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March 27, 2017

**VIA COMMISSION E-FILING SYSTEM**

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

**Attention: Ms. Erica Hamilton, Commission Secretary**

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Our reference:16-3822

Dear Madame:

**BC Hydro F2017-F2019 Revenue Requirement Application (RRA)  
Association of Major Power Customers of BC (AMPC) Information Request (IR) No. 1  
Response to Commercial Energy Consumers Association of British Columbia (CEC)**

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

Please contact the writer if you have any questions.

Yours truly,



Matthew D. Keen

MDK/roe

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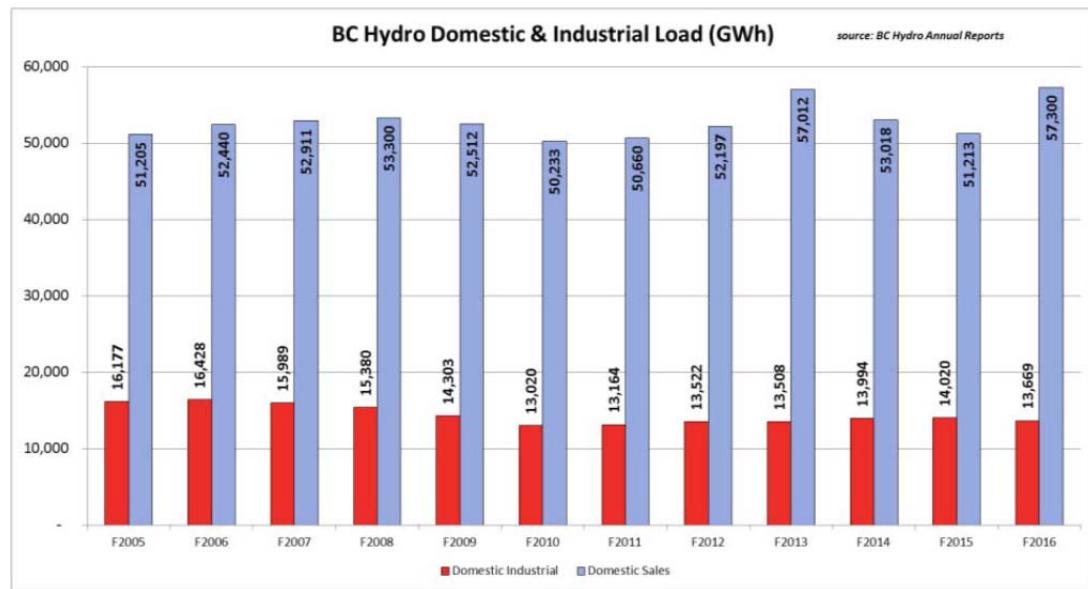
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**AMPC Response to  
Commercial Energy Customers Information Request No. 1**

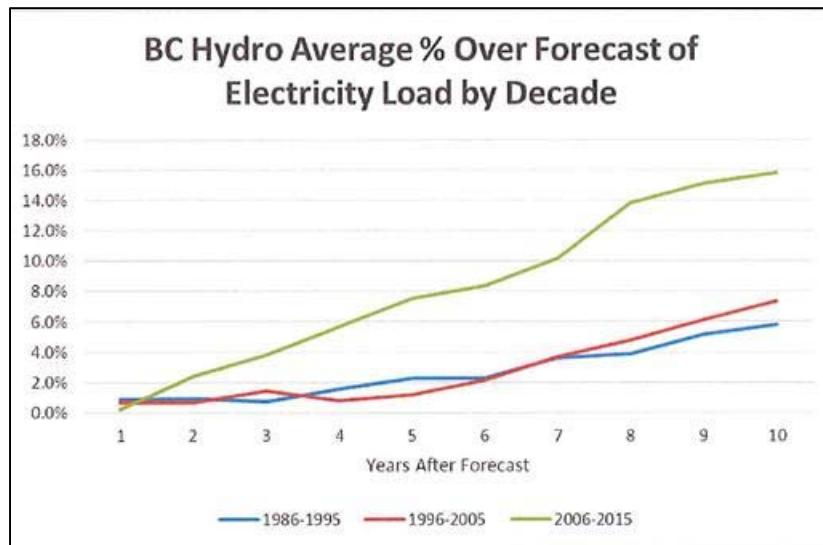
**BC Hydro and Power Authority  
F2017-F2019 Revenue Requirements Application**

March 27, 2017

7.0      Reference:    Exhibit C9-7, Page 3 and Exhibit B-15, CEC 2.135.1



"AMPC members build and maintain businesses that support BC's overall economy. A reliable supply of reasonably priced energy is extremely important to remain competitive in global markets. However, BC Hydro's industrial load has declined by 17% between 2006 and 2015, which reduces total revenues. As a result, remaining customers pay more in rates, creating a vicious cycle that challenges the retention and/or expansion of current industrial customers, and impairs the addition of new industrial customers."



