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Our reference:16-3822

March 27, 2017

VIA COMMISSION E-FILING SYSTEM

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

Attention: Ms. Erica Hamilton, Commission Secretary

Dear Madame:

**BC Hydro F2017-F2019 Revenue Requirement Application (RRA)
Association of Major Power Customers of BC (AMPC)
Information Request (IR) No. 1 Responses to BC Sustainable Energy Association and
Sierra Club BC (BCSEA)**

We are legal counsel to AMPC in this matter, and enclose AMPC's response to BCSEA IR No.1.

Please contact the writer if you have any questions.

Yours truly,

A handwritten signature in black ink, appearing to read 'Matthew D. Keen', written over a horizontal line.

Matthew D. Keen

MDK/roe

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**AMPC Information Request No. 1 Responses to
BC Sustainable Energy Association and Sierra Club BC**

**BC Hydro and Power Authority
F2017-F2019 Revenue Requirements Application**

March 27, 2017

1.0 Topic: Transmission service load

Reference: Exhibit C9-7, AMPC Evidence, Table, BC Hydro Domestic & Industrial Load (GWh), p.4

AMPC says that “BC Hydro’s industrial load has declined by 17% between 2006 and 2015.”

- 1.1 Please confirm that the Table also shows that BC Hydro’s industrial load declined by 21% between F2006 and F2010 and rose by 5% between F2010 and F2016.
- 1.2 What portion of the 21% decline in BC Hydro’s industrial load between F2006 and F2010 does AMPC attribute to BC Hydro’s rates or rate increases?
- 1.3 Has AMPC compared the industrial load and electricity prices and price increases of comparator public utilities in other Canadian jurisdictions for the F2006-F2015 period, or the F2006 to F2010 period and the F2010 to F2016 period, with those of BC Hydro? If so, please provide the results.
- 1.4 Please provide a figure showing the BC Hydro Annual Industrial Load for the F2005 to F2016 period, along with metric AMPC is using for Industrial price and price increase. Please indicate which price metric is used.
 - 1.4.1 Please discuss whether there is an observable correlation between Annual Industrial Load and Industrial price or price increase over this period.
- 1.5 Does AMPC have an explanation for the 5% increase in transmission service load between F2010 and F2016?

Response:

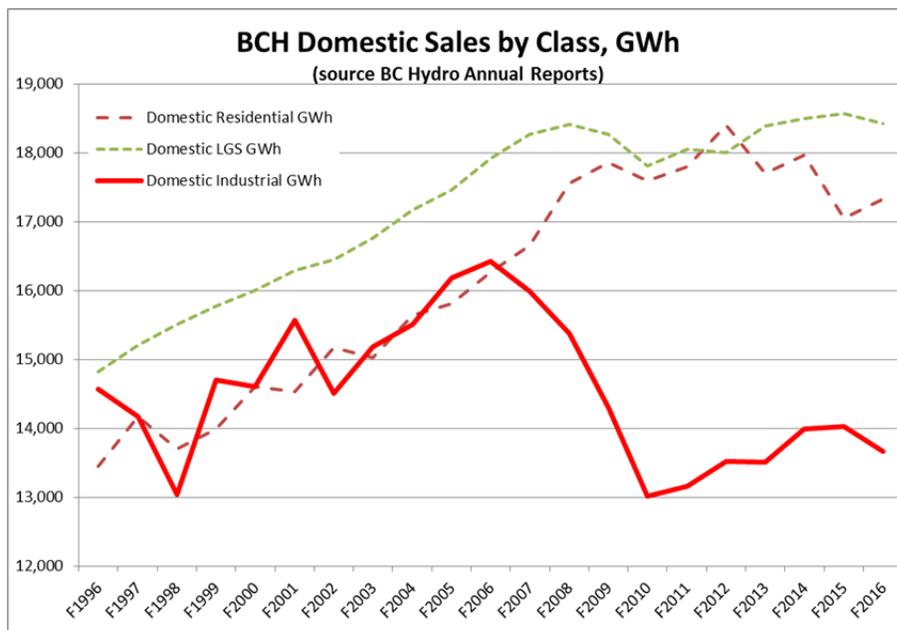
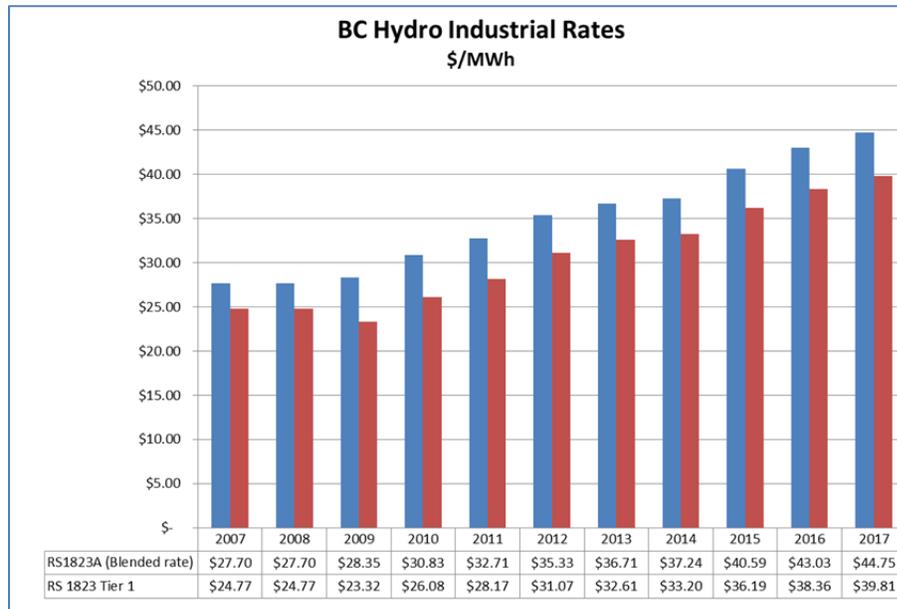
- 1.1 Confirmed.
- 1.2 AMPC has not developed a breakdown. Much of the decline during the 2006-2010 period is attributed to the effects of the decline in global paper demand, and the global financial crisis’ depression of commodity prices and US softwood lumber demand. The larger point is the lack of recovery during the subsequent time period: some of the drop in load is due to the reduced competitiveness of BC Hydro rates for EITE industries.

