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May 12, 2017

Mr. Patrick Wruck  
Commission Secretary and Manager  
Regulatory Support  
British Columbia Utilities Commission  
Sixth Floor – 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**RE: Project No. 1598907  
British Columbia Utilities Commission (BCUC or Commission)  
British Columbia Hydro and Power Authority (BC Hydro)  
Salmon River Diversion Ceasing of Operations Application  
Final Argument**

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BC Hydro writes as required by Commission Order No. G-49-17 to provide its Final Argument.

For further information, please contact the undersigned.

Yours sincerely,



Fred James  
Chief Regulatory Officer

gh/ma

Enclosure

**Salmon River Diversion Ceasing of Operations  
Application**

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**Counsel's Final Argument  
on behalf of  
British Columbia Hydro and Power Authority**

**May 12, 2017**

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## 1 Introduction

### 1.1 Application to Permanently Cease Operations

On March 7, 2017 British Columbia Hydro and Power Authority (**BC Hydro**) requested permission from the British Columbia Utilities Commission (**BCUC or Commission**) to cease operations of the Salmon River Diversion (**the Project**) pursuant to section 41 of the *Utilities Commission Act (UCA)*. The relevant portions of section 41 provide:

A public utility that ... has been deemed to have been granted a certificate of public convenience and necessity, and has begun any operation ... in respect of which the certificate is deemed to have been granted, must not cease the operation or a part of it without first obtaining the permission of the commission.<sup>1</sup>

Pursuant to subsection 45(2)(a) of the *UCA* a public utility is deemed to have received a Certificate of Public Convenience and Necessity (**CPCN**) if operating a plant or system on September 11, 1980. BC Hydro is therefore deemed to have received a CPCN for the Salmon River Diversion (**Diversions**), as it entered into service in 1958,<sup>2</sup> and is a “plant” for the purpose of section 45 of the *UCA*. BC Hydro plans to permanently cease operations of the Salmon River Diversion; therefore section 41 of the *UCA* is engaged.

### 1.2 Layout of the Final Argument

Prior orders issued by the Commission in relation to applications to cease the operation of plant or equipment have been issued following minimal or no submission of Argument, and without written reasons. Though relatively minor in

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<sup>1</sup> *Utilities Commission Act*, section 41.

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

scope, this Application has attracted interest as evidenced by the number of information requests received from the Commission and interveners.<sup>3</sup>

This Final Argument will first lay out BC Hydro's views on the decision making framework within which the Commission should render its decision. It will move on to explain the need for the Project and the alternatives that were considered in advancing the Project. Next, the argument will deal with the assessment of alternatives in reference to economic and non-economic factors, illustrating why the preferred alternative is the basis for the Project. The argument concludes with a discussion of a regulatory account treatment of cost pertaining to the Project, the timing issues associated with Project implementation and other miscellaneous legal issues which have been raised in this proceeding.

## **2 Section 41 Decision Framework**

A number of Information Requests raised questions about the factors the Commission should properly consider in a *UCA* section 41 proceeding, and the relative weight to be given to those factors.<sup>4</sup> The answer is given, somewhat obliquely, in *UCA*, section 41 itself. As noted, it provides: "A public utility that has been ... deemed to have been granted a certificate of public convenience and necessity ..."

The underlined words "certificate of public convenience and necessity" are critical to understanding the scope and weight of considerations to be brought to bear in a section 41 proceeding. Those words are generally understood to be the test a public utility must meet prior to committing assets to public utility service; in B.C. public utilities must obtain a "certificate of public convenience and necessity" under *UCA* section 45 to "construct or operate public utility plant or system".

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<sup>3</sup> BC Hydro received 329 Information Requests.

<sup>4</sup> For example, Exhibit B-4, Responses to Bishop IR I.H.2 and CEC IR 1.17.2.

