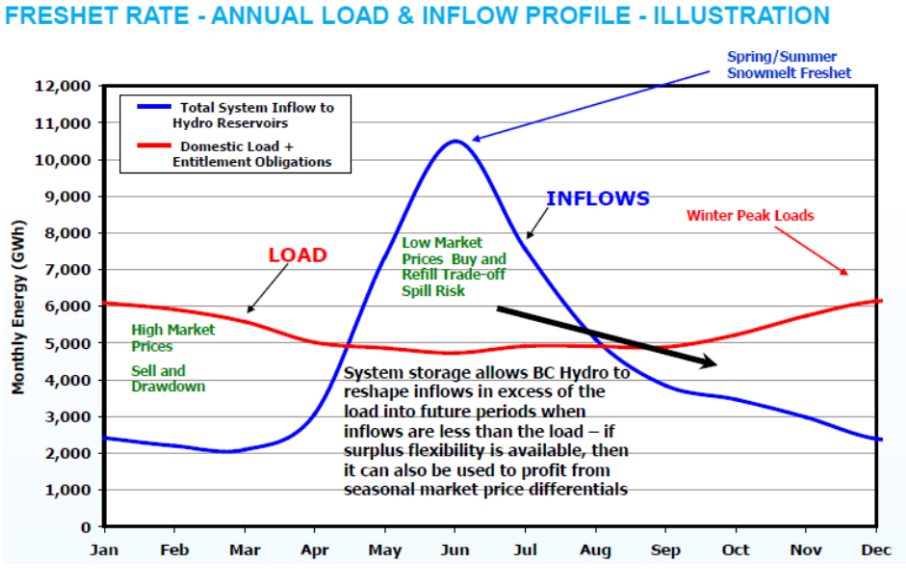
1.0 **Reference: Exhibit B-1, Application, Section 7.3.4 Proposed Freshet Rate Pilot**

On pages 7-27 to 7-28, BC Hydro outlines its objectives for the proposed freshet rate, including the following:

> *"...2. Assist in the management of the freshet oversupply in the BC Hydro system by providing the option to:*
>
> - *Increase the ability to import cheap electricity during low priced periods;*
> - *Reduce the volume of surplus energy being forced to export markets; and/or*
> - *Reduce spill at BC Hydro facilities;*

It further asserts that, *"the freshet rate would encourage customers to increase electricity consumption during the freshet period (May-July), when BC Hydro has a long-term recurring issue of energy oversupply."*

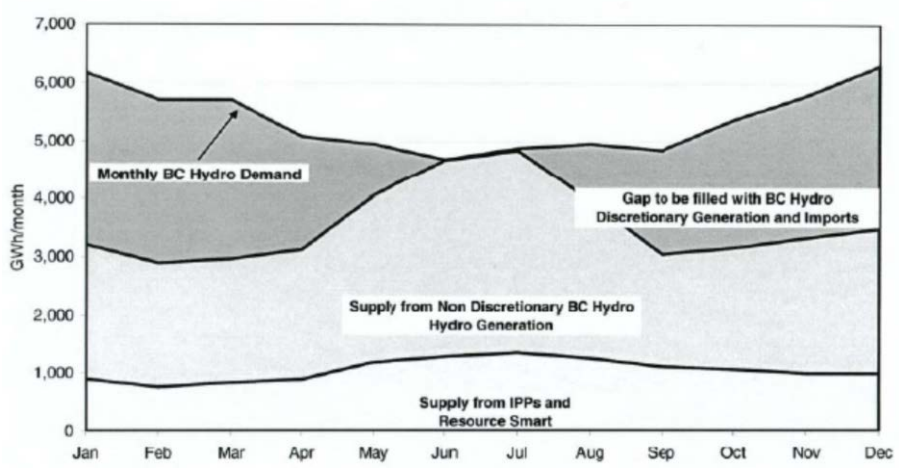
As an illustration of the problem, BC Hydro provided Figure 7-2, showing system inflows vs. monthly load. The following similar figure appeared at slide 29 of the Workshop #5 presentation material:



However, as the large note indicates, system inflows do not well define the problem because system storage is generally managed to reshape those flows.

