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VIA COMMISSION E-FILING SYSTEM

British Columbia Utilities Commission
6th Floor - 900 Howe Street
Vancouver, BC V6Z 2V3

Attention: Erica Hamilton, Commission Secretary

Dear Madame:

**British Columbia Hydro & Power Authority (BC Hydro) Fiscal 2017-Fiscal 2019
Revenue Requirements Application – AMPC Evidence**

In accordance with the Commission's timetable, please find enclosed the written evidence of the Association of Major Power Customers of BC in this matter.

Please contact the writer if you have any questions.

Yours very truly,



Matthew D. Keen

MDK/jkt

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BRITISH COLUMBIA UTILITIES COMMISSION

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
F2017-F2019 REVENUE REQUIREMENTS APPLICATION**

PROJECT NO. 3698869

EVIDENCE OF THE ASSOCIATION OF MAJOR POWER CUSTOMERS OF BC

February 27, 2017

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I. INTRODUCTION AND OVERVIEW

Q1. Please describe the purpose of this evidence and provide an overview.

- A1. This is the evidence of the Association of Major Power Customers of BC (“AMPC”). Its purpose is to provide the facts and context that inform AMPC’s perspective on BC Hydro’s Revenue Requirement Application for the F2017-F2019 period (“RRA”).

In AMPC’s view the RRA reflects welcome and material efforts by BC Hydro to control costs, find efficiencies and meet the capped rate increases imposed by government’s “10-year rate plan”, which built upon the detailed findings of the panel of Deputy Ministers who reviewed BC Hydro in 2011.¹

This evidence sets out AMPC’s concern that BC Hydro’s industrial rates are becoming increasingly uncompetitive with the rest of the country, based on Hydro Quebec’s rate survey. It then focuses on the RRA’s assumptions about how industrial customers respond to rate increases, specifically relating to industrial “demand elasticity”, as well as the overall load forecast. In AMPC’s view the RRA underestimates the extent and nature of industrial customers’ price sensitivity. AMPC accordingly considers it critical to set out why it is important to control and tightly manage rate increases in the near to medium term, keeping to BC Hydro’s plan of 2.6%, and suggests appropriate further steps for the Commission to take in the future.

These steps include regular adjustments to revenue to cost ratios, support for innovative rate structures that take advantage of industrial customers’ potential process flexibility, recognition of the risk to industrial demand, and a decision that provides government with a broad “menu” of policy options should BC Hydro fail to meet its revenue targets.

Q2. Please explain AMPC’s history and membership.

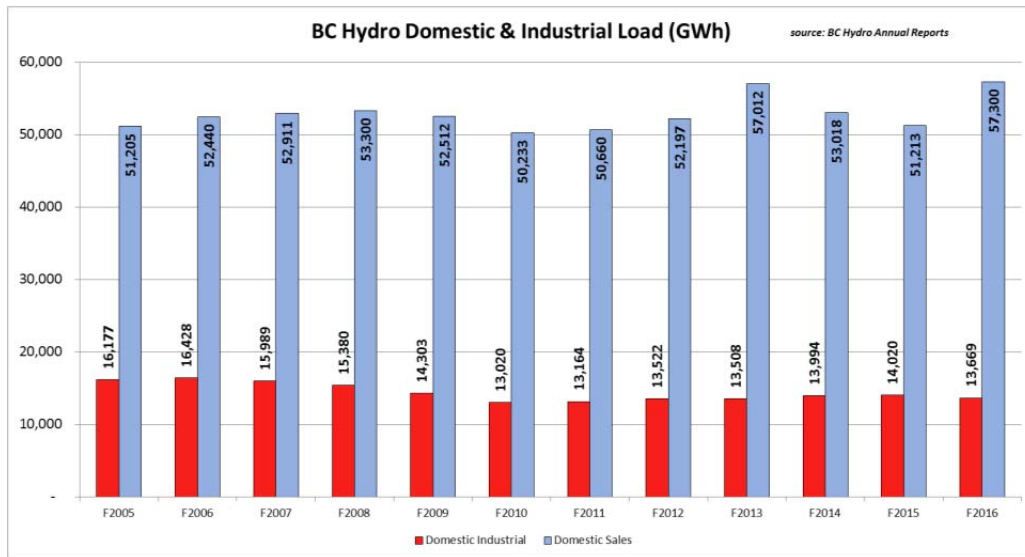
- A2. AMPC is a long-standing British Columbia association of resource-based industries, and a registered not-for-profit society. AMPC was formerly known as the Joint Industry Electricity Steering Committee, which reflected the combined regulatory efforts of the Council of Forest Industries and the Mining Association of British Columbia. AMPC and its predecessors have participated in every major BC Hydro revenue requirement or rate design proceeding since BC Hydro came under active regulation in the early 1980s.