- 7.1 The CEC has developed the above graphic from data contained in response to CEC 2.135.1. Would AMPC agree that BC Hydro has significantly over-forecast its load over the last several decades, and should be carefully reviewed to correct for over-forecasting?
- 7.2 Would AMPC agree that over-acquisition of expensive energy based on overly high forecasts can also contribute to increased rates and the ‘vicious cycle that challenges the retention and/or expansion of current industrial customers’?

**Response:**

- 7.1 Based on the graphic provided, historically generation has exceeded load.
- 7.2 Yes.

## **8.0 Reference Exhibit C9-7, page 4**

BC Hydro's rates are typically cited as a relative strength for industries looking to locate in BC, offsetting some of the higher operating costs in the province. However, a review of the Hydro Quebec annual rate survey ("Hydro Quebec Report") reveals some alarming trends regarding BC's competitive position relative to other utilities in Canada.<sup>3</sup> AMPC's analysis of the report's data in Appendix "A" shows that BC Hydro's industrial rates have risen faster than any other Canadian jurisdiction since F2011, increasing 42% based on Tier 1 pricing (an increase of 51% if the cumulative impact of PST is included).

- 8.1 Please Provide AMPC's evidence of the 'higher operating costs' in BC that are offset by BC Hydro rates.

### **Response:**

8.1 Resource based industries in BC compete with other resource industries worldwide that have operating cost advantages in many areas from the cost of meeting environmental standards to the costs of energy and labour, proximity to key markets or climate-related costs.

For example, according to the World Bank, Canada ranks 56<sup>th</sup> in the world in dealing with construction permits and 108<sup>th</sup> in the world in getting electricity.<sup>1</sup>

The Organization for Economic Co-operation and Development ranks Canada as having the eighth highest wages on a purchasing power parity basis,<sup>2</sup> while the United Nations Economic Commission for Europe ranks Canada 10<sup>th</sup>,<sup>3</sup> amongst the countries sampled. It is unlikely that many, if any, countries not sampled would have higher wages than Canada.

The World Bank's data shows that only seven countries or jurisdictions have carbon taxes that exceed BC's, while only four are within 50% of BC's.<sup>4</sup>

It is not possible to provide more specific information without disclosing confidential competitive information.

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<sup>1</sup> <http://www.doingbusiness.org/rankings>

<sup>2</sup> <http://stats.oecd.org/Index.aspx?QueryId=64115>

<sup>3</sup> [http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT\\_20-ME\\_\\_3-MELF/60\\_en\\_MECCWagesY\\_r.px?rxid=0806c85a-23f8-4249-a4d0-10980df459d1](http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT_20-ME__3-MELF/60_en_MECCWagesY_r.px?rxid=0806c85a-23f8-4249-a4d0-10980df459d1)

<sup>4</sup> <https://openknowledge.worldbank.org/bitstream/handle/10986/24288/CarbonPricingWatch2016.pdf?sequence=4&isAllowed=y> at p. 6.

## **9.0 Reference: Exhibit C9-7, AMPC pages 5,7 and 8**

AMPC is concerned that BC Hydro is over-optimistic about the effect that its applied-for and future rate increases will have on industrial sales – in particular, that BC Hydro's price elasticity assumptions and probability estimates do not adequately reflect the stepwise nature of industrial customers' electricity demand. Steady sales volumes from traditional industrial sector sales volumes will be critical to BC Hydro achieving its revenue requirement. AMPC is also concerned with the accuracy of the growth assumptions for the natural gas and LNG sector and the associated "knock-on" GDP effect built into BC Hydro's LNG load forecast.

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.

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:

*"Consistent with prior load forecasts, the residential, light industrial/commercial, large industrial and other sector sales forecasts before Demand-Side Management reflect the result of future rate increases, which is known as rate impacts. The forecast with rate impact applies an elasticity of -0.05 to each of the main customer sectors. This calculation uses rate increase projections in real dollar terms, including the Deferred Account Rate Rider."<sup>10</sup>*

BC Hydro confirmed in IRs that it applies the same elasticity factor "to all rate classes, except for FortisBC and Seattle City Light", that "has not been applied for specific income level, end uses of electricity, season, electricity rate level, customer rate classes, location on the system, or duration of the forecast period."<sup>11</sup>

BC Hydro also explained that individual customer estimates played a larger role for the industrial rate class instead of elasticity studies:

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. But the TSR class is a small one, and the departure of a few large customers could have disproportionate effects. AMPC's EITE members are also increasingly sensitive to cumulative price increases. AMPC expects the effect of continued rate increases on future electricity consumption will be more complex than depicted, inconsistent with the simple application of linear percentages. 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.

