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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
Information Responses Round 1 to BCUC and Intervener

BC Hydro writes in compliance with Commission Order No. G-229-18 to provide its responses to Round 1 information requests as follows:

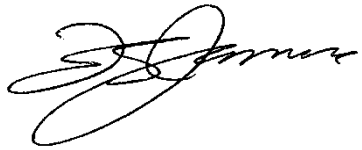
Exhibit B-3	Responses to Commission IRs (Public Version)
Exhibit B-3-1	Responses to Commission IRs (Confidential Version)
Exhibit B-4	Responses to Interveners IRs (Public Version)
Exhibit B-4-1	Responses to Interveners IRs (Confidential Version)
Exhibit B-5	Responses to Commission Confidential IRs

BC Hydro is filing a number of IR responses and/or attachments to responses confidentially with the Commission. BC Hydro provides an explanation for its request for confidential treatment in the public version of each IR response. BC Hydro seeks this confidential treatment pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission's Rules of Practice and Procedure.

BC Hydro requests that any concerns regarding the adequacy of the IR responses, confidentially concerns, or other issues, be addressed to Christopher R. Bystrom at cbystrom@fasken.com.

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

cu/tl

Enclosure

1.0 Reference: Exhibit B-1, page 1-1, lines
Exhibit B-1, page 2-1, lines 18-23 and 26-27

The Application states (pages 1-1 and 2-1) that the revised estimated cost range for the SCA project is $71.3 M to $79.3 M – where the lower end is the Expected Cost estimate and the upper end is the Authorized Cost estimate

The Application also states (page 2-1) that: "The SCA Project's Expected Cost of $71.3 million has a cost estimating accuracy range of +15 per cent /- 10 per cent"

1.1.1 Please explain why $79.3 M is considered to be the upper end of the cost estimate when the Application's statement regarding the cost estimate accuracy suggests that there as accuracy range of -10% to +15% associated with the estimate which would suggest an upper end of $82 M (i.e., $71.3 x 1.15).

RESPONSE:

$79.3 million is considered to be the upper end of the cost estimate as the estimate accuracy range is applied only to the future estimated costs of $43.6 million. The future estimated cost of $43.6 million, increased by the upper end of the accuracy range of 15 per cent equals $50.1 million.

The $79.3 million figure is calculated as the addition of the $50.1 million plus total interest during construction of $2.5 million, reserves for known risks of $1.3 million, and total life-to-date actual cost (as of August 31, 2018) of $25.4 million.

1.0 Reference: Exhibit B-1, page 1-1, lines
Exhibit B-1, page 2-1, lines 18-23 and 26-27

The Application states (pages 1-1 and 2-1) that the revised estimated cost range for the SCA project is $71.3 M to $79.3 M – where the lower end is the Expected Cost estimate and the upper end is the Authorized Cost estimate

The Application also states (page 2-1) that: "The SCA Project's Expected Cost of $71.3 million has a cost estimating accuracy range of +15 per cent /- 10 per cent"

1.1.2 Please explain why the Expected Cost estimate of $71.3 M is considered the lower end of the cost estimate range when the Application's statement regarding the cost estimate accuracy suggests that there as accuracy range of -10% to + 15% associated with the estimate.

RESPONSE:

Please refer to BC Hydro's response to BCUC IRs 1.2.1, 1.2.1.1, and 1.2.1.2.

2.0 Reference: Exhibit B-1, page 1-8
Exhibit B-1, Appendix E, page 5 of 12

The Application states (page 1-8): "On September 27, 2018, BC Hydro's Board of Directors authorized the SCA Project to proceed with Implementation Phase activities up to the incremental increased value of $15 million in advance of a Commission Decision".

1.2.1 Please clarify what is meant by "incremental increased value". Does this mean that the BCH Board of Directors approved the expenditures of up to $15 M on the Implementation Phase of the project?

RESPONSE:

The Board of Directors approved the expenditure of an additional $15 million above what had previously been approved for the SCA Project. The incremental funding is for Implementation Phase activities. In December 2017, the Board of Directors approved Definition Phase funding of an Expected Amount of $26.1 million. With the approval of the incremental increased value of $15 million, the total approved amount is now $41.1 million, of an expected project cost estimate of $71.3 million.

2.0 Reference: Exhibit B-1, page 1-8
Exhibit B-1, Appendix E, page 5 of 12

The Application states (page 1-8): "On September 27, 2018, BC Hydro's Board of Directors authorized the SCA Project to proceed with Implementation Phase activities up to the incremental increased value of $15 million in advance of a Commission Decision".

1.2.2 For how long (i.e., months) is such incremental funding expected to carry the project?

RESPONSE:

The incremental funding is expected to cover the project costs until the end of April 2019 based on the SCA Project's current schedule and forecast.

3.0 Reference: Exhibit B-1, pages 2-8, 2-12 and 2-15
Exhibit B-1, pages 6-4 to 6-5

1.3.1 Is the SCA Project's Expected Cost of $71.3 M (per Table 2-7) based on the Target In-Service Date (November 2019) or the Committed In-Service Date (March 2020)?

RESPONSE:

The SCA Project's Expected Cost of $71.3 million (per Table 2-7) is based on the current project plan, which includes placing the solution into service on the Target In-Service Date (November 2019).

3.0 Reference: Exhibit B-1, pages 2-8, 2-12 and 2-15
Exhibit B-1, pages 6-4 to 6-5

1.3.1 Is the SCA Project's Expected Cost of $71.3 M (per Table 2-7) based on the Target In-Service Date (November 2019) or the Committed In-Service Date (March 2020)?

1.3.1.1 If the former (i.e., the Target In-Service Date), please re-do Table 2-7, up to Row AF based on the Committed In-Service Date.

RESPONSE:

BC Hydro is unable to provide the requested information since the resultant cost estimate depends on the reasons the in-service date would be changed. The costs in Table 2-7 are built up from the current project implementation plans which are based on the current Target In-Service Date. The impact to project costs of the solution being placed into service on the Committed In-Service Date depends on the various factors that might lead to the decision to change the in-service date.

For example, a change in the in-service date could be due to:

- **external constraints such as storm season and the impact of resource availability for training;**
- **scope being added to the project; or**
- **execution delays such as quality issues.**

Each of these factors would have a different potential impact on project costs, in part because they impact whether any additional work would be covered under the System Integrator's fixed price contract or whether they would cause BC Hydro to incur additional costs. If an in-service date change causes BC Hydro to incur additional costs, these additional costs would be covered by the contingency or project reserve.

3.0 Reference: Exhibit B-1, pages 2-8, 2-12 and 2-15
Exhibit B-1, pages 6-4 to 6-5

1.3.2 Is the SCA Project's Authorized Cost of $79.3 M (per Table 2-7) based on the Target In-Service Date (November 2019) or the Committed In-Service Date (March 2020)?

RESPONSE:

The SCA Project's Authorized Cost of $79.3 million (per Table 2-7) is based on the current project plan, which includes placing the solution into service on the Target In-Service Date (November 2019). As noted in BC Hydro's response to BCOAPO IR 1.3.1.1 any additional costs caused by an in-service date change would be covered by the contingency or project reserve.

3.0 Reference: Exhibit B-1, pages 2-8, 2-12 and 2-15
Exhibit B-1, pages 6-4 to 6-5

1.3.2 Is the SCA Project's Authorized Cost of $79.3 M (per Table 2-7) based on the Target In-Service Date (November 2019) or the Committed In-Service Date (March 2020)?

1.3.2.1 If the former (i.e., the Target In-Service Date), what would be the Authorized Costs (per the above definition) based on the Committed In-Service Date? As part of the response, please provide a revised version of Table 2-7.

RESPONSE:

The Authorized Cost would remain unchanged at $79.3 million whether the In-Service Date for the solution is the Target In-Service Date or the Committed In-Service Date. Any additional costs incurred as a result placing the solution into service later than the Target In-Service Date would be covered through the SCA Project's contingency and reserve amounts.

Please refer to BC Hydro's response to BCOAPO IR 1.3.1.1 for further discussion.

4.0 Reference: Exhibit B-1, pages 2-4 to 2-5, 2-7 and page 6-2

The Application notes (page 2-4) that the current Expected Cost of the Definition Phase is $0.7 M less than the Mid-range Cost as set out in the Phase One Application".

The Application also notes (page 6-2) that the Definition Phase took three months longer than originally anticipated.

1.4.1 What is the impact of the additional three months on the overall cost of the Definition Phase?

RESPONSE:

The impact of the additional three months on the overall cost of the Definition Phase is $1.2 million.

In section 2.2.1.1 in the Verification Report, BC Hydro describes the draws of contingency approved by the Steering Committee during the Definition Phase: $0.8 million to cover additional System Integrator costs and $0.7 million to cover additional BC Hydro resource costs. The latter $0.7 million item is directly related to the additional time required to complete the Definition Phase. Of the $0.8 million in additional System Integrator costs, the portion related "…to additional design workshops that were not initially anticipated" ($0.5 million) was related to the additional time as this work did impact the project schedule.

