

June 13, 2017

VIA COMMISSION E-FILING SYSTEM

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

Attention: Mr. Patrick Wruck, Commission Secretary

Norton Rose Fulbright Canada LLP
1800 - 510 West Georgia Street
Vancouver, BC V6B 0M3 CANADA

F: +1 604.641.4949
nortonrosefulbright.com

Matthew D. Keen
+1 604.641.4913
matthew.keen@nortonrosefulbright.com

Assistant
+1 604.641.4527
rosalind.endo@nortonrosefulbright.com

Our reference
16-3822

Dear Sir:

**BC Hydro F2017-F2019 Revenue Requirement Application (RRA)
Association of Major Power Customer of BC (AMPC) – Final Argument**

In accordance with the Commission's timetable, please find enclosed the Final Argument 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/roe

Enclosure

7553172.02

Norton Rose Fulbright Canada LLP is a limited liability partnership established in Canada.

Norton Rose Fulbright Canada LLP, Norton Rose Fulbright LLP, Norton Rose Fulbright Australia, Norton Rose Fulbright South Africa Inc and Norton Rose Fulbright US LLP are separate legal entities and all of them are members of Norton Rose Fulbright Verein, a Swiss verein. Norton Rose Fulbright Verein helps coordinate the activities of the members but does not itself provide legal services to clients. Details of each entity, with certain regulatory information, are at nortonrosefulbright.com.

BRITISH COLUMBIA UTILITIES COMMISSION

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
F2017-F2019 REVENUE REQUIREMENTS APPLICATION
PROJECT NO. 3698869**

ARGUMENT OF THE ASSOCIATION OF MAJOR POWER CUSTOMERS OF BC

June 13, 2017

Association of Major Power Customers of BC (“AMPC”)

BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (“RRA”)

FINAL ARGUMENT

I. INTRODUCTION AND OVERVIEW

1. AMPC is an industry association that represents major industrial operators in BC, including in the pulp and paper, forestry, mining, electrochemical and petrochemical industries, in matters of electricity regulation. Many of these operators are energy intensive and trade-exposed (“EITE”) customers who are disproportionately affected by changes to industrial electricity rates, and therefore take a strong interest in the outcome of this proceeding. AMPC’s mandate is to ensure that industrial customers’ utility rates in BC are competitive, fair, and efficient.¹
2. In this argument, AMPC addresses the following concerns. AMPC raised these concerns throughout its evidence, and subsequent information Request (“IR”) responses on that evidence:
 - (a) BC Hydro’s industrial rates have rapidly increased since F2011 and are becoming increasingly uncompetitive compared to other provinces in Canada.
 - (b) Increasingly uncompetitive electricity rates heighten the risk of existing customers scaling or shutting down their operations, or transferring production to other jurisdictions, which slows new industrial investment in BC. Any such “demand destruction” will negatively affect all BC Hydro ratepayers, who will have to bear a greater proportion of costs.
 - (c) The Commission and BC Hydro must understand the risk that BC Hydro’s rate increases pose to the industrial load forecast when approving the rate-smoothing deferral account now, assessing BC Hydro programs that may retain load now, and considering “post-rate-cap” rate increases in the near future. AMPC is already concerned that BC Hydro’s load and revenue forecast is overly optimistic given its track record, the way it understates industrial customers’ price sensitivity and risk, and how it forecasts growth in certain sectors.
3. AMPC supports other parts of BC Hydro’s revenue requirement application, including BC Hydro’s continued plan to control costs, find efficiencies, and meet the capped rate increases under the 10-Year Rate Plan.² To make efficient uses of the resources available to it, and recognizing BC Hydro’s rate cap circumstances, AMPC has focussed its final argument to issues of specific concern. Where AMPC does not comment on an issue, it should not be taken for agreement or disagreement.
4. Finally, AMPC supports industrial load programs that have attracted some attention in the information requests of the Commission and other parties. They reflect appropriate and cost-effective collaboration between BC Hydro and AMPC, among other industrial customers, and should continue.

¹ Ex. C-9-7, AMPC Evidence, Q/A 2, p. 2.

² Ex. C-9-7, AMPC Evidence, Q/A 1, p. 3.