- 9.1 Does AMPC believe that the rate increases proposed for the 2017-2019 test period will negatively influence industrial sales volumes?
  - 9.1.1. If yes, please explain and provide quantification if possible as to how load may be impacted.
  - 9.1.2. If not, please explain why not.
- 9.2 Please confirm that AMPC believes that an alternative elasticity factor may be the reality.

- 9.2.1. If yes, please explain and identify what alternative elasticity factor AMPC would recommend or what alternative to elasticity factors AMPC would see as being relevant.
- 9.2.2. If confirmed, does AMPC believe it would be preferable to eliminate the use of the elasticity factor altogether for the Industrial class? Please explain why or why not.
- 9.2.3. If confirmed, what alternative methods would AMPC use to include price sensitivity into BC Hydro's forecasting? Please explain.

**Responses:**

9.1 Any further rate increases have the potential to reduce industrial sales volumes. Quantification of the reduction is not readily available as the price relationship is non-linear and subject to facility specific discontinuities and confidential information. Recent experience has confirmed that large industrial shut downs have unpredictable timing.

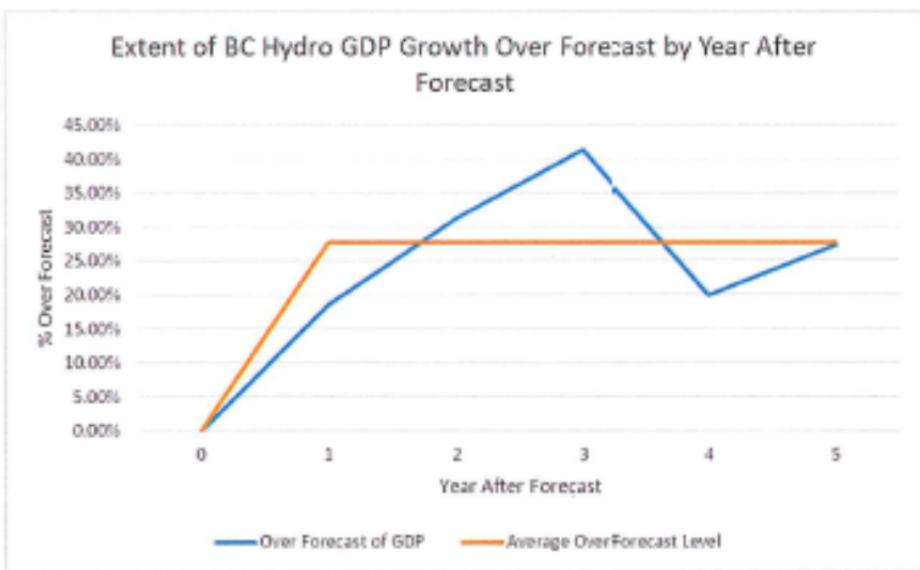
9.2 Elimination of a price elasticity factor for the industrial class that is the same as for other rate classes is one possibility. This could be replaced by more specific calculations. A further change would be the inclusion of one or more “feedback” iterations between the rate increase (and revenues) sought and the industrial load forecast.

## 10. Reference: Exhibit C9-7, page 6 and BC Budget and Fiscal Plans

### Q5. What is AMPC's concern with BC Hydro's load forecast?

- A5. AMPC is concerned that BC Hydro is over-optimistic about the effect that its applied-for and future rate increases will have on industrial sales – in particular, that BC Hydro's price elasticity assumptions and probability estimates do not adequately reflect the stepwise nature of industrial customers' electricity demand. Steady sales volumes from traditional industrial sector sales volumes will be critical to BC Hydro achieving its revenue requirement. AMPC is also concerned with the accuracy of the growth assumptions for the natural gas and LNG sector and the associated "knock-on" GDP effect built into BC Hydro's LNG load forecast.

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.



- 10.1 The CEC has analyzed the recent BC Government GDP forecasting recorded in their historical Budget and Fiscal Plans and found at [Http://bcbudget.gov.bc.ca/](http://bcbudget.gov.bc.ca/). Please confirm that over-forecasting of general GDP growth also has the effect of creating an overly high forecast and could contribute to the inability of BC Hydro to achieve its revenue requirement.
- 10.2 Does AMPC believe that measures to maintain business productivity should be extended equally to other rate classes? Please explain why or why not.
- 10.3 Please confirm that to the extent that the forecast is over-forecast and resulting in acquisition of additional energy which becomes surplus to BC Hydro's customers' need, adjusting the forecast downward to remove over-forecasting bias would contribute to lower revenue requirements and equally preserve the ability of all customers to utilize electricity.

### Response:

- 10.1 AMPC is not in a position to comment on the specifics of the government's GDP forecast.