Mr. Justice Goldie of the BC Court of Appeal emphasised the centrality of the CPCN process to the Commission' regulatory purpose in *British Columbia Hydro and Power Authority v. British Columbia Utilities Commission* [1996] B.C.J. No. 379 (BC Court of Appeal):

48 The certification process is at the heart of the regulatory function delegated to the Commission by the legislature. In *Memorial Gardens Association Ltd. v. Colwood Cemetery Co.*, [1958] S.C.R. 353 Mr. Justice Abbott, after referring to the American origin of the phrase, said at 357:

As this Court held in the Union Gas case, *supra*, the question whether public convenience and necessity requires a certain action is not one of fact. It is predominantly the formulation of an opinion. Facts must, of course, be established to justify a decision by the Commission but that decision is one which cannot be made without a substantial exercise of administrative discretion. In delegating this administrative discretion to the Commission the Legislature has delegated to that body the responsibility of deciding, in the public interest, the need and desirability of additional cemetery facilities, and in reaching that decision the degree of need and of desirability is left to the discretion of the Commission.

49 The other function the legislature has entrusted to the regulatory tribunal is the supervision of the utility's use of property dedicated to service as a result of the certification process. Unless so certified, or exempted from certification by the Commission, such property is not part of the appraised value of the utility company...

BC Hydro submits that a section 41 process is effectively the converse of a CPCN process: rather than seeking the Commission's permission to dedicate property to public utility service, it seeks the Commission's permission to remove property from the utility service. For these reasons, the scope of factors, and their relative weights, that can be brought to bear in a section 41 proceeding are similar to those that can be brought to bear in a CPCN proceeding.

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Regarding CPCN proceedings, BC Hydro notes that the Commission has grappled with the question of scope and weight in a number of proceedings, where it has over time defined and refined a “cost-effectiveness” test. However, its July 7, 2006 decision in regard to the application by the British Columbia Transmission Corporation for a CPCN for the Vancouver Island Transmission Reinforcement Project (**VITR**) provides perhaps the most pertinent consideration of the question. At page 15:

The Commission Panel accepts the submissions of BCTC that there is a broad range of interests that should be considered in determining whether an applied-for project is in the public convenience and necessity. The Commission Panel concludes, as is stated in Memorial Gardens [quoted above], that it is both impractical and undesirable to attempt a precise definition of general application as to what constitutes public convenience and necessity. As the Commission concluded in the VIGP Decision, the test of what constitutes public convenience and necessity is a flexible test.

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The task before the Commission Panel is to select amongst competing project alternatives, and amongst route options and designs for VITR. As stated in the previous paragraph, private interests are to be considered in this Decision. The description of “cost-effective” as described in the VIGP Decision provides further clarification of the appropriate considerations. The task is not to select the least cost project, but to select the most cost-effective project. Therefore, as suggested by BC Hydro, reliability, safety, schedule, financing arrangements and other factors itemized in the VIGP Decision and revised by BC Hydro are also relevant to the task before the Commission Panel. In this regard, the Commission Panel accepts BC Hydro’s view of the considerations that can be included in the definition of cost-effective.

The foregoing continues to animate and inform the current (2015) CPCN Application Guidelines (Appendix A to Commission Order No. G-20-15). The Guidelines state that a CPCN application should contain information on project need, alternatives and

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justification (refer to pages 4 to 5, section 2). In section 2(v), they state that this information should contain "A schedule and supporting discussion comparing the project and feasible alternatives in terms of social and environmental factors, and the applicant's assessment regarding the overall social and environmental impact of the project relative to the overall impact of the feasible alternatives." Section 3 of the Guidelines sets out that the applicant must engage in consultation (First Nations and public), and says that applicants must provide an "overview of the community, social and environmental setting in which the project and its feasible alternatives will be constructed and operated, and of the public who may be directly impacted by the project and its feasible alternatives" as well as "description of the issues and concerns raised during consultations, the measures taken or planned to address issues or concerns, or an explanation of why no further action is required to address an issue or concern." (refer to page 6). Section 4 deals with project description and indicates that information should include "identification and preliminary assessment of potential effects of the project on the physical, biological and social environments or on potentially affected First Nations and the public, proposals for reducing potentially negative effects and maximizing benefits from positive effects, and the cost to the project of implementing the proposals;" (refer to page 7).

In summary, although economic factors inform consideration of an application, BC Hydro submits that in a section 41 proceeding in which project alternatives have very similar economics, as in the instant case, it is appropriate and indeed proper for the Commission to give significant weight to non-economic factors including, most particularly, stakeholder support for the alternative with the most attractive environmental, social and First Nation attributes.

