

May 17, 2018

**VIA EMAIL**

Mr. Patrick Wruck  
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British Columbia Utilities Commission  
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Our File: 7670

Dear Mr. Wruck:

**Re: British Columbia Hydro and Power Authority Waneta 2017 Transaction  
Application ~ Project No.1598933**

On October 30, 2017, British Columbia Hydro and Power Authority (“BC Hydro”) filed an application with the British Columbia Utilities Commission seeking a variety of approvals arising out of its proposal to purchase Teck Resource Limited’s (“Teck”) two-thirds interest in the Waneta Dam and its associated assets. Specifically, BC Hydro is seeking orders<sup>1</sup>:

- Pursuant to section 44.2(3) of the *Utilities Commission Act* (the *UCA*), acceptance by the Commission of the expenditure schedule in regard to the Waneta 2017 Transaction as shown in the Filing;
- Pursuant to sections 58-61 of the *UCA*, approval of the Teck Wheeling Agreement<sup>2</sup>; and
- Pursuant to section 49(a) of the *UCA*, approval of three adjustments to the Non-Heritage Deferral Account (**NHDA**) as described in the Filing.

**The Waneta Transaction Application**

**The Waneta Dam**

Waneta is a hydroelectric dam built back in 1954 to generate power specifically for Teck’s smelter in Trail, BC. It is located close to the Canada-US border with a capacity of approximately 490 MW and a current output of approximately 2,670 GWh per year<sup>3</sup>.

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<sup>1</sup> Exhibit B-13.

<sup>2</sup> The initial Application also sought approval of the Waneta Interconnection Agreement, but after completion of the agreements it was determined that such approval was not necessary – see Exhibit B-19-2, BCUC 2.22.1 and Exhibit B-13.

<sup>3</sup> Exhibit B-1, page 1-2.

In 2010, BC Hydro purchased a one-third interest in that dam from Teck, with Teck retaining the balance. That purchase agreement provided both BC Hydro and Teck with a “right of first offer” (“ROFO”) on any future sale by the other of its interest in Waneta. Also, while the purchase by BC Hydro did not include the acquisition of any of Teck’s transmission assets, the Co-Ownership and Operating Agreement that formed part of the purchase agreement contained provisions whereby Teck agreed to make BC Hydro’s share of the generation from Waneta available at the Kootenay interconnection with BC Hydro’s transmission system<sup>4</sup>.

BC Hydro’s one third interest is not notional or superfluous to its needs: this interest translates directly into the utility receiving one third of the Waneta dam’s generation to serve its customers with Teck primarily (although not exclusively) using the remaining two-thirds to power its smelter in Trail, albeit with Teck contracting with FortisBC to operate and maintain the asset on behalf of its two owners<sup>5</sup>.

### The Transmission Assets and Rights

Not surprisingly, Teck owns a number of transmission assets associated with the Waneta Dam<sup>6</sup>:

- Line 71, a 230 kV lines (370 MW capacity) with two segments: one that connects Waneta to BC Hydro’s Nelway Substation and a second that connects Waneta to BPA’s transmission system at the Canada/US border;
- Lines 14-17, four 63 kV circuits, that connect Waneta to Teck’s Emerald Switching Station;
- Emerald Switching Station which interfaces with: i) Lines 14-17; ii) circuits connecting to Teck’s smelter and iii) Fortis BC Line 62 (which in conjunction with FortisBC Lines 77 and 79 provides access to the BC Hydro system); and
- Waneta Hydro Station, a sub-station connecting the Waneta plant’s generator to, amongst other things, Lines 71 and Lines 14-17.

Teck has also contracted with FortisBC to operate and maintain these transmission assets<sup>7</sup>.

Because Teck also has transactions with wholesale US markets, it negotiated the Line 71 Agreement with BC Hydro, which provides Teck transmission access to the BC/US border regardless of whether Line 71 is directly connected to the BPA system or is indirectly connected through its interconnection with BC Hydro’s system<sup>8</sup>.

Teck currently utilizes these transmission assets to serve the smelter load either from Waneta or by way of wholesale purchases from the US. The transmission assets are

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<sup>4</sup> Exhibit B-1, page 1-12.

<sup>5</sup> Exhibit B-1, pages 1-2 to 1-3.

<sup>6</sup> Exhibit B-1, page 2-9.

<sup>7</sup> Exhibit B-1, page 2-13

<sup>8</sup> Exhibit B-1, page 2-18

also used by Teck to sell surplus power from Waneta to wholesale markets in the US<sup>9</sup>. In addition, as noted previously, these assets are used to deliver BC Hydro's current share of the generation from Waneta to the BC Hydro system.

Furthermore, Teck does not use Line 71 exclusively for its own purposes. In accordance with a 1987 agreement<sup>10</sup>, FortisBC has an interruptible right to use Line 71 for imports and exports, subject to Teck's rights and obligations<sup>11</sup>.

Finally, Teck currently has certain rights with respect to Lines 62, 77 and 79 which are owned by FortisBC<sup>12</sup>.

### The Genesis of this Transaction

In early 2016, BC Hydro and Teck began discussing the possibility of Teck selling its remaining two-thirds interest in Waneta to the utility. However, after those discussions began, Teck initiated an auction process for that interest bundled with a power purchase agreement with the successful bidder and BC Hydro did not participate in that auction, either directly on its own or behind the scenes in conjunction with a third party<sup>13</sup>.

Fortis Inc. was the successful bidder in that auction: offering Teck \$1.18B for its remaining interest in the dam with a twenty year lease back to Teck with an option to extend the lease term for an additional ten years. This agreement also called for Fortis Inc. to purchase the Waneta-related transmission assets for an additional \$20M with lease-back conditions mirroring those placed on the sale of the Waneta Dam itself<sup>14</sup>.

Because of the ROFO provision in the 2010 purchase agreement, Teck then delivered notice (i.e., the "Sale Notice") to BC Hydro of the pending sale which, providing BC Hydro with the opportunity to match the offer of Fortis Inc. and purchase Teck's two-thirds interest in Waneta under substantially equivalent terms to those offered by Fortis Inc.<sup>15</sup>

### The Terms of the Transaction

Under the terms of the ROFO, the Sale Notice provided to BC Hydro offered the Utility the opportunity to purchase Teck's two-thirds interest on substantially the same terms as provided for in the Fortis Inc. transaction agreement. In the final agreement between BC Hydro and Teck, the following terms were agreed upon:

- BC Hydro to purchase of Teck's 2/3's interest in Waneta for \$1.203 B (based on \$1.18 B plus \$23 M as BC Hydro (being a non-taxable Crown Corporation)

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<sup>9</sup> Exhibit B-1, page 2-13

<sup>10</sup> Exhibit B-8-2, BCUC 1.36.1

<sup>11</sup> Exhibit B-1, page 2-19 and Exhibit B-8-2, BCUC 1.36.2

<sup>12</sup> Exhibit B-1, page 2-13, Footnote #58 and Exhibit B-8-2, BCUC 1.41.1

<sup>13</sup> Exhibit B-1, page 1.13

<sup>14</sup> Exhibit B-1, page 3-1

<sup>15</sup> Exhibit B-1, page 1-14

- was unable to deliver an election pursuant to section 16.1 of the Income Tax Act<sup>16</sup>.
- Closing of the transaction to occur by August 1, 2018<sup>17</sup>.
  - The Waneta assets will be leased back to Teck for a 20-year period (extendable to 30 years at Teck's option). Lease payments will start at \$74.2 M per year and escalate annually at 2 percent. (Note: If the lease is extended, initial rent will be \$144.4 M annually, again escalated at 2 percent)<sup>18</sup> During the period of the lease, Teck will be responsible for two-thirds of the operating and maintenance costs as well as two-thirds of sustaining capital. BC Hydro will be responsible for the remaining one-third plus non-sustaining capital costs and the costs of non-shared upgrades.<sup>19</sup>
  - During the lease period, the status quo will continue with respect to the transmission arrangements currently in effect. At the expiry or earlier termination of the Lease, BC Hydro will purchase Teck's transmission assets (including Line 71) for \$20 M<sup>20</sup>.
  - After the lease period and BC Hydro's acquisition of the transmission assets, BC Hydro will provide wheeling service to Teck between the US border and Teck's smelter load under the Teck Wheeling Agreement<sup>21</sup> (which forms part of the transaction). As part of the Agreement, BC Hydro will provide, if requested, an imbalance service to Teck.<sup>22</sup>
  - Also included as part of the transaction is an Interconnection Agreement<sup>23</sup> between BC Hydro and Teck that provides for the interconnection of their respective electrical systems (both during and after the Lease Period) and for Teck to receive certain ancillary services to support the smelter load<sup>24</sup>.
  - As noted above, Teck currently holds certain rights with respect to Lines 62, 77 and 79 which are owned by FortisBC. The Agreement requires Teck to use commercially reasonable efforts to extend the time for exercising its options to purchase capacity and/or asset rights on these Lines until 90 days after the expiry/early termination of the Lease<sup>25</sup>.