-
5. AMPC therefore recommends that the Commission direct BC Hydro to:
- (a) comply with the rate caps set out in the 10-Year Plan in the near to medium term, i.e., F2017-F2019 and F2020-F2024, by:
 - (i) proposing adjustments to revenue to cost ratios in the planned F2019 rate design filing (“rebalancing”);
 - (ii) minimizing amounts to be added to the rate-smoothing account; and
 - (iii) developing a broad “menu” of mitigating policy options if BC Hydro fails to meet its revenue target;
 - (b) recognize the risk of increasing rates to industrial customers by:
 - (i) replacing the universal price elasticity factor of -0.05 applied to industrial customers in favour of a higher price elasticity factor that more realistically captures the effect of cumulative rate impacts on more price-sensitive EITE industrial customers;
 - (ii) introduce conservatism to the load forecasting methodology by building in a transparent “iterative step” or price feedback mechanism to the facility-based industrial load forecast, explicitly considering the production-shifting risk of the rate increase(s) proposed for the test period; and
 - (c) continue to pursue innovative optional rates (e.g., load curtailment, freshet, market-indexed for incremental sales, time of use, etc.) that take advantage of industrial customers’ flexibility, mitigate the effect of rate increases, and reflect “win-win” outcomes relative to other rate classes by assisting BC Hydro to achieve or exceed its load and revenue forecast.
6. AMPC elaborates on each of these points in more detail below.

II. ARGUMENT

A. BC Hydro’s Industrial Rates Need to Stay Competitive

7. Industrial customers are a material component of BC Hydro’s total load, encompassing 27%.³ AMPC members, in turn, make up approximately 80% of BC Hydro’s Transmission Service Rate (“TSR”) customers.
8. While BC Hydro rates have historically been competitive for industrial users, AMPC’s Evidence shows that BC Hydro’s rates for industrial customers connected at transmission voltage under Rate Schedule 1823 (“**RS 1823**”) are becoming uncompetitive, irrespective of whether realistic (Tier 1 weighted) or conservative (non-trivial Tier 2 purchases) assumptions are made.

³ Ex. C-9-7, AMPC Evidence, Q/A 2, p. 3. Also, Ex. B-1-1, BC Hydro Application, p. 3-9.

9. There have been alarming rate increases for the TSR class in BC since F2011:

- Tier 1 pricing has increased by 42%, an increase of 51% when the cumulative impact of PST is included (recognizing that PST is poised to change).⁴
- AMPC prepared both conservative and realistic analyses of the Hydro Quebec study, and both confirm the rapid escalation of BC’s industrial rates relative to other regions in Canada.⁵
- As these increases surpass those of any other Canadian jurisdiction, they risk adverse effects to existing and future industrial customers and the competitiveness of the BC economy.⁶
- Specifically, BC Hydro’s industrial rates are the fourth most expensive out of the 12 Canadian locations surveyed, up from the second lowest-cost jurisdiction in less than five years.⁷ In other words, most of the locations now offer cheaper industrial rates than BC does.

Price, \$/kWh									Relative Ranking						
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

10. Given this external context, the efforts of the ten-year rate-smoothing plan to control the pace of rate increases are important to the public interest, and thereby the Commission’s mandate. As BC Hydro notes in its Final Argument,⁸ Directions 6 and 7 of its Shareholder’s Letter mandate rates that “remain among the most competitive” in North America as BC Energy Objectives and elements of BC Hydro’s Service Plan.
11. It is therefore critical that BC Hydro achieve or surpass its objective of limiting F2020-F2024 rate increases to 2.6% in its next several applications to the Commission.⁹
12. The rate-smoothing deferral account means that the rate caps are “soft”, however, and accordingly, regular and transparent Commission processes should be used to review

⁴ Ex. C-9-7, AMPC Evidence, Q/A 3, p. 4.

⁵ Ex. C-9-7, AMPC Evidence, Q/A 2, pp. 3-4 and Appendix “A”, p. 17.

⁶ Ex. C-9-7, AMPC Evidence, Q/A 2, pp. 3-4 and Appendix “A”, p. 17.

⁷ Ex. C-9-7, AMPC Evidence, Q/A 3, p. 4 and Appendix “A”, p. 16.

⁸ BC Hydro Final Argument, p. 16, para. 39.

⁹ Ex. B-10, BC Hydro response to AMPC IR 1.1.1.

BC Hydro's spending and practices to ensure accountability and to drive efficiencies in the absence of either a fully competitive environment or hard rate caps.¹⁰

13. Although AMPC has not been able to dedicate significant resources towards such efforts in this proceeding,¹¹ AMPC urges the Commission to ensure, through careful scrutiny, that BC Hydro does not exceed the proposed \$795 million addition to its rate-smoothing account over F2017-F2019, for collection during the F2020-F2024 period.¹²
14. Also, as AMPC argued at the second procedural conference, major proceedings are sufficiently important to customers and to BC that the *practical* starting point should be a standard oral hearing, unless it becomes demonstrably more efficient to shift some or all hearing components to streamlined written processes, depending upon the unique circumstances.¹³ Proceedings that feature large quantities of complex written evidence should invite cross-examination rather than shy from it, in order to ensure organizational accountability – again, unless, as here, stakeholder responses and circumstances permit moving components to wholly written processes.
15. AMPC remains concerned with the looming potential for industrial rate increases beyond those already proposed, i.e., rate increases greater than 2.6% in F2020-F2024 and beyond.¹⁴ Also, if BC Hydro's forecast load does not materialize, and BC Hydro under-collects its revenue requirement as a result, the shortfall is recovered through future rates.¹⁵ Programs and measures that address the growing competitiveness gap and retain industrial load, or even attract it, should therefore be the highest priority for BC Hydro and the Commission, not least because they ultimately benefit all customers.