10.2 AMPC has not made any recommendations on business productivity measures.

It is important to recognize that EITE (sometimes referred to as emissions-intensive and trade exposed in relation to climate change legislation) businesses are well recognized in policy as particularly affected by changes in electricity prices. While there is no established definition, the mining, pulp and paper, chemicals and fertilizers, iron and steel, and aluminum industries are often regarded as EITE businesses.<sup>5</sup> These businesses are unique because (1) energy constitutes a significant proportion of their costs, (2) their businesses are mobile across jurisdictions, and (3) they tend to operate in commodity markets. As a result of these characteristics, these businesses are sensitive to changes in input costs, as their production (and competitors') can be shifted to other jurisdictions where costs are lower.

In this context, AMPC's recommendations concerning limiting rate increases, price sensitivity and price caps arise from EITE businesses generally, but are not directed outside of the transmission service class.

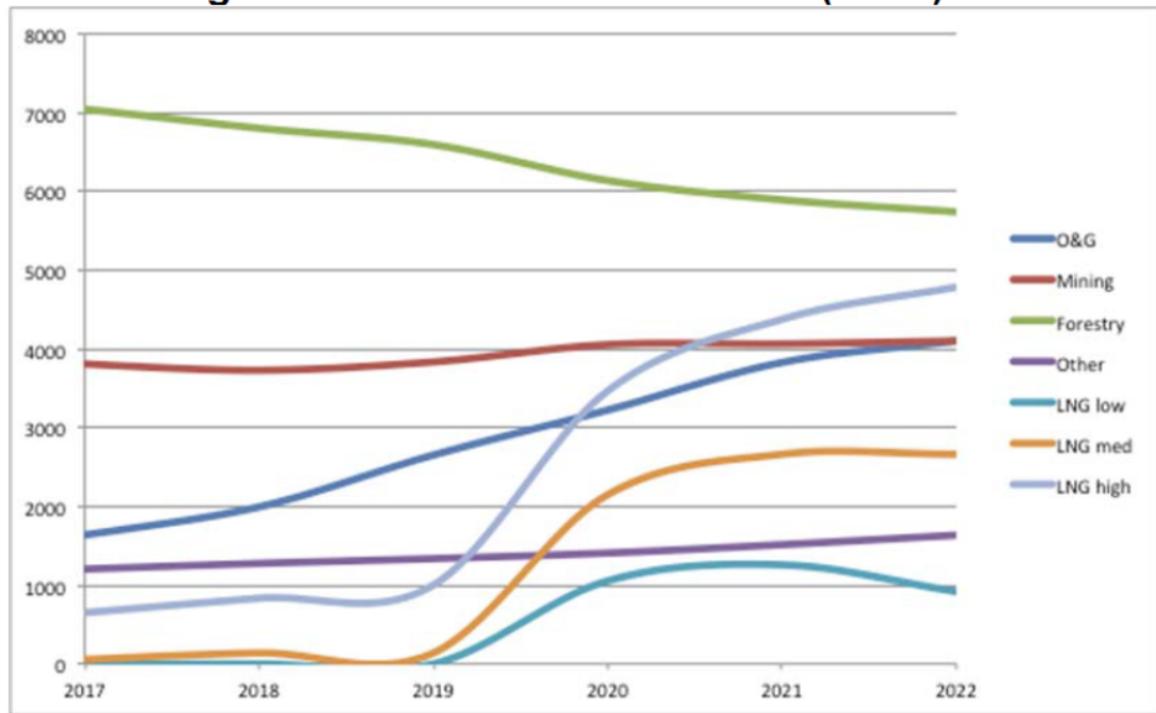
10.3 The conclusion would depend on the extent of the supply surplus, and the ability to reduce energy acquisitions without incurring significant stranded costs.

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<sup>5</sup> See for example, Environment Canada: <https://www.ec.gc.ca/doc/publications/cc/COM1374/ec-com1374-en-s3.htm>

11.0 Reference: Exhibit C9-7, page 6

**Graph of Fig. 3-3: “Fiscal 2017 to Fiscal 2036 – Large Industrial Sales Forecasts” (GWh)<sup>8</sup>**



<sup>7</sup> Exhibit B-15, BC Hydro response to AMPC IR 2.1.1.