In addition, both Teck and BC Hydro have completed agreements<sup>26</sup> with FortisBC regarding the latter's use of Line 71 both prior to and after the expiry/termination of the Lease (and the acquisition of the line by BC Hydro). Use of these rights by BC Hydro would allow it to ensure delivery of the full output of Waneta to its system in the event the smelter shuts down<sup>27</sup>. Any related costs would be payable by BC Hydro.

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<sup>16</sup> Exhibit B-1, page 3-5 and Exhibit B-9, BCOAPO 1.7.1 and Exhibit B=20, CEC 2.52.1 & 2.52.2

<sup>17</sup> Exhibit B-1, page 1-20

<sup>18</sup> Exhibit B-1 page 3-6 to 3-7

<sup>19</sup> Exhibit B-1, page 3-12

<sup>20</sup> The \$20 M is subject to adjustment if the assets are enhanced, based on the additional costs and Teck's use of the assets. See Exhibit B-1, page 1-15 and Exhibit B-9, BCOAPO 1.3.2

<sup>21</sup> Exhibit B-12, Attachment 2, Schedule B

<sup>22</sup> Exhibit B-1, pages 3-21 to 3-22

<sup>23</sup> Exhibit B-12, Attachment 2, Schedule C

<sup>24</sup> Exhibit B-1, pages 1-17 and 3-23

<sup>25</sup> Exhibit B-1, page 3-20

<sup>26</sup> Exhibits B-17 and C-1-10.

<sup>27</sup> Exhibit B-9, BCOAPO 1.9.3

## REQUESTED ORDERS FROM THE COMMISSION

### *Section 44.2 Order*

As specified above, in this Application BC Hydro is seeking a Commission determination that the capital expenditures related to the Waneta Transaction (\$1.203B for the Waneta Assets, \$20 M for the Transmission Assets and \$50 M for Transaction costs) are in the public interest and that the associated expenditure schedule is accepted<sup>28</sup>.

### *Rate Order*

BC Hydro is seeking Commission orders approving the Teck Wheeling Agreement. Under this agreement BC Hydro will be providing what are considered to be regulated services that required approval under sections 58-61 of the UCA<sup>29</sup>.

BCOAPO agrees that the Wheeling Agreement involves the provision of regulated services and requires approval by the Commission. Furthermore, should the expenditure schedule be accepted by the Commission, BCOAPO supports the approval of the Agreement.

### *Accounting Orders*

BC Hydro is also seeking three adjustments to Non-Heritage Pool Deferral Account (“NHDA”):

1. If the closing of the transaction occurs on August 2018, the first Lease Payments from Teck will be made in BC Hydro’s 2019 fiscal year. However, no provision for the receipt of such payments was made in the recent Fiscal 2017-Fiscal 2019 Revenue Requirement Application. Absent any adjustment, the incremental revenue would be to the account of the shareholder. As a result, BC Hydro is seeking an order allowing it to defer its fiscal 2019 lease revenues arising from the 2017 Waneta Transaction to the NHDA so ratepayers will receive the full value<sup>30</sup>. In response to BCUC 1.57.3, BC Hydro explained why the NHDA is used to defer the 2019 lease revenues (as opposed to a different deferral account.
  - a) Under IFRS, the payments that Teck will make to cover its share of operating and sustaining capital costs during the Lease Period are considered to be revenues for BC Hydro. In contrast, these costs, as incurred by BC Hydro, are recognized as operating expenses and capital expenditures.

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<sup>28</sup> Exhibit B-1, pages 1-15 to 1-16

<sup>29</sup> Exhibit B-1, page 1-16 to 1-17 and Exhibit B-13

<sup>30</sup> Exhibit B-1, page 1-18

In the case of the operating expenses, the revenues from Teck will generally offset the incremental costs now incurred (after the Transaction). However, there is one exception which is water rentals since variances between forecast and actual water rentals are deferred to the NHDA. This means that, without any adjustment, Teck will be paying any variation between its share of forecast and actual water rentals but any variation would also be recorded in the NHDA for refund/recovery from rate payers. To address this, BC Hydro is seeking an order allowing it to exclude variances between forecast and actual water rentals arising, in a given year, from the Waneta 2017 Transaction, from the water rental variances deferred to the NHDA.<sup>31</sup>

- b) Similarly, in the case of the capital expenditures, a mismatch arises in that, without any adjustment, the revenues from Teck for its share of capital expenditures would be fully recognized in the year of year of each capital addition whereas BC Hydro will actually amortize the cost of addition. BC Hydro is seeking an order allowing it to defer to eh NHDA the revenue it would receive from Teck due to capital additions at Waneta. BC Hydro recognizes that the amortization period for the NHDA will not necessarily match that of the capital additions. However, it notes that the proposal is an improvement over doing nothing and, that since the dollar amounts involved are expected to be modest, introducing more complex accounting arrangements is not warranted<sup>32</sup>.

In its application, BC Hydro has noted that any financing charges incurred in fiscal 2019 as a result of the Transaction will result in variances between actual and forecast and be deferred to the Total Finance Charges Regulatory Account. Similarly, any variances between forecast and actual amortization in 2019 due to the Transaction will be transferred to Amortization of Capital Additions Regulatory Account. The only additional costs that will not be deferred are the operating/administration costs. Given the relatively immaterial amount involved, BC Hydro has not requested a deferral of these costs and, hence, they are to the account of the shareholder in fiscal 2019<sup>33</sup>.

In BCOAPO's view, the objective of these accounting orders is to better match the timing of cost and benefits from the Transaction and to ensure that benefits intended to accrue to ratepayers actually do so<sup>34</sup>. This makes a lot of sense to BCOAPO et al. and we appreciate BC Hydro making the effort to ensure the benefits accrue appropriately. As a result, should the expenditure schedule be accepted by the Commission, BCOAPO agrees with BC Hydro's proposed accounting orders.

## **JUSTIFICATION**

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<sup>31</sup> Exhibit B-1, pages 1-18 to 1-19

<sup>32</sup> Exhibit B-1, pages 1-18 to 1-19 and Exhibit B-8, BCUC 1.57.5, 1.57.5.1 & 1.57.5.2 and Exhibit B-9, CEC 1.6.1 & 1.6.3 and Exhibit B-20, CEC 2.51.1

<sup>33</sup> Exhibit B-8, BCUC 1.57.4

<sup>34</sup> Exhibit B-18, BCUC 2.119.4

## LEGAL AND REGULATORY REQUIREMENTS

### *Capital Expenditure Schedule*

Under section 44.2(5.1) of the UCA when the Commission is considering whether to accept an expenditure schedule filed by the authority (i.e., BC Hydro), in addition to considering the interests of persons in British Columbia who receive or may receive service from the authority, it must consider:

- c) British Columbia's energy objectives,
- d) an applicable integrated resource plan approved under section 4 of the Clean Energy Act,
- e) the extent to which the schedule is consistent with the requirements under section 19 of the Clean Energy Act, and
- f) if the schedule includes expenditures on demand-side management, the extent to which the demand-side management measures are cost-effective within the meaning prescribed by regulation, if any.

In the Application, BC Hydro addressed how the proposed Waneta Transaction either serves or is neutral with respect to each of the energy objectives set out in the *Clean Energy Act*<sup>35</sup>. After reviewing the evidence on record, BCOAPO accepts that the proposed Waneta Transaction is consistent with British Columbia's energy objectives subject to certain conditions.

BC Hydro noted that the purchase of Teck's two-third's interest in Waneta "does not at this time figure in any long-term resource plan of BC Hydro" and, as a result, item (b) above is not applicable<sup>36</sup>. However, BCOAPO notes that during the Lease Period, BC Hydro's projected load/resource balance is essentially unaffected by the transaction and (assuming the Lease is not terminated early by a default on Teck's part) the additional two-thirds interest in Waneta becomes available when BC Hydro's load/resource balance is expected to be in deficit<sup>37</sup>. As a result, in our view, the Transaction is not inconsistent with BC Hydro's most recently approved integrated resource plan. Indeed, adding the two-thirds of Waneta's generation to BC Hydro's planned resources is not enough to offset the projected and substantial deficit at the end of the Lease Period<sup>38</sup>.

Finally, BC Hydro notes<sup>39</sup> that sections (c) and (d) are not applicable to the current Application.

Overall, BC Hydro contends that the Waneta 2017 Transaction is fundamentally an economic transaction<sup>40</sup> and that it serves the interests of the persons served by BC

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<sup>35</sup> Exhibit B-1, pages 4-21 to 4-25

<sup>36</sup> Exhibit B-1, page 4-25

<sup>37</sup> Exhibit B-1, page 4-10

<sup>38</sup> Exhibit B-8, BCUC 1.3.4

<sup>39</sup> Exhibit B-1, page 4-26

Hydro (i.e., the ratepayers) by virtue of its positive economics and positive ratepayer benefits. While all these considerations are worth examining, BCOAPO agrees with the utility that the economic and ratepayer benefits are the primary bases on which the transaction should be evaluated.