AMPC’s membership is largely energy intensive and trade exposed (“EITE”) customers, being the largest electric power customers served by BC Hydro, and includes major employers in the forestry, pulp and paper, mining, electrochemical and petro-chemical sectors. AMPC’s mandate is to ensure that industrial customers’ utility rates in BC are competitive, fair, and efficient.

AMPC’s membership largely consists of the majority of large industrial customers who will be impacted by the outcome of this proceeding, comprising approximately 80% of BC Hydro’s Transmission Service Rate (“TSR”) customers and over 20% of BC Hydro’s total load (by MWh).²

¹ <https://news.gov.bc.ca/files/Newsroom/downloads/bchydroreview.pdf>

² Ex. B-1-1, p. 3-9 notes that large industrial load comprises 27% of BC Hydro’s total load.



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.

Q3. Please provide the context for AMPC’s concerns about increasing electricity rates.

A3. 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.³ 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).

The Hydro Quebec Report’s comparison used data based on the blended rate (Rate Schedule 1823A). AMPC prepared a more realistic analysis that recognizes that EITE customers typically purchase electricity on the stepped rate and will work to minimize Tier 2 purchases. AMPC’s historical comparison uses the Tier 1 energy rate, which is the lowest cost a customer could achieve with optimal energy efficiency improvements. This conservative approach shows that in F2017 BC is the fourth most expensive jurisdiction in Canada, up from the second lowest cost jurisdiction in F2011 (please refer to appendix “A”). This ranking is unaffected by the recent budget announcement regarding the future rollback of PST on electricity

EITEs cannot pass the impact of these rate increases to their customers in a global marketplace. The rapid rate escalation also makes it challenging for industrial customers to sufficiently adapt their businesses to absorb these impacts. The result is weaker financial performance, which discourages investment and risks a vicious cycle of eroding competitiveness.

³ http://www.hydroquebec.com/publications/en/docs/comparaison-electricity-prices/comp_2016_en.pdf.

II. FUTURE INDUSTRIAL RESPONSE TO BC HYDRO RATE INCREASES

"Prediction is very difficult, especially if it's about the future."

Niels Bohr (Physicist and Nobel Laureate)

Q4. Please briefly describe BC Hydro's industrial rates for the F2017-F2019 period and how they affect BC Hydro's Revenue Requirement.

A4. BC Hydro's rates for industrial customers connected at transmission voltage under Rate Schedule 1823 ("RS 1823") will be set by the Commission pursuant to Special Direction 7 ("SD 7"). Rates will increase by 4, 3.5 and 3%, respectively, and – subject to future Commission approval – BC Hydro is targeting 2.6% rate increases for F2020-F2024.⁴

Industrial customers' increased contribution to the revenue requirement is calculated by multiplying these rates by the industrial portion of BC Hydro's load forecast.

BC Hydro also requests approval from the Commission to record \$795 million in its rate smoothing account for F2017-F2019, for collection during F2020-F2024 under the 10-year rate smoothing plan.⁵ To the extent that BC Hydro under-collects its revenue requirement under the rate smoothing plan, the shortfall is recovered through the rate-smoothing account.

