

**FINAL ARGUMENT ON BEHALF OF  
THE CLEAN ENERGY ASSOCIATION OF  
BRITISH COLUMBIA  
("CEABC")**

**Re: BRITISH COLUMBIA HYDRO and POWER AUTHORITY**

**2019 Letter Agreement with Powerex Corp.**

**Project No. 1599038**

**December 18, 2019**

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# BC HYDRO 2019 Powerex Letter Agreement

## Final Argument of CEABC

### I. EXECUTIVE SUMMARY

Without material modifications, the Clean Energy Association of B.C. (“CEABC”) is opposed to BC Hydro’s request for approval from the British Columbia Utilities Commission (“BCUC” or “Commission”) for the Letter Agreement, between BC Hydro and its wholly owned subsidiary Powerex (“Letter Agreement” or “2019 Letter” or “Application”). Approval of this application would allow BC Hydro (“BC Hydro” or “BCH”) to enter into firm, including term and price, electricity import contracts.

Under the Utilities Commission Act<sup>1</sup> (“Act”) the onus is on BC Hydro to prove whether any new energy supply contract (“ESC”) is in the public interest.<sup>2</sup> The fixed term and price forward contracts contemplated pursuant to the Letter Agreement would allow BC Hydro to enter new ESCs without any further oversight from the Commission.

While the CEABC appreciates that BCH needs some latitude to operate its predominantly hydro electric system including electricity purchases from third parties, BCH has not met the required onus with respect to the Letter Agreement.

The basic premise of the Application is that the events that led to the need for BCUC approval of the 2018 Letter Agreement between BCH and its wholly owned subsidiary Powerex could in some shape or another happen again. However, when fully analyzed these events were not that serious and if future events are as serious, then it would be best if BCH applied for “one off” approvals to import electricity pursuant to fixed term and price contracts, as it did with respect to the 2018 Letter Agreement.

BCH has not shown how the Application creates economic opportunities for First Nations. Indeed, CEABC believes that increasing imports would clearly reduce

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<sup>1</sup> Section 71

<sup>2</sup> In Exhibit B-1, page 11, BCH states: “Further, the scheme of the relevant provisions of the UCA is that ESC’s are presumptively in the public interest unless the Commission declares otherwise, after a hearing.” The CEABC can find no such presumption in the provisions of the UCA. What constitutes a “hearing” is a question for determination by the BCUC on a case by case basis. The CEABC does not agree with BCH’s assertion in Exhibit B-1, page 11 that: “The proposed process would not be the “hearing” contemplated by the UCA, but a preliminary enquiry into the question whether i) the 2019 Letter Agreement can be declared to be in the public interest and accepted to filing, or whether ii) a hearing is required.” It is up to the BCUC determine whether the process followed to review the Application constitutes a hearing.

opportunities for First Nations in clean energy production. This is contrary to the Clean Energy Act and the Declaration on the Rights of Indigenous Peoples Acts.

BC Hydro attempts to distinguish between electricity imports and domestic electricity production by artificially drawing a distinction between planning and operational “horizons” for the purposes of sourcing supplies of electricity. The operational horizon is rather arbitrarily set at 3 years.

BCH appears to have amended its Application to reduce the term of:

- i) the Letter Agreement from “indefinite” to the earlier of April 1, 2022 or the date of the date of the New TPA by issuing a termination notice.”<sup>3</sup> This notice is not expressed to be irrevocable nor does Section 16 of the Letter Agreement mention irrevocability.
- ii) Delivery Terms to not more than three years <sup>4</sup>.

If formalized in any BCUC Order in relation to the Application, these amendments would alleviate but not eliminate the CEABC’s concerns about BCH’s failure to prove the Application is in the public interest.

The resources available to BCH, including purchases from IPPs and Powerex are, except in the most unusual circumstances, sufficient to meet domestic requirements. The assertions in the Application and follow-up Information Requests (“IRs”) about the declining liquidity in the day-ahead Mid-C market are based on material extracted from Bonneville Power Administration (“BPA”) documents. While certainly a reputable institution, the referenced day-ahead volume material is based on Intercontinental Exchange (ICE) Inc. data<sup>5</sup>, which is a private trading platform and not connected with BPA. Not all day-ahead Mid-C trading is conducted on this platform (e.g. bilateral trades that are not conducted on the platform)<sup>6</sup>.

According to the BPA material, real time Mid-C liquidity (according to Powerdex data), is not in decline.<sup>7</sup>

In the 2017 BCUC Site C Inquiry proceedings, BC Hydro, as a potential seller of surplus electricity from this project, did not disclose that day-ahead Mid-C liquidity was in decline.

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<sup>3</sup> BCH Final Argument, page 7 cross referencing Exhibit B-8

<sup>4</sup> Exhibit B-4, BCH response to BCUC IR 1.6.4

<sup>5</sup> Bonneville Power Administration, “Southern Intertie Data as of FY 2018”, January 28, 2019, Page 27,

<sup>6</sup> In Exhibit B-4, BCH response to BCUC IR 1.2.1, reference is made to “dominant volumes” with no supporting explanation provided. The slide provided in response to BCUC IR 1.2.6 doesn’t indicate the data source(s).