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### 3 Need for a Project

The Salmon River Diversion is located in central Vancouver Island about 30 km west of Campbell River and consists of a rock filled timber crib Dam and spillway, a concrete trimming weir and sluiceway, a concrete fishway, a radial gate, an approximately 3 kilometre Canal inclusive of an 83 m long timber flume (the Patterson Creek flume) and a downstream fish screen. Water is diverted from the Salmon River into the canal and then to the Campbell River system to support generation at the John Hart and Ladore Generating Stations and to a lesser extent at the Strathcona Generating Station.<sup>5</sup>

The record in this proceeding clearly shows the need for a project to either refurbish the Diversion or consider ceasing its operations. The Diversion is approaching 60 years old and many components are reaching end of life.<sup>6</sup> While structural concrete portions of the Diversion headworks at the Dam are in relatively good condition, the Dam and Canal, in particular, are in poor condition and require substantive repairs to remain in operation over the next 20 years. The Diversion requires replacement if a permanent facility is to be continued in the long term.<sup>7</sup> The existing fishway and fish screen require replacement to be effective.<sup>8</sup> In addition, commitments have been made to improve fish passage due to the obstruction of the Diversion.<sup>9</sup>

#### 3.1 Condition of the Dam and Canal

BC Hydro must act to address the physical condition of the Dam. The upper structural timbers of the Dam and the facing boards of the spillway are deteriorating due to rot and wear. Fifty per cent of the structural timbers holding facing boards

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<sup>5</sup> Exhibit B-1, page 22.

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

<sup>7</sup> Refer to Exhibit B-1, Appendix E which describes substantive repairs to extend life by 20 years and replacements for 50 years.

<sup>8</sup> Exhibit B-1, page 12, and pages 17 to 19.

<sup>9</sup> Exhibit B-1, page 41 and Exhibit B-3, Response to BCUC IR 1.4.4.

were noted showing rot, with the result that at higher flows facing timbers become dislodged exposing the rock, gravel and sand ballast within the timber cribbing to erosion and movement.<sup>10</sup> Inspections have noted missing facing boards, and shifting riprap, increasing dam safety risks at higher flows, reducing the structural integrity of the Dam. A scour hole has been noted forming downstream. A Dam failure would have environmental, reputational and other financial consequences.<sup>11</sup>

The lengthy 3.1 kilometre Canal lined with concrete is clearly deteriorating. Inspections of the Canal have indicated areas of spalling, cracking, holes along the length of the Canal, as well as voids under the concrete.<sup>12</sup> As the Canal is constructed in longitudinal segments, the joints between segments are prone to ingress of vegetation leading to cracking and spalling of the concrete segments. Attempts to replace and seal joints have not resulted in a permanent solution. The Canal was taken out of service following an inspection in 2011 to the end of 2013, to facilitate necessary repairs to the panels considered in poor condition and returned to service with a reduction in the maximum permitted flow from 42.5 m<sup>3</sup>/s to 15 m<sup>3</sup>/s and operated on limited basis at 5 m<sup>3</sup>/s.<sup>13</sup> Further repairs were undertaken in 2014 to repair 150 holes and the Canal returned to service at 15 m<sup>3</sup>/s and remained in fair to poor condition. Review of the elevated 83 m Patterson Creek flume portion of the Canal in 2014 indicated rot in its timber substructure and frame, with replacement of the flume, likely needed within a ten-year horizon. Partial replacement of timber substructure and framing could extend the life of the flume to 20 years if flows are limited to 15 m<sup>3</sup>/s.<sup>14</sup>

A review completed in 2014 (the **AE Report**) indicated that substantive refurbishment of the Dam and Canal is required within a five-year horizon, and

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<sup>10</sup> Exhibit B-1, pages 9 to 10.

<sup>11</sup> Exhibit B-4, Response to BCOAPO IRs 1.1.1 and 1.5.1 and CEC IR 1.4.2.

<sup>12</sup> Exhibit B-1, page 13.

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

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

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extensive reconstruction or replacement to continue beyond 20 years.<sup>15</sup> Continued piecemeal maintenance is not considered effective, as deterioration and repair frequency increases. In view of a major required refurbishment and further required investigations, maintenance has been deferred where possible pending a decision to implement the Project.<sup>16</sup>

### **3.2 Fish Passage Improvement Commitments**

The Diversion reduces the water volumes otherwise available in the Salmon River. The Dam also affects the natural movement of gravel and constrains the natural river channel, thereby reducing habitat in the Salmon River. Downstream and upstream fish movement is adversely effected by the Diversion. BC Hydro has made commitments to address fish passage solutions in the Salmon River.