B. BC Hydro Load Forecasting Accuracy Concerns

16. AMPC has identified four areas of concern in BC Hydro's load forecast:
 - BC Hydro has a documented history of over-forecasting both load and revenues, and there is evidence that this over-forecasting is occurring again.
 - BC Hydro's load forecasting model is a complex and unwieldy "black box" that incites concern about BC Hydro's load and related revenue forecast (e.g., it requires a significant amount of time to respond to changes in the assumptions, and struggles to produce sensitivity analyses). The model's methodology, inputs, and assumptions require further refinement to allow sensitivity studies for resource developments and multiplier effects.
 - BC Hydro's load forecast fails to capture real world industrial customers' responses to cumulative price increases. Because of the composition of the industrial customer class and the EITE nature of many industrial ratepayers' operations, rate increases affect industrial customers differently and more

¹⁰ Ex. C-9-7, AMPC Evidence, Q/A 10, p. 11.

¹¹ See, for example, Ex. C-9-11, AMPC's response to NIARG 3.2.

¹² Ex. B-1-1, BC Hydro Application, p. 1-43.

¹³ Transcript, Vol. 7, pp. 354-356.

¹⁴ Ex. C-9-7, AMPC Evidence, Q/A 4, p. 5.

¹⁵ BC Hydro's Final Argument details BC Hydro's use of the Non-Heritage Deferral Account for load variations at paras. 143 and 145, pp. 61-62, and paras. 169-171, pp. 73-74.

dramatically than other customer classes. BC Hydro must adjust the industrial price elasticity and load forecast to recognize the “lumpy” nature of industrial customers’ electricity demand and iteratively incorporate the requested rate increase into the final demand.

- BC Hydro has incorporated data and assumptions into its load forecasts about demand from oil and gas and other sectors that are overly optimistic and contrary to other data available on the record in this proceeding. The Commission should therefore be prepared to adjust BC Hydro’s load forecasts to better reflect the risks of slower growth in the oil and gas and nascent LNG industries, and better represent industrial trends.

AMPC elaborates on each of these areas below.

(a) Demonstrated History of Over-forecasting

17. BC Hydro’s load forecasting model demonstrates a clear history of over-forecasting, particularly in the oil and gas sector. Also, as discussed further below, some of its industrial inputs and assumptions are flawed.
18. In BC Hydro’s response to BCUC IR 2.200.4, BC Hydro provided the following comparison of approved forecast sales, actual sales, and variances between F2009 to F2016:¹⁶

Fiscal Year	Oil & Gas				Coal and Metal Mining				Forestry				Forecast Vintage
	Approved Forecast	Actual Sales	Variance Actual less Forecast	Percentage Difference	Approved Forecast	Actual Sales	Variance Actual less Forecast	Percentage Difference	Approved Forecast	Actual Sales	Variance Actual less Forecast	Percentage Difference	
	GWh	GWh	GWh	%	GWh	GWh	GWh	%	GWh	GWh	GWh	%	
F2009	945	810	(134)	-14%	2,833	2,738	(94)	-3%	10,304	9,678	(625)	-6%	October 2008 Forecast
F2010	1,011	890	(121)	-12%	2,828	2,783	(45)	-2%	10,227	8,323	(1,904)	-19%	October 2008 Forecast
F2011	1,120	946	(174)	-16%	2,647	2,786	139	5%	9,289	8,359	(930)	-10%	March 2010 Forecast ¹
F2012	1,480	954	(526)	-36%	2,917	2,720	(197)	-7%	8,817	8,757	(60)	-1%	March 2011 Forecast
F2013	1,859	961	(898)	-48%	3,251	3,101	(151)	-5%	8,937	8,351	(587)	-7%	March 2011 Forecast
F2014	2,514	1,032	(1,482)	-59%	4,098	3,528	(571)	-14%	8,570	8,234	(336)	-4%	March 2011 Forecast
F2015	1,683	1,116	(568)	-34%	3,939	3,806	(132)	-3%	7,496	7,959	463	6%	October 2013 Forecast
F2016	1,966	1,276	(691)	-35%	4,355	3,882	(474)	-11%	7,297	7,389	93	1%	October 2013 Forecast

Note:
 1. The vintage of the fiscal 2011 forecast is March 2010 and not July 2009 as stated in the response to BCUC IR 1.4.3.
 2. The total variance for each subsector through the years represents the sum of positive and negative variances for individual large industrial customers which have been added together.