BC Hydro illustrated the impact of the rate smoothing account in the following table:⁶

	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024
Rate Increase (%)	9.0	6.0	4.0	3.5	3.0	2.6	2.6	2.6	2.6	2.6
Return on Equity (%)	11.84	11.84	11.84	11.40	10.91	10.59	10.49	10.51	10.50	10.42
Net Income (\$ million)	582	652	701	715	730	746	761	777	794	810
Water Rentals (\$ million)	393	382	391	345	375	383	392	399	409	416
Grants & Taxes (\$ million)	214	221	230	241	249	260	268	276	284	293
Dividend (\$ million)	262	463	481	385	285	185	85	-	-	-
Regulatory Account (\$ million)	181	339	672	940	1,010	1,088	1,075	914	560	-
Total Debt	16,656	17,409	18,288	19,217	19,686	19,642	19,309	18,751	17,876	17,352
Debt to Equity Ratio	80:20	80:20	80:20	80:20	79:21	77:23	75:25	72:28	69:31	66:34
Heritage Deferral Account (\$ million)	12	9	54	30	19	12	8	4	-	-
Non-Heritage Deferral Account (\$ million)	383	274	169	93	60	37	25	13	-	-

As can be seen, the balance of the rate smoothing account (the "Regulatory Account" row in the table) is projected to increase until F2020, then will be paid down through rates in F2021-F2024 with planned 2.6% rate increases over the period.

BC Hydro's ability to repay the rate smoothing deferral account while limiting rate increases to 2.6% is dependent on its revenue projections for F2021-F2024. To the extent BC Hydro's assumptions regarding this period are incorrect, it will face revenue shortfalls that will need to be recovered from ratepayers in some form. For example, BC

⁴ Exhibit B-10, BC Hydro response to AMPC IR 1.1.1.

⁵ Exhibit B-1-1, Application, p. 1-43.

⁶ Exhibit B-10, BC Hydro response to AMPC IR 1.1.4.

Hydro has illustrated how rate increases of less than 2.6% will impact rates.⁷ Similarly, to the extent BC Hydro over-forecasts its load for this period, BC Hydro will have revenue shortfalls that will either have to be recovered by rate increases greater than 2.6%, or through future rates in some other form.

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.

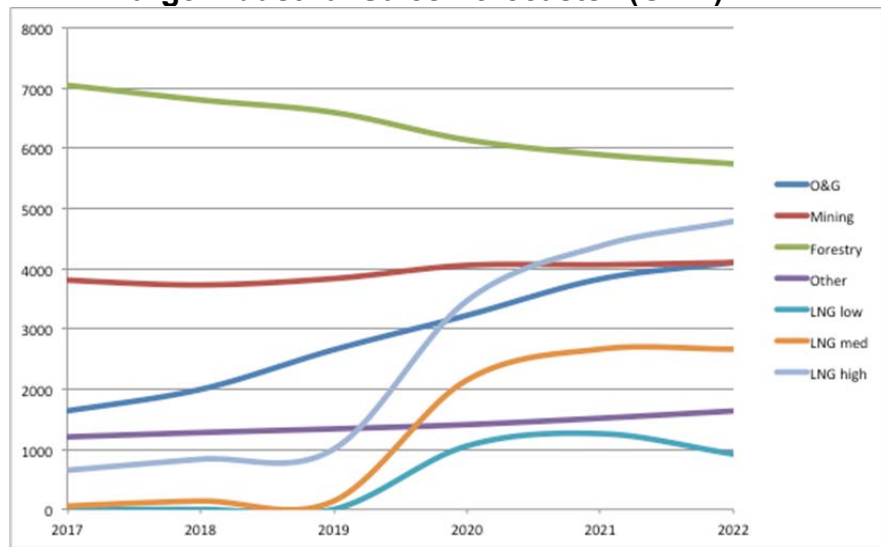
In AMPC’s view BC Hydro and the Commission should be prepared to take steps to maintain sales volumes to existing core industrial loads if the revenue requirements are to be achieved in practice.

Q6. How does BC Hydro forecast industrial load?

A6. 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.

Table 3-3 in BC Hydro’s Application itemizes BC Hydro’s load forecast by major industrial sector between 2017 and 2022. It is presented below in graphical form.

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



⁷ Exhibit B-15, BC Hydro response to AMPC IR 2.1.1.

⁸ 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.

