

**REQUESTOR NAME: Clean Energy Association of B.C. (CEABC)**  
**INFORMATION REQUEST ROUND NO: #1 on AMPC EVIDENCE)**  
**TO: ASSOCIATION OF MAJOR POWER CUSTOMERS (“AMPC”)**  
**DATE: December 17, 2019**  
**PROJECT NO: 1598990 / Order G-45-19**  
**APPLICATION NAME: BC Hydro F2020-F2021 Revenue Requirements Application (“F20-21 RRA” or “RRA”)**

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**1.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the Association of Major Power Customers of BC (AMPC), discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 1.1, Conclusions and Recommendations, states (underlining added):

*“9. There are costs included in BC Hydro’s Application that contribute materially to the un-competitiveness of rates, but are understood to be beyond the regulatory jurisdiction of the BCUC at this time, due to directions from Government. It is important to have such costs clearly identified even if the BCUC cannot direct associated changes (Section 4.6).”*

*10. With a return to full regulation, the BCUC must ensure future rate reviews consider and test the prudence and least cost nature of all costs that continue to be included in revenue requirement (even costs committed in previous periods, which have to date not been properly tested or adjusted in rates). A number of costs are now explicitly acknowledged by either the BC Government (Independent Power Producer costs, Water Rentals) or the BCUC (Capital projects which merited an ex post factor review to determine prudence) as not meeting the test for least cost utility planning or full and transparent regulatory review. (Section 4.6).*

Section 2.0, paragraphs 2 and 3 state (underlining added):

*As a general principle, prices for electricity throughout Canada are set based on one of the following three basic approaches:*

- 1) reliance on market forces and free and fair competition for components of service that can be provided on this basis, such as generation ... or*
- 2) by government, based on political considerations, such as in Quebec for bulk power, Nunavut, and British Columbia from 2013 to the most recent Government policy to start reverting back to BCUC oversight; or*
- 3) based on regulated cost of service approaches ...”*

*BC Hydro’s RRA for F2020-F2021 is an amalgamation between the latter two approaches, where Government has set direction for some requirements for rate setting, with the BCUC exerting regulatory oversight for some cost categories making up BC Hydro’s revenue requirement.”*

BC Hydro stated in its Report on the Clean Power Call RFP<sup>1</sup> that:

*“The price to be paid for this electricity met BC Hydro's expectations based on comparisons to other BC Hydro processes and similar processes undertaken by other jurisdictions, and to 2008*

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<sup>1</sup>BC Hydro 2010 Clean Power Call: Report on the RFP Process. Page 2.

*LTAP projections. BC Hydro's Clean Power Call process has resulted in the acquisition of cost-effective clean, renewable electricity for BC Hydro's ratepayers."*

BC Hydro stated in its Report on the Bioenergy Phase 2 Call RFP<sup>2</sup> that:

*"The cost-effectiveness is also demonstrated by comparing the RFP results to other BC Hydro calls. ... Furthermore, the weighted-average Average Firm Energy Price for the Bioenergy Phase 2 RFP is lower than that for the Clean Power Call ... The Bioenergy Phase 2 RFP awards are also comparable to recent Hydro-Quebec awards for biomass and wind projects."*

- 1.1 Please advise why the above competitively awarded EPAs are not included in the basic approach "1) reliance on market forces and free and fair competition for components of service that can be provided on this basis, such as generation...?"
- 1.2 Please identify where the BC Government has explicitly acknowledged Independent Power Producer costs "as not meeting the test for least cost utility planning or full and transparent regulatory review."
- 1.3 Please advise why above competitively awarded EPAs do not "meet the test for least cost utility planning or full and transparent regulatory review."

**2.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 3.2, BC GOVERNMENT COMPREHENSIVE REVIEW OF BC HYDRO, states (underlining added):

*"BC Hydro's Original RRA was filed following the February 2019 Ministry of Energy, Mines and Petroleum Resources' Comprehensive Review of BC Hydro: Phase 1 Final Report.*

*In addition, a concurrent review was undertaken by Ken Davidson as part of the review relating to purchase of power from IPPs, which was also made available in February 2019.<sup>3</sup>"*

*Phase 1 of the Comprehensive Review primarily addresses three key areas:<sup>15</sup>*

1. *Enhancing the BCUC oversight of BC Hydro.*
2. *Establishing new electricity rates.*
3. *Short-term actions to address power acquisition costs (Electricity Purchase Agreements or "EPAs")*

*For short-term control of EPA costs, or the form of agreement by which BC Hydro purchases power from Independent Power Producers (IPPs), the Comprehensive Review offers little relief. The only actions tie to limiting future purchases under the Standing Offer Program and limiting renewals under the strategically important biomass EPAs (which are specifically cited to be important to "recognizing the socio-economic importance of forest sector facilities" but also function to improve competitiveness and as a result support BC Hydro's own financial interests in respect of domestic loads). There has been*

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<sup>2</sup>BC Hydro 2012 Biomass Energy 2: Report on the RFP Process, Page 3.

<sup>3</sup>Zapped: A Review of BC Hydro's Purchase of Power from Independent Power Producers conducted for the Minister of Energy, Mines and Petroleum Resources, by Ken Davidson, February 2019

no relief or pathway to solutions proposed to address the significant problems posed by existing IPP arrangements.

- 2.1 Why are biomass EPAs singled out to be strategically important? Why not other IPPs, including Rio Tinto Alcan, Municipal Solid Waste, other co-gens, or independent IPPs?
- 2.2 Why are IPPs that provide grid support not strategically important?
- 2.3 Why are IPPs that involve First Nations and provide material benefits for First Nations not strategically important?
- 2.4 What are the “*significant problems posed by existing IPP arrangements*”?
- 2.5 Given what BC Hydro stated in its Report on the Clean Power Call RFP, and in its Report on the Bioenergy Phase 2 Call RFP, does AMPC not believe that these IPP EPAs were competitive at the time they were awarded?

**3.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.0, BACKGROUND AND CONTEXT, paragraphs 2 and 3 state (underlining added):

*In a sense, many of the present issues arise from a material change in direction for BC Hydro as a result of the Government’s 2002 BC Energy Plan. As noted in the Comprehensive Review (Section 4.2.2), this period reflected a material change in direction for the policy towards IPPs. The policy framework was also applied inconsistently and excessively between 2002 and 2012, the overall outcome was to significant ratepayer detriment.*

*Subsequent government reviews and policies exacerbated the effects of the 2002 Energy Plan, such as the 2007 Energy Plan which greatly increased the magnitude of IPP purchases required.*

In Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, paragraphs 1 to 3, AMPC quotes from a 3<sup>rd</sup> party report, called Zapped<sup>4</sup> and states (underlining added):

*“Concurrent with the Comprehensive Review, the BC Government commissioned a review of BC Hydro power planning since the 2002 Energy Plan, including periods of significant and ill-advised Government direction. The report<sup>5</sup> was published by the Minister of Energy, Mines and Petroleum Resources.*

*The review that was commissioned was very clear in its findings, quoted as follows:*

*This report draws three conclusions:*

- BC Hydro bought too much energy and energy with the wrong profile;
- BC Hydro paid too much for the energy it bought, and
- BC Hydro undertook these actions at the direction of Government.