19. The table shows, for the oil and gas sector, year-over-year over-forecasts that range from a 12% over-forecast to over-forecasts of up to 59%. Significant over-forecasts exist for nearly every year for the coal and metal mining and forestry sectors as well.
20. Even though this forecasting model was accepted by the Commission in past proceedings, as BC Hydro argues,¹⁷ its outputs clearly do not reflect actual loads.
21. The explanations that BC Hydro provides for the over-forecasts also appear to reflect market conditions that persist in 2017. For example, regarding the oil and gas sector over-forecasts, BC Hydro identified three factors to explain the discrepancies:¹⁸

¹⁶ Ex. B-14, BC Hydro Response to BCUC IR 2.200.4.

¹⁷ BC Hydro Final Argument, para. 53, p. 26.

- aggressive growth in US shale production that have resulted in downward gas liquids prices and customer load requests failing to materialize;
 - changes in global LNG supply and demand; and
 - the attractiveness of gas based self-supply relative to grid-based electricity supply.
22. AMPC's concern remains. It is not clear that BC Hydro's load forecasting model has accounted for the risk that new customer requests for service and consumption projections may fail to materialize. In response to Commission IR 2.197.3, BC Hydro emphasized that to date, its May 2016 load forecast is within 1% of actuals, and that 90% of the test period load can be attributed to existing customers or projects under construction.¹⁹ AMPC's concern extends beyond the test period (although competitiveness should be addressed now), and is not convinced that forecasts attributed to facilities under construction and yet to commence operations, should be considered reliable.

(b) Industrial Customers' Demand is "Lumpy"

23. As AMPC identified in its Evidence, BC Hydro's load forecast fails to recognize and account for the "stepwise" and "lumpy" of industrial customers' electricity demand: "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."²⁰
24. AMPC elaborated on its concerns regarding industrial demand as follows in its responses to Commission IR 2.1.1 and NIARG IR 1.3:

[Industrial loads] that are energy intensive and trade exposed are, by definition, especially vulnerable to the effect of rate increases that continue to exceed the pace of inflation, particularly compared to other rate classes. Energy comprises a significant proportion of their costs, and their revenues are driven by external market prices, meaning energy costs directly affect profitability. All customers are harmed if industrial load is lost and BC Hydro's costs are spread over the remaining customer base. It is the combination of those two factors that make EITE customers unique and in need of careful consideration in the context of BC Hydro's load forecast.

Industrial loads tend to comprise large pieces of equipment that operate most efficiently at their design capacity. Partial loadings are less efficient and result in increased costs per unit of production. The "stepwise nature of industrial customers' electricity demand" refers to the limited manner in which electricity intensive and trade exposed industrial customers are able to adapt to and absorb electricity rates given the nature of facility operation. Their ability to adapt and absorb electricity

¹⁸ Ex. B-14, BC Hydro Response to BCUC IR 2.200.4.

¹⁹ Ex. B-14-2, BC Hydro Response to BCUC IR 2.197.3.

²⁰ Ex. C-9-7, AMPC Evidence, Q/A 7, p. 8.

rate increases by cutting other costs economically is limited, and the price-taking nature of the firms means that all cost reductions lead to increased profits and can be expected to have already been implemented. As a result, in response to electricity rate increases, especially those that exceed inflation, large blocks of load may drop off in a “stepwise manner”, i.e., entire mills, lines, plants, facilities, etc., once the business cannot absorb those costs and continue to operate profitably. In other words, the rate increases may cause the business to cross their breakeven threshold, necessitating a shutdown of all, or a significant portion, of their production.²¹

25. Industrial ratepayers, especially in EITE sectors, are most susceptible to price increases and face escalating risks as price increases accumulate. As AMPC described in its Evidence, these ratepayers may be required to scale back or shut down their operations once electricity prices are too high, resulting in “demand destruction” and an even greater burden on other ratepayers:

- *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.²²*
- *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.²³*

26. BC Hydro conceded that the large industrial sector is particularly vulnerable, and is notoriously difficult to forecast for:

- *“[t]his Large Industrial sector is the most volatile and difficult to forecast, given the variability in drivers of the forecast (e.g., external commodity markets) and events such as large customer attrition.”²⁴*
- *“[t]he large industrial sector has historically exhibited volatility in sales due to several factors such as fluctuations in global commodity prices and*

²¹ Ex. C-9-11, AMPC Response to NIARG 1.3.

²² Ex. C-9-7, AMPC Evidence, Q/A 7, p. 8.