<sup>7</sup>Bonneville, op. cit., page 27

Powerex is the exclusive agent for the disposition of the Canadian Entitlement, which is owned by the Province of British Columbia. This is the half share of the downstream benefits resulting from the Columbia Treaty and is approximately 1,320 megawatts of capacity and 4,540 gigawatt-hours of energy<sup>8</sup>. This energy is delivered to the Canada-U.S. border and is more than adequate to buttress day-ahead Mid-C purchases if liquidity is a problem.

In a very recent decision<sup>9</sup> with respect to the renewal of three electricity purchase agreements (“EPA”) between Independent Power Producers (“IPPs”) and BCH the BCUC said that in the absence of an updated integrated resource plan, BCH had not shown there was a need for energy from these contracts over their 40 year terms. It concluded that:

*“Accordingly, the Panel adjourns this proceeding for 60 days to allow BC Hydro and the counterparties, should they so choose, to restructure and resubmit the EPA renewals with a term not to exceed three years from the date of this order.”*

Because of BC Hydro’s arbitrary distinction between planning and operational horizons, the integrated resource plan (“IRP”) falls into the former category. Regardless, as evidenced by the BCUC’s recent EPA renewal decision there is a large amount of uncertainty concerning the acquisition of electricity by BCH whether it be for planning or operational purposes. An IRP needs to be filed and approved by the BCUC before the BCUC can properly address the contents of any standing agreement between BCH and Powerex for firm electricity purchase agreements.

Ultimately, the CEABC does not believe BCH can make the case for a standing ESC with such a long Delivery Term (potentially up to 3 years). The solution is for BCH to apply to the BCUC as and when the need arises to enter into fixed term and price electricity import contracts with specific shorter Delivery Terms.

In the alternative, it is the CEABC’s position that the Letter Agreement:

- i) Not be independently approved or a rolled into a new transfer pricing agreement (“TPA”) between BCH and Powerex until approval of an IRP.
- ii) If the Letter Agreement is approved prior to the approval of an IRP but not as part of a new TPA, the maximum term of the Letter Agreement be 1 year and no Delivery Term exceed 6 months.

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<sup>8</sup> <https://engage.gov.bc.ca/columbiarivertreaty/faqs/#faq3>

<sup>9</sup> Order Number G-278-19, Appendix A, Application for Electricity Purchase Agreement Renewals for Sechelt Creek Hydro, Brown Lake Hydro and Walden North Hydro, Reasons for Decision, November 8, 2019

- iii) If a new TPA is filed for approval, the discussion regarding the length of the Delivery Term can be recommenced anew.

For reasons set out in more detail elsewhere in this submission, a maximum three year Delivery Term of contract for electricity imports is too long. It is based on Energy Studies conducted by BCH over a period of up to 5 years. As almost all of BCH's electricity requirements are met by hydroelectric generators, the outcome of these studies is highly dependent on the weather, which BCH cannot accurately predict over 1, 2, 3 or 5 year periods. If BCH finds itself in an anomalous situation which requires a Delivery Term in excess of 6 months, it can make this case on a "one-off" basis to the BCUC.

**The principle points that CEABC makes in this submission are:**

- A. First Nations – Clean Energy Act – UN Declaration on the Rights of Indigenous Peoples Act.**
- B. A perpetual or multi-year agreement should not be necessary, and would bypass important oversight by the BCUC.**
- C. The anomalous situation of 2018-19 was an issue of low reservoir levels rather than an inability to serve load.**
- D. BC Hydro's Energy Studies cannot be expected to predict these anomalous situations.**
- E. BCUC awareness and oversight should not be eliminated by putting such strong measures in place for an extended or indefinite period.**
- F. Not all of the energy imported pursuant to the 2018 Letter Agreement was immediately required to serve domestic load. Rather, it was used to conserve or replenish reservoir levels.**
- G. Forward supply contracts for longer than 6 months should not be necessary to deal with an anomalous situation.**
- H. The volume in the day-ahead Mid-C market may have decreased to 50,000 GWh per year, but this and other regional resources should be sufficient to deal with the restoration of reservoir levels.**

**I. BC Hydro also has access to a number of additional alternatives for dealing with exceptional circumstances, and these could be further enhanced.**

**II. CEABC’s CONCERNS**

**A. First Nations – Clean Energy Act – UN Declaration on the Rights of Indigenous Peoples Act.**

**1. Clean Energy Act (B.C.)**

The CEABC does not agree with BC Hydro’s conclusion that the Application, as amended, is compliant with the Clean Energy Act and in particular the Clean Energy Act objective 2(l). The Application states<sup>10</sup>:

Section/Objective	Explanation
2(l) – Foster development of first nation and rural communities	“The Letter Agreement allows for the management of short-term operational needs. BC Hydro uses all available capability in its system for the benefit ratepayers and may periodically request incremental short-term supply from Powerex. The 2019 Letter Agreement neither advances nor conflicts with this objective and therefore is in alignment with it.”

BCH’s response is predicated on the assumption that there is a clear and distinct line between the planning and operation horizons. As noted under the headings: “A perpetual or multi-year agreement should not be necessary, and would bypass important oversight by the BCUC” and “BC Hydro’s Energy Studies cannot be expected to predict these anomalous situations” there is no factual basis for this distinction. The results of the Energy Studies are highly dependent on the weather.

Since the early 2000’s, First Nations have been involved in the clean energy industry in British Columbia. First Nation’s participation has ranged from royalty sharing to equity ownership and they had plans to develop more energy projects. When BC Hydro indefinitely suspended the Standing Offer Program and the micro standing offer program in February 2019, opportunities for First Nations to sell electricity to BC Hydro were eliminated.