*The cost pressures arising from these Government directed actions are evident in the rate pressures and competitiveness issues exhibited in BC from excessive sourcing of third-party IPP energy (for example, energy supplied by parties who are not otherwise BC Hydro industrial customers, e.g., unlike biomass which supports industry and BC Hydro loads).”*

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<sup>4</sup>Zapped: A Review of BC Hydro’s Purchase of Power from Independent Power Producers conducted for the Minister of Energy, Mines and Petroleum Resources, by Ken Davidson, February 2019

<sup>5</sup>Zapped: A Review of BC Hydro’s Purchase of Power from Independent Power Producers conducted for the Minister of Energy, Mines and Petroleum Resources, by Ken Davidson, February 2019

*Zapped's* Executive Summary and Conclusion both repeat the following allegation:

*“Government directed BC Hydro to purchase 8,500 GWh/year of Firm energy BC Hydro did not need. This direction of BC Hydro’s actions is manifest in the Response EPAs ... The Response EPAs cost ratepayers an Estimated \$16.2 billion over 20 years, the estimated period during which BC Hydro will likely not need the energy Government told it to buy.”*<sup>6</sup>

*Zapped* arrives at the \$16.2 billion “*Estimate*” using the following formula:

$$9,500 \text{ GWh/year} \times \$85/\text{MWh} \times 20 \text{ years} = \$16.2 \text{ billion}$$

The 9,500 GWh/year amount is the total energy contracted under all the EPAs (Electricity Purchase Agreements) signed since 2007 (the “Response EPAs”). The 8,500 GWh/year amount is the amount that *Zapped* alleges the previous government directed BC Hydro buy from IPPs since 2007 that was not needed. *Zapped* alleges that the government directed BC Hydro to buy 8,500 GWh in 2007 which has now resulted in BC Hydro buying 9,500 GWh.

*Zapped* states that “*this report expects the annual impact of the over-buy will be felt for some 20 years.*”<sup>7</sup> *Zapped* starts its tally of the 9,500 GWh/yr of overbought Response EPAs<sup>8</sup> in 2009.<sup>9</sup> *Zapped's* \$16.2 billion estimate is based on the full amount of the overbought energy being surplus to domestic needs and therefore being sold to the export market at Mid-C. *Zapped* estimates the total surplus to be 190,000 GWh (9,500 GWh x 20 years).

Over the 20 years *Zapped* overestimated the surplus by 166,545 GWh compared to BC Hydro historical records<sup>10</sup> and forecast<sup>11,12</sup>. The table below (prepared by CEABC from those records and forecasts), shows that *Zapped* overestimated the surplus by a factor of 8 times too much. Or the corollary, BC Hydro’s amounts are only 12% of the *Zapped* estimate.

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<sup>6</sup>*Zapped* pages 1 and 72.

<sup>7</sup>*Zapped* page 48.

<sup>8</sup>Response EPAs are the EPAs that BC Hydro awarded to IPPs since 2007. *Zapped* states that they total 9,500 GWh/year

<sup>9</sup>*Zapped* Page 53, starting with the Dokie Wind 2009 EPA and adding the subsequent EPAs for projects listed in red ink.

<sup>10</sup>The annual volumes in this calculation are taken from adding the hourly volumes shown in the columns titled “US Tie Lines” and “AB Tielines” in the spreadsheets titled “BC Hydro Actual Interchange” on the BC Hydro website: <https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data/historical-data.html> in the section titled “Net Actual Flow”.

<sup>11</sup>BC Hydro Application to the BCUC dated October 5, 2018, Appendix B, Table 3-8; revised F2017-2019 Revenue Requirement Application, Load Resource Balance After Planned Resources - Energy

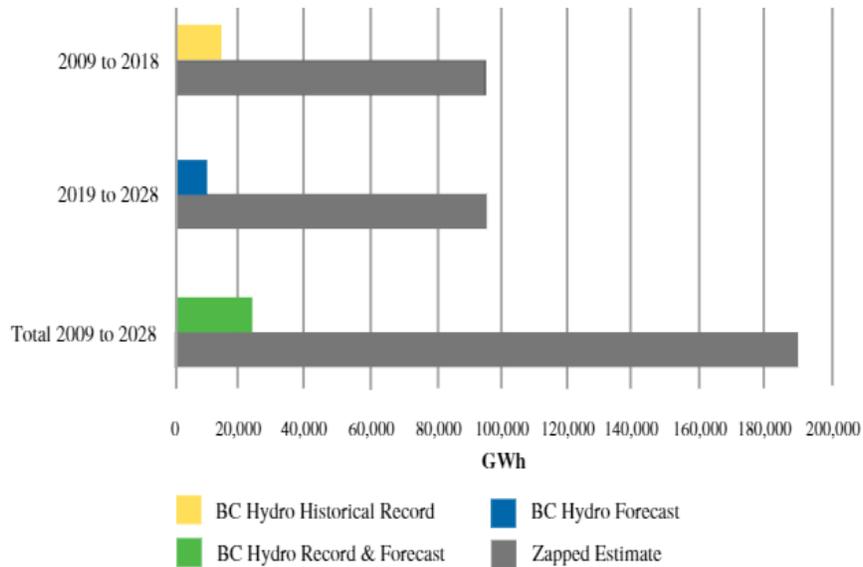
<sup>12</sup>The energy generated by Site C is deducted in this determination because it was built by BC Hydro, not an IPP. And Site C was started after 98% of the Response EPAs (that are the subject of *Zapped's* “*overbought*” allegation) were signed.

**Table: Comparing Zapped’s IPP Surplus vs. BC Hydro Record or Forecast over 20 years**

Surplus Comparison	Zapped Estimate	BC Hydro Historical Record or RRA Forecast	Overestimate Amount	Overestimate Factor (# of times over BC Hydro amount)	Percent BC Hydro vs Zapped
Period	GWh	GWh	GWh		
2009 - 2018	95,000	15,531	79,469	6.1	16%
2019 - 2028	95,000	7,925	87,075	12.0	8%
Total 2009 - 2028	190,000	23,456	166,544	8.1	12%

The figure below shows Zapped’s estimated surpluses vs. BC Hydro records and forecast (a graphic representation of the above table data).

**Figure: Comparing Zapped Estimate of Surplus due to IPP Over-purchasing to BC Hydro Historical Records and Forecast from 2009 - 2028(GWh)**



- 3.1 In light of BC Hydro historical records and forecast showing that a surplus that is 1/8<sup>th</sup> of the surplus estimated by Zapped, does AMPC agree with the Zapped claim that BC Hydro bought too much IPP power?
- 3.2 Please advise on how “the policy framework was applied inconsistently and excessively between 2002 and 2012 with the overall outcome a significant ratepayer detriment.”

**4.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

In Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, paragraphs 1 to 3, AMPC quotes from a 3<sup>rd</sup> party report, called Zapped and states (underline added):

*“Concurrent with the Comprehensive Review, the BC Government commissioned a review of BC Hydro power planning since the 2002 Energy Plan, including periods of significant and ill-advised Government direction. The report was published by the Minister of Energy, Mines and Petroleum Resources.*

The review that was commissioned was very clear in its findings, quoted as follows:

This report draws three conclusions:

- BC Hydro bought too much energy and energy with the wrong profile;
- BC Hydro paid too much for the energy it bought, and
- BC Hydro undertook these actions at the direction of Government.