The remaining $0.3 million is not related to the additional time required to complete the Definition Phase. The $0.3 million was required for the other changes mentioned in the Application, including "support for the updated benefits analysis" and "additional effort required in the Mobilization Stage", neither of which had an impact on the project timeline.

4.0 Reference: Exhibit B-1, pages 2-4 to 2-5, 2-7 and page 6-2

The Application notes (page 2-4) that the current Expected Cost of the Definition Phase is $0.7 M less than the Mid-range Cost as set out in the Phase One Application".

The Application also notes (page 6-2) that the Definition Phase took three months longer than originally anticipated.

1.4.2 Is this impact captured in the $0.7 M draw on contingency discussed on page 2-5 (lines 19-21)? If not where is it reflected in Table 2-2?

RESPONSE:

As discussed in BC Hydro's response to BCOAPO IR 1.4.1, the cost impact is made up of the $0.7 million draw on contingency discussed on page 2-5 (lines 19-21) of the Verification Report and a portion ($0.5 million) of the $0.8 million draw on contingency discussed on page 2-5 (lines 15-18) of the Verification Report.

5.0 Reference: Exhibit B-1, pages 1-7, 2-9, 2-15 and 4-4

1.5.1 The Application indicates that there have been minor changes to the scope of the SCA Project. What impact, if any, have these changes had on either the total Expected Cost or Authorized Cost of the Project?

RESPONSE:

The minor change in scope that removed the SAP to Unifier interface resulted in a reduction of $0.3 million in the Expected Cost, but did not change the Authorized Cost. This is because a $0.3 million reserve was included in the Authorized Cost due to the risk that the interface may still be required to meet Site C's business requirements. Please refer to BC Hydro's response to BCUC IR 1.19.6 for a discussion on how the $0.3 million value was calculated.

The other three minor scope changes discussed in the Verification Report - the cross-application timesheet function for contingent labour resources, the Graphic Work Design project, and dynamic discounting - had no impact on project costs.

Please refer to BC Hydro's response to BCUC IR 1.19.1.3 for further discussion.

5.0 Reference: Exhibit B-1, pages 1-7, 2-9, 2-15 and 4-4

1.5.2 If there is an impact, please indicate how this change in scope affected the variances set out in Table 2-3 and Table 2-7.

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.5.1.

6.0 Reference: Exhibit B-1, page 2-17
Exhibit B-1, Appendices F and J

1.6.1 How were the incremental annual operating and capital costs (per Appendix F) determined and has the forecast been "benchmarked" against experiences elsewhere?

RESPONSE:

The Information Technology related costs were determined by considering factors such as the effort needed to operate and sustain the technical solution, provide Information Technology support for users, allowances for minor evolution of the system to maintain currency, and incremental software licensing costs. These estimates were informed by BC Hydro's previous experience in supporting other SAP modules such as Customer Care (CCS), Human Resources and Financials, which have similar technical footprints, as well as BC Hydro's experience sustaining Ariba and other internal Enterprise Resource Planning (ERP) systems such as the PassPort Supply Chain system.

The business-related costs were determined by considering the labour resources needed to support the targeted Supply Chain Applications related business processes. These estimates were informed by BC Hydro's previous supply chain process experience, plus consideration for the changes and enhancements introduced to close the targeted business capability gaps.

The estimates for ongoing Supply Chain Applications related costs are consistent with BC Hydro's previous internal experience. BC Hydro did not conduct an external benchmarking exercise in estimating these costs.

Please also refer to BC Hydro's response to BCUC IR 1.9.3.

6.0 Reference: Exhibit B-1, page 2-17
Exhibit B-1, Appendices F and J

1.6.2 Please indicate which incremental annual operating and capital costs (per Appendix F, i.e., low, high or mid-range values) where used in Appendix J and where in Appendix J they have been incorporated (i.e., what Tabs and Rows).

RESPONSE:

1. **The ongoing technology and business costs used in the scenario analysis in Appendix J can be found in Appendix F in Table 1 in Tabs E1 and E2, respectively:**

   a. **The high scenario for ongoing technology costs was used in the Authorized Costs / Monetized Benefits scenario in Appendix J;**

   b. **The mid scenario for ongoing technology costs was used in the Expected Costs / Monetized Benefits scenario in Appendix J; and**

   c. **Ongoing business costs are the same in all scenarios in Appendix J;**

2. **All the inputs used in Appendix J can be found in Appendix F in Tab G2:**

   a. **Rows 13 and 23 both relate to Ongoing Capital Savings which feed into Appendix J by way of Tab G2;**

   b. **Rows 14 and 24 both relate to Ongoing Operating Savings which feed into Appendix J by way of Tab G2; and**

   c. **Only one scenario was used for the ongoing business sustainment costs which were included in the same rows detailed above;**

3. **Incremental annual operating and capital costs are included as part of the ongoing capital and operating savings rows in Tabs G2 and G1. The information in the aforementioned tabs is from Tab E1:**

   a. **Cells G13-S13 in Tab G2 includes SCA Ongoing Technology Costs - SCA Mid Capital Cost values from Table 1 in Tab E1;**

   b. **Cells G14-S14 in Tab G2 includes SCA Ongoing Technology Costs - SCA Mid Operating Cost values from Table 1 in Tab E1;**

c. Cells G23-S23 in Tab G2 includes SCA Ongoing Technology Costs - SCA High Capital Cost values from Table 1 in Tab E1; and

d. Cells G24-S24 in Tab G2 includes SCA Ongoing Technology Costs - SCA High Operating Cost values; and

4. Operating savings from rows 14 or 24 in Tab G2, depending on the scenario, are entered on line 40 in Tab "4.0 Input Data" in Appendix J. Capital savings from rows 13 or 23, depending on the scenario are entered on lines 2-12 in Tab "4.0 Input Data" in Appendix J.

Please note cells G13-S13 and cells G23-S23 referenced in 3a and 3c above were inadvertently hidden in the Appendix F filed as an attachment to the Verification Report. These cells are visible in the updated Appendix F filed under separate cover (Exhibit B-1-2). There have been no changes to the values included in these cells.

6.0 Reference: Exhibit B-1, page 2-17
Exhibit B-1, Appendices F and J

1.6.3 The Application makes reference to accelerating the depreciation of the remaining supply chain PassPort IT system costs. Please indicate where the impact of this accelerated depreciation is reflected in Appendix J (i.e., what Tabs and Rows).

RESPONSE:

As described in footnote 11 on page 2-17 of the Verification Report, the $0.3 million expected write off is considered immaterial and was not included in the revenue requirements impact analysis (Appendix J). Including this amount will not materially change the results of the analysis.

7.0 Reference: Exhibit B-1, pages 1-7, 3-10 and 4-4

1.7.1 The Application indicates (page 1-7) that there have been minor changes to the scope of the SCA Project. What impact, if any, have these changes had on valuation of Expected Benefits?

RESPONSE:

The changes to the scope of the SCA Project as described on page 4-4 and in section 4.3.2.2 of the Verification Report, did not have any impact on the valuation of Expected Benefits.

Please also refer to BC Hydro's response to BCUC IR 1.19.1.6.

7.0 Reference: Exhibit B-1, pages 1-7, 3-10 and 4-4

1.7.2 If there is an impact, please indicate how this change in scope affected the variances set out in Table 3-3.

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.7.1.

8.0 Reference: Exhibit B-1, page 3-10 (Table 3-3)

1.8.1 Please provide a revised version of Table 3-3 with two additional columns identifying the portion of the each variance that is due to: i) new or removed benefits per Table 3-2 versus ii) changes in the calculation of the benefits.

RESPONSE:

Please refer to the excel version of the requested revised Table 3-3 (Table 3-3A) in Tab B2 of the updated Appendix F filed under separate cover (Exhibit B-1-2). Table 3-3A shows the portion of each variance due to new or removed benefits and changes in the calculation of the benefits.

8.0 Reference: Exhibit B-1, page 3-10 (Table 3-3)

1.8.2 Please provide a revised version of Table 3-3 including a column setting out the Expected Monetized Benefits for each Capability Gap.

RESPONSE:

Please refer to BC Hydro's response to BCUC IR 1.12.3.

9.0 Reference: Exhibit B-1, page 3-12 (lines 1-5)
Exhibit B-1, pages 3-10 and 3-23

1.9.1 In its Revenue Requirement Applications, is BC Hydro's determination of the various elements of the revenue requirement (e.g., working capital requirements) sufficiently detailed to capture the savings associated with each of the Expected Monetized Benefits?

RESPONSE:

BC Hydro expects that its future revenue requirements will be lower than they otherwise would have been by the amount of the Expected Monetized Benefits. However, as the revenue requirements forecasts are at a more aggregated level, the reporting in BC Hydro's revenue requirements and rates applications would not typically be sufficient to show all the Expected Monetized Benefits (e.g., they would not show up as a line item in the financial schedules). This is because the Expected Monetized Benefits will be spread across many areas of the organization and many capital projects. In addition, a significant portion of the Expected Monetized Benefits are avoided costs, which are not presented in revenue requirements and rates applications but ensure BC Hydro keeps future projected rate increases affordable.