BC Hydro describes its large industrial forecast methodology as follows:

“BC Hydro prepares the electricity sales forecast for the large industrial sector on an account-by-account basis. The forecast drivers include production forecasts, electric intensity (i.e., kWh/unit of production), and probability weightings. The probability weightings represent the risk assessment of future expansion or contraction or the likelihood of previous trends in sales continuing. Given the uncertain and binary nature of large industrial loads, a range of forecasts were developed for each industrial sub-sector considering:

- An assessment of current state of the global economy;*
- A range of projected outcomes for BC’s major global trading partners who purchase BC’s exports; and*
- Supply and demand balance outlooks of major commodities for each sub-sector, including a projected range of future commodity prices.*

A mid projection of commodity prices, which is assessed to be the most likely, informs the mid forecast and its probability weightings. These probability weightings also consider factors that pertain to the individual circumstances of customers. For example, a customer’s project that does not have environmental approval and is in initial discussions with BC Hydro would have a different probability than a customer’s project that is in the final stages of taking electrical service.”⁹

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.”¹⁰

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.”¹¹

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

For the large industrial sectors, rather than attempt to undertake individual sector elasticity studies, BC Hydro has chosen to use a facility by facility

⁹ Ex. B-10, pp. 3-9 – 3-11.

¹⁰ Ex. B-1-1, p. 3-4, footnote 29.

¹¹ Exhibit B-10, BC Hydro response to AMPC IR 1.3.2.

*assessment of viability given commodity market conditions and prices. The results of the analysis informs the probability weighting factors applied to all of the various electric intensive customers which make up the large industrial sector. Future rate increases impact future viability of these large industrial customers, but in general this is expected to be a secondary effect given the relative costs of electricity as a portion of total operating costs for some sectors.*¹²

Q7. What is the “stepwise nature of industrial customers’ electricity demand” mentioned above, and how does BC Hydro’s load forecast fail to recognize it?

A7. AMPC expects the industrial response to continued rate increases to be “lumpier” and less uniform than BC Hydro projects, e.g., sudden stops in production as lines, mills, or mines shut down entirely. As BC Hydro recognizes, “[t]he large industrial sector has historically exhibited volatility in sales due to several factors such as fluctuations in global commodity prices and unpredictable events such as temporary or permanent closure of large industrial facilities.”¹³

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.

As loads leave the system, the resulting revenue decrease would typically lead to rate increases in an attempt to keep BC Hydro’s overall revenue stable, exacerbating the “demand destruction” effect. 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.

This concern is real: some large load industrial facilities have already shut down since 2011, in some cases without warning. Government policy speaks directly to the connection of these events to electricity pricing. BC Hydro’s subsequent \$100 million “Thermal-mechanical Pulping Program” and Mining Customer Payment Plan program reflect Orders-in-Council targeting particular industry segments.¹⁴ Under the latter program, mining operations can defer payment of a large portion of their electric bills. The affected mining customer must pay the carrying cost of that relief, however. Customers’ willingness to consider and use those costs demonstrates that industrial rate

¹² *Ibid.*

¹³ Ex. B-1-1, p. 3-9.

¹⁴ Ex. B-1-1, p. 2-9, sections 2.3.3 and 2.3.4, respectively.

concerns are real and serious. No mining company would incur these material carrying costs if electricity rates had not become a major challenge to their staying in business in the short-term. In fact, government described the purpose of the plan as “keep[ing] workers on the job” and “help[ing] the mines stay open as long as possible.”¹⁵

These effects are difficult to forecast generally, especially using BC Hydro’s current approach. 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.

Q8. Please provide examples of rate options available to industry in other jurisdictions.

A8. Generally, other jurisdictions have made use of initiatives like managing demand response,¹⁶ time of use, and market-indexed rates to alleviate rate pressures. While BC Hydro is presently piloting load curtailment and a “Fresnet” rate as pilot programs, they have limited scope and it is uncertain at this time whether these pilots will become permanent programs.

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?