The cost pressures arising from these Government directed actions are evident in the rate pressures and competitiveness issues exhibited in BC from excessive sourcing of third-party IPP energy (for example, energy supplied by parties who are not otherwise BC Hydro industrial customers, e.g., unlike biomass which supports industry and BC Hydro loads).”

Zapped’s Executive Summary and Conclusion both repeat the following allegation:

“Government directed BC Hydro to purchase 8,500 GWh/year of Firm energy BC Hydro did not need. This direction of BC Hydro’s actions is manifest in the Response EPAs ... The Response EPAs cost ratepayers an Estimated \$16.2 billion over 20 years, the estimated period during which BC Hydro will likely not need the energy Government told it to buy.”<sup>13</sup>

Zapped arrives at the \$16.2 billion “Estimate” using the following formula:

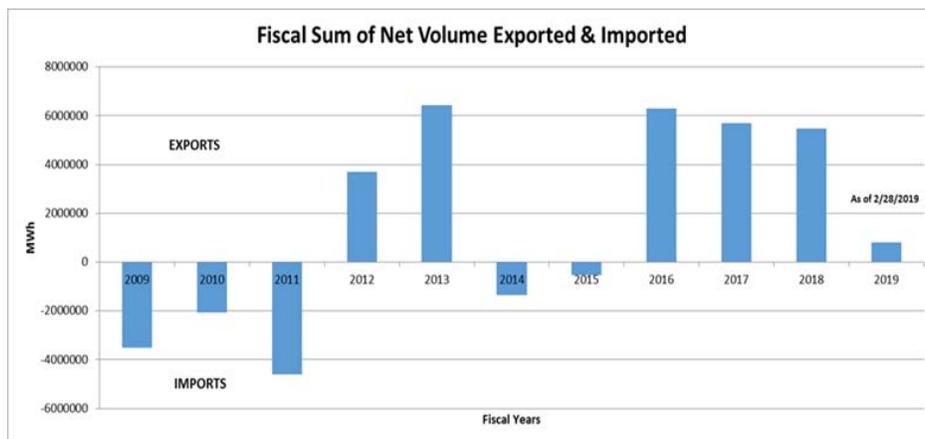
$$9,500 \text{ GWh/year} \times \$85/\text{MWh} \times 20 \text{ years} = \$16.2 \text{ billion}$$

Zapped states that “this report expects the annual impact of the over-buy will be felt for some 20 years.”<sup>14</sup>Zapped starts its tally of the 9,500 GWh/yr of overbought Response EPAs<sup>15</sup> in 2009.<sup>16</sup>

Zapped estimates the total surplus for the last 10 years to be 90,000 GWh (9,500 GWh x 10 years).

The total of the actual net exported surplus over the last 10 years has been 15,531 GWh according to the following graph produced by CEABC from BC Hydro data.<sup>17</sup>

**Figure: BC Net Energy Export & Import Volumes - Fiscal 2009 to Fiscal 2018 per BC Hydro**



<sup>13</sup>Zapped pages 1 and 72.

<sup>14</sup>Zapped page 48.

<sup>15</sup>Response EPAs are the EPAs that BC Hydro awarded to IPPs since 2007. Zapped states that they total 9,500 GWh/year

<sup>16</sup>Zapped Page 53, starting with the Dokie Wind 2009 EPA and adding the subsequent EPAs for projects listed in red ink.

<sup>17</sup>The annual volumes on the graph are from adding the hourly volumes shown in the columns titled “US Tie Lines” and “AB Tielines” in the spreadsheets titled “BC Hydro Actual Interchange” on the BC Hydro website: <https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data/historical-data.html> in the section titled “Net Actual Flow”. The years on the graph correspond to BC Hydro’s Fiscal Year.

As compared to net exports it would appear *Zapped's* surplus estimate was 79,469 GWh too high or 6 times higher than BC Hydro's records (95,000/15,531).

Over the last 10 years that works out to be an average annual surplus of 1,553 GWh.

BC Hydro has stated that, as a result of variable water conditions, the energy capability of the Heritage Resources can vary up to 14,000 GWh each year – between a very wet year and a very dry year<sup>18</sup>. The 1,553 GWh surplus is only 11% of the total potential range due to water variability.

- 4.1 In light of BC Hydro historical records showing that the actual surplus was 1/6<sup>th</sup> of the surplus forecast by *Zapped* and that the average surplus amount of 1,553 GWh is only 11% of the potential variation of annual hydro generation, does AMPC agree with the *Zapped* claim that BC Hydro bought too much IPP power?

**5.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

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*The review that was commissioned was very clear in its findings, quoted as follows:*

*This report draws three conclusions:*

- *BC Hydro bought too much energy and energy with the wrong profile;*
- *BC Hydro paid too much for the energy it bought, and*
- *BC Hydro undertook these actions at the direction of Government.*

*Zapped's* Executive Summary and Conclusion both repeat the following allegation:

*“Government directed BC Hydro to purchase 8,500 GWh/year of Firm energy BC Hydro did not need. This direction of BC Hydro's actions is manifest in the Response EPAs ... The Response EPAs cost ratepayers an Estimated \$16.2 billion over 20 years, the estimated period during which BC Hydro will likely not need the energy Government told it to buy.”<sup>19</sup>*

*Zapped* arrives at the \$16.2 billion “*Estimate*” using the following formula:

$$9,500 \text{ GWh/year} \times \$85/\text{MWh} \times 20 \text{ years} = \$16.2 \text{ billion}$$

*Zapped* alleges that BC Hydro paid \$85/MWh too much for the 9,500 GWh of energy it acquired through the EPAs signed after 2007. It reached the \$85 premium using the following formula:

$$\$85/\text{MWh} = \$110/\text{MWh} - \$25/\text{MWh}$$

*Zapped* states that the:

- *“... average cost of 9,500 GWh of blended energy acquired in 2009 is assumed to be \$110/MWh.”*

*Zapped* asserts that “*energy has only one price and that is the price it can be bought or sold at in the market. In the case of BC Hydro, the market value of all energy is the Mid-C rate.*”

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<sup>18</sup>Section 4.1.1 Impact of Variability of Water Flows in BC Hydro's Transmission Service Market Reference-Priced Rates Application; “*BC Hydro notes that there can be significant variability in system water inflows, in the range of +/- 7,000 GWh/yr.*” [Where does this quote come from?]

<sup>19</sup>*Zapped* pages 1 and 72.

In 2006, two senior executives from BC Hydro gave the following testimony<sup>20</sup> to the BCUC (underlining added):

- “... we’ve made an assessment that we feel that’s too heavy a reliance on spot market. And so the actions we are taking in this LTAP are moving us away from a reliance towards more energy security ...”
- “We fundamentally believe that having 18% of our reliance on the spot market ... is accepting too much volatility, and that replacing the energy of that plant with longer-term products that have less volatility is more cost-effective overall.”
- “We are moving away from a reliance on spot market. So that’s why we have proposed these two future calls going forward ... We’ve set those call volumes based on what we feel we need to bring on to close this supply gap that we’ve got.”