²³ Ex. C-9-7, AMPC Evidence, Q/A 7, p. 8.

²⁴ BC Hydro Final Argument, para. 70, p. 33, citing Ex. B-1-1, BC Hydro Application, p. 3-9.

unpredictable events such as temporary or permanent closure of large industrial facilities.”²⁵

27. Furthermore, industrial load declines (or departures) can happen suddenly, without clear or advance signals. As AMPC identified in its Evidence, BC Hydro’s industrial load declined by 17% between 2006 and 2015.²⁶ AMPC elaborated in response to BCSEA IR 1.2:

[T]he 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... 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.²⁷

(c) BC Hydro’s Load Forecasting Methodology Should be Updated

28. As mentioned above, BC Hydro’s central argument concerning why its methodology should be accepted by the Commission is that the methodology “has been in place for many years, has been endorsed by Government in the 2013 Integrated Resource Plan and by the Commission in prior applications, and is consistent with the Commission’s resource planning Guidelines.”²⁸ None of this places the methodology beyond any need for improvement.
29. BC Hydro claims past proceedings have used the same methodology, dating back to 2003. None is more recent than 2010.²⁹ Obviously, each Revenue Requirement Application must be subject to careful scrutiny, regardless of whether aspects of the application are recurrent or novel. Even if BC Hydro’s load forecasting methodology was accepted in the past, BC Hydro must still ensure its methodology is appropriate for the market and industry circumstances of today.

(d) Industrial Price Sensitivity

30. Because the large industrial sector is notoriously difficult to forecast and the economic risks of industrial attrition are severe for all customers, BC Hydro’s load forecast and revenue forecast must be careful and measured.

Demand Elasticity Factor

31. AMPC’s Evidence disputes the common demand elasticity factor of -0.05 that BC Hydro used for each of residential, commercial, light industrial, and large industrial rate

²⁵ Ex. B-1-1, BC Hydro Application, pp. 3-9.

²⁶ Ex. C-9-7, AMPC Evidence, Q/A 2, p. 4 and Table, p. 4.

²⁷ Ex. C-9-9, AMPC Response to BCSEA IR 1.2.

²⁸ BC Hydro Final Argument, para. 53, p. 26.

²⁹ *Ibid.*, para. 54, p. 27, footnote 72.

- classes.³⁰ BC Hydro did not undertake any individual sector elasticity studies,³¹ and a common demand elasticity factor results in a “one-size fits all” for all rate classes that falls far short of representing industrial customers’ higher degree of price sensitivity. It is simply inadequate for industrial customers.³²
32. This stronger price sensitivity is well-recognized. In its 2015 BC Hydro Rate Design Application (“**RDA**”) Reasons for Decision, the Commission repeated its finding from the 2013 Residential Inclining Block Report: “Large consumers have higher elasticity (higher average response to higher prices) than smaller consumers.”³³ BC Hydro also used a -0.16 price elasticity factor for industrial customers in its F2010 Demand-Side Management Milestone Evaluation Summary Report” (a figure AMPC challenged as unduly limited in cross-examination during the RDA oral hearing, in passing).³⁴
33. BC Hydro stated in its Rebuttal Evidence that the -0.16 price elasticity from the 2013 Residential Inclining Block Report “cannot be compared on an ‘apples to apples’ basis” to the -0.05 price elasticity estimate used in this application, and “could double count price responsiveness effects”.³⁵ BC Hydro’s response is no reason to prefer the coarse and equally stale -0.05 figure, which dates from before 2008 and is even less precise than -0.16.³⁶
34. BC Hydro’s concern about “double counting” price responsiveness effects by using an elasticity factor for industrial customers is also, confusingly, a criticism that equally applies to its current methods. Earlier in the same document, BC Hydro states “AMPC is correct that BC Hydro applies a common elasticity factor of -0.05 to all customer classes. However, this is only one means by which price elasticity is applied in the context of industrial customers.”³⁷
35. AMPC’s point is not that -0.16 must be used, it is that -0.05 should **not** be used, and a factor clearly applicable to industrial customers should be substituted. The only other example the Commission has is the -0.16 offered by BC Hydro in earlier times.

“Individual Facility Assessments”

36. BC Hydro’s Argument responds to AMPC’s concerns about industrial forecasting by pointing to its “individual facility assessments” undertaken by Key Account Managers (“**KAMs**”) that attempt to “[take] into account electricity cost impacts on the customers operations”.³⁸ The facility assessments both predict load and apply a KAM-sourced risk-based “probability weighting”, i.e., a discount, to the load forecast.³⁹

³⁰ Ex. B-1-1, BC Hydro Application, p. 3-4, footnote 29; Ex. B-10, BC Hydro Response to AMPC IR 1.3.2, although BC Hydro specifically exempts FortisBC and Seattle City Light.