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.¹⁷

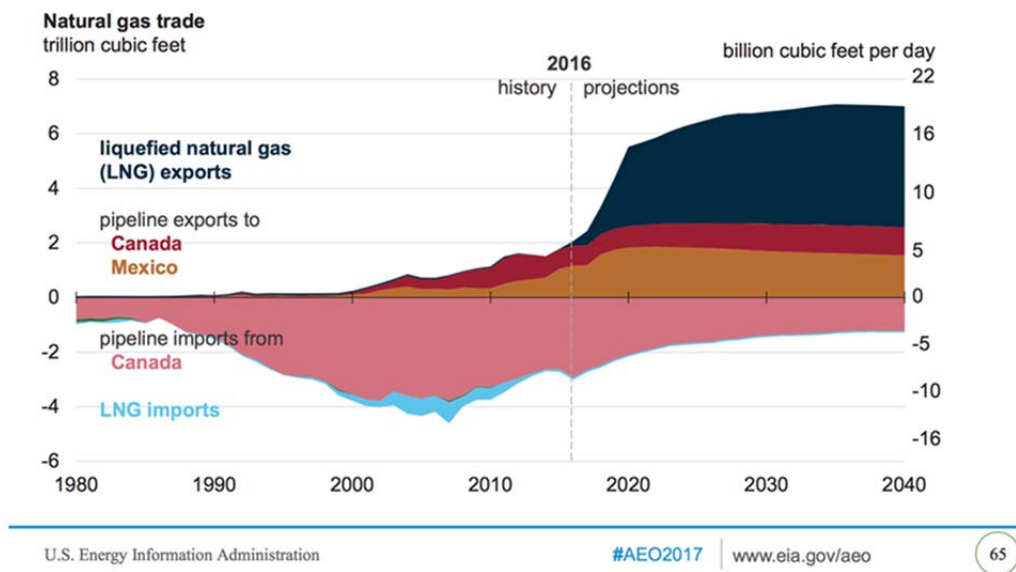
¹⁵ <https://news.gov.bc.ca/releases/2016MEM0002-000167>.

¹⁶ See, e.g., <http://www.theimo.com/Pages/Participate/Settlements/Peak-Demand-Factor-and-the-Global-Adjustment.aspx>

¹⁷ Ex. B-1-1, p. 3-17, lines 3-19.

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.¹⁸ 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:¹⁹



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.

BC Hydro has also included a related "multiplier effect" in its modelling. This refers to general load growth linked to the economic effects of any large new injection of spending into the economy, in turn driving an increase in BC Hydro’s overall income. In other words, the forecast GWh are increased by the “knock-on” effect of the incremental economic activity associated with discrete new large loads (e.g., natural gas production and LNG export terminals).

BC Hydro’s responses to AMPC’s IRs shows that the multiplier effect is a non-negligible component of the overall load forecast:

In summary, all three sensitivity cases [with and without LNG / Site C] primarily impact the residential and commercial sales forecast for the

¹⁸ Ex. B-15-2, AMPC IR 2.2.1, Attachment 2, re “Case 2”.

¹⁹ Annual Energy Outlook 2017, p. 66; [http://www.eia.gov/outlooks/aeo/pdf/0383\(2017\).pdf](http://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf).

North region. In addition, the sensitivity cases result in a lower overall B.C. GDP growth forecast over the long term, which would impact a portion of the light industrial sales. However, as noted in BC Hydro's revised response to BCUC IR 1.5.1, these sectors combined only make up about 10 per cent of the total domestic sales for BC Hydro. That is, the overall impact of reduced economic growth drivers associated with the sensitivity cases on BC Hydro's total load forecast would be small.²⁰

If LNG development proceeds more slowly than the RRA forecasts, the associated multiplier effects on load growth will be similarly delayed.

Q10. What steps should BC Hydro and the Commission take to “maintain sales volumes to core industrial loads”?

A10. The current turmoil surrounding the Ontario electricity market provides an example of the circumstances that AMPC seeks to avoid, namely policy and price uncertainty that encourages industry to locate its production elsewhere. As reported publicly:

The Ontario government is pursuing a fundamental overhaul of the province's electricity market in an effort to keep rates as low as possible as it faces a political backlash over soaring prices....

Residential electricity prices have doubled in the past seven years, and Premier Kathleen Wynne is facing angry consumers and nervous industrial users across the province. With an election scheduled for 2018, the government's record on electricity prices has emerged as a key issue.²¹ [emphasis added]

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

Specific items include regular rate design updates to ensure balanced revenue to cost ratios, creative new rate options, and Commission recognition of the value of rate caps in driving BC Hydro to find efficiencies.