### *Rate Orders*

When setting a rate under section 60(1) of the UCA the Commission must have due regard that it:

- (i) is not unjust or unreasonable within the meaning of section 59,
- (ii) provides to the public utility for which the rate is set a fair and reasonable return on any expenditure made by it to reduce energy demands, and
- (iii) encourages public utilities to increase efficiency, reduce costs and enhance performance

BCOAPO submits that the Teck Wheeling Agreement (for which BC Hydro is seeking rate order approval) is an integral part of the overall Waneta 2017 Transaction and it must be considered in that context.

### *Accounting Orders*

In contrast, approval of the requested accounting orders is not integral to the approval of the overall Transaction and therefore, these can be considered on their own merits<sup>41</sup>.

## ECONOMIC JUSTIFICATION

The assessment of the economics of the Waneta 2017 Transaction can be broken down into two periods:

The Lease Period<sup>42</sup> – during which the load/resource balance of BC Hydro is essentially unaffected<sup>43</sup> and the primary considerations are the initial costs incurred by BC Hydro (i.e., purchase and transaction costs) along with the incremental capital and operating costs that BC Hydro will incur in accordance with the transaction agreement and to oversee the Lease. Offsetting these are the annual lease payments that will be made by Teck.

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<sup>40</sup> Exhibit B-1, pages 4-1 and 4-32

<sup>41</sup> Exhibit B-8, BCUC 1.57.5.2 and BCUC B-18, BCUC 2.119.6.1

<sup>42</sup> Exhibit B-1, pages 4-7 to 4-9

<sup>43</sup> Exhibit B-8, BCUC 1.3.3

The Post-Lease Period – when the additional two-thirds of Waneta will become available to BC Hydro and its value dependent upon the load resource/balance at the time. If the additional Waneta generation is required/used to address a load/resource deficit then its value is reflected by BC Hydro’s Long Run Marginal Cost (LRMC). However, if BC Hydro’s load/resource balance is in surplus then the value of the additional Waneta generation is reflected in the ability to earn additional trade revenues (i.e., the assumed export prices).

BC Hydro notes<sup>44</sup> that “economic justification” can be viewed from two perspectives:

Investment Analysis: Does the investment provide net economic benefits (i.e., is it an efficient allocation of funds)?

Ratepayer Analysis: What are the net costs or benefits to rate payers.

Both perspectives involve a net present value (NPV) analysis. However, they will differ in terms of the financing rate used<sup>45</sup> (particularly now that BC Hydro’s return on equity is fixed and independent of the rate base) and the timing of the costs and benefits (i.e., Investment Analysis looks at cash flows whereas Rate Payer Analysis looks at the annual revenue requirement).

### Investment Analysis

#### *Core Investment (NPV) Analysis – No Risk Adjustments*

BC Hydro evaluated the transaction under five “core” scenarios, each of which used a different basis for valuing in the Waneta generation following the primary 20 year lease period. These scenarios included two bases that used two export price forecasts from a third party vendor (ABB) and another with a built-in projection where export prices grow more slowly<sup>46</sup>. Under these scenarios the assumption is that the two thirds output from Waneta is exported after the Lease Period<sup>47</sup>. The fourth used BC Hydro’s Forecast Industrial Rate. This reflects the circumstances where, following the Lease Period, BC Hydro becomes Teck’s electricity service provider<sup>48</sup>. A fifth used two LRMC forecasts. One based on solely Clean Energy and second based on a combination of Clean Energy and natural gas-fired generation.

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<sup>44</sup> Exhibit B-18, BCUC 2.90.3.1

<sup>45</sup> Exhibit B-20, BCSEA 2.51.5 and B-20, CEABC 2.23.8

<sup>46</sup> See Exhibit B-8, BCUC 1.7.6 for an explanation as to the derivation of the Extrapolated Prices forecast. The actual prices used are considered commercially sensitive.

<sup>47</sup> Exhibit B-18, BCUC 2087.1

<sup>48</sup> Exhibit B-1, page 4-6. Note: The analysis assumed that Teck did not require all of the 2/3’ output and small amount (48 GWh/year) would be exported at ABB export prices – Exhibit B-8-4, BCUC 1.16.4.

In all cases the NPV analysis used a forty-year evaluation period and a discount rate of 6%. The latter is based on a weighted average cost of capital which includes both equity (40% weight at 8.75%) and debt (60% weight at 4.01%)<sup>49</sup>. The scenarios were evaluated against a “base case” where the Waneta 2017 Transaction does not occur and the assets remain with Teck<sup>50</sup>.

The results of the analysis are set out below<sup>51</sup>.

**Table 5 Un-risked Value of Transaction**  
(Present value to 2018, \$ millions)

Basis for Post-Lease Value	Value of 20-year Lease Period	Value of Post-Lease Period	Transaction Value	Net Benefit to Ratepayers @ Price of \$1.28
LRMC – Clean only	792	1,482	2,274	1,071
LRMC – Clean + Gas	792	1,206	1,997	794
BCH Industrial Tariff	792	586	1,378	175
Market Prices (ABB)	792	570	1,362	159
Extrapolated Prices	792	440	1,232	29

It should be noted that The LRMC values used for the 100% Clean (or “Clean only”) and Clean+Gas scenarios differ from those used in the 2017-2019 RRA in order to reflect the Government’s recently introduced Climate Leadership Plan. This change results from the use of pumped storage as the capacity resource after Revelstoke in the 100% Clean scenario as opposed to a single cycle gas turbine (“SCGT”). In addition, BCOAPO notes that for the Waneta business case, a more conservative (i.e., lower) value was used for the cost of an SCGT than in 2017-2019 RRA<sup>52</sup>. The energy LRMC<sup>53</sup> value is the same as in the RRA.

The key factor leading to a difference in the results for the two LRMC values is the value attributed to capacity (i.e., pumped storage at \$221/kW/year for Clean only versus simple cycle gas turbine for Clean+Gas at \$88/kW/year<sup>54</sup>).

The LRMC-based scenarios value any of the two thirds of the Waneta generation available to BC Hydro (i.e., after the Lease Period) at the ABB Market price if BC Hydro is in surplus and at the relevant LRMC value if the load/resource balance is in deficit<sup>55</sup>. In contrast, the export price scenarios (Market Prices and Extrapolated Prices) values all such generation at the export price<sup>56</sup>.

As noted previously, BC Hydro’s current load/resource balance indicates there will be an energy deficit by 2033 (F2034): at least four years prior to the end of the Lease

<sup>49</sup> Exhibit B-1, page 4-3

<sup>50</sup> Exhibit B-9, BCOAPO 1.12.1 & 1.12.2

<sup>51</sup> Exhibit B-1, Appendix N, page 25

<sup>52</sup> Exhibit B-1, Appendix N, page 19 and Exhibit B-8, BCUC 1.11.1.2 and Exhibit B-8-4, BCUC 1.6.1

<sup>53</sup> Exhibit 20, BCOAPO 2.9.1

<sup>54</sup> Exhibit B-8-4, BCUC 1.6.1

<sup>55</sup> Exhibit B-8, BCUC 1.6.4

<sup>56</sup> Exhibit B-8, BCUC 1.6.2 and 1.6.2.1

Period<sup>57</sup>. This means that the export price-based scenarios actually *understate* the benefit of the Transaction during the post-Lease Period. On the other hand, the LRMC scenarios may overstate the value if load growth is slower than forecast and BC Hydro's load/resource balance is still in surplus when the Lease Period ends.

BCOAPO notes that all of the scenarios BC Hydro generated using a variety of inputs show a positive benefit of this transaction to its ratepayers ranging from \$29M to \$1,071M. Having reviewed the evidence on the record, BCOAPO is of the view that the results are most likely to be at the upper end of the benefits range presented: a fact that is not determinative but is worth noting.

### Core Investment (NPV) Analysis – With Risk Adjustments

It is obvious that one of the key risks of this transaction is that the Lease Period will terminate early due to a Teck default. Should that happen, the lease payments would cease; BC Hydro would then become responsible for all of the operating and capital costs; and energy and capacity would become available that presumably BC Hydro would then need to sell either to domestic or export markets.

In order to analyze this risk, BC Hydro obtained Moody's assessment of the yearly probability of Teck defaulting over the next 10 years and extrapolated the probabilities for the remaining ten. Not surprisingly, the results vary depending upon the valuation basis used for the two thirds of the Waneta generation that would become available upon default.

Another key risk or uncertainty is whether or not Teck will exercise its option to renew the Lease for an additional 10 years. Again, the impact on the economic analysis depends on the value attached to the two-thirds of Waneta's generation during the extended lease period. The calculation of the value of the Extension option also factored in the likelihood that Teck would exercise the option<sup>58</sup>.

The overall impact on the economic analysis of these two risk factors is set out below<sup>59</sup>.