BC Hydro stated in its Report on the Clean Power Call RFP<sup>21</sup> that:

*“The price to be paid for this electricity met BC Hydro's expectations based on comparisons to other BC Hydro processes and similar processes undertaken by other jurisdictions, and to 2008 LTAP projections. BC Hydro's Clean Power Call process has resulted in the acquisition of cost-effective clean, renewable electricity for BC Hydro's ratepayers.”*

BC Hydro stated in its Report on the Bioenergy Phase 2 Call RFP<sup>22</sup> that:

*“The cost-effectiveness is also demonstrated by comparing the RFP results to other BC Hydro calls. ... Furthermore, the weighted-average Average Firm Energy Price for the Bioenergy Phase 2 RFP is lower than that for the Clean Power Call ... The Bioenergy Phase 2 RFP awards are also comparable to recent Hydro-Quebec awards for biomass and wind projects.”*

The current Government approved the continuation of Site C based on BC Hydro stating that its price would be \$65/MWh.<sup>23</sup> That is over twice the price of Mid-C, which has averaged around \$30/MWh for a considerable period of time. The CEAA/BCEAA<sup>24</sup> Joint Review Panel did not compare the price of Site C to Mid-C in its 2014 Assessment. Nor did the BCUC consider Mid-C in its 2017 Site C Inquiry.

- 5.1 In light of BC Hydro executives’ recommendation to reduce reliance on Mid-C imports and increase reliance on long-term EPAs, the Joint Review Panel and the BCUC Site C Inquiry did not use Mid-C as a comparator for building Site C. Does AMPC agree with Zapped’s claim that “*the value of all energy is Mid-C*” and therefore that BC Hydro paid too much for IPP energy at the time the electricity purchase agreements were entered into?

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<sup>20</sup>Transcripts from the BC Hydro Executive VP-Operations and the BC Hydro Executive VP –Customer Care and Conservation at the BCUC review of the BC Hydro 2006 Integrated Electricity Plan and Long Term Acquisition Plan, Volume 9, pages 1125 – 1127.

<sup>21</sup>BC Hydro 2010 Clean Power Call: Report on the RFP Process, Page 2.

<sup>22</sup>BC Hydro 2012 Biomass Energy 2: Report on the RFP Process, Page 3.

<sup>23</sup>BC Hydro based that \$65/MWh price on an estimated capex of \$8.9 billion. The government approved a budget of \$10.7 billion.

<sup>24</sup> Canadian Environmental Assessment Act and BC Environmental Assessment Act

6.0 **Reference: Exhibit C-11-11, Intervener Evidence filed by the Association of Major Power Customers of BC (AMPC), discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, AMPC quotes from a 3<sup>rd</sup> party report, called Zapped and states (underlining added):

*The review that was commissioned was very clear in its findings, quoted as follows:*

*This report draws three conclusions:*

- *BC Hydro bought too much energy and energy with the wrong profile;*
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- *BC Hydro undertook these actions at the direction of Government.*

*Zapped's Executive Summary and Conclusion both repeat the following allegation:*

*"Government directed BC Hydro to purchase 8,500 GWh/year of Firm energy BC Hydro did not need. This direction of BC Hydro's actions is manifest in the Response EPAs ... The Response EPAs cost ratepayers an Estimated \$16.2 billion over 20 years, the estimated period during which BC Hydro will likely not need the energy Government told it to buy."<sup>25</sup>*

*Zapped links the related amounts of 9,500 GWh/year and 8,500 GWh/year as follows:*

*"The Response EPAs represent approximately 9,500 GWh of additional contracted energy. These EPAs act as a proxy for the impact. Of note, total energy contracted under the Response EPAs includes both Firm and non-Firm energy, whereas the policy directive demanded BC Hydro deliver 8,500 GWh in Firm energy. BC Hydro was trying to buy 8,500 GWh of Firm energy, but likely managed to buy only 9,500 GWh of blended energy."*

*Zapped states:*

- *"Given Government's direction and BC Hydro's intent to comply, the Estimate of the impact of the policy direction could be based on 8,500 GWh of incremental Firm energy."*
- *"... the 2007 Energy Plan and Special Direction #10 amounted to direct Government interference with the energy planning process at BC Hydro, with the intent to create the appearance of an energy shortfall. The resulting energy shortfall was then used to justify an expansion of the IPP portfolio and gave rise to the calls for power issued since 2007..."<sup>26</sup>*
- *"In Recommendation 19 of the 2007 Energy Plan Government directed that the province would achieve zero net greenhouse gas emissions from existing thermal generation plants by 2016. This was effectively a direction that BC Hydro must close Burrard Thermal by 2016."*
- *"After 2007, BC Hydro operated with the intent that it needed to buy 8,500 GWh of incremental Firm Energy."*

The following table summarizes the policy directions that *Zapped* claimed constituted government interference in BC Hydro's load forecasting and planning:

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<sup>25</sup>*Zapped* pages 1 and 72.

<sup>26</sup>*Zapped* page 43.

Direction	Document and Date	Added Demand
		<i>GWh/yr</i>
Eliminate market purchases	Special Direction #10 issued December, 2007	2,500
Insurance	Special Direction #10 issued December, 2007	3,000
Reduce use of Burrard	Recommendation #19 in 2007 Energy Plan	3,000
	<b>Total</b>	<b>8,500</b>

Zapped claims that these three Government Directions “amounted to direct Government interference with the energy planning process at BC Hydro with the intent to create the appearance of an energy shortfall.”

However, in 2006, two senior executives at BC Hydro gave the following testimony<sup>27</sup> to the BCUC (with underlining added):

- “Right now we rely on spot market for about 18% of our domestic load, and we’ve made an assessment that we feel that’s too heavy a reliance on spot market. And so the actions we are taking in this LTAP<sup>28</sup> are moving us away from a reliance towards more energy security ...”
- “We fundamentally believe that having 18% of our reliance on the spot market, because we fundamentally have a plant that looks like it’s producing energy but it really isn’t. It’s just having us purchase from the spot market, is accepting too much volatility, and that replacing the energy of that plant with longer-term products that have less volatility is more cost-effective overall.”<sup>29</sup>

BC was a net importer of energy for 6 of the 7 years from 2001 to 2007. That is based on the tables on the BC Hydro website that show the Net Actual Flows across the US Tie-lines.<sup>30</sup>

The 2007 Energy Plan pointed to the high and growing level of imports and added strong domestic load growth as the rationale for adding “insurance”:

- “BC Hydro must acquire an additional supply of “insurance power” beyond the projected increases in demand to minimize the risk and implications of having to rely on electricity imports.”
- “BC Hydro estimates demand for electricity to grow by up to 45 per cent over the next 20 years.”

The graph<sup>31</sup> below compares 16 load forecasts from 2000 to 2016 made by BC Hydro as compared to the actual requirements. BC Hydro’s 2007 and 2008 Load Forecasts are shown as thin black lines that

<sup>27</sup>Transcripts from BC Hydro Executive VP-Operations and BC Hydro Executive VP –Customer Care and Conservation at the BCUC review of the BC Hydro 2006 Integrated Electricity Plan and Long Term Acquisition Plan, Volume 9, pages 1125 – 1127.