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<sup>10</sup>Exhibit B-1, Page 10

Allowing BCH to import firm electricity for periods up to 3 years will do nothing to “Foster development of first nation and rural communities”. To the contrary, it will achieve the exact opposite result.

## 2. Declaration on the Rights of Indigenous Peoples Act (B.C.) (“Act”)

On November 28, 2019 this act was given Royal Assent. It affirms the United Nations Declaration on the Rights of Indigenous Peoples to the laws of British Columbia (“Declaration”). In the Application or any subsequent filing, BC Hydro has not explained how the Application is compliant with the Act, in particular:

### *“Article 3*

*Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.*

### *Article 5*

*Indigenous peoples have the right to maintain and strengthen their distinct political, legal, economic, social and cultural institutions, while retaining their right to participate fully, if they so choose, in the political, economic, social and cultural life of the State.*

### *Article 26:*

*1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.*

*2. **Indigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess** (emphasis added) by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired.*

*3. States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.”*

As the Application is for the import of electricity for periods up to 3 years it does not create any economic opportunities for First Nations in British Columbia and is, therefore, not compliant with the Act.

The Universal Declaration on Indigenous Peoples Act requires First Nations self determination and in this particular context, the right to freely determine their own economic development. As B.C. and BC Hydro have suspended the Standing Offer Program and calls for electricity, they have effectively eliminated economic development opportunities for First Nations. The fact that BC Hydro can acquire electricity from other jurisdictions for their shortfalls, or to make money on the

spot market, deprives First Nations of all opportunities to create clean energy for economic purposes.

Approving this ability to go outside of B.C. for electricity also deprives First Nations of their right to develop and control their resources. They may be able to do so for their own communities, but they cannot do it for other communities or for any economic development purposes. The State must give due respect to these opportunities and if the BCUC recommends this proposed action, it runs contrary to the right of self determination and the right to control and develop First Nations lands and resources. These are the principles that must be upheld with this new B.C. legislation.

Also, B.C. has committed itself to Reconciliation with First Nations and has committed to implement the Calls to Action of the Truth and Reconciliation Commission. Principle 5 requires B.C. to “create a more equitable and inclusive society by closing the gap in social, health and economic outcomes between Aboriginal and Non Aboriginal Canadians.” Keeping First Nations out of economic opportunities that should be available to them does not close this gap.

Call to Action 92 (ii) requires aboriginal people to have equitable access to jobs, training and education, and opportunities in the corporate sector, and to gain long term sustainable benefits from economic development projects. B.C. cannot forget its commitments to reconciliation as it considers supporting businesses outside of B.C. to the detriment of First Nations within the province who could benefit from these opportunities.

**B. A perpetual or multi-year agreement should not be necessary, and would bypass important oversight by the BCUC.**

The anomalous situation of 2018-19 was truly a coincidence of circumstances – a pipeline rupture occurring simultaneously with a fall season exhibiting inflows in the driest 5<sup>th</sup> percentile of the past 60 years, and coming after a summer season when BC Hydro had taken advantage of high prices to sell off a significant amount of its energy reserves. The pipeline rupture had the greatest impact and the weather not nearly as much.

This coincidence of events should not be a precedent for establishing a perpetual new relationship that will, in effect, bypass future BCUC oversight, and would be, in CEABC’s view, an unnecessary remedy to deal with a rare and short-term problem.

No like coincidence of events has been demonstrated by BC Hydro with respect to the upcoming 2019-20 winter season, and BC Hydro has stated that it intends to terminate the 2019 Letter Agreement as soon as a revised and updated TPA is put into effect – which effective date is anticipated for this winter.

The discussion of the term for the Letter Agreement including Delivery Terms, as rolled into a new TPA, or on a standalone basis, should be started anew in the case of a new TPA and, in any event, upon approval of a new IRP. As noted under the heading “Executive Summary”, the absence of a new IRP was an important factor in the BCUC’s decision not to approve the renewal of three separate IPP EPAs.

Similarly it should be an important factor in the approval of the Letter Agreement or new TPA. The distinction between the planning and operational horizons that BC Hydro draws is not the clear line that BC Hydro claims. If a new TPA only covered real time or day ahead electricity imports, then the CEABC can accept BC Hydro’s distinction.

However if as expected the new TPA covers fixed term and price electricity imports, then the distinction disappears. For example the Campbell River gas fired plant is subject to the B.C. carbon tax but electricity imports are not<sup>11</sup>. The gas transportation contract with Enbridge for the plant has been transferred to Powerex<sup>12</sup>, which means that the gas supply is no longer firm. With no firm gas supply, Campbell River is no longer a firm source of energy and capacity.

The BCUC has no jurisdiction over Powerex, including who Powerex sells the Enbridge transportation space to.<sup>13</sup> BCH could enter into a 3 year fixed term and price electricity import contract as a replacement for the output of the Campbell River plant. For a number of years, Burrard Thermal was similarly used as a means to enable imports.<sup>14</sup> Issues like this should be evaluated in the BCUC’s review of a new IRP before a new TPA containing the right of BCH to enter into fixed term and price electricity import contracts is approved.