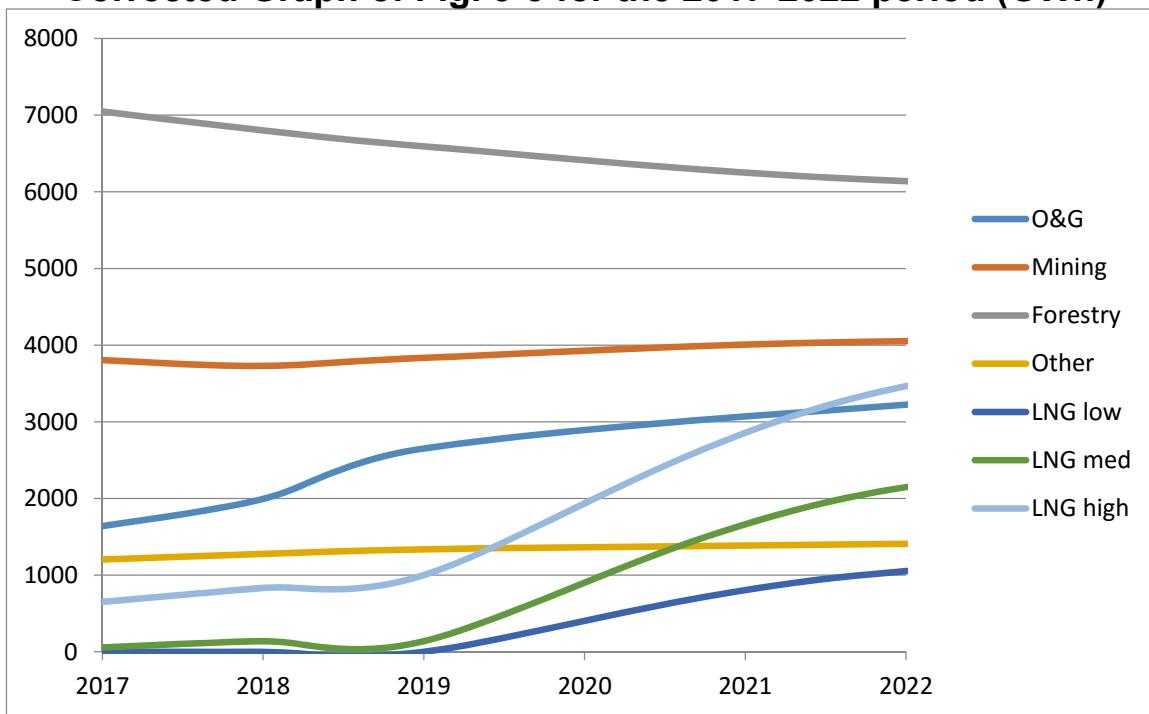
<sup>8</sup> Forecast data only presented. LNG low/med/high figures derived from subtracting total sales before LNG from each of the three total sales with LNG cases and setting to 0 where negative.

11.1 Please extend the graph to 2036.

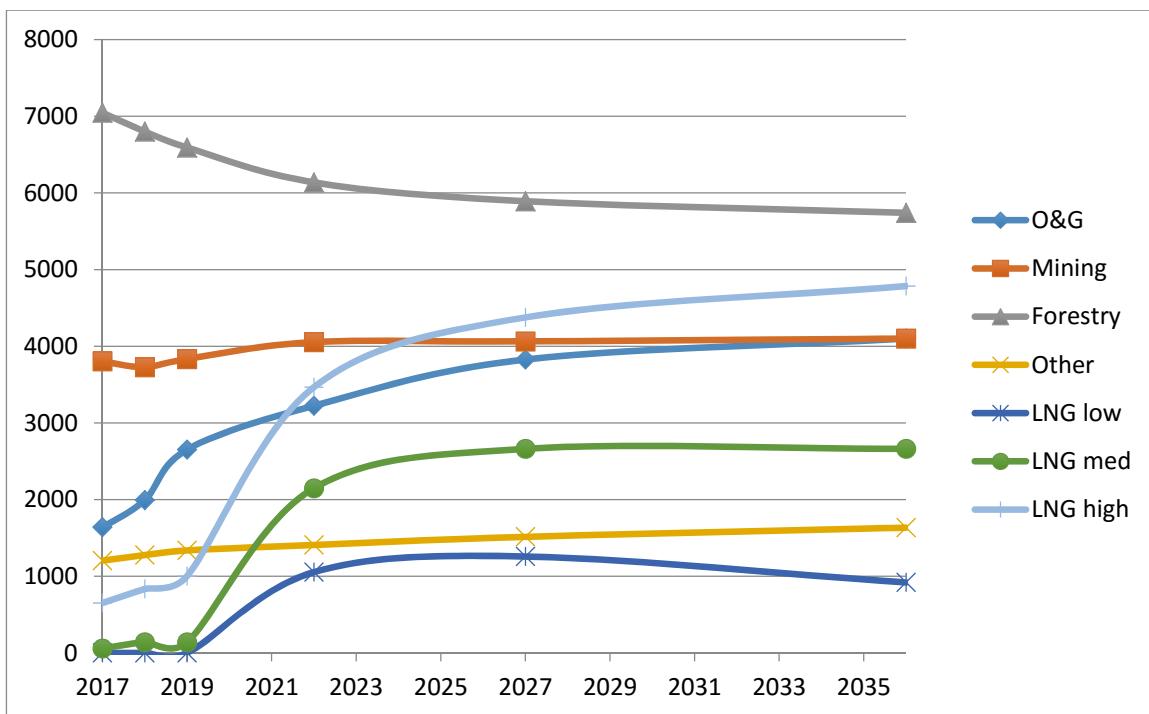
**Response:**

11.1 Please see the extended graph below, with individual points plotted. AMPC also identified an error in the X-axis of the original chart. It is reproduced in corrected form below.