In addition, the level of industrial load has not rebounded commensurate with the industrial load losses for F2006 to F2010 despite commodity prices recovering from their lows during the financial crisis. The reduced competitiveness of BC Hydro rates not only affect existing load, but also impact investment decisions to start, re-start or expand industrial facilities in British Columbia. In other words, AMPC is concerned that demand is more “plastic” than elastic, in that the impact of rate increases is not fully reversible because once an industrial site closes the cost structure required to reopen may have to be significantly better than the cost structure that forced the facility down. AMPC notes that the industrial load decline of 21% between F2006

and F2010, cited in IR 1.1, reflects a roughly 4% per year decline in industrial load, while the 4% increase between F2010 and F2016 is roughly 0.7% per year. This latter number indicates that there has been little incremental load from industrials following the lowest energy usage year directly in the wake of the financial crisis.

1.3 No. Many AMPC members operate in multiple jurisdictions. Those members' experience, as confirmed by the Hydro Quebec rate survey data, is that increases to industrial electricity rates in BC outpace those elsewhere.

1.4 Please see below. AMPC has not researched rate data prior to the implementation of RS 1823.



1.4.1 Please refer to the response to 1.2. Please also refer to pages 8-9 of AMPC's evidence concerning the risk of assuming linear price response behaviour for a large load and thinly populated class.

1.5 Please see the response to 1.2.

2.0 Topic: Load forecast
Reference: Exhibit C9-7, AMPC Evidence, pp.6-7

“BC Hydro’s Application explains that it uses an “account-by-account” method to forecast large industrial sales, informed by multiple sources of information, modified by an individual probability factor and a common demand elasticity factor.” [p.6]

“As mentioned, BC Hydro applies a common small demand elasticity factor (the extent to which rate increases discourage load growth) of -0.05 to each of residential, commercial, light industrial, and large industrial rate classes:...” [p.7]

“BC Hydro also explained that individual customer estimates played a larger role for the industrial rate class instead of elasticity studies:...” [p.7]

“AMPC is reasonably concerned that over-optimistic demand elasticity assumptions and load forecasts may lead to rate increases before the expiry of the 10-year rate plan that are unsustainable for multiple industrial customers, leading to relocated production and lost revenues.” [p.8, underline added]