If the terms of the Letter Agreement are rolled into a new TPA, which is then approved, the term of the Letter Agreement will be irrelevant except during the period prior to this approval. This date can be as early as this winter, the date of an approved IRP or as per the Letter Agreement termination notice, April 1, 2022. To take into account these potential different outcomes, the CEABC submits that the term of this 2019 Letter Agreement not exceed one year from the date of BCUC approval.

The issuance of the termination notice has increased the potential number of outcomes which need to be addressed in the alternative to the CEABC’s core

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<sup>11</sup> BCH F2020-21 RRA, Exhibit B-6, BCH response to CEABC IR1.5.8. See BCH’s response in the same proceeding to CEABC IR 1.5.9 where BCH states: “... the Carbon Tax per MWh of generation at Island Generation would be between \$15 per MWh and \$17 per MWh in fiscal 2020, and between \$17 per MWh and \$19 per MWh during fiscal 2021.”

<sup>12</sup> BCH F2020-2021 RRA, Exhibit B-13, BCH response to CEABC IR 2.33.5

<sup>13</sup> Section 71 of the UCA

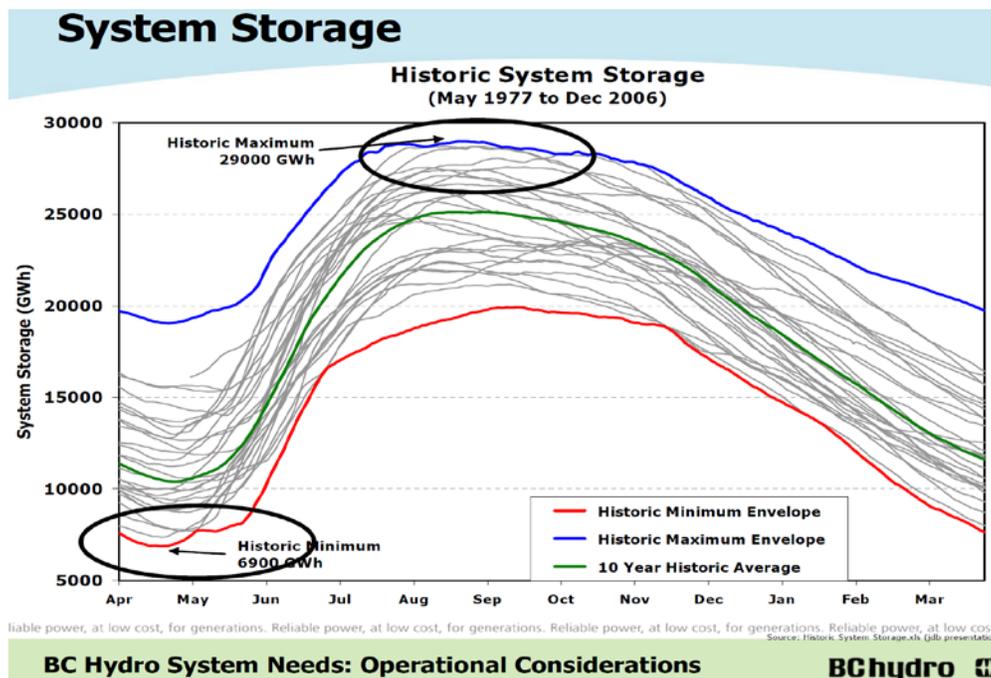
<sup>14</sup> BCH 2006 IEP & LTAP, Transcript V8, page 983

position that firm electricity import contracts should be considered by the BCUC on a one off basis. Some of these outcomes include rolling the Letter Agreement into the TPA, the length of the firm Delivery Term in the TPA, not rolling the Letter Agreement into the TPA such that it is a standalone agreement, the length of the Delivery Term in the standalone agreement, approval of the 2019 Letter Agreement, the term of the 2019 Letter Agreement given the termination notice etc.

Whatever the term of any Letter Agreement or TPA, Delivery Terms should not exceed a maximum of 6 months, and not extend beyond the term of any temporary Letter Agreement.

**C. The anomalous situation of 2018-19 was an issue of low reservoir levels rather than an inability to serve load.**

The following chart illustrates the pattern of reservoir levels in the BC Hydro storage system.



The 30-year period shown in the chart reveals that the pattern of system inflows is obvious and very consistent throughout history. However, it speaks to the inability of energy modeling to predict the future that, even with this knowledge, BC Hydro was unable to accurately foresee its own import and export requirements six months into the future.

This chart confirms the extent to which BC Hydro’s system inflows are reliant on snow-pack. The inflows in both the Peace and Columbia systems (which contain

90% of BC Hydro’s system storage), are heavily dominated by the melt of snow-pack (60% and 80% respectively)<sup>15</sup>.

The chart shows that reservoir levels are always on the decline in September through November, which indicates that the rainfall in September through November never leads to reservoir filling. It merely offsets a portion of the domestic load.

The chart covers the period from 1977 to 2006<sup>16</sup>. Based on the snowpack information (available in April of 2018), the fact that the reservoirs would likely be experiencing unusually low system inflows would have been apparent to BC Hydro as early as May, certainly by the end of June. Reservoir levels could have been protected by conducting a more moderate level of summer sales in July and August.

