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January 15, 2019

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Supply Chain Applications Project Phase Two Verification Report**

BC Hydro writes to provide Errata No. 1 (**Exhibit B-1-2**) to the Verification Report. We note these errata have no impact on the Expected Cost, Authorized Cost, Expected Benefits or Monetized Benefits amounts as provided in the Verification Report or Appendix F to the Verification Report (**Exhibit B-1**).

Errata:

- Replacing Table 2-7 on page 2-15 of the Verification Report to correct the values and references in Rows Z and AH to AI to better align with Table 2-7 in Appendix F as filed with the Verification Report. This erratum is in response to BCUC IR 1.8.1.
- Replacing Table 3-7 on page 3-23 and Figure 3-2 on page 3-24 of the Verification Report, and the explanation below the table and figure, respectively. This is to update the net present value of revenue requirements, benefit percentage required to breakeven values, and the annual revenue requirements impact. This update is as a result of correcting a formula link error in Appendix F as noted below and described in BC Hydro's response to BCUC IR 1.1.6.5. The impact of the correction is an increase in the net present value of discounted cash flows and a lower threshold required to breakeven.
- Revised Appendix F that:
 - Replaces Table 1, Tab G2 of Appendix F to correct formula link error as noted in BC Hydro's response to BCUC IR 1.8.1 filed as Exhibit B-3;
 - New Tab B2 with Table 3-2A, Table 3-3A, Table 3-3B, and Table 3-7A reflecting responses to information requests that required changes or requested additions to Table 3-2, Table 3-3, and Table 3-7 filed with the Verification Report;

- In Table 1, Tab E1, 'unhide' rows T, V, and W that are no longer in use and row X that was inadvertently hidden as discovered in response to BCOAPO IR 1.6.2. No changes are required to any values in the table.
- Updates to Workbook Overview tab to explain the above changes.
- Replacing Section 3.2 of Appendix I-1 to update the baseline and target information for Benefit ID No. 26. BC Hydro discovered in the course of responding to information requests that this portion of the tracking sheet in section 3.2 of Appendix I-1 had not been updated to reflect the current baseline and target information. This erratum has no impact on estimated benefits or net present value analyses as the correct information was already reflected in all of BC Hydro's models and the rest of the Verification Report.

We are including in this filing a list of the errata to the Verification Report, with explanatory notes, and revised Chapter and Appendix pages. We apologize for any inconvenience as a result of the errata to our Verification Report.

For further information, please contact Geoff Higgins at 604-623-4121 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

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Enclosure

Supply Chain Applications Project

Phase Two Verification Report

ERRATA – January 15, 2019

REMOVE	INSERT	NOTE
Chapter 2, Page 2-15	Chapter 2, Page 2-15 - Revision 1 – January 15, 2019	1
Chapter 3, Pages 3-23 to 3-24	Chapter 3, Pages 3-23, 3-24 and 3-24(l) – Revision 1 – January 15, 2019	2
Appendix F	Appendix F – Revision 1 – January 15, 2019	3, 4a, 4b, 4c, 4d, 5, 6
Appendix I-1 – Pages 7 to 9	Appendix I-1 Revision 1 – Pages 7 to 9 – January 15, 2019	7

Notes:

1. Corrected the values and references in Rows Z and AH to AI of Table 2-7 on page 2-15 of the Verification Report to align with the correct information in Table 2--7 in Appendix F of the Verification Report.
2. Updated the scenario analyses presented in Table 3-7 and line 19 on page 3-23 and the revenue requirements impact presented in Figure 3-2 and discussed on page 3-24 of the Verification Report to correct a formula error in Appendix F as described in Note 3 below and in BC Hydro’s response to BCUC IR 1.1.6.5. This update is as a result of correcting a formula link error in Appendix F, as noted below. The impact of the correction is an increase in the net present value of discounted cash flows and a lower threshold required to breakeven.