**Table 8 Consolidated Value of Transaction**  
(Risky present value to 2018, \$ millions)

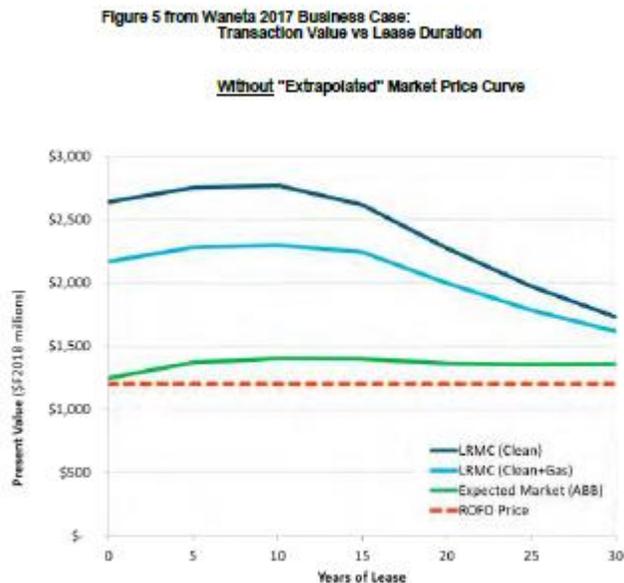
Basis for Post-Lease Value	Value of Assets / Lease to BC Hydro					
	Un-risked Lease Period	Default Risk Adj.	Post-Lease Value	Extension Option	Total Value	Value net of purchase
LRMC (Clean)	792	107	1,482	(291)	2,090	887
LRMC (Clean + Gas)	792	64	1,206	(196)	1,865	662
Industrial Tariff	792	n/a	586	(45)	1,334	131
Market Prices (ABB)	792	1	570	(93)	1,269	66
Extrapolated Prices	792	(54)	440	(6)	1,172	(31)

<sup>57</sup> Exhibit B-1, page 4-10

<sup>58</sup> Exhibit B-1, Appendix N, page 27-28 and Exhibit B-20, BCOAPO 2.7.1 and CEC 2.66.1

<sup>59</sup> Exhibit B-5, Appendix N-Revision 1, page 29

The following figure presents the results from another perspective by setting out the impact of the Lease Period on the value of the Transaction<sup>60</sup>. BC Hydro has expressed the view that the likelihood of the smelter being served by BC Hydro following default is low<sup>61</sup> and BCOAPO agrees with this assessment.



In both presentations, the first two scenarios use LRM to value the generation when BC Hydro is forecast to be in deficit but market prices (i.e., Expected Market (ABB)) when it is forecast to be in surplus<sup>62</sup>. In contrast, the market price scenarios assume that energy and capacity are sold at market prices regardless of the load/resource balance<sup>63</sup>. However, BC Hydro's load/resource balance is likely to transition from surplus to deficit at some point during the 40 year evaluation period<sup>64</sup> and this point is currently forecast to be towards the end of the 20-year Lease Period. This would again suggest that the export price-based scenarios understate the Post-Lease value as well as understating the negative impact of the Lease Extension Option.

Based on the above analyses and observations, BCOAPO would expect LRM-based scenarios to be more representative of the net benefit accruing to BC Hydro rate payers, indicating that the benefit to ratepayers will more likely be towards the higher end of the range presented than the lower one.

### Sensitivity Analyses

<sup>60</sup> Exhibit B-1, Appendix N-1, page 3

<sup>61</sup> Exhibit B-18, BCUC 2.76.3

<sup>62</sup> Exhibit B-8, BCUC 1.6.4

<sup>63</sup> Exhibit B-8, BCUC 1.6.2 and 1.6.2.1

<sup>64</sup> Exhibit B-1, page 4-10

In regards to the Load/Resource Balance, BC Hydro examined a variety of scenarios including where the load grew faster or slower than expected<sup>65</sup>. It should be noted that even under the small gap scenario, based on P10 load levels, there is resource deficit during the evaluation period<sup>66</sup>. The sensitivity analysis indicates<sup>67</sup> that using the LRMC Clean scenario with a 10-year delay to 2044, which is beyond the small gap scenario need date, still results in a net value for the Transaction of \$570 M.

In BCOAPO's view, the "export price" scenarios will understate the value of Transaction in all but extreme cases. The net value of this transaction is almost \$600 M under the small LRB gap scenario using ABB export prices after the Lease Period when BC Hydro is in surplus and the LRMC Clean when BC Hydro is in deficit<sup>68</sup> as compared to \$66 M under the ABB price scenario<sup>69</sup>.

When looking at the Long Run Marginal Cost BC Hydro re-did the scenarios addressed in the core economic analysis using a range of values for Long-Run Marginal Cost from \$104/MWh to \$167/MWh (versus the assumed LRMC-Clean value of \$145/MWh). Even under the \$104/MWh LRMC value the net benefit of the Transaction exceeds \$400 M<sup>70</sup>.

Furthermore, BC Hydro has indicated that the LRMC (energy and capacity combined) would need to fall to below approximately \$50/MWh (2018\$) before the un-risked value of the Transaction falls below zero<sup>71</sup>. In contrast, BC Hydro suggested that, after allowing for optimistic technological improvements, the combined energy plus capacity LRMC for the post 2038 period is estimated to be \$105/MWh for Clean+Gas and \$126/MWh for 100% Clean (in 2018\$)<sup>72</sup>.

For Market/Export Prices BC Hydro also re-did the scenarios addressed in the core economic analysis using two additional export price scenarios: one where export prices are assumed to remain flat/constant in real terms and a second where the Extrapolated Price forecast is combined with an increase (30%) in capacity prices. Under the first scenario, the net value of the Transaction is negative (-\$328M) while the second forecast results in the Transaction breaking even<sup>73</sup>.

While these results are not positive, BCOAPO does not find either of these sensitivities particularly meaningful. They both use the export prices to value all of the additional generation available from Waneta after the Lease Period over the entire 40-year evaluation period.

In regards to Capital Costs, for the purposes of its initial analysis, BC Hydro included a 20% risk premium in the capital costs used for all projects over \$1 M<sup>74</sup>. However, BC Hydro also considered scenarios where the future Waneta capital costs it would be

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<sup>65</sup> Exhibit B-1, Appendix N, pages 29-30

<sup>66</sup> Exhibit B-8, BCUC 1.1.2.1

<sup>67</sup> Exhibit B-1, Appendix N, page 30

<sup>68</sup> Exhibit B-20, BCOAPO 2.11.1

<sup>69</sup> Exhibit B-1-3, Appendix N-Revision 1, page 29

<sup>70</sup> Exhibit B-1, Appendix N, page 31

<sup>71</sup> Exhibit B-21-1, CEC 2.2.1

<sup>72</sup> Exhibit B-21-1, CEC 2.5.1

<sup>73</sup> Exhibit B-1, Appendix N, page 32

<sup>74</sup> Exhibit B-1, Appendix N, page 34

responsible for were higher than those assumed in the core economic analyses<sup>75</sup>. These scenarios reduced the net benefit of the Transaction by less than \$100 M. The impact of higher capital costs was also explored in the information requests where it was noted that a 100% increase in all capital costs would reduce the net benefit of the transaction by approximately \$150 M<sup>76</sup>.

However, BCOAPO notes and takes comfort in the fact that the sustaining capital budget for Waneta has been reasonably predictable since BC Hydro purchase of its 1/3 interest<sup>77</sup>. It is also noted that the capital spending included in the economic analysis is based on BC Hydro's internal standards and leading utility practice which led to increased spending relative to the "Good Utility Practice" standards followed by Teck<sup>78</sup>. In BCOAPO's view, this suggests that a significant increase in capital spending over what has been included in the business case is unlikely.

As noted above, BC Hydro used a nominal discount rate of 6% in its investment analysis and the sensitivity analysis was performed using 4% and 8%<sup>79</sup>. Higher discount rates obviously reduce the value of the Transaction so with an 8% discount rate only the LRMC-Clean scenario has a positive value. At 7% both of the LRMC-based scenarios BCOAPO thinks are most likely would have positive values<sup>80</sup>.

One of the key inputs into the discount rate is the cost of debt. The 6% discount rate is based on a 3.4% cost of debt using an interest rate forecast provided by the Ministry of Finance in May 2017<sup>81</sup>. More recent forecasts by the Ministry<sup>82</sup> indicate that the cost of debt will be marginally lower (3.26%). BC Hydro hedged \$1.25B of future long term debt in September/October 2017 at 3.18%<sup>83</sup>. While not specifically ear-marked for the Waneta Transaction, this does provide BC Hydro with some risk mitigation against rising interest costs.

Based on these facts, it is BCOAPO's view that, while the results show a material sensitivity to higher discount rates, the potential for increases in the discount rate do not present a major risk to the valuation of the Project.

### *Site C Inquiry*

In its Site C Inquiry Report, the BCUC used a number of forecasts and assumptions different from those adopted by BC Hydro regarding a number of the inputs. Some of the key ones (from the perspective of the Waneta business case) are discussed below.