- 2.1 Please confirm that AMPC’s view is that BC Hydro’s mid-level load forecast for transmission service customers is too high, i.e., it is higher than an accurate forecast would be.
- 2.2 Regarding demand elasticity, is AMPC’s point that BC Hydro should not use a demand elasticity adjustment in its industrial load forecast, or that BC Hydro should use a demand elasticity figure that is larger than -0.5 (on an absolute value basis) in forecasting industrial load?
 - 2.2.1 If the latter, what does AMPC suggest would be an accurate demand elasticity figure for the transmission service class?
- 2.3 What is AMPC’s view of the ‘account by account’ component of BC Hydro’s load forecast for transmission service load?
 - 2.3.1 Is AMPC saying that the probability weightings that BC Hydro applies on an account level are too low?
- 2.4 Does AMPC have an estimate of the amount by which BC Hydro’s transmission service load forecast is too high?
- 2.5 Is it correct that AMPC’s main point is not that BC Hydro’s methodology for forecasting the transmission service load should be changed but that BC Hydro’s Ten Year Rates Plan is unrealistic, i.e., that beyond the test period, other things being equal, either rates will exceed 2.6% per year or the revenue requirement will not be fully recovered by the end of the Ten Year period and the shortfall will be to the account of ratepayers?

Responses:

- 2.1 Confirmed.
- 2.2 BC Hydro should modify its revenue forecasting practices as individual load forecasts appear bullish in aggregate, and a simple linear revenue response to industrial rate increases cannot be assumed. The remedy for the industrial revenue calculation following a rate increase

is the use of an industrial price elasticity figure larger than -0.05, and a more detailed revenue calculation (as distinct to a load forecast) by individual industrial facilities that includes a “feedback” step.

Indeed, BC Hydro’s most recent analysis in its F2010 Demand-Side Management Milestone Evaluation Summary Report indicates a -0.16 price elasticity for industrial customers. (See also BC Hydro’s response to AMPC’s information request 1.3.11.)

2.2.1 AMPC not has undertaken the modelling necessary.

2.3 See the response to 2.2.

2.3.1 Yes, important resolution and “feedback” is lost by using a “one size fits all” price elasticity of -0.05 when computing the increased revenue expected from a specific rate increase. See the response to 2.2.

2.4 No. See the response to 2.2.1.

2.5 No. AMPC’s main points are that capped rate increases drive important efficiencies in the management of BC Hydro and the approach should continue.

The last 5 years of the plan should have a hard cap of 2.6% with incentives to keep rate increases below this level (i.e., not treat 2.6% as a floor). Rate increases above the expected level of 2.6% may have unintended consequences in the form of demand destruction, and the expected revenues from increased rates may not be achieved, worsening the financial circumstances of BC Hydro. In this proceeding, minimizing amounts that flow into the rate smoothing account to only those justified as reasonable will assist in achieving the 2.6% target.”

3.0 Topic: Industrial Customers -- Definitions

Reference: Exhibit C9-7, AMPC Evidence; Exhibit B-1-1, pdf p.110

- 3.1 For load forecasting, BC Hydro uses the term “large industrial” to describe transmission voltage connected customers but excluding customers that are public utilities [Exhibit B-1-1, pdf p.110]. Does AMPC use the same definition of “large industrial” in its evidence? If not, please explain.
- 3.2 AMPC uses the terms “industrial customers,” “large industrial customers,” “traditional industrial customers,” and “existing core industrial customers.” Please define these terms and discuss whether they are used consistently in the AMPC evidence.

Responses:

3.1 Yes.

3.2 The first two terms are synonyms, and the latter two terms are equally synonyms. “Core” and “traditional” refer to existing resource based industries in BC, as opposed to new resource based industries forecast to be developed in BC, such as LNG.

4.0 Topic: Existing Core Industrial Loads
Reference: Exhibit C9-7, AMPC Evidence, p.6

“In AMPC’s view BC Hydro and the Commission should be prepared to take steps to maintain sales volumes to existing core industrial loads if the revenue requirements are to be achieved in practice.” [p.6, underline added]

4.1 What does AMPC mean by “existing core industrial loads”? Is the intention to distinguish between existing transmission service loads (i.e., including “Other” such as large universities) and new transmission service loads? Or to distinguish between “core” and ‘not core’ types of existing transmission service load?

4.1.1 If the latter, what is the definition of “core,” and why should maintenance of existing core TS loads be prioritized over existing non-core TS loads?