3. Corrected formula link that resulted in the incorrect information from Tab G1 being linked to Table 1, Tab G2. The revised Appendix F shows the corrected information in Table 1, Tab G2.
4. New Tab 'B2 - IR SCA Appl Tables' in Appendix F that includes:
 - a. Table 3-7A with the updated NPV of Revenue Requirements and Benefit Percentage Required to Breakeven values after correcting for the formula link error described in Note 3 above;
 - b. Table 3-2A with an additional column that provides the value of each new and removed benefit as listed in Table 3-2 of the Verification Report in response to CEC IR 1.12.1;
 - c. Table 3-3A with two additional columns that identifies the portion of each variance by capability gap as listed in Table 3-3 of the Verification Report that is due to new or removed benefits and / or changes in the calculation of benefits in response to BCOAPO IR 1.8.1; and
 - d. Table 3-3B with six additional columns that provides for each capability gap as listed in Table 3-3 of the Verification Report, the Phase One Mid Scenario Benefits, Verification Report Expected Benefits, and Variances by capital, operating , and financing activities in response to CEC IR 1.14.1.
5. In Table 1, Tab E1, 'unhide' rows T, V, and W that are no longer in use and row X that was inadvertently hidden as discovered in response to BCOAPO IR 1.6.2. No changes to any values in the table.
6. Updated Tab 'Workbook Overview' to reflect the information in Note 4 above.
7. Updates to align with the information in Appendix H of the Verification Report, including updating the baseline information for the number of invoices to 123,596 from 140,446 and the target annual benefit value to \$4.4 million from \$4.8 million. This erratum has no impact on estimated benefits or net present value analyses.

1
2

Table 2-7 Total SCA Project: Verification Report Cost Estimate (including Actual Cost) versus Phase One Cost Estimate (\$ million)

Ref	Components	Capital Costs		Operating Costs		Total Costs		
		Phase One Cost Estimate (A)	Verification Report Cost Estimate (B)	Phase One Cost Estimate (C)	Verification Report Cost Estimate (D)	Phase One Cost Estimate (E)	Verification Report Cost Estimate (F)	Variance (F-E)
R	Supply Chain Transformation Blueprint (Early Design Costs) (A from Table 2-2)	7.3	7.3	-	-	7.3	7.3	0.0
S	Identification (B from Table 2-2)	-	-	1.2	1.2	1.2	1.2	0.0
T	Definition (Early Definition as of November 2016) (C from Table 2-2)	3.0	3.0	0.1	0.1	3.1	3.1	0.0
U	Definition (Early Definition post November 2016) (D from Table 2-2)	1.0	0.7	0.3	0.0	1.2	0.7	-0.6
V	Definition (Mobilization, Design & Implementation Planning) (E from Table 2-2)	9.4	9.7	0.8	1.4	10.2	11.0	0.9
W	Total Life-to-Date Cost as of August 31, 2018 (R + S + T + U + V)	20.7	20.6	2.4	2.7	23.1	23.4	0.3
X	Direct Future Costs to End of Definition (G from Table 2-2)	-	1.3	-	0.1	-	1.4	1.4
Y	Contingency (% * Direct Future Costs to End of Definition) (H from Table 2-2)	2.1	0.0	0.2	0.0	2.3	0.0	-2.3
Z	Interest During Construction (Definition Phase) (I from Table 2-2)	0.8	0.7	-	-	0.8	0.7	-0.1
AA	Total Definition Phase Expected (Mid-range) Cost Estimate (W + X + Y + Z)	23.5	22.6	2.6	2.8	26.1	25.4	-0.7
AB	Implementation (Costs to Go Live)	22.9	25.9	2.2	4.9	25.1	30.7	5.6
AC	Implementation (Stabilization & Completion)	4.9	5.6	1.2	1.6	6.1	7.2	1.1
AD	Contingency (% * Direct Future Costs)	5.6	4.7	0.7	1.0	6.3	5.7	-0.6
AE	Interest During Construction	2.2	2.3	-	-	2.2	2.3	0.1
AF	Total Expected (Mid-range) Cost Estimate (AA + AB + AC + AD + AE)	59.2	61.1	6.7	10.2	65.9	71.3	5.4
AG	Project Reserve - Reserve For Known Risks (from P in Table 2-5)	5.2	1.3	0.0	0.0	5.2	1.3	-3.9
AH	Project Reserve - Incremental Contingency (from Q in Table 2-6) Table 2-4	6.9	5.4	0.8	1.1	7.7	6.5	-1.2
AI	Incremental Interest During Construction on project reserve	5.20.5	1.30.2	0.0-	0.0-	5.20.5	1.30.2	-3.90.3
AJ	Total Project Reserve (AG + AH + AI)	12.6	6.9	0.8	1.1	13.4	8.0	-5.4
AK	Total Authorized Cost Estimate (AF + AJ)	71.8	68.0	7.5	11.3	79.3	79.3	0.1