BC Hydro intends to report on the results of the benefits tracking process described in section 3.3 of the Verification Report in its future revenue requirements and rates applications.

9.0 Reference: Exhibit B-1, page 3-12 (lines 1-5)
Exhibit B-1, pages 3-10 and 3-23

1.9.1 In its Revenue Requirement Applications, is BC Hydro's determination of the various elements of the revenue requirement (e.g., working capital requirements) sufficiently detailed to capture the savings associated with each of the Expected Monetized Benefits?

1.9.1.1 If not, please provide a revised version of Table 3-3 that includes a column setting out the Expected Monetized Benefits (for each Capability Gap) that can be captured in BC Hydro's Revenue Requirements Applications.

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.9.1.

9.0 Reference: Exhibit B-1, page 3-12 (lines 1-5)
Exhibit B-1, pages 3-10 and 3-23

1.9.1 In its Revenue Requirement Applications, is BC Hydro's determination of the various elements of the revenue requirement (e.g., working capital requirements) sufficiently detailed to capture the savings associated with each of the Expected Monetized Benefits?

1.9.1.2 If not, please provide a revised version of Table 3-7 that includes only those Expected Monetized Benefits that can be reflected in the Revenue Requirements Application.

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.9.1.

10.0 Reference: Exhibit B-1, Appendix H, page 22

The explanation of the effort savings associated with Benefit LD#2 indicates that the hours were valued at $82.83/hour (BC Hydro's F18 blended SLR).

1.10.1 Please indicate how the $82.83 was determined (i.e., what type of employee/job classification was used) and what costs were included.

RESPONSE:

The $82.83 is an average BC Hydro wide standard labour rate that was calculated using the total labour costs divided by the total labour hours.

Below is a full listing of the components which comprise BC Hydro's standard labour rates.

Labour Category	Components
Base Labour	**Base Salary & Wages**
	Other Remuneration which includes first aid allowance and remote location incentive program
	Vacation & Flex Time
	Salary Holdback & Gainsharing
Current Service Pension	**Current Service Pension**
Other Benefits	**Employment Insurance Premiums**
	Canada Pension Plan Premiums
	WorkSafe BC Insurance Premiums
	Medical Services Plan of B.C. Premiums
	Group Life Insurance Premiums
	Accidental Death & Dismemberment Insurance Premiums
	Extended Health
	Dental
	Long Term Disability
	Executive Health Program

10.0 Reference: Exhibit B-1, Appendix H, page 22

The explanation of the effort savings associated with Benefit LD#2 indicates that the hours were valued at $82.83/hour (BC Hydro's F18 blended SLR).

1.10.2 It appears that the same SLR was used to value all hours of effort savings regardless of the source or basis for the effort savings. Please explain why this is appropriate.

RESPONSE:

In cases where benefits are impacting known roles and business groups, specific SLRs were used in the benefit calculation (Benefit ID Nos. 16, 58, 81, 100, 105). The average SLR rate of $82.83 was applied to all other effort benefits where the benefit impacts a broader number of employees across the organization or business groups where the specific impacted roles will not be defined until the implementation or realization phase, which is appropriate for this stage of the SCA Project.

11.0 Reference: Exhibit B-1, page 3-14

The Application states: "(iii) As the determination completed in (ii) was on the combined impact of total expected effort reduction benefits, BC Hydro discounted each discrete effort benefit value at the same rate to arrive at a monetized value at the benefit level.

Individual effort reduction benefits are not necessarily linked directly to a headcount reduction, but rather it is the cumulative reduction from all effort benefits combined that will enable the headcount reduction."

1.11.1 Please explain more fully the adjustments made in step (iii) and why they were necessary.

RESPONSE:

Please refer to BC Hydro's response to BCUC IR 1.13.1 and BCUC IR 1.13.2.

12.0 Reference: Exhibit B-1, Appendix I-1

For some Benefits (e.g. ID #5) the metric used is based on forecasts of what will occur given the SCA solution versus "estimates" prepared by BC Hydro of what would have occurred without the SCA solution. For other Benefits (e.g., ID #26) the metric used is based on actual comparisons of time/cost spent prior to versus after the SCA solution.

1.12.1 Please provide a schedule that indicates for each of the 12 Benefits that will be monitored: i) the Expected Benefit, ii) the Monetized Benefit and iii) whether the metric used is a comparison of actual before vs. after SCA effort/costs or an estimate of before vs. actual SCA effort/costs.

RESPONSE:

The table below provides the requested information of the expected benefits, the monetized benefits, and an indication of whether the current baseline type or future measure has an actual or estimated metrics.

- **Column C in the table represents whether the benefits was calculated on an actual measured baseline or an estimated baseline. Also note that in column C Benefit ID Nos. 2, 7, 14, 16, 26, 29, 67, and 105 estimated baselines will be updated with actual time and motion study baselines prior to the project going into service.**

- **Column D represents whether the future benefit will be measured as an actual benefit or estimated based on what would have occurred without the SCA solution.**

Benefit Description		A	B	C	
		Phase 2 - Expected	Phase 2 - Expected	Current Baseline Type	Future Measure
ID	Benefit Quick Name	Quantified Benefit	Monetized Benefit	Actual or Estimate	Actual or Estimate
2	PO automation	$ 537	$ 84	Estimate	Actual
5	Active contract management	$ 16,073	$ 16,073	Actual	Estimate
7	Eliminating non-Supply Chain time in PassPort managing contracts	$ 3,988	$ 624	Estimate	Actual
14	Reduced carrying costs for material via improved inventory turn	$ 2,677	$ 2,677	Actual	Actual
16	Eliminate manual material reservations in MMBU	$ 433	$ 433	Actual	Actual
26	Reduced effort to approve invoices	$ 4,407	$ 689	Estimate	Actual
29	Automated invoice accruals	$ 1,858	$ 292	Estimate	Actual
67	Request standard services via catalogue	$ 596	$ 93	Estimate	Actual
102	Excess Project Materials Benefit	$ 816	$ 816	Estimate	Estimate
103	Wire Core Reel Return	$ 400	$ 400	Actual	Actual
104	Inventory Obsolscence Write-Off	$ 425	$ 425	Actual	Actual
105	Project forecasting effort	$ 1,121	$ 175	Estimate	Actual
Grand Total		$ 33,330	$ 22,781		

13.0 Reference: Exhibit B-1, page 3-19 (lines 12-16)

1.13.1 For purposes of determining the NPV of discounted cash flows in this Application, are the sunk costs the same as those used in the Phase One Application (i.e., up to November 2016) or do they also include expenditure that have been made since then and are now considered as "sunk"?

RESPONSE:

Yes. The sunk costs are the same as those used in the Phase One Application.

13.0 Reference: Exhibit B-1, page 3-19 (lines 12-16)

1.13.1 For purposes of determining the NPV of discounted cash flows in this Application, are the sunk costs the same as those used in the Phase One Application (i.e., up to November 2016) or do they also include expenditure that have been made since then and are now considered as "sunk"?

1.13.1.1 If the latter, what costs are considered as being sunk for purposes of the current Application?

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.13.1.

14.0 Reference: Exhibit B-1, page 3-20

1.14.1 What is the basis for the assumed 10-year economic life for the SCA Project?

RESPONSE:

As per BC Hydro's depreciation policy, all enterprise systems are depreciated over a 10-year period.

14.0 Reference: Exhibit B-1, page 3-20

1.14.2 Is there evidence from other users/jurisdictions as to the economic life of the SCA Project? If so, please detail what users/jurisdictions evidence was used and provide user/jurisdiction-specific summaries of that information.

RESPONSE:

BC Hydro did not seek to gather evidence from other users/jurisdictions as to the expected economic life of the Supply Chain Applications solution. However, the assumption of a 10-year economic life is conservative. BC Hydro's perspective is based on the following:

- **BC Hydro uses a 10-year depreciation period for its enterprise information technology assets, which is also the assumption used for SCA Project's NPV model. BC Hydro has found that its enterprise Information Technology assets have typically met or exceeded the 10-year useful life assumption.**

- **BC Hydro has fully implemented four other major SAP modules (Customer Care (CCS), Finance, Project & Portfolio Management, and Human Resources), and in all cases the useful life of these assets is tracking to exceed 10 years. The CCS module has been in service for 15 years, while the other three modules have been in service for between six and eight years. None of these modules are considered obsolete nor expected to need replacement in the foreseeable future.**

- **It should be recognized that in order to preserve the useful life of Information Technology assets, periodic technical upgrades and sustaining capital investments to maintain the currency of systems are needed. BC Hydro follows these practices for all of its SAP modules and other Information Technology assets.**

- **BC Hydro is not aware of any peer Canadian utilities that have implemented the SAP supply chain module, and have subsequently replaced that system within 10 years.**

15.0 Reference: Exhibit B-1, page 3-21 (Table 3-6)

1.15.1 Please confirm that the percentage reported as the "Benefits Percentage Required to Breakeven" is the percentage of the Expected Benefits and Monetized Expected Benefits (per page 3-15) required to breakeven – where these values have already been "discounted" to reflect a weighted realization rate of 54% (per page 3-8).