In CEBC's view, BC Hydro has provided more useful information in the past by showing the load vs. discretionary and non-discretionary generation. An example of this is taken from the 2006 IEP/LTAP Hearing (Attachment to the response to IPPBC IR 1.15.2), a portion of which is shown below.

Figure 8: Wet Year BC Hydro Supply and Demand - Seasonal Profile for 2012



And, to accompany this and similar charts, BC Hydro included the information in tabular form:

Table 3: Chart Data for 2012

Average Year (GWh/Month)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Supply from IPPs + Resource Smart	894	754	835	885	1,184	1,282	1,356	1,259	1,107	1,065	992	988
Supply from Non Discretionary BC Hydro Generation	2,112	1,916	1,960	2,086	2,768	2,953	2,545	1,940	1,765	2,017	2,086	2,149
Gap to be filled with BC Hydro Discretionary Generation and Imports	3,166	3,043	2,897	2,104	994	443	968	1,755	1,975	2,296	2,715	3,172
Monthly BC Hydro Demand	6,172	5,713	5,711	5,074	4,946	4,678	4,870	4,954	4,848	5,378	5,793	6,310

Data for Area Charts Wet Year (GWh/Month)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Supply from IPPs + Resource Smart	894	754	835	885	1,184	1,282	1,356	1,259	1,107	1,065	992	988
Supply from Non Discretionary BC Hydro Generation	2,312	2,142	2,134	2,243	2,864	3,377	3,484	2,701	1,948	2,099	2,336	2,491
Gap to be filled with BC Hydro Discretionary Generation and Imports	2,967	2,818	2,743	1,946	898	19	30	994	1,792	2,213	2,465	2,830
Monthly BC Hydro Demand	6,172	5,713	5,711	5,074	4,946	4,678	4,870	4,954	4,848	5,378	5,793	6,310

Data for Area Charts Dry Year (GWh/Month)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Supply from IPPs + Resource Smart	894	754	835	885	1,184	1,282	1,356	1,259	1,107	1,065	992	988
Supply from Non Discretionary BC Hydro Generation	1,654	1,392	1,298	1,353	2,425	2,404	2,047	1,744	1,434	1,807	1,830	1,950
Gap to be filled with BC Hydro Discretionary Generation and Imports	3,625	3,567	3,578	2,837	1,337	992	1,466	1,951	2,306	2,506	2,971	3,372
Monthly BC Hydro Demand	6,172	5,713	5,711	5,074	4,946	4,678	4,870	4,954	4,848	5,378	5,793	6,310

CEBC found this format to be much more illustrative of the extent of the oversupply problem and, in the following information requests, seeks to use a similar format to:

1. clarify the recent and current extent of this "long-term recurring issue of energy oversupply,"
2. understand how known future events are expected to impact on this oversupply, and
3. explore various possible ways in which this oversupply situation could be mitigated, possibly with greater benefits to ratepayers than a freshet rate might bring.

1.1 To facilitate a clearer understanding of the recent and current status of the oversupply problem, please provide the historical monthly information in a tabular and chart format similar to the table and chart above, for the actual results in the years 2012 through 2015 (to the extent that 2015 is available). In the tables and charts, please include the following as separate line items:

- Supply from IPPs
- Supply from BCH Resource Smart
- Supply from non-discretionary BCH hydro generation
- Supply from imports
- Supply from BCH discretionary generation
- SUBTOTAL - Total energy available to serve domestic load
- Minus energy exported
- TOTAL - Monthly energy used to serve BCH domestic load

1.2 To give a better understanding of the future status of the oversupply problem, please provide the same tabular and chart information projected for the years 2016 and 2017 (the subject years for

the pilot rate), assuming dry, average, and wet water years and prior to any impact of the pilot freshet rate implementation.