1 For the NPV of revenue requirements, the following additional assumptions were
 2 made:

- 3 • All project-related benefits will result in capital and operating budget reductions
 4 to be passed on to ratepayers through an incremental reduction in revenue
 5 requirements;
- 6 • SCA Project monetized benefits impacting capital will result in both lower
 7 capital expenditures and lower capital additions in the same year; and
- 8 • The amortization period of the monetized benefits impacting capital is 30 years
 9 as BC Hydro has assumed an average life of 30 years for assets procured
 10 using the new supply chain.

11 **Table 3-7 NPV of Revenue Requirements:**
 12 **Sensitivity and Breakeven Analysis**

Scenarios	NPV of Revenue Requirement (\$ million) (i.e., reduction to revenue requirements over time)	Benefit Percentage Required to Breakeven (%)
Expected Cost / Monetized Benefits	25,428.6	67.64
Authorized Cost / Monetized Benefits	19.4	75

13 [Table 3-7](#) sets out the results of the NPV analysis, and highlights that the NPV of
 14 revenue requirements is positive in all the scenarios. BC Hydro has also performed
 15 a breakeven analysis based on the two scenarios showing the percentage of
 16 monetized benefits needed to breakeven.

17 The NPV of revenue requirements in the Base Case scenario is lower than the
 18 Phase One proceeding’s “Mid-range Cost-Mid Benefit” scenario¹⁹ by
 19 \$28,424.9 million for the same reasons as discussed in section [3.4.1](#).

¹⁹ Attachment 1 to BC Hydro’s response to BCUC IR 2.39.1 - Mid-range NPV of revenue requirement \$53.5 million

**Figure 3-2 Revenue Requirement Impact (\$ million)
Fiscal 2016 – Fiscal 2060**

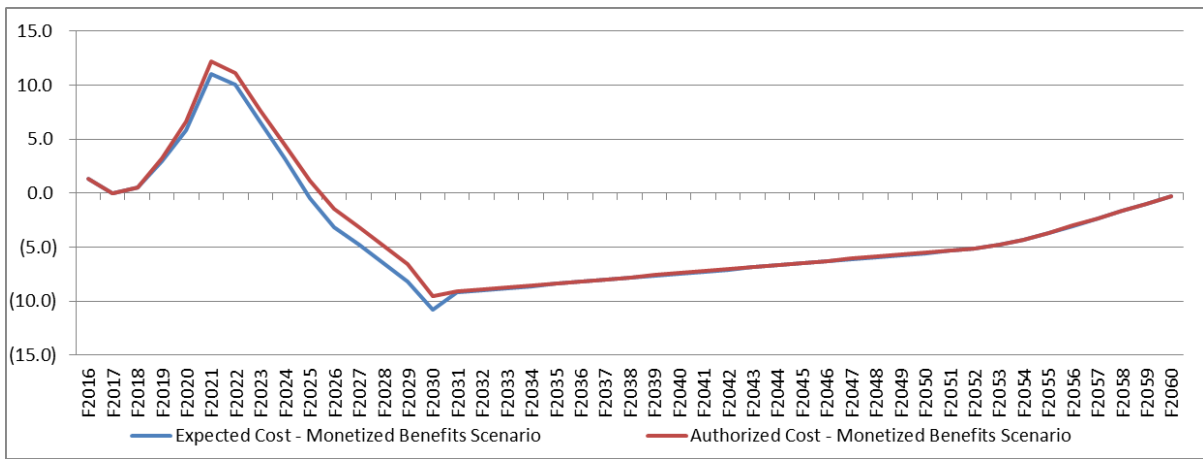
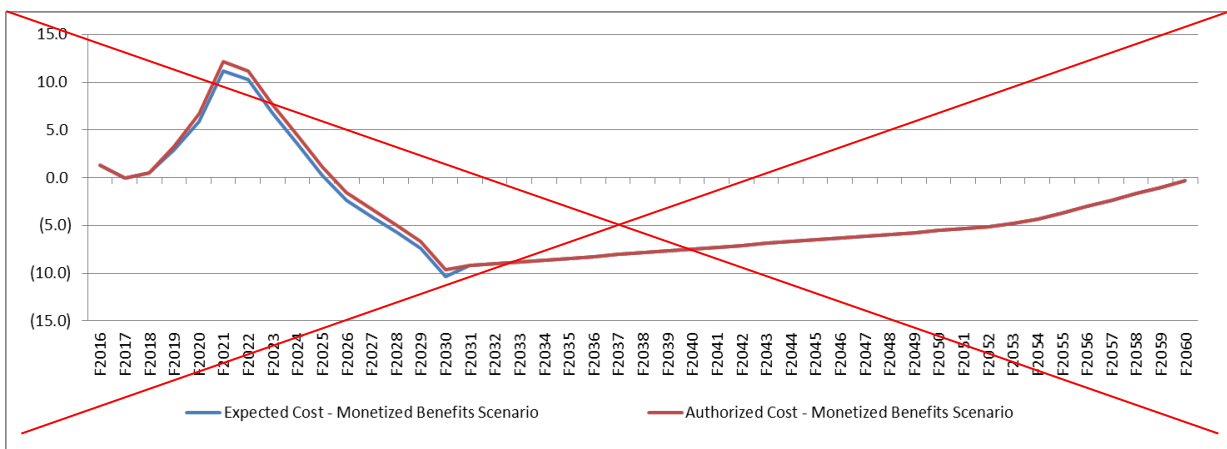