RESPONSE:

Confirmed.

16.0 Reference: Exhibit B-1, page 3-24

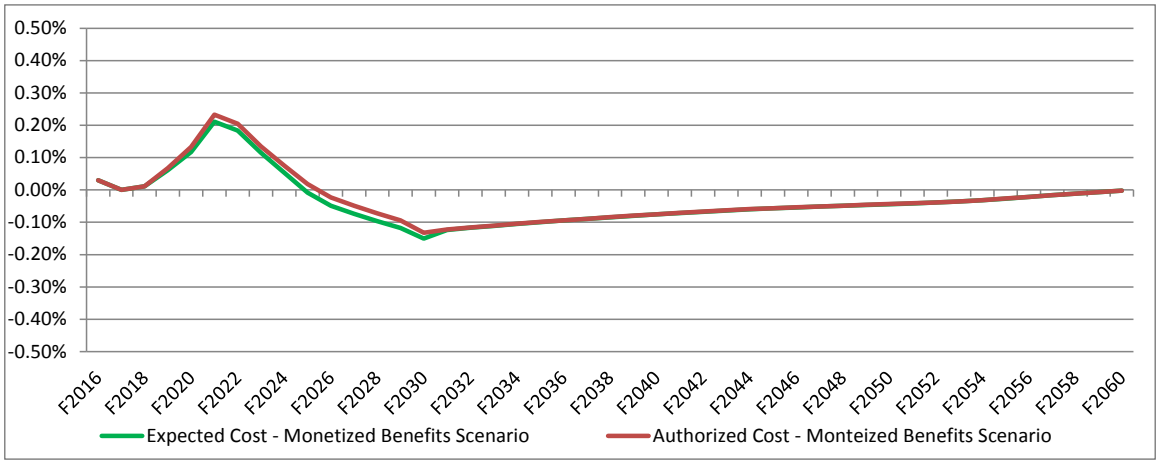
1.16.1 If possible, please translate the Revenue Requirement Impacts (per Figure 3-2) into rate level increase/decrease impacts.

RESPONSE:

The incremental changes to BC Hydro's revenue requirement, as presented in Figure 3-2 and described on page 3-24 of the Verification Report, have been used to estimate the incremental cumulative impact on future rates. The estimated rate impact represents the magnitude (in percentage), in a given year, which rates are higher or lower in the scenario than they would have otherwise been without the SCA Project, in that same year.

The figure below shows the estimated rate impacts of the Base Case (Expected Cost / Monetized Benefits) and the Authorized Cost / Monetized Benefits scenarios.

Estimated Rate Impact (%) : Fiscal 2016 – Fiscal 2060



Implementing the SCA Project will impact BC Hydro's revenue requirements through higher operating costs, amortization, and finance charges, with partially offsetting benefits starting in fiscal 2022. The resulting increase to BC Hydro's rates would be highest (in incremental percentage terms) in fiscal 2021, ranging from 0.21 per cent in the Base Case scenario to 0.23 per cent in the Authorized Cost / Monetized Benefits scenario.

As a result of the monetized benefits, which are expected to gradually start one year after the SCA Project goes into service, the project is estimated to have a

favourable impact on customer rates in fiscal 2025 and fiscal 2026 under the Base Case and the Authorized Cost / Monetized Benefits scenarios, respectively, and this positive rate impact will continue for a sustained period of time extending to fiscal 2060, under both scenarios.

The chart above reflects the corrections noted in BC Hydro's response to BCUC IR 1.16.5.

1.0 Reference: Exhibit B-1, page 1-3

> BC Hydro monetized the cost and effort reduction benefits in a base case resulting in a net present value of discounted cash flows of $68.3 million with a range of $2.2 million to $103.2 million between the low and high scenarios. Anticipated benefits from reducing or eliminating risks were not monetized because there is insufficient information available to calculate the economic benefit, although BC Hydro believes there will be reduced or avoided costs resulting from the risk reductions;
>
> - **Project Risks:** The Commission was satisfied that BC Hydro's approach to project risk management was appropriate. BC Hydro developed a risk register outlining the likelihood of occurrence and consequences of each risk, and mitigation plans. BC Hydro also has a Risk Management Plan in place to manage these risks, and expects that project risks will be reduced through the course of the Definition Phase as its mitigation plans are advanced; and

1.1.1 Does BC Hydro regularly examine and assess its ability to effectively reduce risks?

RESPONSE:

Yes.

BC Hydro actively manages project risks. Project Steering Committees regularly discuss project risks and risk treatment including risk reduction, mitigation, and avoidance.

The current risk rating of all IT projects is reported on a monthly basis to the Technology Project Management Office, a summary of which is provided to the BC Hydro executive. Projects assessed with a high risk rating may be asked to provide follow-up on the specific strategies being implemented in order to reduce the risk level.

For each completed project, the Project Completion and Evaluation Report requires a discussion of risk management processes, including an analysis of the risks originally identified in the approved business cases and new risks that may have occurred during the project delivery. The analysis includes the nature of the

risk, risk rating, planned risk response strategy, and the mitigation strategy deployed.

The Technology Project Management Office reviews the Project Completion and Evaluation Reports and project lessons learned. Based on patterns identified, the Technology Project Management Office initiates improvements to project management practices, including the effective management of the project risks. This includes the updating of standards and guidelines and the communication of the existing and updated practices with the project management community.

1.0 Reference: Exhibit B-1, page 1-3

> BC Hydro monetized the cost and effort reduction benefits in a base case resulting in a net present value of discounted cash flows of $68.3 million with a range of $2.2 million to $103.2 million between the low and high scenarios. Anticipated benefits from reducing or eliminating risks were not monetized because there is insufficient information available to calculate the economic benefit, although BC Hydro believes there will be reduced or avoided costs resulting from the risk reductions;
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> - **Project Risks:** The Commission was satisfied that BC Hydro's approach to project risk management was appropriate. BC Hydro developed a risk register outlining the likelihood of occurrence and consequences of each risk, and mitigation plans. BC Hydro also has a Risk Management Plan in place to manage these risks, and expects that project risks will be reduced through the course of the Definition Phase as its mitigation plans are advanced; and

1.1.1 Does BC Hydro regularly examine and assess its ability to effectively reduce risks?

1.1.1.1 If yes, please provide the metrics that BC Hydro normally utilizes to evaluate risk reductions.

RESPONSE:

In order to assess the effectiveness of its risk management processes, including risk response, reduction, mitigation and avoidance on technology projects, BC Hydro looks to project metrics, primarily cost performance metrics.

Since fiscal 2016, BC Hydro delivered all IT projects to within 4 per cent of the total of their First Full Funding approval, indicating good cost estimation and risk management. Typically, unmanaged or poorly managed risks would impact project cost performance.

Please refer to CEC IR 1.5.2 for details on cost performance metrics.

1.0 Reference: Exhibit B-1, page 1-3

> BC Hydro monetized the cost and effort reduction benefits in a base case resulting in a net present value of discounted cash flows of $68.3 million with a range of $2.2 million to $103.2 million between the low and high scenarios. Anticipated benefits from reducing or eliminating risks were not monetized because there is insufficient information available to calculate the economic benefit, although BC Hydro believes there will be reduced or avoided costs resulting from the risk reductions;
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1.1.1 Does BC Hydro regularly examine and assess its ability to effectively reduce risks?

1.1.1.2 If no, please explain why not and what information would be useful in BC Hydro's view to evaluate its ability to reduce risks.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.1.1.

2.0 Reference: Exhibit B-1, page 1-3 to 1-4, and 1-5 and page 1-6 and page 2-1

- **Project costs:** With respect to total project costs, BC Hydro estimated a mid-range cost estimate of $65.9 million with upper- and lower-bound cost estimates ranging from $60.5 million to $79.3 million. In the Phase One proceeding, acceptance of capital expenditures ranging from $22.5 million to $29.7 million to complete work to the end of the Definition Phase was requested. The Commission found that the proposed lower-bound and mid-range cost estimates, in total and up to the end of the Definition Phase, were supported by their respective cost breakdowns and were reasonably robust.

Based on the updated information, the forecast project completion date for the SCA Project is March 2021 at a cost in the range of $71.3 million to $79.3 million and with a base case scenario net present value of discounted cash flows of $41.8 million and a base case scenario net present value of revenue requirements of $25.1 million.

• The Expected Cost estimate is $71.3 million, which is analogous to a P50 estimate. The Expected Cost estimate is comparable to the Mid-range Cost estimate of $65.9 million in the Phase One Application. BC Hydro explains this variance in the referenced sections.	Sections 2.2.1 and 2.3.1; Appendix F

The SCA Project's Expected Cost of $71.3 million has a cost estimating accuracy range of +15 per cent /- 10 per cent. The Expected Cost reflects BC Hydro's bottom-up estimate of the cost to deliver the SCA Project. When compared with the type of cost estimate BC Hydro would normally develop for an infrastructure project,

1.2.1 As the $71.3 is comparable to the mid-range estimate, with an estimating accuracy of + 15% would BC Hydro consider $82 million ($71.3*1.15) to be an upper bound estimate and $64.17

(71.3*.9) to be a lower bound estimate? Please explain why or why not and provide quantification of any other upper or lower bound estimate.