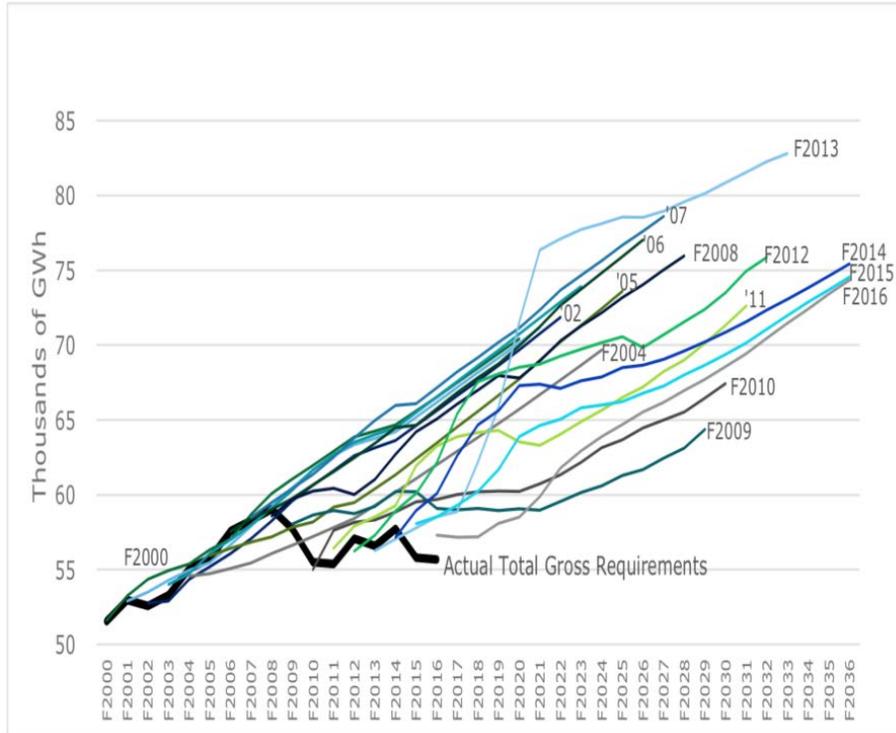
<sup>28</sup> BC Hydro’s 2008 Long Term Electricity Plan.

<sup>29</sup>The energy crisis in California in 2000 - 2001 resulted from an apparent energy shortage as well as low water on the west coast. It caused very high electricity prices. In 2000 annual rates peaked at \$200/MWh. [This footnote should be deleted. This is evidence and not a reference.]

<sup>30</sup>Calculated from totaling the annual volumes shown in the column titled “US Tie Lines” in the spreadsheets titled “BC Hydro Hourly Tieline Data” on the BC Hydro website: <https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/actual-flow-data/historical-data.html> in the section titled “Net Actual Flow”.

<sup>31</sup>Site C – Alternative Resource Options and Load Forecast Assessment, submitted by Deloitte to the BC Utilities Commission. September 7, 2017 Figure 3: Total Gross Energy Requirement Forecast Models between 2000 and 2016 (with DSM)

consistently follow that strong growth rate increase from before 2007 to 2027.



6.1 In light of BC Hydro’s BCUC testimony to the BCUC, the Net Actual Flows across the US Tie-lines from 2001 to 2007<sup>32</sup>, and the projected increases up to 2008 and beyond, does AMPC agree with Zapped’s claim that BC Hydro undertook these actions at the direction of Government?

7.0 **Reference: Exhibit C-11-11, Intervener Evidence filed by the Association of Major Power Customers of BC (AMPC), discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, paragraph 4 states:

*“The largest components of the Revenue Requirement are composed of the “Cost of Energy” supplied. This cost has grown materially in past years, in both total cost and in average unit cost. By far, the driving force behind this growth has been IPPs....”*

The following table displays the history of BC Hydro Revenue Requirement from F2007 to F2018, as extracted from the tables in Appendix A of the F2107-19 RRA and the F2020-21 RRA.<sup>33</sup>

<sup>32</sup> IBID

<sup>33</sup> Exhibit B-13 in the F20-21 RRA proceeding, BC Hydro’s response to CEABC IR 2.47.1