Attempts to mitigate adverse effects on fish ecology in the Salmon River have included the introduction of a fish screen in the Canal to address downstream fish entrainment, and a fishway at the Dam to facilitate fish passage. Neither have worked effectively and have been the topic of ongoing discussion with federal and provincial agencies, community stakeholders, and First Nations.

The downstream fish screen in the Canal is intended to divert juvenile fish back into the Salmon River. The screen is undersized and prone to debris build-up. At higher flows and when clogged by debris the screen is forced out of position and allows fish to continue down the canal and into the Campbell River System. The screen may remain out of position for several days and requires manual operation on site to reset. Records indicated that the screen is out of position approximately 30 per cent of the time during the required period of operation.<sup>17</sup> Even during normal operation, the screen design causes impingement of fish at the bottom of the Canal and mortality. BC Hydro has been working with regulators, interested parties and First

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<sup>15</sup> Exhibit B-1, page 9 and 27 and Appendix E.

<sup>16</sup> Exhibit B-3, Response to BCUC IRs 1.1.1. and 1.2.1.

<sup>17</sup> Exhibit B-3, Response to BCUC IRs 1.3.12 and 3.1.14.

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Nations, in relation to the Campbell River System for many years, and specifically since 1999 in the development of the Campbell River Water Use Plan (**WUP**) for the Campbell River System. The WUP was accepted by the Comptroller for Water Rights in 2012, and by associated Order required improvements to the fish screen's performance to operate with flows up to 30 m<sup>3</sup>/s and to be operational from April 1 to December 31 of each year.

The upstream fishway is not effective and fails to meet design targets for fish to move beyond the Dam. Among other deficiencies, it fails to attract fish due to flow differentials and narrow entrance.<sup>18</sup> The WUP planning process identified fish passage as a concern, and subsequently in 2008 BC Hydro facilitated the Salmon River Diversion Fish Passage Consultative Committee working under a structured Fish Passage Decision Framework.<sup>19</sup> This Committee's work culminated in BC Hydro's agreement to make improvements to the fish passage. In 2013 BC Hydro initiated a project to carryout improvements and formed an Upstream Fish Passage Technical Committee, comprising representative from K'omoks First Nation (K'omoks), We Wai Kai First Nation (We Wai Kai), and Wei Wai Kum (We Wai Kum), and BC Hydro, DFO, and MFLNRO. Implementation of a solution was targeted for the 2015 timeframe.<sup>20</sup>

In addition, under an impacts benefits agreement entered into in 2012 at the time of the John Hart Generating Station Replacement Project, BC Hydro committed to working with the We Wai Kai and Wei Wai Kum to identify and implement a fish passage solution for upstream migrating fish passage improvements at the Diversion, with an expectation that this would be completed in the 2015 timeframe.<sup>21</sup>

The activity described above has resulted in a consideration of alternatives to address the issues and advancement of the proposed Project as described in the

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<sup>18</sup> Exhibit B-1, pages 19 to 20.

<sup>19</sup> Exhibit B-1, pages 20 to 21 and Exhibit B-3, Response to BCUC IR 1.15.12.

<sup>20</sup> Exhibit B-1, page 21.

<sup>21</sup> Exhibit B-1, page 41.

Application. BC Hydro seeks to advance the Project as soon as practicable to address its outstanding commitments to make improvements to fish passage at the Diversion.

## **4 Project Alternatives**

### **4.1 Alternatives Considered**

In section 3 of the Application, BC Hydro describes that it considered a number of alternatives, with some dismissed either because they do not adequately address the condition of the Diversion thereby leading to safety concerns, or they did not address commitments to improve fish passage. Dismissed alternatives included maintaining the status quo of periodic minor repairs, and ceasing operations without removal of the Dam or other components. Two viable alternatives were considered in the Application, namely i) Rehabilitation (the **Rehabilitation Alternative**) and ii) Ceasing of Operation and Removal (also referred to as the **Decommissioning Alternative**).