RESPONSE:

Please refer to BC Hydro's response to BCUC IRs 1.2.1 and 1.2.1.2 and BCOAPO IR 1.1.1.

2.0 Reference: Exhibit B-1, page 1-3 to 1-4, and 1-5 and page 1-6 and page 2-1

- **Project costs:** With respect to total project costs, BC Hydro estimated a mid-range cost estimate of $65.9 million with upper- and lower-bound cost estimates ranging from $60.5 million to $79.3 million. In the Phase One proceeding, acceptance of capital expenditures ranging from $22.5 million to $29.7 million to complete work to the end of the Definition Phase was requested. The Commission found that the proposed lower-bound and mid-range cost estimates, in total and up to the end of the Definition Phase, were supported by their respective cost breakdowns and were reasonably robust.

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1.2.2 Please discuss the difference between a P50 estimate and P90 estimate.

RESPONSE:

The SCA Project did not develop a formal P50 or P90 estimate using the Monte Carlo technique. As stated in section 2.3.1.3 of the Verification Report, BC Hydro considers the SCA Project's Expected Cost to be analogous to P50 and the Authorized Cost to be analogous to a P90 estimate plus an additional project reserve for specific quantified risks.

BC Hydro's estimating practice defines a P90 cost estimate as the cost estimate that will not be exceeded 90 per cent of the time. P50 is defined as the cost estimate that will not be exceeded 50 per cent of the time. This is also defined as the Expected Cost estimate.

As BC Hydro's technology projects do not use Monte Carlo analysis for their estimates, a reasonable approach in approximating the difference between the P90 and the P50 estimates is to include a 15 per cent reserve in addition to future expected costs.

2.0 Reference: Exhibit B-1, page 1-3 to 1-4, and 1-5 and page 1-6 and page 2-1

- **Project costs:** With respect to total project costs, BC Hydro estimated a mid-range cost estimate of $65.9 million with upper- and lower-bound cost estimates ranging from $60.5 million to $79.3 million. In the Phase One proceeding, acceptance of capital expenditures ranging from $22.5 million to $29.7 million to complete work to the end of the Definition Phase was requested. The Commission found that the proposed lower-bound and mid-range cost estimates, in total and up to the end of the Definition Phase, were supported by their respective cost breakdowns and were reasonably robust.

Based on the updated information, the forecast project completion date for the SCA Project is March 2021 at a cost in the range of $71.3 million to $79.3 million and with a base case scenario net present value of discounted cash flows of $41.8 million and a base case scenario net present value of revenue requirements of $25.1 million.

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The SCA Project's Expected Cost of $71.3 million has a cost estimating accuracy range of +15 per cent /- 10 per cent. The Expected Cost reflects BC Hydro's bottom-up estimate of the cost to deliver the SCA Project. When compared with the type of cost estimate BC Hydro would normally develop for an infrastructure project,

1.2.3 Did BC Hydro use a P90 or other in the Phase 1 filing? Please identify and explain why.

RESPONSE:

As stated on page 2-16 of the Phase One Application, when compared with the type of cost estimate BC Hydro would normally develop for an infrastructure project, the Lower Bound of the Project Cost Range is analogous to a P10 estimate, the Mid-Range is analogous to a P50 estimate, and the Upper Bound is analogous to a P90 estimate plus an additional Project Reserve for specific, individually quantified risks.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

Given that the Verification Report demonstrates that the SCA Project still has a strong project justification and positive NPV based on updated costs and benefits, BC Hydro has concluded that it is prudent to commence Implementation Phase activities in advance of a Commission Decision. On September 27, 2018, BC Hydro's Board of Directors authorized the SCA Project to proceed with Implementation Phase activities up to the incremental increased value of $15 million in advance of a Commission Decision. The Board Briefing Memo and Certified Resolution are included as Appendix E.

Proceeding with Implementation Phase activities will allow the project to continue with less risk, and will allow approximately six months for the regulatory process

without impact to the cost and schedule of the SCA Project. While this will entail increased cost recovery risk, BC Hydro is confident in the business case for the SCA Project and that the ultimate determination in this proceeding will be acceptance of the expenditures for the SCA Project.

The project is proposing to begin Implementation Phase activities in early October, prior to receiving the Commission's decision on the Phase Two Application. This is to avoid the significant risk of the project losing key resources and continuity were it to incur a lengthy delay at this point in the project. It is expected that the regulatory process will take three to six months to complete, which will place between $7.5 million and $15 million at risk. We do not need BCUC approval to proceed, but rather approval for recovery of funds spent. On September 24, 2018, BC Hydro met with BCUC staff and outlined our implementation strategy.

1.3.1 Please provide a discussion of the Commission's decision options in reviewing this application.

RESPONSE:

The decision options open to the Commission are set out under subsections 3 and 4 of section 44.2 of the *Utilities Commission Act* in that the Commission may either:

- **Accept the expenditure schedule, if the Commission considers that making the expenditures would be in the public interest (subsection 44.2(3)(a));**
- **Reject the expenditure schedule (subsection 44.2(3)(b)); or**
- **May accept or reject a part of an expenditure schedule (subsection 44.2(4)).**

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.2 Please provide BC Hydro's views as to whether or not BC Hydro's decision to proceed with the Implementation Phase prior to the

Commission's decision on whether to approve the Project could have any impact on the Commission's decision-making?

RESPONSE:

BC Hydro does not believe there is any impact on the Commission's decision-making ability with respect to the Application, based on BC Hydro's decision to commence implementation prior to the Commission issuing its decision. As discussed in BC Hydro's response to CEC IR 1.3.1, the Commission can accept the expenditure schedule, reject the expenditure schedule, or approve or reject a part of the expenditure schedule.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.3 Please provide a discussion of the risks to BC Hydro if the Commission were to deny the project after BC Hydro has already begun the Implementation Phase.

RESPONSE:

The risk to BC Hydro of the Commission denying the SCA Project would be that the benefits of the Project would not be realized, assuming BC Hydro did not proceed with the Project. In that outcome, the 13 capability gaps identified by BC Hydro in the Phase One Application would not be closed, the anticipated efficiencies and cost and effort savings would not be realized, and BC Hydro would continue to have to manage risks associated with the existing supply chain model.

Assuming BC Hydro did not proceed with the Project, denying the SCA Project would also impact ratepayers as potential efficiencies and cost savings forecast in the Verification Report would not be realized, leading to customer rates that would be higher than if the SCA Project were approved and implemented as planned. The rate impact would be exacerbated by the recovery of the SCA Project's Definition Phase capital costs incurred that have been accepted by the Commission and in BC Hydro's view should be recoverable from ratepayers, resulting in higher rates for maintaining the status quo. BC Hydro expects that the Commission would allow for the recovery of the Definition Phase capital expenditures accepted by the Commission in Order No G-158-17.

With regard to Implementation Phase capital expenditures for the SCA Project incurred by BC Hydro prior to the Commission's Decision on the Verification Report, BC Hydro could submit an application to the Commission seeking approval for recovery of these expenditures assuming completion of the Project and would need to justify that the costs were prudently incurred by BC Hydro. If BC Hydro's request is approved by the Commission, these costs would be to the account of ratepayers, offset by the benefits obtained as outlined in the Verification Report.

If the Commission was to deny BC Hydro's request for recovery of Implementation Phase capital expenditures incurred for the SCA Project and the Project is not completed, the Implementation Phase costs capitalized to date that are no longer expected to have future benefits would be written-off and expensed for financial reporting purposes. This would have the effect of reducing BC Hydro's net income in the fiscal year that the write-off is made, and these costs would be to the account of the shareholder (i.e., taxpayer).

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

Given that the Verification Report demonstrates that the SCA Project still has a strong project justification and positive NPV based on updated costs and benefits, BC Hydro has concluded that it is prudent to commence Implementation Phase activities in advance of a Commission Decision. On September 27, 2018, BC Hydro's Board of Directors authorized the SCA Project to proceed with Implementation Phase activities up to the incremental increased value of $15 million in advance of a Commission Decision. The Board Briefing Memo and Certified Resolution are included as Appendix E.

Proceeding with Implementation Phase activities will allow the project to continue with less risk, and will allow approximately six months for the regulatory process

without impact to the cost and schedule of the SCA Project. While this will entail increased cost recovery risk, BC Hydro is confident in the business case for the SCA Project and that the ultimate determination in this proceeding will be acceptance of the expenditures for the SCA Project.

The project is proposing to begin Implementation Phase activities in early October, prior to receiving the Commission's decision on the Phase Two Application. This is to avoid the significant risk of the project losing key resources and continuity were it to incur a lengthy delay at this point in the project. It is expected that the regulatory process will take three to six months to complete, which will place between $7.5 million and $15 million at risk. We do not need BCUC approval to proceed, but rather approval for recovery of funds spent. On September 24, 2018, BC Hydro met with BCUC staff and outlined our implementation strategy.