Further exacerbating the low reservoir situation was the fact that reservoir levels were already depressed at the beginning of the fiscal year (i.e. March 31, 2018, the end of F2018), as confirmed in Table 4-1, reproduced here<sup>17</sup>:

**Table 4-1 End of Fiscal Year System Storage**

GWh	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Forecast	F2020 Plan	F2021 Plan
End of Period System Storage <sup>122</sup>	11,918	13,208	10,746	9,736	10,576	7,293	9,354	10,649

This table shows that while the “planned for” year-end level of System Storage appears to be around 10,700 GWh, the actual level at the beginning of the F2019 year was already depressed by approximately 1,000 GWh (i.e. the F2018 Actual, as shown in Table 4-1, was only 9,736).

The decision to export energy in July and August, 2018, was a profitable one for BC Hydro. However, due to the already depressed reservoir levels and the lower than normal expected inflows, that decision ultimately exacerbated the events that would transpire in December.

The concerns in December were caused by potentially low reservoir levels rather than an inability to serve load.

**D. BC Hydro’s Energy Studies cannot be expected to predict these anomalous situations.**

<sup>15</sup> BCH F2009-2010 RRA, Transcript V12, pages 2201-2202

<sup>16</sup> In Exhibit B-13 in the F2020-21 RRA proceeding, BCH in response to CEABC IR 2.25.1, declined to provide an update of this information to include the years after 2006, stating that: “Publication of the information would enable third-parties to model BC Hydro’s system to predict BC Hydro’s import and export requirements.”

<sup>17</sup>Exhibit B-1 in the F2020-21 RRA proceeding, page 4-18

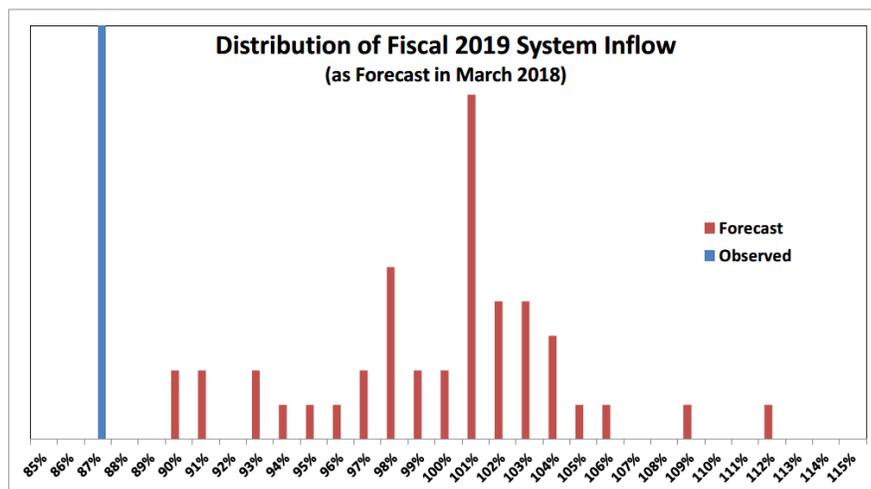
The unusual situation that occurred in the winter of 2018-19 can be considered as a rare anomaly. The forecasts generated by BC Hydro’s Energy Studies cannot be expected to predict such situations. Since they are based on the probabilities established by the historical record, they are not likely to predict such a combination of rare circumstances.

The results of the Energy Studies are used to inform BC Hydro’s management and not bind it.<sup>18</sup>

BC Hydro’s water flow forecasts are very unlikely to predict the anomalous situations that might indicate a need for supply arrangements longer than one year. In fact, their design is limited to anticipating needs up to one year in the future.

The problem is that the weather is quite unpredictable even a few months in advance, let alone one or more years ahead. The histograms provided in BC Hydro’s response to an AMPC IR,<sup>19</sup> make this abundantly clear. The histogram below shows the modelling forecasts prepared at the beginning of the F2019 year, as compared to the actual “after-the-fact” result for the year.

Based on the historic record over the past 45 years, the forecasting model came up with a range of possible system inflows for Fiscal 2019 with assigned probabilities. It then used this distribution of possible outcomes to inform BC Hydro’s operational decision making. As it turned out, the actual system inflows for the year fell entirely outside the range of the 45 forecast scenarios.



Even as late as June, 2018, BC Hydro stated that it was of the view that the annual water flows would still generate a surplus.<sup>20</sup>

<sup>18</sup> Exhibit B-5, BCH response to CEABC IR 1.5.1

<sup>19</sup>F2020-21 RRA, Exhibit B-6, BCH response to AMPC IR 1.15.3

<sup>20</sup>F2020-21 RRA, Exhibit B-6, BCH response to CEABC IR 1.7.2

*“When BC Hydro conducted its energy studies in June 2018, it was still projecting a surplus for the fiscal year. In July and August 2018, BC Hydro engaged in surplus sales that were appropriate given the information known at the time...”*

Accordingly, it sold a net 1,470 GWh through July and August, 2018,<sup>21</sup> unaware that this energy would ultimately have to be repurchased to avoid undue depletion of the reservoirs.

In the fall, water inflows were significantly below normal. Specifically, *“inflows into Williston in September, October and November 2018 were the third, second and fourth lowest in 60 years”*<sup>22</sup>. However to reiterate, the inflows in both the Peace and Columbia systems (which contain 90% of BC Hydro’s system storage), are heavily dominated by the melt of snow-pack (60% and 80% respectively).

The final extraordinary event was the pipeline rupture in October, 2018. The shortage of gas could easily lead to increased electrical loads for winter heating, especially if the weather turned unusually cold<sup>23</sup>.