³¹ Ex. B-10, BC Hydro Response to AMPC IR 1.3.2.

³² Ex. C-9-11, AMPC Response to NIARG IR 3.1.

³³ British Columbia Hydro and Power Authority 2015 Rate Design Application, Decision and Order G-5-17, p. 16. <http://www.ordersdecisions.bcuc.com/bcuc/decisions/en/218025/1/document.do>

³⁴ Ex. C-9-9, AMPC Response to BCSEA IR 2.2.

³⁵ Ex. B-20, BC Hydro Rebuttal Evidence, Q/A 5, pp. 21-22.

³⁶ BC Hydro Final Argument, paras. 131-132, pp. 56-57.

³⁷ Ex. B-20, BC Hydro Rebuttal Evidence, Q/A 3, p. 18, lines 3-5..

³⁸ BC Hydro Final Argument, para. 75, p. 36; Ex. B-10, BC Hydro Response to AMPC IR 1.3.2.

³⁹ BC Hydro Final Argument, para. 76, p. 36. Also see Ex. B-10, BC Hydro Response to AMPC IR 1.9.2.

37. As AMPC's Evidence noted, however, the KAM forecasts have several limitations:
- The sources of information that BC Hydro relied on to conduct these assessments (namely, internal BC Hydro staff and Key Account Managers, consultants, and industry news services) will largely reflect non-sensitive, public information. They are legitimate information sources, but limited, and should not be understood to paint a complete picture of the market challenges and price sensitivity that many industrial ratepayers face.
 - The KAM-generated probability weightings do not include the "iterative step" of concern to AMPC. That is, AMPC understands that the KAM forecast assesses only status quo production, rather than production (i) subject to electricity rate increases that outpace the rate of inflation and consume an increasing proportion of customer costs and, critically, that (ii) is often capable of being shifted, in whole or in part, to other jurisdictions with potentially lower cost environments. As BC Hydro's industrial rates become less competitive with other utilities, the risk of such production shifts escalates.
38. Accordingly, BC Hydro's understated demand elasticity, and understated KAM-generated risk profiles, are insufficient to accurately reflect the nature of industrial demand or introduce conservatism into BC Hydro's load forecast. An additional "iterative step" is required that considers what effect the proposed rate increase would have on individual facilities once it is implemented on top of all prior rate increases.
39. The iterative step should include consideration of the rapidly falling relative competitiveness of BC Hydro's industrial rates, and the risk of potentially shifting production to other jurisdictions. For example, comparing the rate increase to the first quartile of Canadian electricity rates (a rank BC occupied until recently). As BC Hydro recognizes with its current "double barreled" industrial load forecast methodology, highlighted earlier, simply applying a single elasticity factor to industrials – especially EITEs – can fail to reflect the relative force that attracts or repels an industry to continue to operate in that jurisdiction.
40. BC Hydro disputes the need for an "iterative step" for three reasons: the industrial forecast already accounts for elasticity beyond the -0.05 factor; there is less value in additional "feedback" in the context of the 10-year Plan; and large industrial load is tracking close to forecast.⁴⁰
41. These objections are, with respect, ill-founded because:
- BC Hydro's use of "individual facility assessments" to create its industrial forecast illustrates why the use of a dated and coarsely applied "universal" demand elasticity factor is insufficient to model industrial load's likely response to rate increases. In the circumstances, the use of BC Hydro's elasticity factor is irrelevant to the use of an iterative step or not.
 - The suggestion that the existence of a 10-year rate plan means there is little value to an iterative step is confused. The purpose of an iterative step is neither to try to calculate what a rate increase will be, nor to inform customers but, again,

⁴⁰ BC Hydro Final Argument, paras. 136-139, p. 59.

to model how customer consumption changes once the rate increases take effect. Further, AMPC's concern focuses on the potential for future rate increases, in part driven by deferral accounts, that exceed the 10-year rate plan (i.e., immediately after the test period), which is what underpins AMPC's concern that steps to address competitiveness are needed now, during the test period.

- It is insufficient comfort that the forecast is tracking well for the relatively short period since May 2016, when past forecasts have tracked poorly overall, as noted above.