### Corrected Graph of Fig. 3-3 for the 2017-2022 period (GWh)



### Graph of Fig. 3-3 for the 2017-2036 period (GWh)



## 12.0 Reference: Exhibit C9-7, page 6

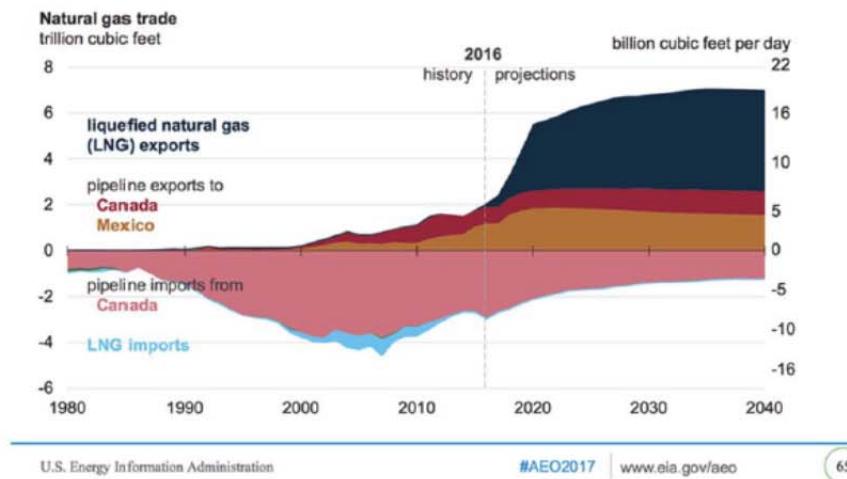
- A9. BC Hydro is frank that its oil and gas forecast projects significant growth, but is highly uncertain:

*Most of the growth in the sales to the large industrial sector over the test years stems from the oil and gas sector. Sales to the oil and gas sector are expected to grow by about 350 GWh per year between fiscal 2017 and fiscal 2018 and about 660 GWh between fiscal 2018 and fiscal 2019. This growth is primarily led by an expected increase in demand from gas producers in Northeast B.C. From fiscal 2017 to fiscal 2022 sales to the oil and gas sector is expected to grow annually by 14.5 per cent. This trend is expected to remain strong over the medium and long-term; from fiscal 2017 to fiscal 2027 and from fiscal 2017 to fiscal 2036, electricity sales to this sector is forecast to grow by 8.8 per cent and 4.9 per cent, respectively. Sales growth over the medium and long-term is driven by new oil and condensate pipeline projects and gas producer and processor loads.*

*The projections in the oil and gas sector are highly uncertain because the magnitude of these loads vary dependent on factors including: increases in natural gas and natural gas liquids market prices (currently at low levels); final investment decision and approvals on LNG projects; and commitments to specific projects from gas producers that have requested electric service from BC Hydro.<sup>17</sup>*

AMPC supports continued natural gas production and export efforts, and considers them important to BC's economic development. But, for rate-setting purposes, the forecast that BC Hydro has presented is quite bullish concerning natural gas production and LNG exports. AMPC is concerned that the fluid nature of the global natural gas market leaves this aspect of BC Hydro's forecast uncertain.

Notably, BC Hydro's sensitivity analysis provided in IR responses shows that the economic picture of the base case is quite similar to a scenario where non-LNG natural gas production is omitted.<sup>18</sup> This suggests that much of the effects of BC's future natural gas development growth are linked to LNG exports. The U.S. Energy Information Administration, for example, likewise projects the following picture for US imports and exports, suggesting that the Canadian export market will have to become LNG-oriented as new U.S. production displaces traditional Canadian sources:<sup>19</sup>



The Commission should recognize the risk that BC Hydro's industrial revenue will depend on traditional industries for the time being, pending LNG investment decisions.

- 12.1 In its Application (B-I-1, page 3-6) BC Hydro states that the LNG forecast increases to 2662 GWh by 2024, which represents the total of announced loads. What are AMPC's views with regard to the appropriateness of including 'announced' loads as the basis for the forecast.
- 12.2 Does AMPC believe that some probability weighting or decrement could be applied to the LNG load forecast to reflect the significant uncertainty? Please explain why or why not.
  - 12.2.1 If yes, please provide any probability or decrement that AMPC might consider suitable.
- 12.3 Does AMPC have historical data on the international price for LNG trade?
  - 12.3.1 If so, please provide.