AMPC's written evidence in BC Hydro's F2012-F2014 Revenue Requirement proceeding recommended that the Commission establish the fixed rate increases recommended by the BC Hydro Review Panel, and leave it to BC Hydro to identify the

²⁰ Ex. B-15-2, Revised response to AMPC 2.2.1.

²¹ “Ontario Liberals eye electricity market overhaul to lower rates”, Shawn McCarthy, The Globe and Mail, Feb. 24, 2017; <http://www.theglobeandmail.com/news/ontario-liberals-eye-electricity-market-overhaul-to-lower-rates/article34128778/>.

necessary efficiencies to achieve that level of performance.²² This was, in effect, a form of “top down”, rate cap style regulation. The Review Panel’s detailed analysis made clear that limiting rate increases to the levels proposed was possible, and there was no need to establish a “bottom up” calculation of appropriate rates and return. AMPC, in as many words, proposed that the Commission carry the torch on from the Review Panel.²³

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.

While some of these options are outside the Commission’s jurisdiction and imply policy or legislative changes by government, the Commission’s decision in *this* application should provide stakeholders with a clear menu of policy options. AMPC’s concern is that these choices must not assume that industrial rate increases can continue unabated.

Q11. Please discuss what AMPC recommends concerning regular rate design updates to ensure balanced revenue to cost ratios.

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.

Q12. Please discuss what AMPC recommends concerning “new rate options that can respond to the unique flexibilities and pricing needs of industrial customers”.

A12. AMPC supports the load curtailment and freshet rate pilot programs, for example. They are important to industrial customers and should be encouraged. Other initiatives may emerge in the future as well, from revisited access to market-indexed power, to rates based on non-firm service. The rate increases facing price-sensitive EITE industries demand that the Commission carefully consider creative options as they arise.

²² Project 3698622, British Columbia Hydro and Power Authority F2012-2014 Revenue Requirements Application, ex. C18-8, p. 4, lines 12-14.

²³ *Ibid.*, p. 3, line 2.

III. CONCLUSION

Q13. Please summarize AMPC's concerns and the steps it recommends that the Commission should take in response.

A13. BC Hydro's sales forecast is subject to revenue risks from:

- Erosion from the price sensitivity of EITE industries within BC, and
- Delayed natural gas sector development.

For the industrial class in particular, competitive electricity costs are vital to maintaining their presence and support of the economy in BC. AMPC expects that continued material rate increases will not support the expected revenues, risking "lumpy" exits by large loads inconsistent with price elasticity assumptions. To maintain expected revenues, some price moderation must be found for EITEs. This will require staying to BC Hydro's course of no more than 2.6% rate increases in the next test period, regardless of the rate-smoothing account effects within *this* test period. Indeed, while the "across the board" uniform rate increases have been legislated, they are caps rather than floors and lower increases could be approved. BC Hydro has risen to the challenge of identifying sufficient efficiencies to stay within the 10-year rate plan's parameters, and AMPC expects it can continue to do so in pursuit of the 2.6% target.

Price moderation will also require the development of rate options that can address the erosion of competitive rate levels, and more frequent rate design corrections to revenue/cost ratios.

The Commission should also clearly identify and quantify the constraints imposed by shareholder-driven costs: dividend payments, water rentals, taxes and amortization of debt. Ultimately, any suggestion that rates beyond the rate caps are necessary for BC Hydro to finance and maintain the reliability of generation and transmission infrastructure in BC must be weighed against the risk of industrial demand destruction.