(e) Overly Optimistic Growth Assumptions

42. AMPC's evidence expressed concern that BC Hydro's forecast for natural gas production and LNG exports is overly optimistic and, as a result, could result in BC Hydro falling short of its expected revenue and implementing rate increases in response.⁴¹
43. As AMPC's Evidence noted, BC Hydro is transparent about the fact that growth in oil and gas forecast products 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 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.⁴²

44. AMPC identified similar risks in its Evidence, recommending that the Commission "recognize the risk that BC Hydro's industrial revenue will depend on traditional industries for the time being, pending LNG investment decisions."⁴³
45. BC Hydro criticized AMPC's statement that BC Hydro sensitivity analyses and US EIA data suggest that Canadian LNG export decisions will dominate the relative economic impact of BC natural gas development. BC Hydro stated that its "more detailed analysis" was more reasonable, as it considered a relatively competitive cost structure, active liquids plays, and the potential to supply US LNG exports.⁴⁴
46. CEBC's Evidence likewise emphasized that projects related to natural gas liquids represent sufficient growth within the test period that oil and gas based concerns about the load forecast can be dismissed.⁴⁵

⁴¹ Ex. C-9-7, AMPC Evidence Q/A 9, pp. 9-11.

⁴² Ex. B-1-1, BC Hydro Application, p. 3-17, lines 3-19; also see ex. C-9-7, AMPC Evidence Q/A 9, p. 9.

⁴³ Ex. C-9-7, AMPC Evidence Q/A 9, p. 10.

⁴⁴ Ex. B-20, BC Hydro Rebuttal Evidence, pp. 23-25.

⁴⁵ Ex. C-46, CEABC Evidence, p. 7.

47. What is absent from those positions is the frankness presented in BC Hydro's Application about the medium and long-term demand uncertainty in that subsector, and the obvious role Canadian LNG plays in driving development decisions at the pace BC Hydro projects. AMPC's load forecast concern is also not limited to the test period. AMPC's focus is on the need to undertake innovative programs during the test period to mitigate the risk that the medium to long term load forecast is missed, and in turn help limit post-test period rate increases to the targeted 2.6%.
48. AMPC also identified concerns with BC Hydro's "multiplier effect" in its modelling, which relates to general load growth (referred to as the "knock on" effect) linked to the economic effects of any major investment, which in turn increases BC Hydro's overall income.⁴⁶ As AMPC stated in its Evidence:

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.⁴⁷

49. 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 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.⁴⁸

50. If LNG development proceeds more slowly than the RRA forecasts, the associated multiplier effects on load growth will be similarly delayed. In other words, there is lost industrial load if LNG-related load develops later than forecasted or not to the extent projected.⁴⁹
51. AMPC's concerns are uncontentious, and reflect widespread concerns that regularly appear in media and regulator commentary. As AMPC stated in response to NIARG IR 2.1, 2.2, and 2.3:

Delays to BC LNG projects, BC natural gas production linking to LNG development over the medium to long term, and over-optimistic oil and gas production forecasts are all uncontroversial risks. Notably, the

⁴⁶ Ex. C-9-7, AMPC Evidence Q/A 9, pp. 10-11.

⁴⁷ Ex. C-9-7, Q/A 5, pp. 6.

⁴⁸ Ex. B-15-2, Revised Response to AMPC 2.2.1.

⁴⁹ Ex. C-9-8, AMPC Response to BCUC IR 1.1.

National Energy Board recognizes that there is considerable uncertainty regarding how much LNG will be exported from Canada, given there are numerous projects currently under construction around the world that could provide sufficient capacity to meet global LNG demand for many years to come. Its report notes that some market observers suggest that it is more likely that Canada begins exporting LNG in the 2030s.⁵⁰

52. Again, at this time AMPC does not recommend a specific downward adjustment to BC Hydro's natural gas and LNG load forecasts. Rather, AMPC recommends that the Commission and BC Hydro respond by being sensitive to the risk of demand destruction on the part of other industrial customers, by adhering to the 2.6% target in the next RRA, and continuing to develop programs that let industrial customers mitigate the effect of ongoing rate increases.

C. New Programs and Policy Measures

53. As mentioned earlier, to mitigate the risk posed to BC Hydro's load forecast and revenue requirement by increasingly uncompetitive rates, AMPC supports innovative, optional programs and measures that can help retain industrial load and encourage new load.
54. AMPC's Evidence specifically identified options that should continue: the load curtailment and freshet rate pilot programs, market-indexed power in appropriate conditions, or 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.⁵¹ The pilot projects to date reflect action on things like the recommendation of the independent Industrial Electricity Policy Review panel to take advantage of industrial customers' "operational flexibility to reduce peak demand" as a means to avoid "decisions to close or reduce production in British Columbia, or move production out of the province."⁵²
55. AMPC has noted BC Hydro's extensive responses to information requests explaining the industrial load curtailment pilot program,⁵³ and reiterates its support for the program. AMPC's experience was that, over the course of two years, both BC Hydro and AMPC members learned how to make efficient use of the program.
56. The outcome of the load curtailment pilot program was a reliable resource at the cost of \$49/MWh,⁵⁴ that was materially more economic than the marginal cost of other long-run capacity generation options. Having incubated this capacity resource via a two-year pilot program, AMPC recommends that BC Hydro build on its success and continue the program, before the opportunity to leverage the learnings and key staff is gone. The results of the pilot show that industrial capacity-based demand-side management programs represent a real opportunity for BC Hydro to defer generation investment while both retaining load and mitigating the effect of its rate increases. They represent the

⁵⁰ Ex. C-9-11, AMPC Response to IR NIARG IR 2.1, 2.2, and 2.3.