**Response:**

- 12.1 Inclusions in the load forecast should be based on an independent probability assessment both of the development proceeding and of the developer selecting electricity supply from BC Hydro. The latter assumption is particularly significant where the new load involves gas compression or LNG sited far from existing facilities, as such developments could count on a supply of natural gas on-site that in many cases is considered the default source.
- 12.2 and 12.2.1 See above. While AMPC understands that BC Hydro undertakes this type of analysis, AMPC's concern relates to stepwise changes in load. Any expenditures to serve forecast new load should be based on a scenario analysis that results in a flexible "least regret" outcome should the new facility not materialize as hoped.
- 12.3 No, AMPC does not have that historical data.

### **13.0 Reference: Exhibit C9-7, pages 11 and 12**

AMPC recognizes that BC Hydro's future holds significant cost challenges: continued reliable supply, infrastructure maintenance costs, new capital spending, and paying down its significant liabilities, including deferral account balances and the fixed 5% deferral account rate rider ("DARR"). In addition, there are transfers to the shareholder by way of dividend payments, water rentals and tax revenues. While these latter costs are outside of the Commission's jurisdiction to change, AMPC recommends that the Commission's decisions going forward clearly identify the role that these costs play in rates, and direct BC Hydro to carefully take into account the price sensitivity and competitive risks of EITEs as the 10-year rate plan winds down.

Five years later, BC Hydro proposes to continue a similar approach with its targeted rate increases of 2.6% during the final years of the 10-year rate plan. AMPC supports continuing a "capped" approach that drives BC Hydro to find efficiencies in its operations, and recommends that the Commission support BC Hydro in such efforts. The Commission can do so here by recognizing industrial customers' sensitivity to continued rate increases. Providing industrial customers with a certain degree of cost certainty also supports potential reinvestment.

To be clear, if BC Hydro finds it has insufficient revenues to meet its infrastructure investment and operational needs as it approaches F2020, the Commission should insist on limiting rate increases to 2.6% as currently planned, to reduce the risk of industrial demand destruction. This may imply options such as requiring BC Hydro find further efficiencies beyond the good work it has already done, relying on the rate-smoothing account longer than anticipated, or reducing revenues directed to the shareholder in the form of dividend, water rentals, debt costs, or taxes.

- 13.1 Please confirm, or otherwise explain, that AMPC's proposed rate cap approach would provide rate stability to all customer classes, and would not just be applied to the Industrial sector.
- 13.2. Would AMPC agree that planning for a reduction in the requirement for new energy supply could work well in conjunction with BC Hydro's improved efficiency to cap rate increases?
  - 13.2.1. If not, please explain why not.
- 13.3. Does AMPC believe that certain costs incurred by BC Hydro should be considered for denied recovery as opposed to being rolled over into the rate smoothing accounts? Please explain why or why not.
  - 13.3.1. If so, what types of costs would AMPC recommend for denial?

#### **Response:**

- 13.1 Confirmed.
- 13.2 Please see the response to 12 above. The rate impact of reduced supply would depend on the committed or stranded costs involved and the prior use of scenario planning.
- 13.3 If some costs were determined to be imprudent they should not be included in the rate smoothing accounts or in any portion of the revenue requirement, consistent with standard regulatory practice.
  - 13.3.1 AMPC has not conducted sufficient analysis of what costs might have been imprudently incurred.

## 14.0 Reference: Exhibit C9-7, page 12 and Appendix A

- A11.** Rate cap structures are only as fair as the underlying rate design. In the case of BC Hydro, rate rebalancing during F2017-F2019 was prohibited by an amendment to s. 9(3) of SD 7. Absent rebalancing, inter-class subsidies occur. The industrial rate class, like some others, continues to pay more than the cost of its service, for the benefit of other rate classes. It is important for the Commission to remove this subsidy at the earliest opportunity to make BC Hydro's rates more fair and competitive. A review of the Hydro Quebec data notably shows a disconnect between BC's ranking of industrial rates (eighth) and residential rates (fifth) relative to other Canadian provinces.