1.3.4 Please provide a discussion of the risks to BC Hydro' Board of Directors if the Commission were to deny the project after BC Hydro has already begun the Implementation Phase.

RESPONSE:

BC Hydro does not believe there is any risk to BC Hydro's Board of Directors if the Commission were to deny the SCA Project. Please refer to BC Hydro's response to CEC IR 1.3.3 for a discussion of potential impacts to BC Hydro and its shareholder, whom the Board represents.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.5 Please provide a discussion of the risks to ratepayers if the Commission were to deny the project after BC Hydro has already begun the Implementation Phase.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.3.3.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.6 Please provide a discussion of the risks to taxpayers if the Commission were to deny the project after BC Hydro has already begun the Implementation Phase.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.3.3.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.7 What is the expected period of time that BC Hydro gains by proceeding with the Implementation Phase in advance of the Commission's determination?

RESPONSE:

BC Hydro would have incurred a roughly six to nine month delay in the SCA Project had it decided to pause work until a decision had been made by the Commission.

Proceeding with implementation was a decision to mitigate the risk associated with losing key resources as a result of incurring such a delay.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.8 Please provide a discussion of the 'incremental increased value of $15 million,' explaining what it is and how it was arrived at.

RESPONSE:

Please refer to BC Hydro's response to BCOAPO IR 1.2.1 for a discussion of the 'incremental increased value of $15 million.'

The value was estimated based on the forecast costs to be expended during the estimated six-month duration of the regulatory review and approval process.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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without impact to the cost and schedule of the SCA Project. While this will entail increased cost recovery risk, BC Hydro is confident in the business case for the SCA Project and that the ultimate determination in this proceeding will be acceptance of the expenditures for the SCA Project.

The project is proposing to begin Implementation Phase activities in early October, prior to receiving the Commission's decision on the Phase Two Application. This is to avoid the significant risk of the project losing key resources and continuity were it to incur a lengthy delay at this point in the project. It is expected that the regulatory process will take three to six months to complete, which will place between $7.5 million and $15 million at risk. We do not need BCUC approval to proceed, but rather approval for recovery of funds spent. On September 24, 2018, BC Hydro met with BCUC staff and outlined our implementation strategy.

1.3.9 Please provide a discussion of the $7.5 million to $15 million which was identified as being 'at risk'.

RESPONSE:

The $7.5 million to $15 million was based on the estimate that the regulatory review process would require between three to six months to complete, and that the project would expend between $7.5 million and $15 million over this time frame depending on the length of the review process.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.9 Please provide a discussion of the $7.5 million to $15 million which was identified as being 'at risk'.

1.3.9.1 Please provide an assessment of the 'risk', describing the types of 'resources' that could be lost and the impact of losing those resources.

RESPONSE:

During the Design and Implementation Planning Stage, the core project team was comprised of 65 people, 37 from BC Hydro and 28 from the System Integrator. The BC Hydro team was primarily comprised of business specialists with knowledge of BC Hydro's existing supply chain processes and systems, and the Systems Integrator team was primarily comprised of consultants with specific knowledge of the components of SAP being implemented. The fundamental exercise of the Design and Implementation Planning Stage is for the BC Hydro and System Integrator specialists to jointly develop an understanding of how SAP can support the business requirements and to decide on the solution design. Loss of resources involved in this exercise can result in the need to repeat the exercise due to a loss in understanding the solution, understanding of BC Hydro's business processes, and the reasoning supporting the numerous design decisions. Even if no resources were to be lost as a result of a roughly six-month project delay, some knowledge or the ability to recall discussions would have been lost simply due to the delay itself.

While it is certain that not all of the SCA Project's resources would have been lost as a result of a delay, it is almost certain that at least some resources would have been lost. The degree of the impact would have depended on both the number and the specific knowledge of the resources that were lost.

Of the 65 core team members, roughly 17 individuals were independent contractors who were either contracted directly to BC Hydro or sub-contracted by the System Integrator. These individuals have a particularly high likelihood of leaving the SCA Project in the event of a delay as they would most likely need to find other work to keep them employed.

The likelihood of losing BC Hydro employees from the SCA Project as the result of the delay is less than for the System Integrator and contracted resources; however, the impact of losing any BC Hydro specialists would have been very high. BC Hydro has a limited number of resources with the knowledge required to support the design process, and it would have been very difficult to find qualified replacements for any key BC Hydro resources that chose to leave the project.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

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Given that the Verification Report demonstrates that the SCA Project still has a strong project justification and positive NPV based on updated costs and benefits, BC Hydro has concluded that it is prudent to commence Implementation Phase activities in advance of a Commission Decision. On September 27, 2018, BC Hydro's Board of Directors authorized the SCA Project to proceed with Implementation Phase activities up to the incremental increased value of $15 million in advance of a Commission Decision. The Board Briefing Memo and Certified Resolution are included as Appendix E.

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1.3.9 Please provide a discussion of the $7.5 million to $15 million which was identified as being 'at risk'.

1.3.9.2 Please provide a probability for the 'risk'.

RESPONSE:

While it is very unlikely that BC Hydro would lose all of the key project resources, it is almost certain that BC Hydro would lose some project resources.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.9 Please provide a discussion of the $7.5 million to $15 million which was identified as being 'at risk'.

1.3.9.3 Please discuss who would be expected to experience the negative impacts from the 'risk'.

RESPONSE:

BC Hydro would experience the negative impacts from the risk. While a number of the resources that the SCA Project would be at risk of losing are either PwC employees or sub-contractors working through PwC, the negative impacts of losing these resources would largely be borne by BC Hydro. BC Hydro does not have a mechanism for transferring the impacts of this risk to PwC given that the delay would be the result of actions taken by BC Hydro and not the result of actions taken by PwC. Ultimately, the risk would be borne by ratepayers in the form of higher costs for the SCA Project.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

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1.3.9 Please provide a discussion of the $7.5 million to $15 million which was identified as being 'at risk'.

1.3.9.4 Please provide a discussion of the steps BC Hydro took to mitigate the risk, other than commencing the project ahead of receiving Commission approval.

RESPONSE:

BC Hydro considered two other approaches to mitigating the risk of losing key resources and continuity.

1. **In the Phase One Application, BC Hydro included a reserve amount of $3.6 million due to the risk of incurring a project delay during an extended regulatory process (assumed in the Phase One Application to be a four-month delay). One option considered was to utilize this reserve amount to pay the System Integrator to keep key resources committed to the project and to cover the costs of key BC Hydro resources.**

2. **The other approach considered was to extend the overall Implementation Phase schedule and to reduce the amount of work performed during the initial months of Implementation.**

While these approaches would have reduced the likelihood of losing specific key resources, and would have reduced the funds put at risk by proceeding with Implementation activities ahead of a Commission decision, they would have still resulted in a loss of continuity and efficiency for the Project that would have increased the overall SCA Project cost.

3.0 Reference: Exhibit B-1, page 1-8 and Appendix E page 5 of 12

In its Phase One Decision, the Commission found that "there may be a requirement for a more comprehensive review at the end of the Definition Phase" and that "further process will be determined once the Commission receives the Verification Report." BC Hydro wishes to accommodate the need for whatever review of the Verification Report that the Commission determines is required. BC Hydro, however, must also consider the consequences of the loss of resource continuity due to a delay between the Definition and Implementation Phases.

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1.3.10 Please confirm, or otherwise explain, that BC Hydro is always at risk of losing important resources in implementing its projects.

RESPONSE:

Confirmed. There is always some risk on projects that resources will be lost. However, the likelihood of this risk occurring would increase significantly were an extended SCA Project shutdown occur.

Please refer to BC Hydro's response to CEC IR 1.3.9.1.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.1 Please relate the value of the $millions 'at risk' to the 3 – 6 month time frame for a Commission process. i.e. If the Commission process took 3 months, was the risk at $7.5 million whereas at 6 month the risk was $15 million? Please elaborate and provide justifications for BC Hydro's figures.

RESPONSE:

Confirmed. If the regulatory review process takes three months, the funds at risk would be roughly $7.5 million, whereas, if the process takes six months, the funds at risk would be roughly $15 million. These figures are based on the forecast monthly expenditure schedule for the first six months of the Implementation Phase.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.2 What steps would be required for BC Hydro to request an expedited process from the Commission? Please explain and provide the expected costs of requesting an expedited process.

RESPONSE:

BC Hydro proposed a form of expedited regulatory process in section 1.5.2 of the Verification Report. BC Hydro proposed an initial round of information requests on an expedited schedule, and stated on page 1-13: "To minimize risk to BC Hydro and to allow for an expeditious review, BC Hydro respectfully recommends the Streamlined Review Process as a means to fully review the Verification Report and to satisfy the BCUC that the SCA Project remains in the public interest." The regulatory process determined by the Commission is set out in Order G-229-18. BC Hydro considers the approved schedule to be reasonably expedited.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.3 Did BC Hydro request an expedited process from the Commission? Please explain.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.2.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.3 Did BC Hydro request an expedited process from the Commission? Please explain.