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<sup>75</sup> Exhibit B-1, Appendix N, pages 32-33 and Exhibit B-20, BCOAPO 2.13.1

<sup>76</sup> Exhibit B-8, BCUC 1.19.7

<sup>77</sup> Exhibit B-9, CEC 1.19.1

<sup>78</sup> Exhibit B-1, Appendix N, pages 13 and 32-33 and Exhibit B-9, CEC 1.36.1

<sup>79</sup> Exhibit B-1-3, Appendix N-Revision 1., page 29

<sup>80</sup> Exhibit B-8, BCUC 1.23.6

<sup>81</sup> Exhibit B-1, page 4-4 and Exhibit B-8, BCUC 1.23.2

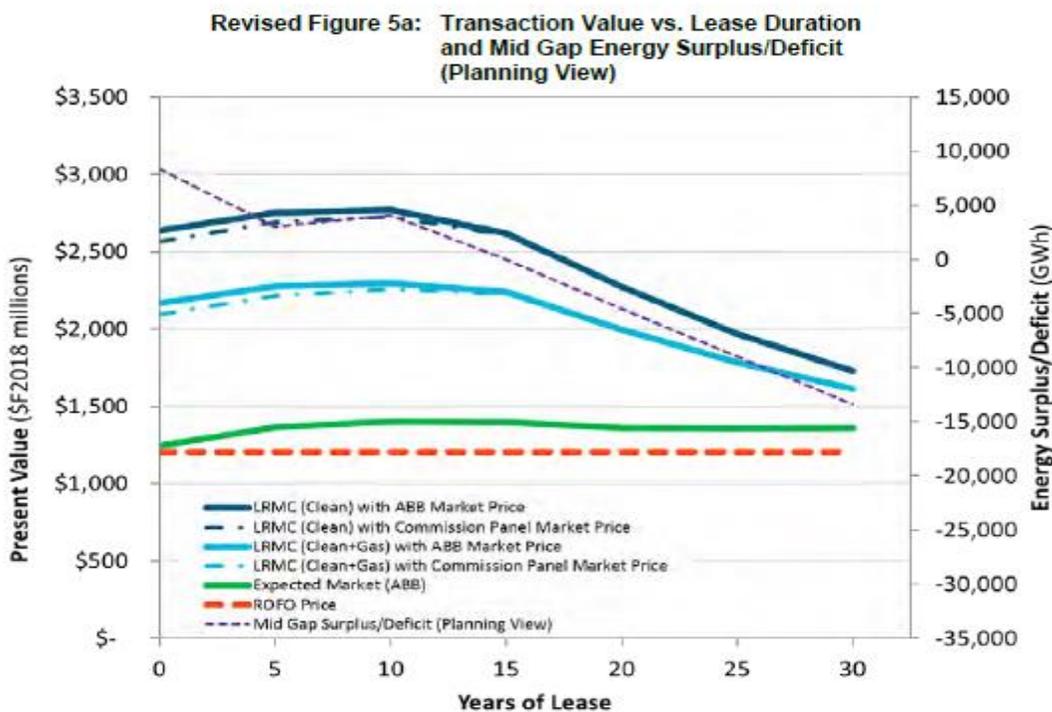
<sup>82</sup> Exhibit B-9, BCOAPO 1.10.1

<sup>83</sup> Exhibit B-8, BCUC 1.23.3

Apart from some small differences the load/resource balance used in the Waneta 2017 Transaction Application is the same as that submitted by BC Hydro in the recent Site C inquiry<sup>84</sup>. However, the BCUC determined<sup>85</sup> that for its analysis of Site C it would use BC Hydro's low load forecast. This difference in the approach to the load/resource balance is not a concern to BCOAPO though simply because the discussion in the preceding section cites evidence showing that the value of the Transaction is positive under the low load growth/small gap scenario. This is further illustrated in BC Hydro's response to BCUC 1.6.5.2<sup>86</sup>.

For purposes of its assessment of Site C, the Commission determined that it would rely on a Mid-C energy price forecast that was mid-way between BC Hydro's forecast and ABB's low price forecast<sup>87</sup>.

The Mid-C energy price forecast from the Site C Inquiry Report yields a transaction value that is less than that under the Market Prices (ABB) scenario but greater than the value under the Extrapolated Prices scenario<sup>88</sup>. Using the Panel Mid-C energy forecast when BC Hydro is in surplus and the LRMC (either Clean or Clean+Gas) when BC Hydro is in a deficit scenario yields a positive net benefit regardless of the Lease Period as illustrated by the following figure<sup>89</sup>:



<sup>84</sup> Exhibit B-8, BCUC 1.3.1  
<sup>85</sup> Site C Inquiry Report, page 77

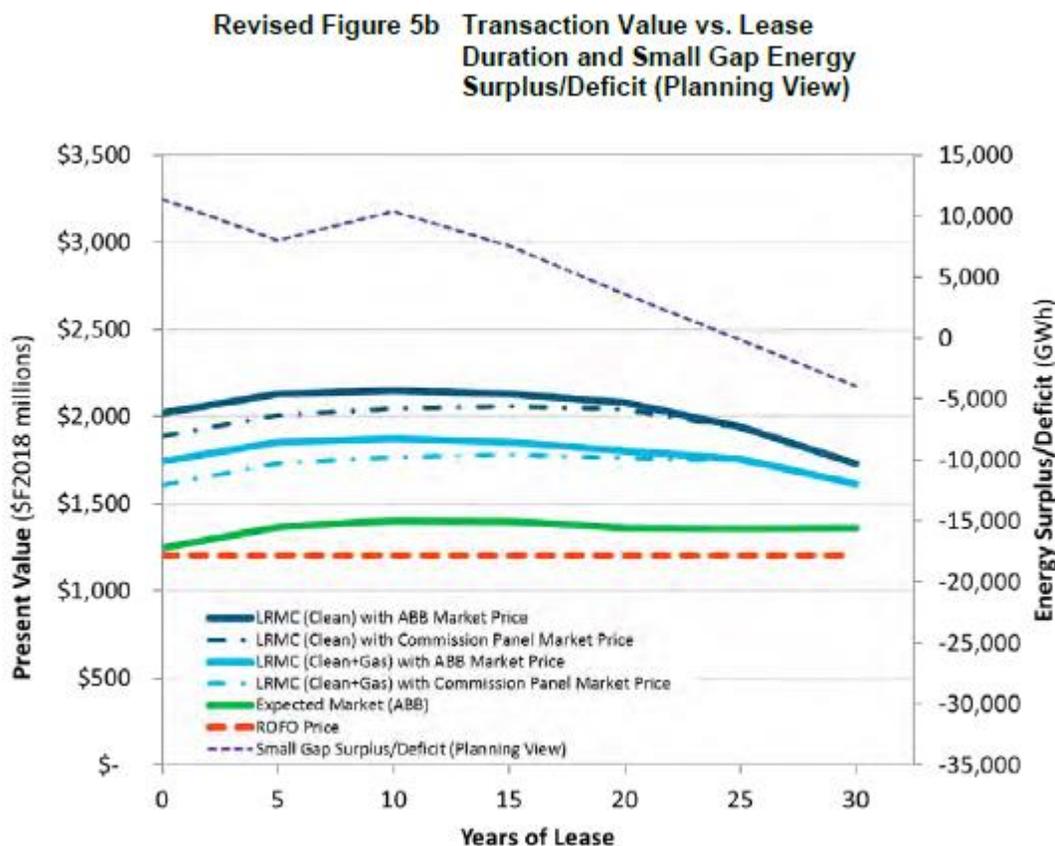
<sup>86</sup> Exhibit B-8

<sup>87</sup> Site C Inquiry Report, page 95 and Exhibit B-8, BCUC 1.7.8

<sup>88</sup> Exhibit B-8, BCUC 1.16.6

<sup>89</sup> Exhibit B-8, BCUC 1.6.5.1

Furthermore, there are still positive net benefit results when the Panel’s Mid-C energy price forecast is used in conjunction with the lower load growth scenario<sup>90</sup> as the risk-adjusted present value of the Transaction is still over \$500 M (versus \$887 M) assuming the LRMC-Clean value when the load/resource balance deficit does occur<sup>91</sup>. In addition, as seen in the following graph<sup>92</sup>, the present value is positive regardless of the duration of the Lease Period.



Examining the case for this transaction by revising the energy LRMC calculation so as to use the \$88/MWh greenfield estimate for wind power from the Commission’s Illustrative Alternative Portfolio and capacity LRMC based on Industrial Load Curtailment results in a value for LRMC-Clean of \$127/MWh (versus \$145/MWh) and for Clean+Gas of \$104/MWh (versus \$122/MWh)<sup>93</sup> is similarly reassuring. BCOAPO notes that these values fall within the range of values used in BC Hydro’s LRMC sensitivity analyses and therefore using these values, along with the other assumptions underpinning the core scenarios, would still result in a net benefit<sup>94</sup>.