Appendix “A” – AMPC Analysis of Hydro-Quebec Rate Survey Report F2011-F2017

		Price, \$.01/kWh							Relative Ranking						
Residential		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	12	10	10	7	6	4
Charlottetown,	PEI	16.15	14.51	14.51	14.87	15.24	15.62	16.02	12	10	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	15.45	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	16.15	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	11.55	11.96	6	4	4	5	7	4	6
Toronto,	ON	11.82	12.90	13.57	12.48	13.78	14.31	17.81	9	7	9	6	9	9	12
Vancouver,	BC	7.79	7.68	8.78	8.91	9.71	10.29	10.70	3	3	3	3	3	3	5
Winnipeg,	MB	7.08	7.31	7.46	7.63	7.89	8.11	8.43	2	2	2	2	2	2	2
Industrial - 1823A															
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	7.40	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	2	1
Halifax,	NS	7.61	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	6.86	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	9	9
St. John's	NL	3.98	3.98	3.98	3.98	4.77	4.77	4.90	2	2	2	2	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	4	7	8
Winnipeg,	MB	3.55	3.62	3.69	3.78	3.91	4.02	4.18	1	1	1	1	1	1	2
Industrial - 1823 Tier 1															
Montréal.	QC	4.55	4.53	4.51	4.62	4.78	4.90	4.90	4	4	4	4	3	5	5
Calgary,	AB	5.03	6.80	8.28	14.02	7.40	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	2	1
Halifax,	NS	7.61	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	6.86	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	9	9
St. John's	NL	3.98	3.98	3.98	3.98	4.77	4.77	4.90	3	2	2	2	2	4	5
Toronto,	ON	9.40	9.64	10.46	10.81	11.03	5.55	4.99	11	12	11	10	12	7	7
Vancouver,	BC	3.88	4.19	4.50	4.58	4.99	5.29	5.49	2	3	3	3	4	6	8
Winnipeg,	MB	3.55	3.62	3.69	3.78	3.91	4.02	4.18	1	1	1	1	1	1	2
Industrial - 1823 Tier 1 with PST															
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	7.40	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	2	1
Halifax,	NS	7.61	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	6.86	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	9	9
St. John's	NL	3.98	3.98	3.98	3.98	4.77	4.77	4.90	3	2	2	2	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	3.89	4.21	4.51	4.90	5.34	5.66	5.87	2	3	4	4	4	7	8
Winnipeg,	MB	3.55	3.62	3.69	3.78	3.91	4.02	4.18	1	1	1	1	1	1	2

	2011	2012	2013	2014	2015	2016	2017
RS1823A (Blended rate)	\$ 32.71	\$ 35.33	\$ 36.71	\$ 37.24	\$ 40.59	\$ 43.03	\$ 44.75
RS 1823 Tier 1	\$ 28.17	\$ 31.07	\$ 32.61	\$ 33.20	\$ 36.19	\$ 38.36	\$ 39.81
RS 1823 Tier 2	\$ 73.60	\$ 73.60	\$ 73.60	\$ 73.60	\$ 80.22	\$ 85.03	\$ 89.20
Demand [\$/kV.A]	5.581	6.027	6.263	6.353	6.925	7.341	7.635
Rate Increase	6.11%	8.00%	3.91%	1.44%	9.00%	6.00%	4.00%
Rate Rider	4.00%	2.50%	5.00%	5.00%	5.00%	5.00%	5.00%
PST	0.28%	0.28%	0.28%	7.00%	7.00%	7.00%	7.00%

rates after rate rider

RS1823A (Blended rate)	\$ 34.02	\$ 36.21	\$ 38.55	\$ 39.10	\$ 42.62	\$ 45.18	\$ 46.98
RS 1823 Tier 1	\$ 29.30	\$ 31.85	\$ 34.24	\$ 34.86	\$ 38.00	\$ 40.28	\$ 41.80
RS 1823 Tier 2	\$ 76.54	\$ 75.44	\$ 77.28	\$ 77.28	\$ 84.23	\$ 89.28	\$ 93.66
Demand [\$/kV.A]	\$ 5.804	\$ 6.178	\$ 6.576	\$ 6.671	\$ 7.271	\$ 7.708	\$ 8.017

Rates after PST

RS1823A (Blended rate)	\$ 34.11	\$ 36.31	\$ 38.65	\$ 41.84	\$ 45.60	\$ 48.34	\$ 50.27
RS 1823 Tier 1	\$ 29.38	\$ 31.94	\$ 34.34	\$ 37.30	\$ 40.66	\$ 43.10	\$ 44.73
RS 1823 Tier 2	\$ 76.76	\$ 75.65	\$ 77.50	\$ 82.69	\$ 90.13	\$ 95.53	\$ 100.22
Demand [\$/kV.A]	\$ 5.820	\$ 6.195	\$ 6.595	\$ 7.138	\$ 7.780	\$ 8.248	\$ 8.578