Figure 3-2 shows the estimated net annual revenue requirement impact of the project over the period fiscal 2016 to fiscal 2060. This period corresponds to: the SCA Project’s Definition and Implementation Phases; a 10-year period beyond the SCA Project in-service date (fiscal 2021 to fiscal 2030); and a thirty year period reflecting the average life of assets procured using the new supply chain. Implementing the SCA Project will impact BC Hydro’s revenue requirements through higher operating costs, amortization, and finance charges with offsetting benefits starting in fiscal 2022. The net increase to BC Hydro’s revenue requirement would be highest (in dollar terms) in fiscal 2021, ranging from \$11.02 million in the Base

1 Case scenario to \$12.2 million in the Authorized Cost / Monetized Benefits scenario.
2 As a result of the monetized benefits, which are expected one year after the
3 SCA Project goes into service, the project will have a favourable impact on revenue
4 requirements in fiscal ~~2026-2025~~ under both in the Base Case scenario and in
5 fiscal 2026 in the Authorized Cost / Monetized Benefits scenario.
6 Favourable impacts to BC Hydro's revenue requirements continue beyond
7 fiscal 2030. This result is due to lower amortization and finance costs associated
8 with the procured assets placed into service in fiscal 2022-fiscal 2030 which cost
9 less as a result of the implementation of the SCA Project. For the purposes of

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(Accessible by opening the Attachments Tab in Adobe)

3.2. Benefit ID #26 – Effort – Reduced effort to approve invoices

Outcomes

Benefit #	Description	Time Frame	Type
26	SCA will provide visibility to contract unit prices, enabling two-way match, three-way match, and evaluated receipt settlement (ERS) as methods to reduce manual effort across the Business Groups on invoice reconciliation and approvals. Procurement channels enable multiple methods to align required levels of control with improved reporting capabilities and balance surety of invoice accuracy with effort to optimize workload in approving invoices.	Long Term (3 years)	Effort

Expected Benefits and Tracking Plan

Expected Benefit				
#	Description	Metric	Baseline	Target
26	<p>Benefit Details</p> <p>Manual effort reduction is expected from streamlining invoice reconciliation and approach for three invoice segments:</p> <p>(1) two-way matching on currently free-text material invoices,</p> <p>(2) two-way, three-way matching or ERS on service invoices, and</p> <p>(3) complicated invoices. Other than three-way matching for material, all of these four types of invoices are matched and approved manually today. Automated reconciliation will reduce Business Groups' efforts in administering and approving invoices.</p>	Time required to approve invoices and method of processing invoices	<p>Benefits were estimated based on the 140,146 invoices that were processed in FY18. Of the 140,146 invoices, 30 per cent are assumed to be complicated invoices while the remaining 70 per cent are assumed to be no touch or one touch invoices.</p> <p><u>Benefits were estimated based on a forecast of 123,596 invoices. Of the 123,596 invoices, 30 per cent are assumed to be complicated invoices while the remaining 70 per cent are assumed to be no touch or one touch invoices.</u></p> <p>Complicated invoices: currently require 2 hours to resolve. With SCA, this will be reduced to 0.5 hours due to increased visibility of data from demand planning to payment (an effort savings of 1.5 hours per invoice).</p> <p>No touch or one touch invoices:</p> <p>a) 25-12 per cent are for material and</p> <p>b) 75-88 per cent are for services.</p> <p>a) Material invoices: 25 per cent are free text. SCA will streamline this process via 2-way matching and reduce the effort required per invoice from 1 hour to 0.25 hours (an effort saving of 0.75 hours per invoice). The remaining 75 per cent of</p>	\$4.8 M annual benefit value