<sup>90</sup> Exhibit B-8, BCUC 1.1.2 – Table 3.8 – Small Gap (line 19b)

<sup>91</sup> Exhibit B-8, BCUC 1.6.6 and 1.25.1

<sup>92</sup> Exhibit B-8, BCUC 1.6.5.2

<sup>93</sup> Exhibit B-8, BCUC 1.12.1

<sup>94</sup> Exhibit B-8, BCUC 1.12.1.1

The response to BCUC 1.24.1<sup>95</sup> indicates that when the Panel's Mid-C market price forecast is combined with an LRMC value of \$87/MWh (i.e., 40% decrease in the \$145/MWh LMRC-Clean value), which is considerably less than the LRMC values noted in the preceding paragraph, the Transaction still has a risk-adjusted positive value of \$360 M.

Furthermore, the response to BCUC 2.86.3<sup>96</sup> indicates that the value of Transaction continues to be positive if the \$87/MWh LRMC value is used in conjunction with the Panel's Mid-C price forecast and the lower load forecast.

Adjusting the inputs to the Waneta business case to reflect the key inputs relied on by the Commission in its Site C Inquiry Report still yields a positive value for the Transaction.

### *CEABC Evidence*

In its Evidence and subsequent IR responses, CEABC suggested that the \$60/MWh<sup>97</sup> for wind energy was a more realistic value than the \$106/MWh used by BC Hydro for purposes of establishing a LRMC-Clean. However, CEABC also claims that the results of Alberta's recent RFP would suggest that the current price for BC wind resources would be roughly \$50/MWh (2018\$) but that, after allowing for future decreases the cost of wind power, an appropriate value for installations in 2039 would be roughly \$40/MWh<sup>98</sup> (2018\$).

There is considerable disagreement between CEABC<sup>99</sup> and BC Hydro<sup>100</sup> as to the applicability of the Alberta RFP results to BC Hydro's service area, future trends in wind power costs and alternative cost for capacity (e.g. battery storage). However, BCOAPO notes that even if the \$40/MWh value is appropriate for wind energy the resulting LRMC for capacity and energy combined for the period after 2034 would be greater than \$50/MWh<sup>101</sup> (using BC Hydro's capacity cost estimates) and the unrisks value of the Transaction would still be positive<sup>102</sup>.

BCOAPO attaches little weight to the value of an RFP held in another province but in any case, the evidence indicates that the value of the transaction would remain positive even should CEABC's pricing scenario come to pass.

### *Transmission Asset Purchase*

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<sup>95</sup> See revised response in Exhibit B-8-4

<sup>96</sup> Note: The values shown in BCUC 2.86.3 do not appear to have incorporated the corrections noted in Exhibit B-8-4 for BCUC 1.24.1 and therefore may under estimate the value of the Transaction.

<sup>97</sup> Exhibit C6-7, BCUC 1.1

<sup>98</sup> Exhibit C6-7, BCUC 1.1, page 4

<sup>99</sup> Exhibit C6-6, page 5 and C6-7, BCUC 1.1

<sup>100</sup> Exhibit B-18, BCUC 2.80.1 and Exhibit B-21-1, CEC 2.5.1

<sup>101</sup> This statement is based on applying the relevant capacity values per Exhibit B-18, BCUC 2.81.1

<sup>102</sup> Exhibit B-18, BCUC 2.86.5

Under the terms of this Transaction, BC Hydro is to purchase the Transmission assets from Tech at the end of the Waneta asset Lease Period. This differs from the initial agreement Fortis Inc. had reached with Teck which called for Fortis Inc. to purchase the Transmission assets at the same time as the Waneta assets but to then lease the Transmission assets back to Teck. Also, the terms of the ROFO from the 2010 transaction was only with respect to the sale of Waneta assets<sup>103</sup>. As a result, another other option potentially open to BC Hydro would have been to not purchase the Transmission assets at all.

As part of the Application, BC Hydro has provided an assessment of three scenarios regarding the acquisition of the Transmission assets (particularly Line 71 which provides Waneta generation access to the BC Hydro system)<sup>104</sup>:

- i. Buy the Transmission assets in 20 years as specified in the current Transaction;
- ii. Buy the Transmission assets upfront and lease to Teck
- iii. Don't buy the Transmission assets and negotiate any required transmission access from Teck.

The NPV analysis of the costs and revenues associated with each scenario indicates that the first two scenarios have roughly the same overall net cost (\$14.0 M and \$13.1 M respectively for (i) and (ii))<sup>105</sup>.

Scenario (iii) has a lower overall cost (\$8.4 M) but presents a much higher risk for BC Hydro in terms of both the guarantee of access to transmission to its system for Waneta generation and the cost of the same after the Lease Period. Because Teck has indicated it would prefer not to continue to own and operate the transmission assets after the Lease Period, there is a risk that Teck will not be the owner at the time negotiations for the transmission rights on Line 71 would take place with an attendant risk that this unknown third party owner may approach those negotiations from a much different position than Teck currently is<sup>106</sup>. Additionally, if BC Hydro declines to commit to purchasing the transmission assets, there is a risk that Teck (or a new owner) may not maintain Line 71 such that the capacity required by BC Hydro will be available<sup>107</sup> when it is needed. Also, if BC Hydro owns the line then, in the event that satisfactory access to Lines 62, 77 and 79 cannot also be arranged, BC Hydro would have the ability to upgrade Line 71. However, if Teck or another party owns the line then BC Hydro will require their agreement to do so and that permission may not be forthcoming or the terms of that agreement may not be beneficial to BC Hydro's ratepayers.

Overall, given that access to sufficient capacity on Line 71 is required to ensure the deliverability of the Waneta generation to the BC Hydro system after the Lease Period, BCOAPO views scenarios (i) and (ii) as being preferable to scenario (iii) despite the cost difference. There are times when the public and ratepayer interest are best served by spending more in the short term to reduce the risks going forward.

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<sup>103</sup> Exhibit B-20, BCOAPO 2.19 a)

<sup>104</sup> Exhibit B-1, Appendix N – Appendix C.

<sup>105</sup> Exhibit B-1, Appendix N-Appendix C, page 6

<sup>106</sup> Exhibit B-1, Appendix N-Appendix C, page 10 and Exhibit B-9, FBC 1.7.1

<sup>107</sup> Exhibit B-1, Appendix N-Appendix C, page 7

In terms of BC Hydro's decision to prefer scenario (i) over scenario (ii), because of the redactions to Appendix C-Analysis of Waneta Transmission Options, BCOAPO is not in a position to offer an informed opinion.

### *Alternative "Base Cases"*

BC Hydro's business case for the Waneta Transaction calculated incremental costs and benefits relative to a case in which the Transaction did not occur and the Waneta assets remained with Teck<sup>108</sup>.

However, it is important to acknowledge that if BC Hydro does not purchase the assets, they could be sold by Teck to a third party<sup>109</sup> such as Fortis Inc. This would produce alternative "base cases" against which the Transaction could be evaluated. In its business case analysis BC Hydro looked at a number of such scenarios which considered circumstances where Teck does or does not request service from BC Hydro for its smelter load and FortisBC does or does not renew its purchase agreement with BC Hydro past 2033<sup>110</sup>.

While BC Hydro does not have any formal obligation to serve the smelter if requested by Teck to do so<sup>111</sup>, it notes that, as a Crown Corporation it was created to serve broad energy and public policy objectives and therefore could be obligated in the future to do so<sup>112</sup>. Similarly, FortisBC's decision as to whether or not to seek renewal of the 3808 PPA past 2033 could be influenced by who owns the Waneta generation assets and how the new owner intends to make use of the associated generation.

The results of the various cases are heavily redacted to the point that it is not possible for BCOAPO to discern the impacts of all of the alternative cases considered by BC Hydro. However, BC Hydro has indicated that in all of the five core scenarios considered (except the one that uses low market prices throughout the evaluation period), there is an overall cost to BC Hydro of not proceeding with the Transaction if the smelter load is to be served by BC Hydro<sup>113</sup>.

### *Other Considerations*

In the Application, BC Hydro identified a number of additional expected sources of value from the Transaction<sup>114</sup>. These include:

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<sup>108</sup> Exhibit B-9, BCOAPO 1,12,1

<sup>109</sup> Exhibit B-9, BCSEA 1.24.1

<sup>110</sup> Exhibit B-1, Appendix N, page 38

<sup>111</sup> Exhibit B-8-2, BCUC 1.63.1

<sup>112</sup> Exhibit B-9, BCSEA 1.1.1 and Exhibit B-9-2, BCOAPO 1.14.1

<sup>113</sup> Exhibit B-1, Appendix N, page 3 and Exhibit B-9, CEC 1.27.1

<sup>114</sup> Exhibit B-1, page 4-20

- Economic Life: BC Hydro has indicated that it considers the 40-year economic life used for purposes of the evaluation to be conservative<sup>115</sup>. Additional investment in Waneta extending the life of the asset up to 70 years could yield incremental value of \$280 M<sup>116</sup>.
- OATT Revenues: The acquisition of the Transmission assets (including Line 71) is expected to result in additional OATT revenues<sup>117</sup>.
- Should BC Hydro be in a surplus situation when the Lease Period ends, there may be an opportunity, under the low export price scenarios, to market the capacity and energy at premium prices<sup>118</sup>.