#### **4.1.1 Rehabilitation**

A number of alternative means to rehabilitate the Diversion were considered during BC Hydro's life cycle for the Project development and discussed during committee reviews of fish passage alternatives. The most cost effective method for the Rehabilitation Alternative was set out in the Application (at pages 28 and 29). The Rehabilitation Alternative extends the life of the Diversion by 20 years and includes within its scope: i) a substantial rebuild of the Dam by replacing the upper level structural timbers, replacing face and spillway boards and reinforcing the crest with steel plate; ii) complete replacement of the existing upstream fishway; iii) complete replacement of the existing fish screen; iv) improvements to the Canal; and v) a new trashrack to control debris.<sup>22</sup> The Rehabilitation Alternative does not include within

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<sup>22</sup> Exhibit B-1, pages 25 to 26.

its scope (or costs) a future requirement to replace the Diversion for long-term sustainability.

#### **4.1.2 Cease Operations and Removal**

The alternative to permanently cease operations includes within its scope the removal of the Dam. On removal, the upstream and downstream riverbeds would be regraded to provide a natural channel for fish movement. If contaminated soils are beneath the Dam from creosoted timbers, they would be removed.

Concrete structures at the headworks would be left in place indefinitely. All mechanical works at the headworks and the downstream fish screen would be removed. The Paterson Creek flume would also be removed but the remainder of the Canal would be left in place. No water would be diverted into the Canal following removal of the Dam.<sup>23</sup>

Alternate approaches suggested by Information Requests such as undertaking separate projects to address isolated concerns and components at the Diversion are not effective. Consideration of an effective Rehabilitation Alternative, or the Project as a whole, requires an integrated approach to all elements of the Diversion, including consideration of fish passage.<sup>24</sup> Similarly, variations on maintaining the Status Quo by continuing piecemeal maintenance or operation to the point of failure are not cost effective or viable solutions.<sup>25</sup> Advancing full replacement or removal of more elements following decommissioning of the Diversion have also been considered and dismissed as alternative means to the Project.<sup>26</sup>

Other Information Requests advocated for a comparison of alternatives to those considered in the AE Report, namely refurbishment for a 20-year extension and

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<sup>23</sup> Exhibit B-1, page 24.

<sup>24</sup> Exhibit B-3, Response to BCUC IRs 1.3.10 and 1.4.5.1, and Exhibit B-4, Response to RB IRs 1.2.4.2.1, 1.2.4.2.2 and 1.5.2.

<sup>25</sup> Exhibit B-4, Response to BCOAPO IRs 1.9.1.1 and 1.9.2.

<sup>26</sup> Exhibit B-4, Response to CEC IRs 1.9.1, 1.11.1 and 1.13.1.

complete replacement for a 50-year facility life. BC Hydro noted that only repairs necessary to maintain operations were considered and undertaken to maintain operations, while more substantive identified repairs were deferred pending a decision on the Project to avoid the likelihood of rework.<sup>27</sup> The options of 20-year refurbishment or complete replacement with a concrete dam for a 50-year lifecycle were considered as alternative means for refurbishment with the most cost effective means advanced as noted as the Rehabilitation Alternative.<sup>28</sup> The AE Report was intended to inform BC Hydro on the relative condition of components of the Diversion, and help prioritize the scope of work and further investigations relating to rehabilitation.<sup>29</sup> The estimates provided in the AE Report do not provide the basis for a direct comparison of cost estimates of the viable alternatives set out in the Application. The AE Report does not attempt to capture all necessary costs.<sup>30</sup> In general, comparisons of planning level estimates with more complete estimates, which result from further investigations and engineering effort, are not valid. To the extent the AE Report informed BC Hydro, its findings were fully considered in the scope and estimates developed for the alternatives considered in the Application.

## 4.2 Economic Assessment of the Alternatives

BC Hydro sets out its economic assessment of alternatives in section 4.1 of the Application (pages 31 to 34) as a detailed Net Present Value (**NPV**) analysis. An update to the NPV analysis was provided as Exhibit B-3-2 to reflect the Class 3 estimate update for the Decommissioning Alternative.<sup>31</sup> The analysis takes into consideration rehabilitation costs (the capital cost of the Rehabilitation Alternative), decommissioning costs (the cost of the Decommissioning Alternative), and the cost of energy over a 20-year period, using a real discount rate of 4.9 per cent.

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<sup>28</sup> Exhibit B-1, page 28.