1.4.3.1 If yes, please elaborate on the result of that request.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.2.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.3 Did BC Hydro request an expedited process from the Commission? Please explain.

1.4.3.2 If no, please explain why not.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.2.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.4 Please confirm that the 'risk' of losing $7.5 million to $15 million would have represented a reasonable justification for requesting an expedited process.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.2.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.4 Please confirm that the 'risk' of losing $7.5 million to $15 million would have represented a reasonable justification for requesting an expedited process.

1.4.4.1 If not, please explain why not.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.2.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.5 If the Commission were to have processed the application within 1 month, what would the value of the 'risk' have been? Please provide a justification for the figure.

RESPONSE:

If the Commission were to have processed the Verification Report within one month, the value of the funds at risk would have been $1.8 million. This figure is based on the actual costs incurred on Implementation Phase activities during the first month of Implementation.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.6 Would BC Hydro agree that proceeding without Commission approval adds a measure of complexity to the regulatory filing and application that would otherwise not have been necessary? Please explain.

RESPONSE:

BC Hydro does not agree that proceeding without Commission approval adds a measure of complexity to the regulatory filing that would otherwise not have been necessary. As discussed in section 1.3.4 of the Verification Report, proceeding with the Implementation Phase avoids negative impacts to the cost and schedule due to the potential for the loss of project resources.

Although proceeding with Implementation Phase increases the cost recovery risk to BC Hydro, it does not add a measure of complexity to the review process of the Verification Report.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.7 Please confirm that BC Hydro essentially considers the Commission decision to be straightforward and uncomplicated.

RESPONSE:

BC Hydro declines to characterize the nature and complexity of the Commission's decision. BC Hydro is of the view that as long as the SCA Project's costs, scope, benefits, and schedule are reasonably within the forecasts established in the Phase One Application, the Commission should accept the expenditures as being in the public interest. A discussion about what matters the Commission needs to consider pursuant to section 44.2(5.1) of the *Utilities Commission Act* for accepting an expenditure schedule filed by BC Hydro is found at section 1.5.1 and Appendix B of the Phase Two Verification Report.

4.0 Reference: Exhibit B-1, page 1-8 and page 1-9 and Appendix E page 5 of 12

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1.4.7 Please confirm that BC Hydro essentially considers the Commission decision to be straightforward and uncomplicated.

1.4.7.1 If not confirmed, please explain why not and discuss the complexities and/or issues that could arise that make it less than straightforward.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.4.7.

5.0 Reference: Exhibit B-1, page 2-4 and page 2-7

2.2.1 Definition Phase: Expected Cost Estimate

In the Phase One Application, BC Hydro's Mid-range Cost to the end of the Definition Phase was a total of $26.1 million. This included actual costs of $11.7 million for activities completed prior to filing the Application,[4] $11.4 million for direct future project costs, $2.3 million for contingency, and $0.8 million for interest during construction.

As of the end of August 2018, the Expected Cost to the end of the Definition Phase is now $25.4 million (row J). BC Hydro's actual recorded cost (including interest during construction) is $24.0 million and BC Hydro estimates the future project cost for the remaining Definition Phase activities at $1.4 million. The difference between the Definition Phase Expected Cost and the Definition Phase Mid-range cost in the Phase One Application is a positive variance of $0.7 million, comprised of a positive capital cost variance of $0.9 million and a negative operating cost variance of $0.2 million.

Table 2-2 Definition Phase: 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)
A	Supply Chain Transformation Blueprint (Early Design Costs)	7.3	7.3	-	-	7.3	7.3	0.0
B	Identification	-	-	1.2	1.2	1.2	1.2	0.0
C	Definition (Early Definition as of November 2016)	3.0	3.0	0.1	0.1	3.1	3.1	0.0
D	Definition (Early Definition post November 2016)	1.0	0.7	0.3	0.0	1.2	0.7	-0.6
E	Definition (Mobilization, Design & Implementation Planning)	9.4	9.7	0.8	1.4	10.2	11.0	0.9
F	**Total Life-to-Date Cost as of August 31, 2018 (A + B + C + D + E)**	**20.7**	**20.6**	**2.4**	**2.7**	**23.1**	**23.4**	**0.3**
G	Direct Future Costs to End of Definition	-	1.3	-	0.1	0.0	1.4	1.4
H	Contingency (% * Direct Future Costs to End of Definition)	2.1	0.0	0.2	0.0	2.3	0.0	-2.3
I	Interest During Construction	0.8	0.7	-	-	0.8	0.7	-0.1
J	**Total Expected (Mid-range) Cost Estimate to end of Definition (F + G + H + J)**	**23.5**	**22.6**	**2.6**	**2.8**	**26.1**	**25.4**	**-0.7**
K	Project Reserve - incremental contingency	1.9	0.0	0.2	0.0	2.0	0.0	-2.0
L	Project Reserve - reserve for known risks	4.2	0.0	-	0.0	4.2	0.0	-4.2
M	Incremental Interest During Construction on Project Reserve	0.1	0.0	-	0.0	0.1	0.0	-0.1
N	**Total Project Reserve (K + L + M)**	**6.1**	**0.0**	**0.2**	**0.0**	**6.3**	**0.0**	**-6.3**
O	**Total Authorized Cost Estimate to end of Definition (J + N)**	**29.7**	**22.6**	**2.8**	**2.8**	**32.4**	**25.4**	**-7.0**

Notes:

1. Minor differences attributable to rounding.
2. Contingency in Phase One Application was 20 per cent of Direct Future Costs of $10.3 million.
3. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

1.5.1 The CEC notes that the negative variance in costs is almost completely a result of savings in contingency and project reserve. Does BC Hydro normally end up using Contingency and/or Project Reserve funds in the Definition Phase of a Project, or is this something that is normally not needed? Please explain and provide some quantification of the frequency and level to which BC Hydro typically uses its Contingency/Project Reserve.

RESPONSE:

According to BC Hydro practices for technology projects, Definition Phase carries out a detailed investigation of the selected alternative as well as preparation of a High Level Design, a Project Plan for implementation, and an estimate of the Implementation Phase funding. A project is not fully defined until the end of the Definition phase.

As a result, there are many different factors related to scoping, high level design, technical, architectural, business process and organizational issues and risks that impact actual costs of the Definition phase of a project, including the use of contingency and reserve funds.

BC Hydro expects that technology projects would use some or the entire contingency, thus we consider contingency to be required and included in the estimate. BC Hydro expects that most technology projects would not use reserve in the Definition Phase. BC Hydro typically plans reserve for technology projects with total project costs exceeding $3 million.

Among 84 technology projects that completed the Definition phase during the period from fiscal 2016 to the third quarter of fiscal 2019:

- **74 projects did not draw on contingency in the Definition phase;**
- **Six projects drew on contingency in the Definition Phase (from 3 per cent to 95 per cent of the planned contingency); and**
- **Four projects required additional funding or had a major change in the Definition Phase requiring Expenditure Authorization Request revision.**

During the period from fiscal 2016 to the third quarter of fiscal 2019, there was only one other project than the SCA Project that had planned reserves in the Definition Phase, and it used 75 per cent of the planned reserve in the Definition phase.

Among 108 technology projects that completed the Implementation Phase during the period from fiscal 2016 to the third quarter of fiscal 2019:

- **57 projects did not draw on contingency in the Implementation phase;**
- **34 projects used contingency in the Implementation phase, ranging from 6 per cent to 100 per cent of the planned contingency; and**
- **17 projects required additional funding or had a major change in the Implementation phase requiring an Expenditure Authorization Request revision.**

During the period from fiscal 2016 to the third quarter of fiscal 2019, there were two completed projects that had planned reserve in the Implementation Phase, and neither of them drew upon the reserve.

5.0 Reference: Exhibit B-1, page 2-4 and page 2-7

2.2.1 Definition Phase: Expected Cost Estimate

In the Phase One Application, BC Hydro's Mid-range Cost to the end of the Definition Phase was a total of $26.1 million. This included actual costs of $11.7 million for activities completed prior to filing the Application,[4] $11.4 million for direct future project costs, $2.3 million for contingency, and $0.8 million for interest during construction.

As of the end of August 2018, the Expected Cost to the end of the Definition Phase is now $25.4 million (row J). BC Hydro's actual recorded cost (including interest during construction) is $24.0 million and BC Hydro estimates the future project cost for the remaining Definition Phase activities at $1.4 million. The difference between the Definition Phase Expected Cost and the Definition Phase Mid-range cost in the Phase One Application is a positive variance of $0.7 million, comprised of a positive capital cost variance of $0.9 million and a negative operating cost variance of $0.2 million.