## Conclusions

From an economic investment perspective, the Transaction is cost-effective on a risk-adjusted basis for all of core valuation scenarios except where the post Lease Period energy and capacity is valued at low market prices for all of the evaluation period<sup>119</sup> (which is highly unlikely given BC Hydro load forecast and load/resource balance outlook).

Based on BC Hydro's sensitivity analyses, an unlikely combination of negative events would need to occur for the Transaction to not be cost-effective<sup>120</sup>.

Applying reasonable stress tests to the core evaluation results still yields positive benefits:

- Assuming a 15% reduction in the LRMC-Clean, a small LRB gap and the Panel's Mid-C market price forecast during periods of surplus yields a net benefit NPV of \$421 M<sup>121</sup>.
- Assuming a lower financing cost for IPPs, a 40% reduction in LRMC-Clean, a small LRB gap and future market prices that are flat in real terms yields a net benefit NPV of \$49 M<sup>122</sup>. (e.g. small gap LRB, Panel Mid-C export prices,

Overall, BCOAPO submits that the evidence indicates the Transaction should be considered as cost-effective from an economic investment perspective.

## RatePayer Analysis

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<sup>115</sup> Exhibit B-8, BCUC 1.22.1 and 1.56.8

<sup>116</sup> Exhibit B-1, Appendix N, page 33

<sup>117</sup> Exhibit B-8, FBC 1.18.1 and Exhibit B-1, Appendix N, page 49

<sup>118</sup> Exhibit B-1, Appendix N, pages 32 and 49

<sup>119</sup> Exhibit B-1-3, Appendix N-Revision 1, page 29

<sup>120</sup> Exhibit B-9, FBC 1.17.1

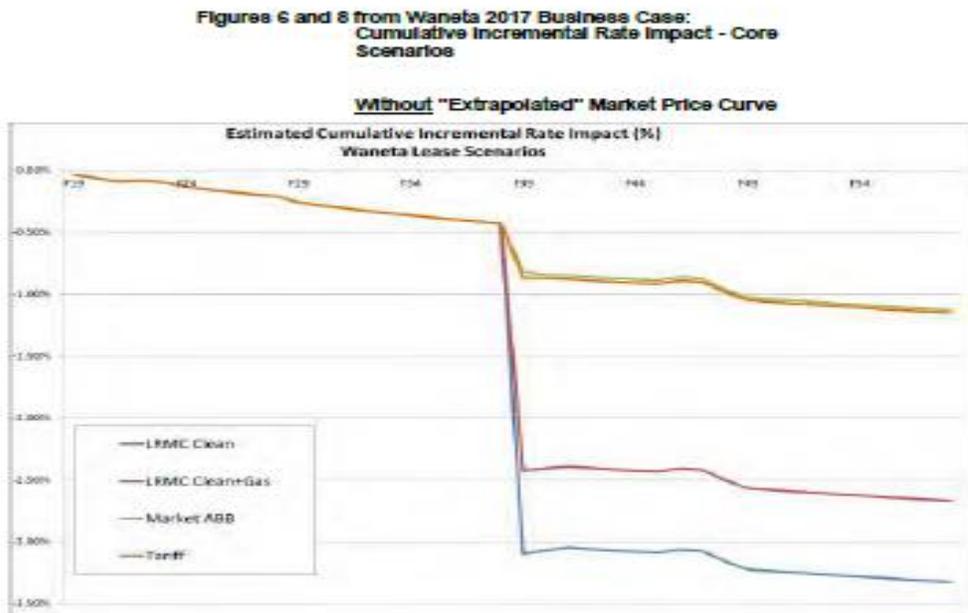
<sup>121</sup> Exhibit B-8-4, BCUC 1.24.1

<sup>122</sup> Exhibit B-18, BCUC 2.86.3

The second perspective used by BC Hydro to assess the economic justification for the project was a “ratepayer” analysis. In this analysis BC Hydro looked at both the cumulative incremental rate impacts of the Transaction as well as the NPV of the change in its revenue requirement over the evaluation period that can be traced to the Transaction<sup>123</sup>.

### Cumulative Incremental Rate Impacts – Core Scenarios

BC Hydro’s analysis determined that, assuming a 20 year Lease Period, there was a beneficial impact on rates for the Lease period. It also shows a beneficial impact on rates during the post-Lease period for all five core evaluation scenarios. The results for four of the scenarios are set out in the following figure which shows the change in the cumulative rate increases as a result of the Transaction<sup>124</sup>.



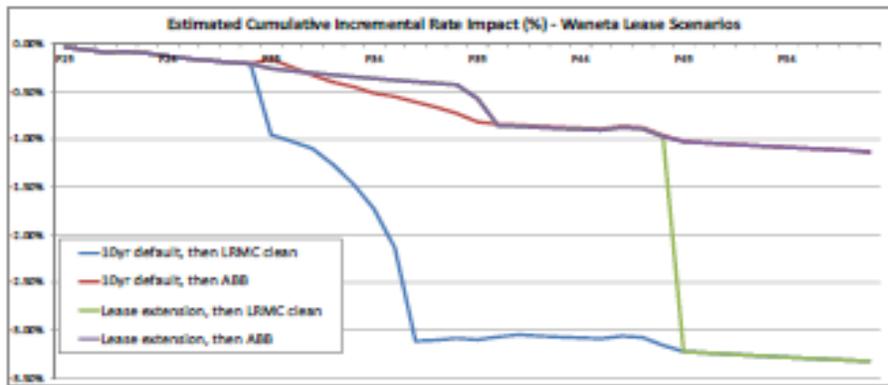
BC Hydro also looked at the impact of a Lease Extension and a Teck default in year 10 of the Lease using either LRMC-Clean or the ABB market prices to value the generation in the post Lease Period. Again, BCOAPO notes that the overall rate impacts for the Transaction were favourable in all cases<sup>125</sup>.

<sup>123</sup> Exhibit B-1, Appendix N, pages 44-47

<sup>124</sup> Exhibit B-1, Appendix B-1, page 4 and Exhibit B-18, BCUC 2.89.1

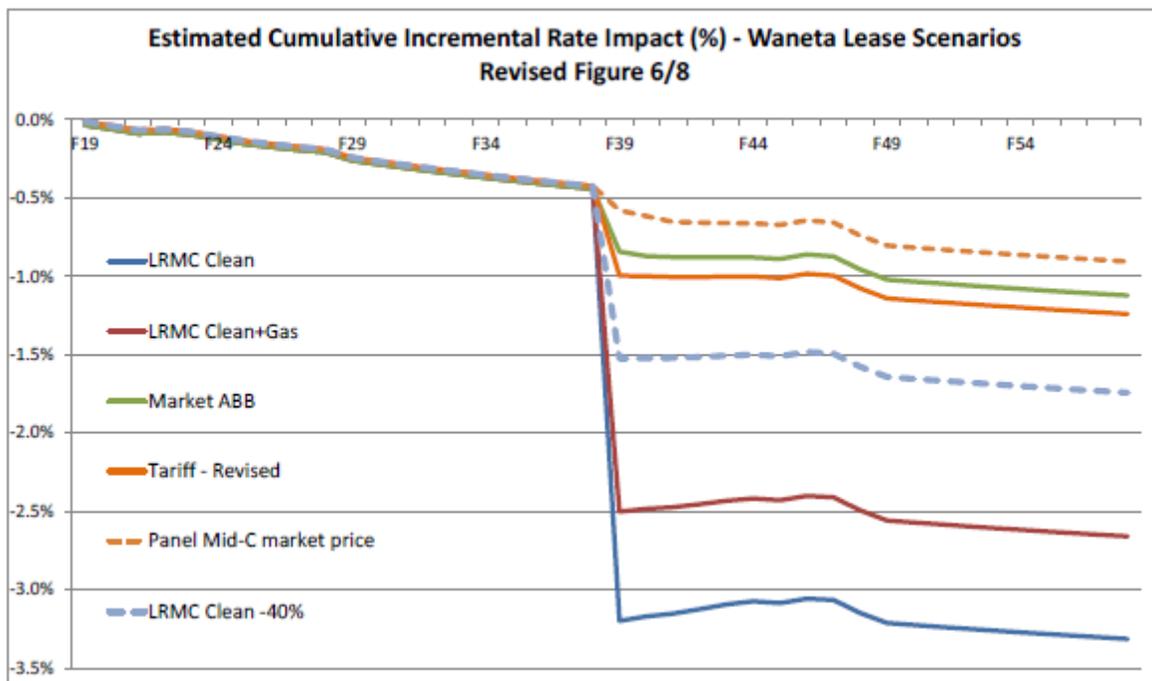
<sup>125</sup> Exhibit B-1, Appendix N, page 45