HQ report data

monthly bill	\$ 1,346,451.80	\$ 1,327,125.92	\$ 1,525,576.10	\$ 1,547,610.85	\$ 1,686,953.52	\$ 1,788,147.60	\$ 1,859,722.96
monthly use	30,600	30,600	30,600	30,600	30,600	30,600	30,600
demand	50,000	50,000	50,000	50,000	50,000	50,000	50,000
load factor	85%	85%	85%	85%	85%	85%	85%
industrial rate	\$ 44.00	\$ 43.40	\$ 49.90	\$ 50.60	\$ 55.10	\$ 58.40	\$ 60.80

Analysis

demand	\$ 290,212.00	\$ 308,883.75	\$ 328,807.50	\$ 333,532.50	\$ 363,562.50	\$ 385,402.50	\$ 400,837.50
energy (by difference)	\$ 1,056,239.80	\$ 1,018,242.17	\$ 1,196,768.60	\$ 1,214,078.35	\$ 1,323,391.02	\$ 1,402,745.10	\$ 1,458,885.46
energy rate with RR	\$ 34.52	\$ 33.28	\$ 39.11	\$ 39.68	\$ 43.25	\$ 45.84	\$ 47.68
energy rate before RR	\$ 33.14	\$ 32.44	\$ 37.15	\$ 37.69	\$ 41.09	\$ 43.55	\$ 45.29
% of blended rate	101.3%	91.8%	101.2%	101.2%	101.2%	101.2%	101.2%
difference	\$ (0.43)	\$ 2.89	\$ (0.44)	\$ (0.45)	\$ (0.49)	\$ (0.52)	\$ (0.55)

based on 1823A

energy	\$ 1,040,963.04	\$ 1,108,125.45	\$ 1,179,492.30	\$ 1,196,521.20	\$ 1,304,188.83	\$ 1,382,425.38	\$ 1,437,721.11
demand	\$ 290,212.00	\$ 308,883.75	\$ 328,807.50	\$ 333,532.50	\$ 363,562.50	\$ 385,402.50	\$ 400,837.50
monthly bill	\$ 1,331,175.04	\$ 1,417,009.20	\$ 1,508,299.80	\$ 1,530,053.70	\$ 1,667,751.33	\$ 1,767,827.88	\$ 1,838,558.61
effective rate	\$ 43.50	\$ 46.31	\$ 49.29	\$ 50.00	\$ 54.50	\$ 57.77	\$ 60.08

based on Tier 1, no PST

energy	\$ 896,482.08	\$ 974,510.55	\$ 1,047,759.30	\$ 1,066,716.00	\$ 1,162,784.70	\$ 1,232,506.80	\$ 1,279,095.30
demand	\$ 290,212.00	\$ 308,883.75	\$ 328,807.50	\$ 333,532.50	\$ 363,562.50	\$ 385,402.50	\$ 400,837.50
monthly bill	\$ 1,186,694.08	\$ 1,283,394.30	\$ 1,376,566.80	\$ 1,400,248.50	\$ 1,526,347.20	\$ 1,617,909.30	\$ 1,679,932.80
effective rate	\$ 38.78	\$ 41.94	\$ 44.99	\$ 45.76	\$ 49.88	\$ 52.87	\$ 54.90

based on Tier 1, with PST

energy	\$ 898,992.23	\$ 977,239.18	\$ 1,050,693.03	\$ 1,141,386.12	\$ 1,244,179.63	\$ 1,318,782.28	\$ 1,368,631.97
demand	\$ 291,024.59	\$ 309,748.62	\$ 329,728.16	\$ 356,879.78	\$ 389,011.88	\$ 412,380.68	\$ 428,896.13
monthly bill	\$ 1,190,016.82	\$ 1,286,987.80	\$ 1,380,421.19	\$ 1,498,265.90	\$ 1,633,191.50	\$ 1,731,162.95	\$ 1,797,528.10
effective rate	\$ 38.89	\$ 42.06	\$ 45.11	\$ 48.96	\$ 53.37	\$ 56.57	\$ 58.74