<sup>29</sup> Exhibit B-3, Response to BCUC IRs 1.2.1 and 1.7.1.

<sup>30</sup> Exhibit B-3, Response to BCUC IRs 1.71 and 1.7.1.1.

<sup>31</sup> Exhibit B-3-2, Revised Response to BCUC IR 1.7.2.

The levelized cost of energy resulting from the Rehabilitation Alternative is shown to be \$55 to \$62 per MWh which was compared to BC Hydro's Reference Price of energy of \$72.5 per MWh and for sensitivity, the current market price of energy of \$46 per MWh. Using these values the NPV analysis results can be summarized below showing both Expected and Authorized estimates for the capital cost of rehabilitation.<sup>32</sup>

		Expected Costs		Authorized Costs	
a	Capital Cost of Rehabilitation <sup>33</sup> (\$000s)	\$35,361		\$39,070	
b	Decommissioning Credit	(\$9,262)			
		Reference Price	Sensitivity Case	Reference Price	Sensitivity Case
c	Value of Energy (\$/MWh)	\$72	\$45	\$72	\$45
d	PV of Energy (\$000s)	\$41,851	\$26,128	\$41,851	\$26,128
e	NPV of Rehabilitation Project (\$000s) (d-(a+b))	\$15,752	\$29	\$12,043	(\$3,680)
f	Benefit Cost Ratio (d/(a+b))	1.60	1.00	1.40	0.88

On an NPV basis, the Rehabilitation Alternative shows a positive NPV of between \$15.8 to \$12.0 million based on the Reference Price of energy (\$72/MWh), but a relatively low cost benefit ratio when comparing the cost of the Rehabilitation Alternative to the cost of energy. When considering the Sensitivity Case using the current market price for energy (\$45/MWh), the result shows a near nil to negative NPV for the Rehabilitation Alternative, with a cost benefits ratio of one or less than one. Considering the scale of the NPV results, the sensitivity to prevailing market conditions and the range of capital estimates for substantive rehabilitation works, the economic comparison of alternatives on an NPV basis is a relatively weak factor in determining the preferred alternative.<sup>34</sup>

<sup>32</sup> As stated in Response to Exhibit B-4, CEC IR 1.15.1, BC Hydro presents cost estimates as a range between the P50 estimate (the Expected Cost), and the P90 estimate plus any required management reserves (the Authorized Cost).

<sup>33</sup> Net of remissible amount.

<sup>34</sup> Exhibit B-3-2.

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BC Hydro affirms that no energy would be acquired to offset the energy loss from ceasing operations.<sup>35</sup> Load resource balancing is dynamic over time but the scale of loss from the Diversion, in comparison to other changes in this time period, such as efficiency improvement under the John Hart Generating Station Replacement Project would not warrant new acquisitions.

Other economic factors considered include the Diversion assets and rate impacts. Assets related to the Diversion will be removed from rate base with the exception of an access road and three timber bridges which will be maintained for access to monitor and maintain remaining structures and for wildlife passage.<sup>36</sup> A rate impact analysis of alternatives indicates an approximate 0.03 to 0.05 per cent impact.<sup>37</sup> These economic factors do not particularly aid in distinguishing alternatives considered in this Application.

Qualitative economic impacts have been identified which arise from improvement in the ecology of the Salmon River through the Decommissioning Alternative, namely eco-tourism and increased angling.<sup>38</sup>

Some Information Requests have raised the issue of optionality to maintain the possibility of rebuilding the Diversion in 20 years' time following decommissioning and removal of the existing Dam. BC Hydro responded as follows:

Rebuilding the Salmon River Diversion in 20 years would entail a greater scope of work than contemplated in the current rehabilitation. For instance, the future rebuild would require replacing the timber-crib dam with a concrete dam, extensive replacement of the canal and canal drainage system, and the complete replacement of the Patterson Creek flume. Costs for such a project would be significantly higher than contemplated in the rehabilitation alternative (a conceptual estimate was more than double the cost), but the energy contribution from the

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<sup>35</sup> Exhibit B-4, Response to CEC IR 1.1.1.2.

<sup>36</sup> Exhibit B-3, Response to BCUC IRs 1.16.4 and 1.16.9.

<sup>37</sup> Exhibit B-3, Response to BCUC IR 1.7.6.