GROSS & CURRENT BASIS Revenue Requirements Summary (\$ million)	Summary History of BC Hydro Revenue Requirement from F2007 to F2018												Forecast F2019-F2021		
	Extracted from F17-19 RRA								Extracted from F20-21 RRA						
	Actual F07	Actual F08	Actual F09	Actual F10	Actual F11	Actual F12	Actual F13	Actual F14	Actual F15	Actual F16	Actual F17	Actual F18	Forecast F19	Plan F20	Plan F21
<b>Cost of Energy (GROSS)</b>	1,091.2	970.4	1,282.8	1,209.9	1,309.1	1,043.0	1,057.3	1,309.3	1,512.5	1,475.6	1,505.5	1,538.7	1,673.4	1,887.0	1,920.2
<i>Deferral Account Transfers</i>	99.6	269.3	(216.7)	(16.6)	(155.5)	73.7	183.4	102.8	(204.9)	(195.9)	210.3	315.5	260.1	(152.0)	(152.0)
<b>Cost of Energy (CURRENT) (includes HDA &amp; NHDA Rate Rider)</b>	1,190.8	1,239.8	1,066.2	1,193.3	1,153.6	1,116.7	1,240.7	1,412.1	1,307.6	1,279.7	1,715.8	1,854.1	1,933.5	1,735.1	1,768.2
<b>Operating Costs (GROSS)</b>	645.7	885.6	831.1	1,186.6	909.7	1,452.0	1,307.8	1,232.2	1,303.0	1,251.6	1,165.1	1,228.7	1,257.5	1,224.2	1,229.3
<i>Regulatory Account Transfers</i>	(89.7)	(334.9)	(182.6)	(540.7)	(153.0)	(506.5)	(378.5)	(457.3)	(367.0)	(265.8)	(174.2)	(255.9)	849.5	74.3	75.9
<b>Operating Costs (CURRENT) (Includes Rate Smoothing &amp; Gov't Reverse Rate Smoothing &amp; Gov't adjustment)</b>	556.0	550.7	648.6	645.9	756.7	945.5	929.3	774.9	936.0	985.7	990.9	972.8	2,107.1	1,298.6	1,305.2
<b>Operating Costs (CURRENT) (before Rate Smoothing &amp; Gov't adjustment)</b>	556.0	550.7	648.6	645.9	756.7	875.8	888.1	885.8	1,102.2	1,106.9	1,192.2	1,299.0	1,292.2	1,298.6	1,305.2
<b>Taxes (GROSS)</b>	147.1	158.6	166.7	172.6	177.4	184.2	194.1	202.1	206.1	213.1	223.1	231.1	242.2	249.8	262.2
<i>Regulatory Account Transfers</i>	-	-	1.7	5.5	5.6	(14.0)	-	-	2.6	3.4	0.4	1.9	-	-	-
<b>Taxes (CURRENT)</b>	147.1	158.6	168.4	178.1	183.0	170.2	194.1	202.1	208.7	216.5	223.5	232.9	242.2	249.8	262.2
<b>Amortization (GROSS)</b>	378.5	363.4	388.0	437.4	501.4	586.2	635.0	656.8	691.7	739.5	777.9	807.6	871.5	915.7	936.5
<b>Finance Charges (GROSS)</b>	456.0	434.5	495.1	384.0	495.4	558.6	576.3	652.2	664.1	746.6	579.2	805.9	684.6	757.5	726.9
<b>Return on Equity (GROSS)</b>	407.0	369.0	365.6	447.0	588.9	558.4	509.3	549.5	580.8	655.0	683.5	684.0	(424.3)	712.0	712.0
<b>Total Capital-Based Charges (GROSS)</b>	1,242	1,167	1,249	1,268	1,586	1,703	1,721	1,859	1,937	2,141	2,041	2,298	1,132	2,385	2,375
<i>Regulatory Account Transfers</i>	(11.0)	35.0	(11.6)	54.7	(88.3)	(93.1)	(40.1)	(82.9)	2.0	44.5	7.6	(184.1)	(49.6)	59.9	59.1
<b>Amortization (CURRENT)</b>	362.9	373.4	405.9	442.1	536.1	552.4	631.7	655.0	739.9	804.3	860.7	916.3	950.8	1,035.6	1,060.2
<b>Finance Charges (CURRENT)</b>	460.6	459.4	465.7	490.4	361.1	490.2	538.4	576.0	606.7	726.3	504.0	513.1	555.6	697.5	662.3
<b>Return on Equity (CURRENT)</b>	407.0	369.0	365.6	390.6	600.2	567.6	510.3	544.7	592.1	655.0	683.5	684.0	(424.3)	712.0	712.0
<b>Total Capital-Based Charges (CURRENT)</b>	1,231	1,202	1,237	1,323	1,497	1,610	1,681	1,776	1,939	2,186	2,048	2,113	1,082	2,445	2,434
<b>Powerex Net Income (GROSS)</b>	(259.2)	(82.7)	(243.9)	(7.5)	(71.5)	(142.0)	(98.2)	58.4	(120.1)	(58.7)	(130.2)	(136.6)	(205.3)	(120.6)	(120.6)
<i>Deferral Account Transfers</i>	(27.0)	(111.1)	(28.6)	(198.5)	(57.0)	20.7	25.2	(122.5)	91.4	3.6	64.0	71.9	153.1	(12.6)	(12.6)
<b>Powerex Net Income (CURRENT)</b>	(286.2)	(193.8)	(272.5)	(206.1)	(128.5)	(121.4)	(73.0)	(64.1)	(28.7)	(55.1)	(66.2)	(64.7)	(52.3)	(133.2)	(133.2)
<b>Non-Tariff/Misc. Revenue (CURRENT)</b>	(45.2)	(31.4)	(44.0)	(55.2)	(102.4)	(80.8)	(116.4)	(122.4)	(129.8)	(133.8)	(143.4)	(143.7)	(151.6)	(237.7)	(243.7)
<b>Inter-Segment Revenue (CURRENT)</b>	(42.6)	(68.7)	30.5	(60.9)	(89.2)	(30.1)	(63.1)	(27.1)	(50.6)	(55.7)	(56.9)	(66.4)	(64.3)	(69.0)	(72.6)
<b>Powerex Net Income (CURRENT)</b>	(1.2)	(0.5)	(1.2)	(0.7)	(0.5)	(2.6)	(2.9)	(3.7)	(4.4)	(4.2)	(2.1)	(3.1)	(3.3)	(3.4)	(3.7)
<b>Other Utilities Revenue (CURRENT)</b>	(18.4)	(15.4)	(22.0)	(16.3)	(16.3)	(14.9)	(14.8)	(16.4)	(18.6)	(18.2)	(13.0)	(11.9)	(28.6)	(28.6)	(28.7)
<b>Liquefied Natural Gas Revenue (CURRENT)</b>	-	-	-	-	-	-	-	-	-	-	(0.4)	(1.3)	(0.3)	-	-
<b>Total Other Incomes (CURRENT)</b>	(393.6)	(309.8)	(309.2)	(339.1)	(336.8)	(249.8)	(270.2)	(233.8)	(232.0)	(267.0)	(282.1)	(291.1)	(300.4)	(471.9)	(481.8)
<b>Total Revenue Requirement (Including Rate Rider before Rate Smoothing)</b>	2,731	2,841	2,811	3,001	3,254	3,523	3,733	4,042	4,325	4,522	4,898	5,208	4,250	5,256	5,288
<i>Rate Smoothing &amp; Gov't adjustment</i>	-	-	-	-	-	69.7	41.2	(110.9)	(166.2)	(121.2)	(201.2)	(326.2)	814.9	-	-
<b>Total RR after rate Smoothing (Incl Rate Rider)</b>	2,731	2,841	2,811	3,001	3,254	3,593	3,774	3,931	4,159	4,400	4,696	4,882	5,065	5,256	5,288
<i>reverse Deferral Rate Rider</i>	(10.1)	(55.7)	(14.0)	(29.7)	(112.9)	(87.7)	(179.7)	(187.2)	(198.1)	(209.5)	(223.7)	(233.2)	(241.2)	-	-
<b>Total Rate Revenue Requirement after Rate Smoothing but before Deferral</b>	2,720.7	2,785.5	2,796.9	2,971.6	3,141.1	3,505.2	3,594.7	3,743.9	3,961.0	4,190.9	4,472.6	4,649.1	4,823.4	5,256.5	5,288.3
<i>Check balances against Schedule 3.0</i>	2,720.7	2,785.5	2,796.9	2,971.6	3,141.1	3,505.2	3,594.7	3,743.9	3,961.0	4,190.9	4,472.6	4,649.1	4,823.4	5,256.5	5,288.3

This summary financial data shows that, in the 10 year period of “Actual” results from F2008 to F2018, the Total Revenue Requirement (Current basis, before Rate Smoothing) increased by \$2.4 billion (from \$2.841 billion to \$5.208 billion).

The largest contribution to that increase came from the Capital-Based Charges, which increased by \$911 million (from 1,202 to 2,113 million, a 76% increase). BC Hydro Operating Costs were the second greatest component of the total increase, rising by \$748 million (before Rate Smoothing, from \$551 to \$1,299 million, an increase of 136%). Together, the Capital-Based Charges and Operating Costs accounted for 70% of the total 10-year increase in Revenue Requirement.

In the same period, the Cost of Energy rose by only \$614 million (from \$1,240 to \$1,854 million, a 50% increase). The historical data reveals that BC Hydro’s Capital-Based Charges and Operating Costs together accounted for 70% of the increase in Total Revenue Requirement, while the Cost of Energy, which includes IPPs, accounted for about 25%.

According to this data, the biggest cost factor that has driven rate increases is BC Hydro’s Capital-Based Charges, which include the grouping together of Amortization, Finance Charges, and Cost of Equity, all of which have risen steadily over the past decade as a result of the huge increase in invested capital.

The rapid rise of Capital-Based Charges has resulted from the huge capital investments that BC Hydro has made in its own facilities, like dams and generating stations, transmission and distribution power

lines. BC Hydro invested roughly \$2 billion per year in those assets over the last 10 years, and continues to invest at an even greater rate over the next decade.