Figure 7 Cumulative Incremental Rate Impact – Additional Scenarios



Cumulative Incremental Rates – Sensitivity Analyses

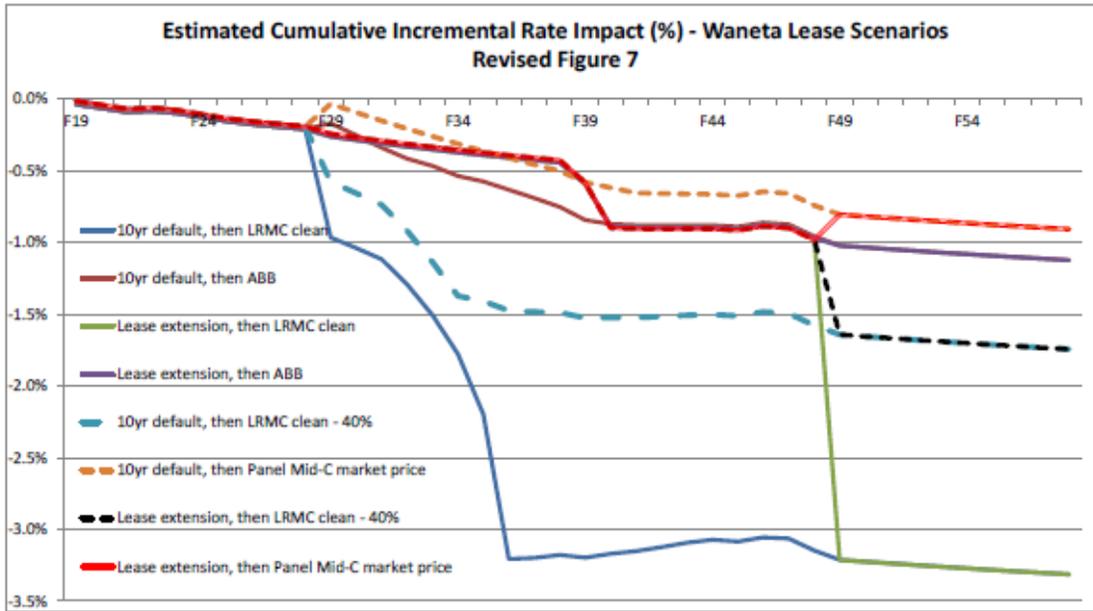
In response to information requests, BC Hydro also looked at the impact of using the Panel’s Mid-C market price forecast and a 40% reduction in the LRM Clean. In both cases, there were continued favourable rate impacts after the 20-year Lease Period as shown below<sup>126</sup>.



Using these alternate assumptions, the cumulative impacts are also favourable under circumstances where the lease is extended for 10 years or Teck defaults after the first 10 years<sup>127</sup>.

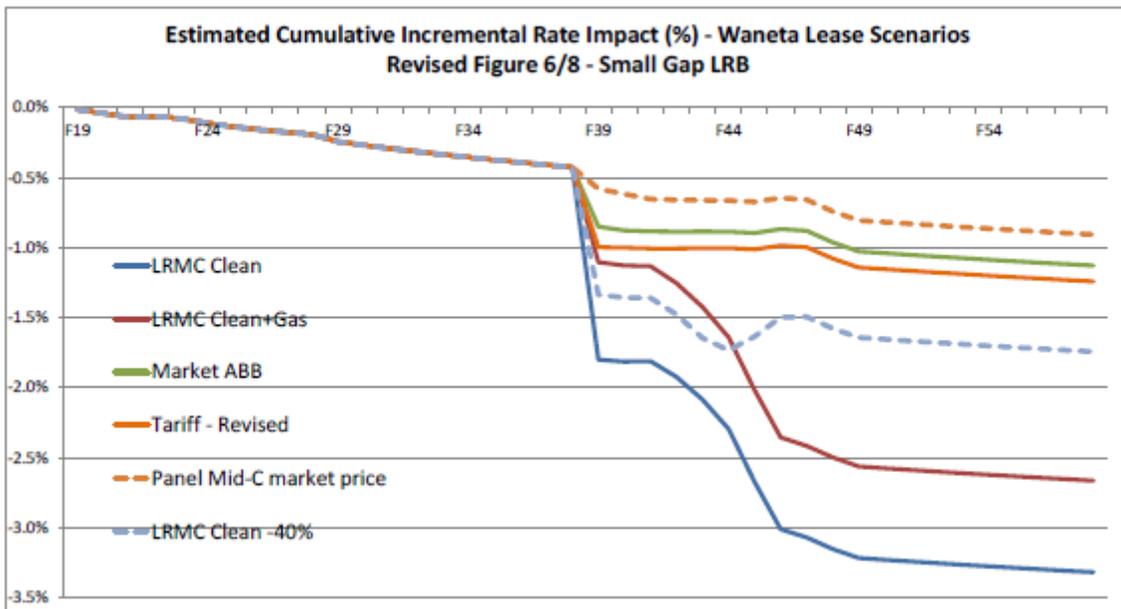
<sup>126</sup> Exhibit B-18, BCUC 2.91.3.1

<sup>127</sup> Exhibit B-18, BCUC 2.91.5



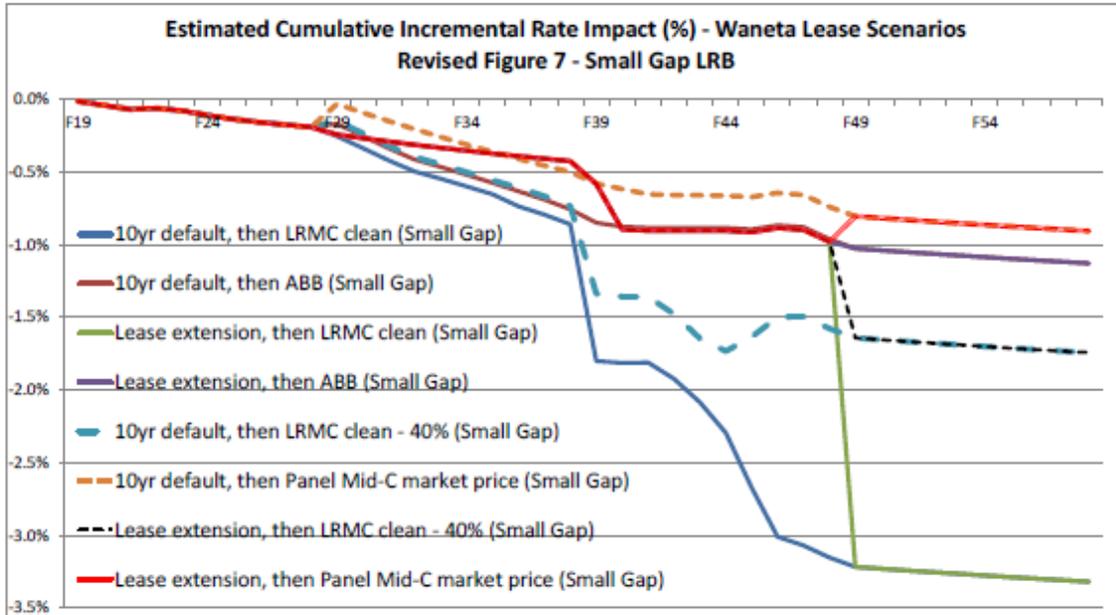
Furthermore, the results continue to be favourable when either of these assumptions are combined with a small gap LRB<sup>128</sup>.

Revised Figure 6/8: Small Gap LRB



<sup>128</sup> Exhibit B-18, BCUC 2.91.6

Revised Figure 7: Small Gap LRB



Revenue Requirement NPV Analysis

Under the 10-year rate plan BC Hydro’s return on equity is fixed and no additional return is earned upon capital investment. This means that the revenue requirement impacts were calculated assuming debt financing at 3.4%. However, for purposes of the NPV analysis the revenue and costs were discounted at 6%. In contrast, the economic investment analysis implicitly used a financing rate of 6%<sup>129</sup>.

On an unrisk-adjusted basis, the NPV values for the revenue requirement analysis are larger than those calculated for the economic investment analysis as can be seen in the following chart<sup>130</sup>:

Table 19 Ratepayer Benefit Present Value  
(Present value net of purchase price, \$ millions)

Basis for Post-Lease Value	Free Cash Flow Un-risked (6% financing)	Ratepayer Benefits (3.4% financing)
LRMC – Clean only	1,071	1,302
LRMC – Clean + Gas	794	1,224
BCH Industrial Tariff	175	389
Market Prices (ABB)	159	370
Extrapolated Prices	29	436

(Note: in both cases costs/benefits are discounted at 6% nominal)

<sup>129</sup> Exhibit B-1, Appendix N, pages 46-47

<sup>130</sup> Exhibit B-1, Appendix N, page 47

*Conclusion*

In BCOAPO's view the Transaction is cost-effective when considered from a ratepayer impact perspective.

**Final Conclusions**

BCOAPO has reviewed the evidence and, although there are some minimal risks to this transaction, those risks are minimal and the evidence overwhelming indicates that there is a far greater likelihood that it will yield some benefit to ratepayers. As a result, BCOAPO supports BC Hydro's application in all regards and asks that the Commission approve the Application as filed.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

*Original on file signed by*

Leigha Worth  
Executive Director, General Counsel

cc. BC Hydro Regulatory Group