The most sophisticated of Energy Studies are very unlikely to predict any of the events that led up to the problem in the winter of 2018-19.

**E. BCUC awareness and oversight should not be eliminated by putting such strong measures in place for an extended or indefinite period.**

In the future, should another, equally adverse, set of circumstances occur, the situation may appear similar, in terms of BC Hydro’s need, but the reasons for it may be due to entirely new and different circumstances. If another rare event does occur, however unlikely, it would be highly desirable for the Commission to be made aware of those circumstances and to understand the reasons for them and BC Hydro’s proposed solution. Just as it was made aware of the special circumstances in December, 2018.

If BC Hydro is granted a Letter Agreement with Powerex with a term that extends for a lengthy or indefinite period, then that involvement and oversight of the Commission would be effectively eliminated for the term of that agreement. In CEABC’s view, a better solution would be to approve such an agreement on a “one-off” basis to deal with special circumstances as they arise.

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<sup>21</sup>Ibid.

<sup>22</sup>Ibid.

<sup>23</sup> See Exhibit B-5, BCH response to CEABC IR 1.6.1., where: “Later a particularly cold winter and resulting heating loads exacerbated the situation” is referring specifically to February 2019 as compared to “and temperatures were slightly colder than normal during the year”.

**F. Not all of the energy imported pursuant to the 2018 Letter Agreement was immediately required to serve domestic load. Rather, it was used to conserve or replenish reservoir levels.**

BC Hydro imported approximately 2,400 GWh pursuant to the 2018 Letter Agreement, from January to April, 2019. In response to a CEABC IR in the F2020-21 RRA proceeding, BC Hydro provided the following summary table:<sup>24</sup>

Delivery period	Delivery profile	Contract price (USD)	Total
Feb. 1- Feb. 28	Heavy load hours	\$55.83/ MWh	96,000 MWh
Mar. 1 – Mar. 31	Heavy load hours	\$47.73/ MWh	520,000 MWh
Apr. 1 – Apr. 30	Heavy load hours	\$30.96/ MWh	624,000 MWh
Jan. 1 – Jan. 31	Light load hours	\$51.77 MWh	164,000 MWh
Feb. 1 – Feb. 28	Light load hours	\$40.87/ MWh	158,400 MWh
Mar. 1 – Mar. 31	Light load hours	\$36.36/ MWh	408,750 MWh
Apr. 1 – Apr. 30	Light load hours	\$26.14/ MWh	456,000 MWh
<b>Total:</b>		<b>\$37.59/MWh (Average)</b>	<b>2,427,150 MWh</b>

The implication is that all of this 2,400 GWh was immediately required in order that BC Hydro could serve its domestic load. However, this impression is not entirely correct.

Although the specific electrons that were imported probably did serve domestic customers at the instant they were imported, BC Hydro has offered no evidence to demonstrate that it could not have served that load using its own BC based generation. It was acting more out of a sense of prudence, rather than a sense of the absolute necessity of serving load – intending to conserve its own system storage as much as possible.

Almost 1,200 of the 2,400 GWh was imported during light load hours (“LLH”), when BC Hydro does not approach its maximum generation capacity limits. Clearly that energy was for the purpose of conserving the reservoir storage, not for serving load.

Of the other 1,200 GWh, there is no evidence to indicate to what extent BC Hydro had a lack of generation capacity, or that its total system storage was at an inoperably low level.

When energy is imported for the purpose of conserving or replenishing system storage, the timing of its importation is not critical. It can be imported at any time when there is discretionary generation that can be curtailed to conserve the reservoirs. BC Hydro has tremendous flexibility as to when it chooses to import that energy, and it will generally wait until the times of lowest prices.

<sup>24</sup>Exhibit B-6 in the F2020-21 RRA proceeding, BCH response to CEABC IR 1.7.4

The point is that this 2,400 GWh of energy wasn't immediately required to serve load at those exact times, and it didn't have to come from scheduled fixed-price forward contracts. BC Hydro has a great deal of flexibility as to when and from where it acquires energy.<sup>25</sup> It could have obtained it from the spot market, although probably over a longer period of time in order to take advantage of the upcoming freshet pricing.

Powerex is the exclusive agent for the disposition of the Canadian Entitlement which is owned by the Province of British Columbia. This is the half share of the downstream benefits resulting from the Columbia Treaty and is approximately 1,320 megawatts of capacity and 4,540 GWh of energy<sup>26</sup>. This energy is delivered to the Canada-U.S. border and is more than adequate to buttress day-ahead Mid-C purchases if liquidity is a problem and could have provided approximately 400 GWh per month.

Or it could have obtained roughly 200 GWh per month by running the Island Generation facility (after January 22, 2019, when Fortis acknowledged having sufficient gas).

Any of these alternatives could have served equally well to conserve or replenish BC Hydro's system storage reservoirs. The energy didn't have to come from forward purchase contracts.

**G. Forward supply contracts for longer than 6 months should not be necessary to deal with an anomalous situation.**

It was a very unusual and rare coincidence of circumstances that created BC Hydro's sense of urgency in the winter of 2018-19. In BC Hydro's own estimation, such an adverse combination of circumstances is very unlikely to occur again.