### Appendix "A" – AMPC Analysis of Hydro-Quebec Rate Survey Report F2011-F2017

Residential	Price, \$/kWh							Relative Ranking						
	F2011	F2012	F2013	F2014	F2015	F2016	F2017	F2011	F2012	F2013	F2014	F2015	F2016	F2017
Montréal, QC	6.88	6.82	6.76	6.87	7.06	7.19	7.23	1	1	1	1	1	1	1
Calgary, AB	10.65	17.47	13.89	14.81	13.41	11.66	10.40	5	17	19	10	7	6	4
Charlottetown, PEI	16.15	14.51	14.51	14.87	15.24	15.62	16.02	12	18	11	11	11	11	10
Edmonton, AB	9.27	16.40	12.90	13.90	11.88	11.55	10.37	4	11	7	9	5	4	3
Halifax, NS	12.89	13.62	15.01	15.85	16.03	16.03	15.88	10	8	12	12	12	12	9
Moncton, NB	11.66	11.82	11.82	11.82	12.06	12.30	12.50	8	5	5	4	6	7	7
Ottawa, ON	11.00	12.44	13.14	12.39	13.45	14.20	16.35	7	6	8	5	8	8	11
Regina, SK	13.15	13.79	12.54	13.15	13.95	14.37	14.65	11	9	6	8	10	10	8
St. John's, NL	10.73	10.99	11.80	12.55	11.34	11.95	11.96	6	4	4	7	4	4	6
Toronto, ON	11.82	12.90	13.57	12.48	13.78	14.31	17.81	5	7	5	6	9	9	13
Vancouver, BC	7.79	7.68	8.78	8.93	9.73	10.29	10.79	3	3	3	3	3	3	5
Winnipeg, MB	7.08	7.31	7.46	7.63	7.89	8.11	8.43	2	7	7	2	3	3	2
<b>Industrial - 1823A</b>														
Montréal, QC	4.55	4.53	4.51	4.62	4.78	4.90	4.90	4	4	3	3	3	5	5
Calgary, AB	5.03	6.80	8.28	14.02	7.49	4.74	4.80	5	6	8	12	7	3	4
Charlottetown, PEI	9.58	8.36	8.36	8.53	8.71	8.90	9.12	12	9	9	8	9	11	11
Edmonton, AB	6.98	8.49	6.97	13.13	7.51	4.22	4.02	8	10	7	11	8	7	7
Halifax, NS	7.65	8.07	9.00	9.33	9.86	10.02	10.02	9	8	10	9	10	12	12
Moncton, NB	6.66	6.86	6.96	6.86	7.00	7.14	7.25	7	7	6	7	6	10	10
Ottawa, ON	8.64	9.51	10.58	6.20	10.87	6.13	4.52	10	11	12	6	11	8	3
Regina, SK	6.09	6.24	5.67	5.95	6.32	6.55	6.71	6	5	5	5	5	5	5
St. John's, NL	3.98	3.98	3.98	3.98	4.77	4.77	4.90	2	7	7	7	2	4	5
Toronto, ON	9.40	9.64	10.46	10.81	11.03	5.55	4.99	11	12	11	10	12	6	7
Vancouver, BC	4.40	4.34	4.99	5.06	5.51	5.84	6.08	3	3	4	4	7	8	8
Winnipeg, MB	3.55	3.62	3.69	3.78	3.91	4.02	4.18	1	1	1	1	1	1	2

14.1 Please provide the most recent BC Hydro Cost of Service ratios for each rate class.

14.2 Please provide the BC Hydro Quebec data for the Commercial rate classes.

### Response:

14.1 AMPC reproduces Table 3-6 from BC Hydro's 2015 RDA Application below (Project No. 3698781, Ex. B-1, p. 3-36):

Table 3-6 R/C Ratios

Rate Class	R/C Ratios		
	Final F2016 COS Study results (%)	Draft F2016 COS study posted to RDA website in February 2015 (%)	F2013 Fully Allocated COS (%)
COLUMN	A	B	C
Residential	93.9	93.9	89.8
SGS	112.0	112.0	126.7
MGS	117.1	120.5	120.8
LGS	100.9	99.7	102.1
Irrigation	85.1	85.2	86.6
Street Lighting	134.1 <sup>144</sup>	134.1	115.7
Transmission	101.4	101.5	104.4
Total Classes	100.0	100.0	

AMPC does not consider these R/C ratios to be accurate, as functionalization and allocation approaches to very significant common costs were disputed. The parties to the subsequent negotiated settlement process agreed to settle in many instances only on the understanding that the issues would be revisited in the “new COSS and Rate Design Application in F2019” that BC Hydro has committed to. See, e.g., pp. 3 and 6-11 of Appendix A to Commission Order G-47-16.

AMPC acknowledges that the most recent cost of service study indicates a commercial rate class revenue-to-cost (R/C) ratio well in excess of 100%, and a residential rate class well below 100%. The industrial rate class also shows a R/C in excess of 100%, which is unusual due to external competitive pressures.

14.2 AMPC has not undertaken a similar analysis for the commercial rate classes. The Hydro Quebec study can be found at the following site:

[http://www.hydroquebec.com/publications/en/docs/comparaison-electricity-prices/comp\\_2016\\_en.pdf](http://www.hydroquebec.com/publications/en/docs/comparaison-electricity-prices/comp_2016_en.pdf).