<sup>38</sup> Exhibit B-3, Response to BCUC IR 1.15.4.

diversion flows would be no higher. As a result the cost of energy from a future rebuild would be correspondingly higher than that from the current rehabilitation alternative, which is itself marginally economic. Furthermore, any options value analysis would have to account for the opportunity costs associated with the forgone improvement in stakeholder and First Nations relations in the Campbell River system where BC Hydro has extensive operations.<sup>39</sup>

It is also notable that the Decommissioning Alternative is estimated to cost \$15.0 million (\$18.0 million to \$12.8 million),<sup>40</sup> and by comparison, the capital cost of the Rehabilitation Alternative is significantly higher at \$37.36 million (\$43.0 million to \$33.6 million).<sup>41</sup> In an era of significant capital outlays and constrained rates, BC Hydro considers that limited capital resources should be directed to higher value projects.<sup>42</sup>

#### **4.3 Consideration of Non-Economic Factors in the Assessment of Alternatives**

BC Hydro has considered a number of non-economic factors in assessing the alternatives, including safety, environmental impacts, social impacts, stakeholder and First Nation interests.

Ceasing operations and removing the Dam eliminates any risk of exposure to failure of the Dam or Canal due to seismic activity or extraordinary high flows.

Rehabilitating the Dam would address the identified deterioration of the components of the Dam as discussed and minimize but not eliminate risks of failure.<sup>43</sup>

Environmental studies highlight the benefits of upstream passage with improved habitat leading to expected increase in spawning and higher expected survival rates

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<sup>39</sup> Exhibit B-3, Response to BCUC IR 1.14.1 (refer also to Exhibit B-4, Response to CEC IR 1.2.1.2).

<sup>40</sup> Exhibit B-3-2, Supplemental Response to BCUC IR 1.9.1.1, AACEI Class 3 Expected Amount.

<sup>41</sup> Exhibit B-3, Response to BCUC IR 1.8.3, AACEI Class 3 Expected Amount.

<sup>42</sup> Exhibit B-1, page 34.

<sup>43</sup> Exhibit B-1, page 35.

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of adult and juvenile fish stocks.<sup>44</sup> Ceasing operation and removal of the Dam will allow natural movement of sediments and gravel recruitment in the areas above and below the Diversion, and continuing downstream.<sup>45</sup> Other environmental benefits include the removal of creosote contamination, retention of smolts in the Salmon River, elimination of inter-basin water diversion.<sup>46</sup> Rehabilitation may improve fish passage and survival rates, through better designed and integrated fishway and fish screen, but it does not reach the levels expected from the Decommissioning Alternative.<sup>47</sup>

Any environmental impacts arising from construction activity related to the Decommissioning Alternative can be mitigated and would be lower than the Rehabilitation Alternative, particularly as it requires only one construction season compared to three for rehabilitation work.<sup>48</sup>

Rehabilitation of the Diversion would perpetuate a physical obstruction to fish passage in the Salmon River. Removal of the Dam achieves all of the environmental benefits contemplated by the Rehabilitation Alternative and provides greater environmental and community benefits. Interested parties, government agencies, community stakeholders and First Nations, all recognize that fish passage and protection are best facilitated by removing of the Dam and allowing the river its natural channel.<sup>49</sup> Letters of support from governmental agencies, community groups and First Nations evidence this view.<sup>50</sup> The broad support for the Project enhances BC Hydro reputation and social licence to operate facilities throughout the Campbell River System.

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<sup>44</sup> Exhibit B-1, pages 34-35, and Exhibit B-3 Response to BCUC IRs 1.10.7, 1.15.1 Attachment 1 pages 27 to 28 of 37, 1.15.3, 1.15.3.1 and 1.15.11.

<sup>45</sup> Exhibit B-3, Response to BCUC IR 1.15.2.

<sup>46</sup> Exhibit B-3, Response to BCUC IR 1.13.1 Attachment 1 page 4 of 24.

<sup>47</sup> Exhibit B-3, Response to BCUC IR 1.15.3.1.

<sup>48</sup> Exhibit B-3, Response to BCUC IR 1.10.7.

<sup>49</sup> Exhibit B-1, pages 35 and 39 and Exhibit B-3, Response to BCUC IR 1.21.2.

<sup>50</sup> Exhibit B-1, Appendix H, I and J.