This particular situation was also relatively short-lived. The imports under the 2018 Letter Agreement were all concentrated within a 4 month period. Any contracts issued for the period beyond 6 months would certainly be for the replenishment of the reservoirs, rather than for serving immediate demand. In fact, any energy delivered beyond April is clearly for replenishing the reservoirs, not for serving immediate load. That energy could be obtained from a variety of other means.

Accordingly, CEABC asserts that there should be no need for forward contracts with Delivery Terms longer than 6 months. Other alternative supplies can provide the energy equally well.

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<sup>25</sup> BCH F2009-2010 RRA, Transcript V12, page 2196

<sup>26</sup><https://engage.gov.bc.ca/columbiarivertreaty/faqs/#faq3>

**H. The volume in the day-ahead Mid-C market may have decreased to 50,000 GWh per year, but this should be more than adequate to deal with the restoration of reservoir levels.**

The resources available to BCH and Powerex are sufficient to meet domestic requirements, except in very unusual circumstances.

The assertions in the Application and follow-up IRs about the declining liquidity in the day ahead Mid-C market are based on material extracted from Bonneville Power Administration (“BPA”) documents. While certainly a reputable institution, the referenced day-ahead volume material is based on Intercontinental Exchange (ICE) Inc. data<sup>27</sup>, which is a private trading platform and not connected with BPA.

The hearing record does not indicate whether all day-ahead Mid-C trading is conducted on this platform (e.g. some bilateral trades may be conducted outside the platform). In the Site C BCUC proceedings, BCH as a potential seller of surplus electricity from this project did not disclose that day-ahead Mid-C liquidity was in decline. According to the BPA material, based on Powerdex, real time Mid-C liquidity is not in decline.

Currently, BC Hydro is managing its storage to balance the risk of under-filling against the risk of spilling. Hindsight shows that the problem in the winter of 2018-19 would have been of much less concern if the reservoir levels had been maintained a little higher, but BC Hydro took advantage of profitable summer sales in 2018 and the reservoir levels became a little too low to comfortably withstand the events that transpired later that year.

Certainly, there were unpredictable events, but the December urgency was one of abnormally low reservoir levels, not an inability to serve BC Hydro’s domestic load. And for the refilling of reservoirs, the Mid-C spot market should be more than adequate.

BC Hydro cites the following charts (from BPA, based on ICE data), to illustrate the decline in the day-ahead market volume:<sup>28</sup>

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<sup>27</sup>Bonneville Power Administration, “Southern Intertie Data as of FY 2018”, January 28, 2019, Page 27

<sup>28</sup>Exhibit B-1, pages 5 and 6 of 11

## 10. Market Liquidity

Figure 10.1: Mid-C Liquidity (Day-Ahead Peak)

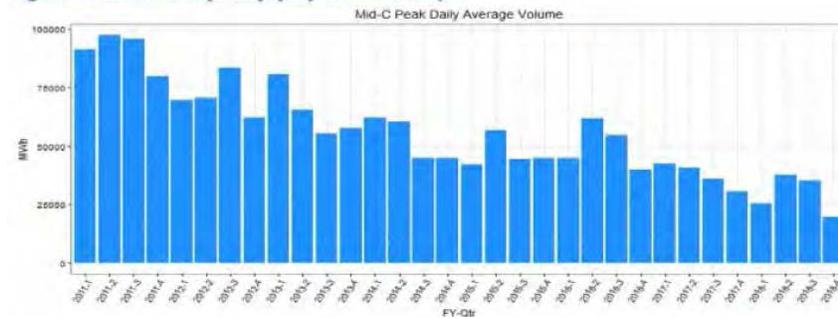
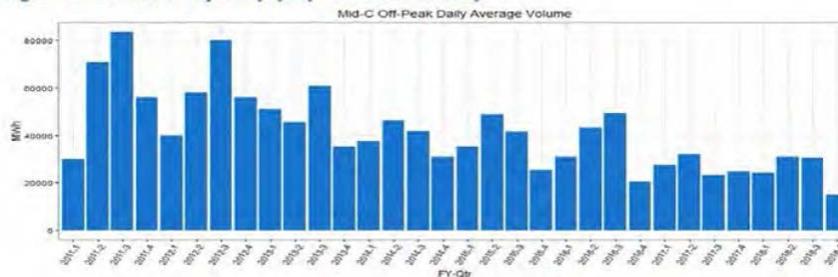


Figure 10.2: Mid-C Liquidity (Day-Ahead Off-Peak)



In IR 1.4.10, CEABC asked “What is the reason for the decline in volumes shown in the above figures 10.1 and 10.2? Has the total generation in the region decreased? If not, then where did all of that missing energy go?”

BC Hydro declined to answer CEABC’s question as to where the missing energy volumes had gone. It also declined to comment on the relative volumes in the forward market, and whether those had suffered a similar decline, citing confidentiality reasons.

However, in response to a Commission IR, BC Hydro gave the following partial explanation:<sup>29</sup>

- “1. Some load serving entities are increasingly seeking the security of forward supply commitments to meet their expected peak loads and to manage operations. This can include forward procurement to meet formal resource adequacy requirements; and*
- 2. Some load serving entities are increasingly seeking forward supply commitments for energy products with specific environmental attributes in part to comply with clean energy policies. This includes purchase of electricity from wind and solar generation facilities.”*

This may mean that some of the utilities in the region are choosing to offer some of the surplus energy from their reserve margins on the forward market rather than the day-ahead market, but the remaining energy is still adequate.