1.3 To give a better understanding of the impact of climate change on the oversupply problem, please provide the same tabular and chart information projected for the years 2020 and 2025, again assuming dry, average, and wet water years, but including BC Hydro's expectation of how climate change may be altering the system inflows and incorporating how BCH would best manage its storage facilities to accommodate the changes.

1.4 Site C will draw on inflows from several Peace River tributaries. What impact will this have on system inflows during the freshet season? To give a better understanding of the impact of Site C on the oversupply problem, please provide the same tabular and chart information projected for the first full year of operation for Site C.

1.5 BC Hydro has proposed to upgrade its transmission line from Terrace to Kitimat to serve possible LNG loads in Kitimat. Could such an upgrade also allow BC Hydro to serve some of Alcan's smelter load in the freshet season, thus increasing the system storage capacity by utilizing Alcan's Nechako reservoir? Please provide BC Hydro's analysis of the potential of any such a transmission upgrade to lessen the freshet oversupply problem.

1.6 Please provide the full details of the constraints on the transmission line between Terrace and Kitimat that prevents BC Hydro during the May to July freshet period from using to the fullest extent possible the equichange and storage provisions in the 2007 electricity purchase agreement between Alcan and BC Hydro as approved by the British Columbia Utilities Commission on January 29, 2008 ("Alcan Agreement").

1.7 Please provide the full details of BC Hydro's use of the equichange and storage provisions in the Agreement in each year from 2008 to 2015.

1.8 If this transmission line is upgraded or replaced in order to serve Shell's proposed LNG project at Kitimat or another LNG project, please provide the full details of BC Hydro's ability to use to the fullest extent during the freshet period the equichange and storage provisions in the Agreement?

1.9 A single major LNG liquefaction plant (such as the Shell project) could require up to 10,000 GWh/yr if fully electrified, and the associated pipelines and upstream activities could require a similar amount of energy. Accordingly, if BC Hydro were to acquire only 50% of that single project's additional upstream and downstream load, it could amount to an additional 1200 MW of load, on a 24/7 ongoing basis. What impact would this magnitude of additional industrial load have on the projected future freshet oversupply problem?

1.10 BC Hydro has explored the possibility of building pumped storage facilities at many locations around the province, including a 500 MW facility at Mica. Assuming BC Hydro had such a 500 MW facility at Mica, please simulate how it would have operated during the past 4 years, from 2012 to 2015. In each of those years, how much freshet energy could have been purchased and effectively "stored" in the Kinbasket reservoir for sale at a more opportune time? Please also estimate how much of a price increase BC Hydro could have realized by reselling that energy in higher-priced periods during the year.

2.0 **Reference: Exhibit B-1, Section 2.2.1.2, page 2-5, Clean Energy Act**

2.1 How are the rate classes and rate design in the Application consistent with section 2(h) of the Clean Energy Act which says: "to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas (GHGP emissions in B. C."?

3.0 **Reference: Exhibit B-1, Section 2.3.2.2, page 2-50, Energy Long-Run Marginal Cost**

3.1 Why is there a price difference between bio-energy EPA renewals which on average are expected to be approximately $95/MWh and run-of-river renewals at approximately $70/MWh ($F2016). Will there be restrictions on delivery or differences in the price paid for bio-energy EPA renewals during the spring freshet?

4.0 **Reference: Exhibit B-1, Section 2.4.1, page 2-56, Bonbright Criteria**

4.1 Why in an age of rapidly changing technology in the electricity industry such as roof top solar panels and battery storage systems that allow some users of electricity to become self-sufficient in electricity are the Bonbright criteria relevant in rate design?

4.2 Please explain how the business model, used by BCH for the purposes of the Application, factors in competition and rapid technological changes in the market place? How is BCH proposing to retain its customers through its rate class structure and rate design as its rates climb and the cost of electricity customer self-supply declines?

5.0 **Reference: Exhibit B-1, Section 7.3.3.1, page 7-24, Retail Access**

5.1 Why isn't the freshet pilot program a form of retail access? Why should BCH's customers be allowed to purchase electricity at market based rate while third parties are prohibited from providing electricity to these customers on similar terms and conditions, including price?