- 7.1 Given the actual historical data, please explain how the following statement can be made: “*The largest components of the Revenue Requirement are composed of the “Cost of Energy”*”? Wouldn’t the largest component more appropriately be the Capital-Based Charges?
- 7.2 Please explain how IPPs are “*by far the driving force*” behind the growth of the largest components of the Revenue Requirements when they are far less and growing at a slower rate than the Capital-Based Charges?
- 7.3 Does AMPC believe that the true cost of the Heritage Energy is fairly represented by including only the cost of the water rentals (approximately \$7.00/MWh), while for the cost of the IPP energy, all the costs of the employees and the capital is included in the number? How does the cost of the Heritage Energy take into account the cost of the 7,000 BC Hydro employees or the \$20plus billion in capital assets being employed?

**8.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the Association of Major Power Customers of BC (AMPC), discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, paragraph 7 states (underlining added):

*“At the same time as the above cost pressures from IPPs were increasing, BC Hydro’s costs in other areas were also rising, though not to the same dollar extent. Among the challenges for ratepayers is that there have been significant constraints on independent regulatory review of these cost pressures, particularly in regard to capital costs. These capital cost drivers show up in rates as increases in amortization expense (increase of approximately \$600 million since F2009) and interest (increase of approximately \$300 million since F2009 despite dropping interest rates) as well as theoretically in added ROE (increase of \$712 million since F2009, though this rate component is not presently linked to asset values but rather comes from desired targets imposed by Government regulation), as shown in Table 4-3.”*

Paragraph 11 states (underlining added).

*“The end result of the period since 2002 is that, particularly because of IPPs, but also due to other constraints imposed by Government, ratepayers are facing rates that cannot be confirmed as just and reasonable nor consistent with least cost utility management. For IPPs the assessment has already been made by the Government commissioned review – costs are not consistent with prudent actions. For other areas, particularly capital-related costs, the assessment simply cannot be properly completed due to Government-imposed constraints.”*

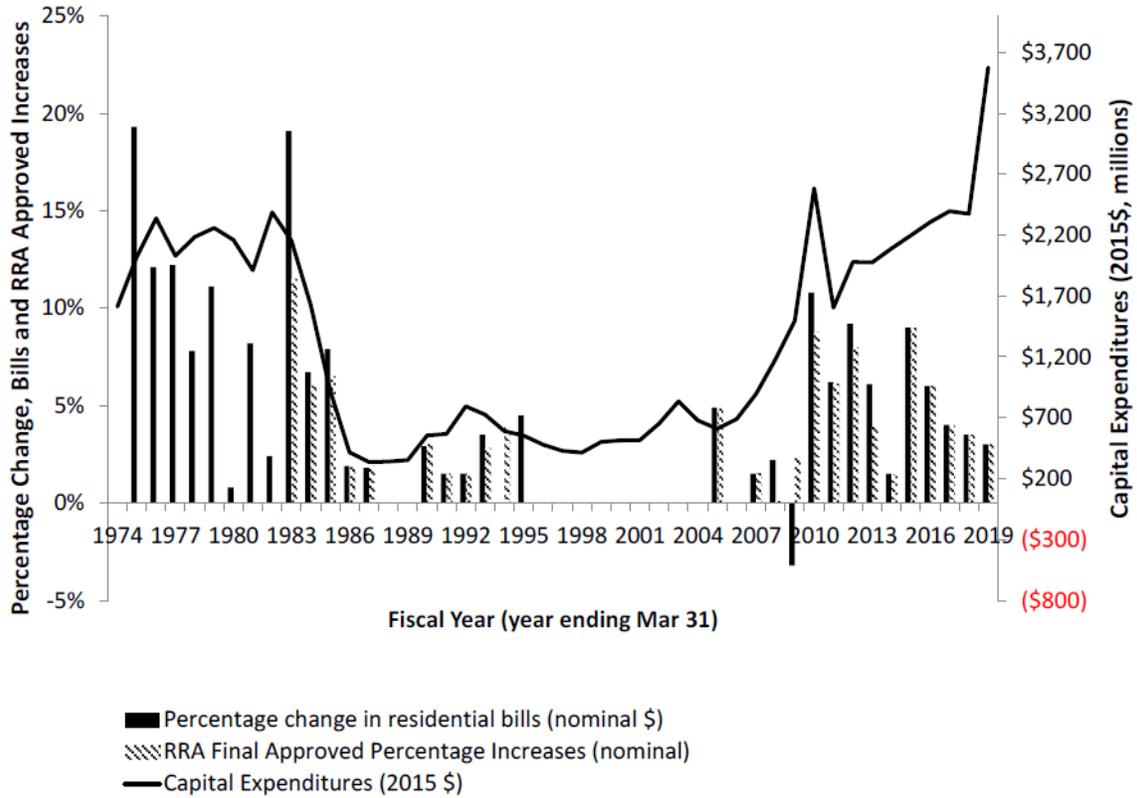
BC Hydro’s 2017 News Release<sup>34</sup> answered the question “*Why do rates need to go up?*” with “*Its all about the need for system upgrades and the growing demand for electricity. Assets and equipment are ageing and in need of replacement.*” It says nothing about the cost of IPP energy.

BC Hydro provided the following graph showing Capital Expenditures (restated in 2015 \$) vs. % change in bills and Revenue Requirement increases from 1974 to 2019. (BCH response to CEABC IR 2.48.1)

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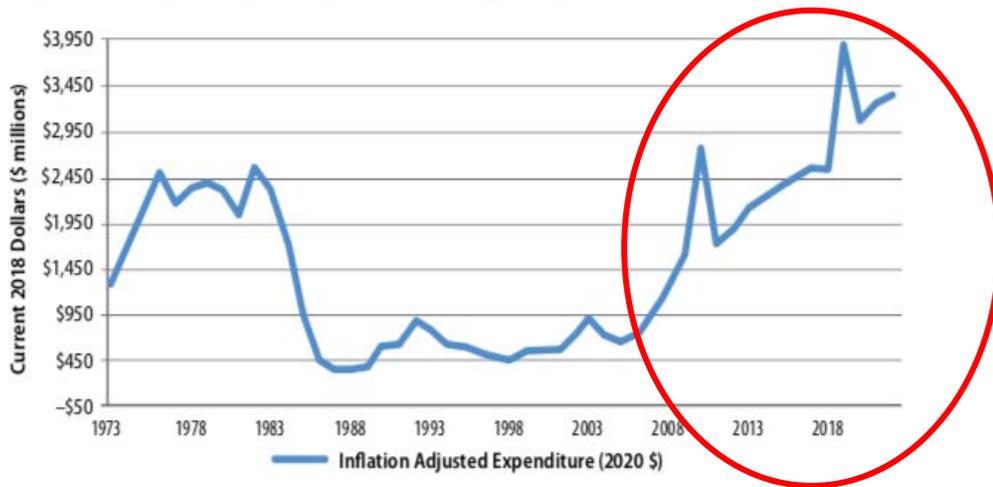
<sup>34</sup> BC Hydro News Release “Why we’re increasing rates: a look at how we’re meeting growing electricity demand, March 17, 2017 found at <https://www.bchydro.com/news/conservation/2017/increasing-rates-growing-demand.html>

**Residential Bill Increases, RRA Approved Increases and Capital Expenditures  
(F1974 to F2019)**



Recent BC Hydro Capital Expenditures are also shown on the following figure taken from the Comprehensive Review<sup>35</sup> (restated to 2020\$). Between 2009 and 2018 Capital Expenditures averaged \$2,100 million per year. Over that time the annual expenditure has doubled from \$1,250 million to \$2,500 million<sup>36</sup>.