#### 4.4 Conclusion

As the Project advanced through a BC Hydro project life cycle staged review process, consideration of the rising scope and cost of rehabilitation, the continuing risks from aging infrastructure, the marginal economics of continued operation, the attractive environmental benefits, and overwhelming support, made ceasing operations and removal the preferred alternative for the Project. BC Hydro submits that enhanced safety, greater environmental and social benefits, and support from First Nations facilitated by ceasing operations and removal of the Dam outweigh the marginal economic benefits (arguably uneconomic given the market price of energy) of rehabilitation.

### 5 Regulatory Account Treatment

As set out in section 6 of the Application, BC Hydro believes that the costs it will incur in regard to the Project, if approved, will be eligible to be recorded in the Dismantling Cost Regulatory Account, assuming this regulatory account is approved as applied for in the Fiscal 2017 - Fiscal 2019 Revenue Requirements Application.<sup>51</sup> If BC Hydro's request for approval of the Dismantling Cost Regulatory Account in the Fiscal 2017 – Fiscal 2019 Revenue Requirements Application is denied, BC Hydro has requested permission to defer the costs of the Project to the Heritage Deferral Account (**HDA**). In response to BCUC IR 1.19.6 BC Hydro noted, in part, that it would not be opposed to the Project costs being deferred to an account other than the HDA if the Commission thought that preferable.

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<sup>51</sup> Exhibit B-3, Response to BCUC IR 1.18.1.

## **6 Timing Issues**

The Application at Table 6 (page 36 of 42) shows that BC Hydro requires a Commission order approving the Application on or before June 15, 2017 in order to implement the Project this year, as opposed to next year. However, BC Hydro acknowledges that this Application has more interest, and issues have been explored in greater depth, than in any other section 41 application previously filed by BC Hydro. In the circumstances, BC Hydro can appreciate that the Commission may wish to issue Reasons for Decision along with its order. For these reasons, BC Hydro respectfully suggests that if necessary it might be appropriate for the Commission to issue its order, before June 15, 2017, with Reasons for Decision to follow.

## **7 Miscellaneous Legal Questions**

A number of legal issues were raised by Commission staff in the Information Request process. In light of the answers provided, none of those issues needs to be directly addressed in this argument. However, for the sake of completeness, BC Hydro takes the opportunity to note the issues and summarize the applicable Information Request response.

(i) Is the Salmon River Diversion a “heritage asset”? BC Hydro does not believe it is, for the reasons given in response to BCUC IR 1.5.1., and thus the prohibition against the sale or disposition of “heritage assets” in section 14 of the *Clean Energy Act* does not arise.

(ii) The Salmon River Diversion is comprised of a number of assets currently and properly in BC Hydro’s rate base, that are in service, and therefore still “used and useful” (BC Hydro response to BCUC IRs 1.16.1, 1.16.8). With the exception of an access road and three timber bridges as noted earlier, assets related to the Diversion will be removed from rate base if the application is approved and the

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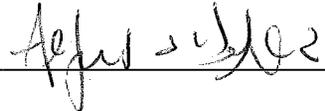
Project is implemented as planned (BC Hydro response to BCUC IRs 1.16.9 and 1.16.10).

(iii) There is no legal obligation on the Commission to consider "British Columbia's energy objectives", as defined in the *Clean Energy Act*, in assessing a section 41 application (BC Hydro response to BCUC IR 1.12.3).

## 8 Conclusion

BC Hydro submits that the Commission has conducted a fulsome inquiry that has allowed issues to be fully considered. The evidence in this proceeding demonstrates that the need for the Project and BC Hydro submits that for the reasons set out above the request to permanently cease operation ought to be approved. BC Hydro's consultation with First Nations and engagement with the public demonstrates overwhelming support for the Project. Consultation with First Nations has been reasonable and adequate to this stage and will continue through implementation.<sup>52</sup> BC Hydro respectfully requests the Commission issue an order in the form included at Appendix A to the Application.

**ALL OF WHICH IS RESPECTFULLY SUBMITTED MAY 12, 2017**

Per:  \_\_\_\_\_

Alfred Hefford, Solicitor & Counsel, British Columbia Hydro and Power Authority

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<sup>52</sup> Exhibit B-3, Response to BCUC IRs 1.22.3 and 1.22.9.