<sup>29</sup> Exhibit B-4, response to BCUC IR 1.2.3

The charts shown above indicate that the volume in the day-ahead market has declined to around 50,000 GWh per year. CEABC expects that, in part at least, some of that declining day-ahead volume has simply moved to other markets, perhaps the bi-lateral markets, and BC Hydro is already able to participate in those, through Powerex as its agent.

Regardless, 50,000 GWh per year (plus the 4,540 GWh of the Canadian Entitlement to the downstream benefits), should be more than adequate to deal with low reservoir situations. The anomalous situation in 2018-19 required only an additional 2,400 GWh to give BC Hydro comfort in its reservoir levels.

This short-term situation is very unlikely to be a crisis of insufficient load-serving generation. It should only ever be a low reservoir-level situation, which can be managed on an annual basis or longer. And on that basis, it should never amount to anything approaching 50,000 GWh per year. It should be, at most, 2,000 to 3,000 GWh in any one year (as it was even in the winter of 2018-19). This level of need should be easily satisfied from the day-ahead market and existing bilateral and other markets already available to Powerex.

**I. BC Hydro also has access to a number of additional alternatives for dealing with exceptional circumstances, and these could be further enhanced.**

BC Hydro's first means of dealing with any unusually adverse events should be to rely on its multi-year system storage. BC Hydro makes the point that, even in the rare and adverse circumstances of the past year, the tremendous flexibility of its storage system allowed it to come through the situation relatively unscathed. This extraordinary sequence of events does, however, highlight the need for BC Hydro to maintain a larger operating margin of error in its reservoir levels – enough to allow for such unexpected events.

CEABC offers the following (non-exhaustive) list of some of the alternatives available to BC Hydro, to deal with any future exceptional circumstances, should they arise.

1. **BC Hydro's system storage** – Already identified as the bastion of security against unanticipated rare events. As its first recourse, BC Hydro should always be able to rely on an adequate reservoir “safety margin” to protect against any such adverse sequences of events.

BC Hydro already tries to balance the two risks – the risks of over-drafting and under-drafting the reservoirs. Of these two risks, the risk of running short of water is by far the more serious. To have excessive water merely results in a lost opportunity. To run short of water, on the other hand, may present a real physical problem for many British Columbians.

When Site C comes into service in 2024 or 2025, the capacity of BC Hydro's system storage to handle exceptional circumstances is already scheduled to be greatly increased (in GWh of energy, rather than in cubic metres of water). Further enhancements could be made with pumped storage or batteries, but greater water management is the simplest and cheapest method to avoid future crises.

2. **The Canadian Entitlement** – The Downstream Benefits under the Columbia River Treaty are assured to British Columbia, but are normally sold off by Powerex into the U.S. market (on behalf of the B.C.). If needed in exceptional circumstances, these could provide up to 4,500 GWh over the course of a year, or 1,200 MW of load serving capacity.
3. **Running Island Generation** – This is a significant resource that is used for planning purposes, but is presently left idle, in favour of relying on imported energy, as a way to avoid B.C.'s carbon tax. Simply transferring the emissions out of the province is, in effect, a direct contradiction to the province's GHG reduction intentions.

If needed to bridge an adverse period, IGC could provide 2,100 GWh of energy over the course of a year (approximately 200 GWh per month), or 275 MW of instantaneous load serving capacity.

4. **Purchase additional IPP supply** – If the supply shortage appears to be occurring with some measure of frequency, then the proper solution is more procurement.
5. **Industrial curtailment arrangements** – Such arrangements are a simple and straightforward way to add new abilities to deal with a sudden and unexpected inability to serve load.

### III. CONCLUSIONS

In conclusion, CEABC has expressed the following concerns:

- CEABC does not believe the proposed 2019 Letter Agreement is aligned with UN Declaration on the Rights of Indigenous Peoples Act, or the indigenous rights provision of the Clean Energy Act.
- CEABC believes that a perpetual or multi-year agreement should not be necessary to deal with short-term anomalous situations. These can be dealt with by “one-off” approvals by the BCUC as needed.
- The anomalous situation of 2018-19 was an issue of low reservoir levels rather than an inability to serve load. Low reservoir levels can be dealt with over time by a variety of resources available to BC Hydro.

- BC Hydro's Energy Studies cannot be expected to predict these anomalous situations. They can only reflect the history upon which they are based and, as such, they cannot anticipate extraordinary circumstances.
- BCUC awareness and oversight should not be eliminated by putting in place, for an extended or indefinite period, measures designed to deal with short-term anomalous situations.
- Not all of the energy imported pursuant to the 2018 Letter Agreement was immediately required to serve domestic load. Rather, it was used to conserve or replenish reservoir levels. Low reservoir levels can be dealt with over time by a variety of resources available to BC Hydro.
- Forward supply contracts for Delivery Terms longer than 6 months should not be necessary to deal with an anomalous situation. Unusually low reservoir levels are unlikely to be experienced after May of each year. They can be dealt with in the January to May period, just as they were in F2019.
- The volume in the day-ahead Mid-C market may have decreased to 50,000 GWh per year, but this and other regional resources should be sufficient to deal with the restoration of reservoir levels.
- BC Hydro also has access to a number of additional alternatives for dealing with exceptional circumstances, and these could be further enhanced. CEABC outlined a number of these resources that are available to BC Hydro.

All of which is respectfully submitted.