**Figure 5: BC Hydro Capital Expenditures through the years**



<sup>35</sup> Figure 5. Comprehensive Review of BC Hydro. Published February 15, 2019

<sup>36</sup> That does not include Capital Expenditures on Site C. Those started in 2015. In 2017 they were budgeted to be \$10.7 billion.

- 8.1 Given this BC Hydro material showing the correlation of rate increases and capital expenditures, does AMPC still maintain that *“The largest components of the Revenue Requirement are composed of the “Cost of Energy”. This cost has grown materially in past years, in both total cost and in average unit cost. By far, the driving force behind this growth has been IPPs...”* as stated in Section 4.6 of its evidence?
- 8.2 Please confirm that “interest” costs in paragraph 7 is equivalent to “Finance Charges” in Table 4-3.
- 8.3 Please advise why *“For other areas, particularly capital-related costs, the assessment simply cannot be properly completed due to Government-imposed constraints”* while *“for IPPs the assessment has already been made.”* as stated in paragraph 11.
- 9.0 **Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.6, IPP AND OTHER COST ISSUES IMPACTED BY GOVERNMENT, the last sentence in paragraph 8 states (underlining added):

*“...As such, similar to IPPs, the BC Government has imposed unjustified costs on ratepayers, and eliminated the normal ratepayer protections of independent regulation that would otherwise mitigate the risk of a natural monopoly.”*

The recommendation/conclusion at the end of section 4.6 states (underlining added):

*“A number of costs are now explicitly acknowledged by either the BC Government (Independent Power Producer costs, Water Rentals) or the BCUC (Capital projects which merited an ‘ex post facto’ review to determine prudence) as not meeting the test for least cost utility planning or full and transparent regulatory review.”*

BC Hydro stated in its 2010 Report on the Clean Power Call RFP that, *“The price to be paid for this electricity met BC Hydro's expectations based on comparisons to other BC Hydro processes and similar processes undertaken by other jurisdictions ... [the] Call process has resulted in the acquisition of cost-effective clean, renewable electricity for BC Hydro's ratepayers.”*

BC Hydro stated in its 2012 Report on the Bioenergy Phase 2 Call that, *“The cost-effectiveness is also demonstrated by comparing the RFP results to other BC Hydro calls ... Furthermore, the weighted-average Average Firm Energy Price for the Bioenergy Phase 2 RFP is lower than that for the Clean Power Call ... The Bioenergy Phase 2 RFP awards are also comparable to recent Hydro-Quebec awards for biomass and wind projects.”*

Most of the energy that BC Hydro has contracted to buy from IPPs is covered in electricity purchase agreements (e.g. Rio Tinto Alcan<sup>37</sup>) that were approved by the BCUC, and IPPs faced significant competitive pressure to submit low-cost bids in response to BC Hydro Calls for Power and RFPs.

- 9.1 Please describe how IPP costs were unjustified and did not meet *“the test for least cost utility planning or full and transparent regulatory review.”*

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<sup>37</sup>BCUC Decision, “A Filing of Electricity Purchase Agreement with Alcan Inc. as an Energy Supply Contract Pursuant to Section 71”, January 29,2008.

**10.0 Reference: Exhibit C-11-11, Intervener Evidence filed by the AMPC, discussing the impact on industrial rate competitiveness of BC Hydro acquiring electricity from Independent Power Producers.**

Section 4.7, INDUSTRIAL RATE DESIGN AND REBALANCING, paragraph 8 states (underline added):

*“At the time of the 2002 Energy Plan, there was an overall consistent concept that BC Hydro would largely no longer develop its own power supplies (outside of some identified exceptions). Instead, the private sector, through IPPs, industrial generation, conservation, and increased market access, would become the new sources of supply.”*

The 2002 Energy Plan enabled BC Hydro to make “*improvements at its existing facilities*”. The 2007 Energy Plan directed BC Hydro to “*Invest in upgrading and maintaining the heritage asset power plants and ... potential capacity additions to Mica and Revelstoke generating stations.*” The 2010 Clean Energy Act directed BC Hydro to submit a “*plan that includes the construction or extension of existing facilities ... install two additional turbines at Mica ... install an additional turbine at Revelstoke ... and to ... build a third dam at Site C.*”

The result was that between 2002 and 2017 BC Hydro increased the generating capacity at its own facilities by 3,361 MW. The capacity increases occurred at 14 operating projects and two new projects.

The capacity increases at the 14 operating projects totalled 2,097 MW. The increases in capacity in those projects ranged from 1 MW to 1,000 MW.

**Table: BC Hydro Facility Capacity Increases from 2002 to 2017<sup>38</sup>**

Facility	2002	2017	Increase
	Operating MW	Operating & Approved MW	Operating & Approved MW
<i>Hydro-electric</i>			
Aberfeldie	5	25	20
Ash River	27	28	1
Bridge River	466	550	84
Cheakamus	157	180	23
GM Shrum	2,730	2,916	186
John Hart	126	132	6
Kootenay Canal	580	583	3
Mica	1,805	2,805	1,000
Peace Canyon	694	700	6
Revelstoke	1,980	2,500	520
Ruskin	105	114	9
Seven Mile	594	805	211
Site C	-	1,100	1,100
Waneta	-	164	164
Fort Nelson Gas Plant	45	73	28
<b>Total</b>	<b>9,314</b>	<b>12,675</b>	<b>3,361</b>

<sup>38</sup>Table compiled by CEABC by extracting facility nameplate capacities that are listed on BC Hydro Quick Fact Sheets. They can be found at <http://lbc.leg.bc.ca/public/PubDocs/bcdocs/358355/index.htm>. Also at <https://bchydro.com/energy-in-bc/projects/bridge-river-projects.html>. Also at BC Hydro response to BCUC Directives 1 & 2 at [https://www.bcuc.com/Documents/Proceedings/2019/DOC\\_53841-A2-2-BCH-F17-19-ComplianceFiling.pdf](https://www.bcuc.com/Documents/Proceedings/2019/DOC_53841-A2-2-BCH-F17-19-ComplianceFiling.pdf). Also at BC Hydro CPCN Application to BCUC February 8, 2013.

The total increase of 3,361 MW for all 16 projects represented a 36% increase in generation from those projects. It also represents a 33% increase in BC Hydro's total generation capacity, from 10,054 MW in 2002 to 13,280<sup>39</sup> MW in 2017.

- 10.1 Please provide evidence that *"At the time of the 2002 Energy Plan, there was an overall consistent concept that BC Hydro would largely no longer develop its own power supplies."*

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<sup>39</sup> This total includes 1,100 MW for Site C which was approved in 2015.