Responses:

4.1 No. The intent is to distinguish between loads that have already, or are likely to, materialize, and those that are not yet here and are less likely materialize. The distinguishing feature is probability/forecast accuracy of arrival, and not type of industry.

4.1.1 See 5.1. There should not be any prioritization between existing loads, or those that are reasonably likely to materialize. AMPC believes that no particular industry should be favoured or discriminated against. It is an important feature of rate design that the tariff be free of such discrimination.

AMPC’s concern is that the revenue forecast and planned expenditures may be over-reliant on speculative future loads, and the Commission should be mindful of retaining existing loads.

5.0 Topic: Load Forecasting and Stepwise Changes

Reference: Exhibit C9-7, AMPC Evidence, p.8

“BC Hydro’s projections for current large industrial customers appear to reflect high level estimates that are workable for rate classes with thousands of smaller customers, where electricity costs are a relatively small proportion of overall costs and exposure to international competition is not a major consideration.” [p.8, underline added]

5.1 Elsewhere in its evidence AMPC appears to acknowledge that BC Hydro’s load forecasting for large industrial customers is based on both an account by account basis and an elasticity of demand of -0.05%. Please explain where in BC Hydro’s load forecasting for large industrial customers AMPC sees “high level estimates.”

“Rather, AMPC expects non-linear threshold effects that are not immediately apparent, however individualized the industrial sales volumes may be. Industrial electricity consumption typically does not change in lockstep with incremental energy price changes, but instead changes in larger blocks when the electricity price hits a level that shifts a facility’s production from economic to uneconomic.” [p.8]

5.2 When AMPCs says it expects industrial customers to exhibit non-linear responses to energy price changes is this at a conceptual level, or at the level of specific industrial customers or sectors that AMPC has knowledge of?

5.3 Does AMPC have a proposed methodology for forecasting non-linear load responses to energy price changes?

“To mitigate against unexpected changes in demand, AMPC recommends that both BC Hydro and the Commission have regard not just to relative rate increases within BC, but electricity prices and rate options available to industry in other jurisdictions, and the competitive pressures they face.”

5.4 Is this statement directed at load forecasting or at load retention?

Responses:

5.1 As the question mentions, BC Hydro applies a broad elasticity factor of -0.05 to all rate classes, reflecting a high level estimate of demand response to price changes.

5.2 Yes, at all of these levels. Conceptually, non-linear responses to changing energy prices are to be expected in commodity industries where price taking producers can shift from economically profitable to unprofitable based on small changes in input costs.

Similarly, AMPC is aware of certain sectors and certain customers where the risk of a non-linear response to energy price changes are more likely to occur. The risk of a non-linear response increases with a number of factors, most importantly for the purpose of the RRA the proportion of its costs that are energy costs.

5.3 AMPC has not developed a specific methodology. At a high level, BC Hydro’s approach needs to recognize the risk that large loads may unexpectedly drop off of the system.

5.4 The statement is directed at both cited factors: these non-linear load responses should be considered as a contextual factor when assessing the reasonableness of BC Hydro’s load forecast, and as a factor when considering steps that should be taken to ensure

load retention. Further, in the latter regard, it is directed towards the effectiveness of using a rate cap approach to drive efficiencies. Please see the response to 2.5.

6.0 Topic: Rate Rebalancing
Reference: Exhibit C9-7, AMPC Evidence, p.12

6.1 Does AMPC agree that a revenue shortfall from the transmission service customer class is to the account of ratepayers of all customer classes except to the extent that there is rate rebalancing based on customer class revenue/cost ratios?

Response:

6.1 Yes.

7.0 Topic: Oil and Gas Load
Reference: Exhibit C9-7, AMPC Evidence, Q.9/A.9, pp.9-11

“Q9. What are BC Hydro’s “growth assumptions for the natural gas sector” and the related “economic multiplier effect”, and what are AMPC’s concerns?”

7.1 Is the gist of AMPC’s evidence on this point that BC Hydro’s load forecast is too high because the component for the oil and gas sector, directly and via multiplier effects, particularly the gas portion, is unrealistically high?

Response:

7.1 Yes.

8.0 Topic: Authorship
Reference: Exhibit C9-7, AMPC Evidence

8.1 Who is (are) the author(s) of the AMPC evidence?

Response:

8.1 Richard Stout and Carlo Dal Monte.