<p>SCA Design Considerations Use of material and service masters on purchase orders will allow for reduction of manual efforts for 2-way and 3-way matching of invoices. SCA will enable the use of 3-way match for services by leveraging service entry sheets and outline agreement functionality. Where appropriate ERS will be enabled to eliminate the need for an invoice to be generated by the vendor or processed by BC Hydro. ERS will enable full automation of invoice processing (requirement for purchase orders (POs), volume/value accuracy and better vendor master data). SCA will streamline the process to resolve invoices that cannot be immediately processed via matching.</p>	<p>material invoices are managed through SAP Arriba 3-way matching and the effort required will not change after the implementation of SCA. b) Service invoices: 75 per cent of all the service invoices, 50 per cent are 2-way match invoices, 25 per cent are 3-way match or ERS (evaluated receipt settlement) invoices, and 25 per cent are no match or manual effort required invoices. For invoices with 2-way match, SCA will result in a streamlined system based approval process and reduce the effort required per invoice from 1 hour to 0.25 hours (an effort saving of 0.75 hours per invoice). For invoices with 3-way match or ERS, there will be a service master associated with each invoice (3-way match with PO, receipt, and invoice) resulting in no approval required, or an automatic match and automatic invoice (ERS). This will reduce effort from 1 hour to 0 hours, a net effort saving of 1 hour. Finally, the remaining 25 per cent of service invoices will require manual effort with no effort savings and will need same effort as current.</p>
<p>Tracking Plan</p>	
<p>When to occur</p>	<p>Stabilization – 1 year 100 per cent Benefit at – Year 3</p>
<p>When measured</p>	<p>Quarterly aggregated to yearly</p>
<p>How measured</p>	<ul style="list-style-type: none"> • Time required to process (invoice processing cycle time) and total number of invoices processed through the following invoice processing types– <ul style="list-style-type: none"> ○ ERS ○ Three-way match ○ Two-way match ○ Manual approvals • BW Report by invoice processing type will require some analysis and final report consolidation. A time and motion study will need to be performed to evaluate the time required for processing post SCA go-live. These numbers will need to be updated as efficiency gains are made. These newly determined task times

	will need to be multiplied by number of transactions. Time reduction comparison will also need to include those transactions which have been completely automated as a time reduction.
Other Assumptions	<ul style="list-style-type: none"> Time and motion study is required to understand baseline performance for comparison to post-SCA performance
Measure – (Most of this section is not applicable until post implementation and will be updated at that time)	
Measured Date	[YYYY-MM-DD}
Measured By	TBD
Metric Type	Quantitative Qualitative
Performance toward achieving target	<i>How is it going?</i> [<u>On Track</u> Off Track]
Suggested Corrective action(s)	N/A at this time
Suggested Opportunistic action(s)	N/A at this time
Comments	N/A at this time
Business Contributions	<ul style="list-style-type: none"> Increased use of material and service master will increase 3-way match volume and increased use of ERS functionality Timely approval of invoices for two-way match Timely resolution of complicated invoices Selection of appropriate spend channel Utilization of Outline Agreement and minimization of free text or non-contracted procurement methods Effort to increase # of ERS vendors
	<i>Are there any key issues or risks related to this contribution?</i> None identified at this time
IT Contributions	<ul style="list-style-type: none"> Where applicable, ERS functionality will eliminate need of invoice to be generated and processed by BC Hydro Systematic routing for invoice approvals notifications and reminders for approvals Report showing the cycle time required for approval of invoice Systematic escalation of invoice based on the approval limits
	<i>Are there any key issues or risks related to this contribution?</i> None identified at this time