⁵¹ Ex.C-9-7, AMPC Evidence, Q/A 12, p. 12.

⁵² Ex.C-9-8, AMPC response to BCUC IR 1.2.1.1, p. 4.

⁵³ Exs. B-9 and B-14-2, BC Hydro Responses to BCUC IRs 1.183, 2.317, 2.318, 2.319, Ex. B-22, BCSEA IR 3.66.

⁵⁴ BC Hydro Final Argument, para. 496, p. 225, citing Ex. B-14, BC Hydro Response to BCUC IR 2.317.3. Also see para. 498, p. 226, citing Ex. B-21, BCUC IR 3.339.2.2 and Ex. B-22, BCSEA IR 3.66.1.

same or better opportunity that BC Hydro suggests for the “low carbon electrification programs” associated with the Climate Leadership Plan.⁵⁵

57. AMPC also supports more regular rate re-balancing as a means to help address competitiveness and limit cross-subsidies.⁵⁶ The Commission should ensure that BC Hydro receives appropriate direction during F2018 to prepare a F2019 Cost of Service study that would address rate rebalancing, as articulated in BC Hydro’s Rebuttal Evidence.⁵⁷
58. AMPC’s Evidence also requested the Commission to “clearly identify and quantify the constraints imposed by shareholder-driven costs: dividend payments, water rentals, taxes and amortization of debt.”⁵⁸ BC Hydro’s Rebuttal Evidence responded by noting that “[t]here is already transparency around how these items affect BC Hydro’s revenue requirements”,⁵⁹ citing sections 1.4, 4.4 and 8.5 of its Application, and its Evidentiary Update.
59. BC Hydro misses the point. AMPC is not criticizing BC Hydro or its Application. AMPC is recommending that the Commission weave together and flag potential policy changes and/or constraints in a common section of its decision, as a “menu” of options for government to mitigate further rate increases should the targeted 2.6% targets be threatened. As AMPC stated in IRs, “Part of the Commission’s role is to present information and analysis clearly that allows government and the public to understand the effects of policy choices, so as to potentially advocate for or against policy changes.”⁶⁰
60. In closing, AMPC continues to recommend all of the above steps as part of helping BC Hydro meet or exceed its load forecast (and thereby its revenue requirement), making BC Hydro’s industrial rates more competitive and creating a “virtuous cycle” for the benefit of all ratepayers.⁶¹

III. CONCLUSION

61. Based on the foregoing, AMPC respectfully requests that the Commission:
 - (a) minimize amounts added to rate-smoothing account, to assist keeping rate increases at or under the 2.6% targeted for post-test-period years of the 10-Year Plan;
 - (b) support innovative optional rates such as the load curtailment and freshet pilot programs, and similarly future market-indexed or time-of-use type rates, to retain load, make BC more competitive, and assist BC Hydro in meeting its load forecast; and

⁵⁵ BC Hydro Final Argument, paras. 117-119, pp. 51-52.

⁵⁶ Ex. C-9-7, AMPC Evidence, Q/A 11, p. 12.

⁵⁷ Ex. C-9-11, Response to NIARG IR 5.2; Ex. B-20, BC Hydro Rebuttal Evidence, Q/A 12, pp. 29-30.

⁵⁸ Ex. C-9-7, AMPC Evidence, Q/A 13, p. 13.

⁵⁹ Ex. B-20, BC Hydro Rebuttal Evidence, Q/A 11, pp. 28-29.

⁶⁰ Ex. C-9-8, AMPC response to BCUC IR 1.3.2, p. 7.

⁶¹ Ex. C-9-8, AMPC Response to BCUC IR 2.1.

-
- (c) direct BC Hydro to:
- (i) develop an elasticity factor relevant to industrial customers that would replace the coarse and common elasticity factor;
 - (ii) introduce a more transparent “iterative step” / “feedback mechanism” to the “individual facility assessment” aspect of the industrial load forecast; and
 - (iii) at the appropriate time, include rate rebalancing proposals in its pending F2019 Cost of Service Study.

All of which is respectfully submitted this 13 day of June, 2017.

Norton Rose Fulbright Canada LLP



Matthew D. Keen

Counsel to the Association of Major Power Customers of British Columbia



Emily Chan