Table 2-2 Definition Phase: 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)
A	Supply Chain Transformation Blueprint (Early Design Costs)	7.3	7.3	-	-	7.3	7.3	0.0
B	Identification	-	-	1.2	1.2	1.2	1.2	0.0
C	Definition (Early Definition as of November 2016)	3.0	3.0	0.1	0.1	3.1	3.1	0.0
D	Definition (Early Definition post November 2016)	1.0	0.7	0.3	0.0	1.2	0.7	-0.6
E	Definition (Mobilization, Design & Implementation Planning)	9.4	9.7	0.8	1.4	10.2	11.0	0.9
F	**Total Life-to-Date Cost as of August 31, 2018 (A + B + C + D + E)**	**20.7**	**20.6**	**2.4**	**2.7**	**23.1**	**23.4**	**0.3**
G	Direct Future Costs to End of Definition	-	1.3	-	0.1	0.0	1.4	1.4
H	Contingency (% * Direct Future Costs to End of Definition)	2.1	0.0	0.2	0.0	2.3	0.0	-2.3
I	Interest During Construction	0.8	0.7	-	-	0.8	0.7	-0.1
J	**Total Expected (Mid-range) Cost Estimate to end of Definition (F + G + H + J)**	**23.5**	**22.6**	**2.6**	**2.8**	**26.1**	**25.4**	**-0.7**
K	Project Reserve - incremental contingency	1.9	0.0	0.2	0.0	2.0	0.0	-2.0
L	Project Reserve - reserve for known risks	4.2	0.0	-	0.0	4.2	0.0	-4.2
M	Incremental Interest During Construction on Project Reserve	0.1	0.0	-	0.0	0.1	0.0	-0.1
N	**Total Project Reserve (K + L + M)**	**6.1**	**0.0**	**0.2**	**0.0**	**6.3**	**0.0**	**-6.3**
O	**Total Authorized Cost Estimate to end of Definition (J + N)**	**29.7**	**22.6**	**2.8**	**2.8**	**32.4**	**25.4**	**-7.0**

Notes:

1. Minor differences attributable to rounding.
2. Contingency in Phase One Application was 20 per cent of Direct Future Costs of $10.3 million.
3. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

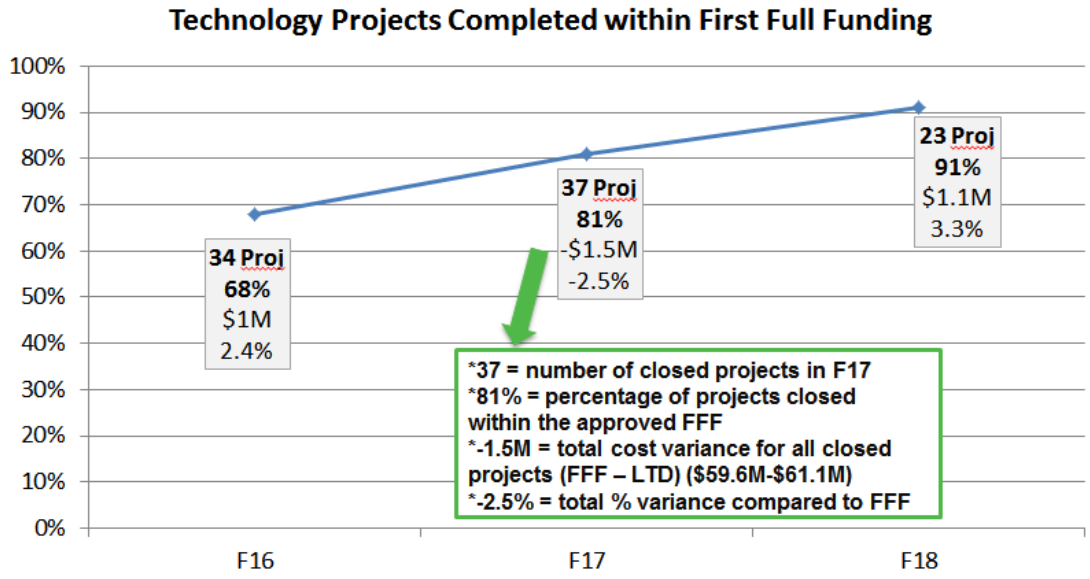
1.5.2 How does BC Hydro evaluate the validity of its cost estimating over the long term? Please explain.

RESPONSE:

Since 2013, BC Hydro has implemented a number of improvements related to project management, governance, controls and delivery practices, including cost estimation practices for technology projects. BC Hydro also established a peer review process for project cost estimates. Since fiscal 2016, BC Hydro has collected cost metrics on all completed technology projects to inform improvement initiatives.

As a project is only considered defined at the end of the Definition Phase, BC Hydro compares actual project cost to First Full Funding (FFF) approval (cost estimate at the beginning of Implementation Phase). BC Hydro looks at the percentage of projects that have completed within its First Full Funding approval amount and also looks at the aggregate variance for all projects closed in the fiscal year. Over the last three years, BC Hydro came within 4 per cent of total approved funding for completed technology projects.

As seen in the chart and table below, in fiscal 2018, the percentage of projects completed within the approved FFF was 91 per cent. By contrast, the Project Management Institute's Pulse of the Profession Report stated in its global project management survey that 57 per cent of projects are completed on budget.



Fiscal Year	No. of Initiatives completed	Percentage of Initiatives Completed within FFF Amount	Cumulative Initiative Cost ($ million)		Variance	
			[A] FFF Amount ($ million)	[B] Actual Final Cost ($ million)	[A – B] ($ million)	[(B – A) / A] (%)
2016	34	68	42.0	41.0	1.0 underspent	2.4 underspent
2017	37	81	59.6	61.1	(1.5) overspent	(2.5) overspent
2018	23	91	33.5	32.4	1.1 underspent	3.3 underspent

5.0 Reference: Exhibit B-1, page 2-4 and page 2-7

2.2.1 Definition Phase: Expected Cost Estimate

In the Phase One Application, BC Hydro's Mid-range Cost to the end of the Definition Phase was a total of $26.1 million. This included actual costs of $11.7 million for activities completed prior to filing the Application,[4] $11.4 million for direct future project costs, $2.3 million for contingency, and $0.8 million for interest during construction.

As of the end of August 2018, the Expected Cost to the end of the Definition Phase is now $25.4 million (row J). BC Hydro's actual recorded cost (including interest during construction) is $24.0 million and BC Hydro estimates the future project cost for the remaining Definition Phase activities at $1.4 million. The difference between the Definition Phase Expected Cost and the Definition Phase Mid-range cost in the Phase One Application is a positive variance of $0.7 million, comprised of a positive capital cost variance of $0.9 million and a negative operating cost variance of $0.2 million.

Table 2-2 Definition Phase: 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)
A	Supply Chain Transformation Blueprint (Early Design Costs)	7.3	7.3	-	-	7.3	7.3	0.0
B	Identification	-	-	1.2	1.2	1.2	1.2	0.0
C	Definition (Early Definition as of November 2016)	3.0	3.0	0.1	0.1	3.1	3.1	0.0
D	Definition (Early Definition post November 2016)	1.0	0.7	0.3	0.0	1.2	0.7	-0.6
E	Definition (Mobilization, Design & Implementation Planning)	9.4	9.7	0.8	1.4	10.2	11.0	0.9
F	**Total Life-to-Date Cost as of August 31, 2018 (A + B + C + D + E)**	**20.7**	**20.6**	**2.4**	**2.7**	**23.1**	**23.4**	**0.3**
G	Direct Future Costs to End of Definition	-	1.3	-	0.1	0.0	1.4	1.4
H	Contingency (% * Direct Future Costs to End of Definition)	2.1	0.0	0.2	0.0	2.3	0.0	-2.3
I	Interest During Construction	0.8	0.7	-	-	0.8	0.7	-0.1
J	**Total Expected (Mid-range) Cost Estimate to end of Definition (F + G + H + J)**	**23.5**	**22.6**	**2.6**	**2.8**	**26.1**	**25.4**	**-0.7**
K	Project Reserve - incremental contingency	1.9	0.0	0.2	0.0	2.0	0.0	-2.0
L	Project Reserve - reserve for known risks	4.2	0.0	-	0.0	4.2	0.0	-4.2
M	Incremental Interest During Construction on Project Reserve	0.1	0.0	-	0.0	0.1	0.0	-0.1
N	**Total Project Reserve (K + L + M)**	**6.1**	**0.0**	**0.2**	**0.0**	**6.3**	**0.0**	**-6.3**
O	**Total Authorized Cost Estimate to end of Definition (J + N)**	**29.7**	**22.6**	**2.8**	**2.8**	**32.4**	**25.4**	**-7.0**

Notes:

1. Minor differences attributable to rounding.
2. Contingency in Phase One Application was 20 per cent of Direct Future Costs of $10.3 million.
3. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

1.5.2 How does BC Hydro evaluate the validity of its cost estimating over the long term? Please explain.

1.5.2.1 Please provide the results of any assessment BC Hydro conducts in validating its cost estimating over the last five years.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.5.2.

6.0 Reference: Exhibit B-1, page 2-5 and 2-6 and Exhibit B-1, pages 2-9

2.2.2 Definition Phase: Authorized Cost Estimate

The Authorized Cost is the Expected Cost plus project reserve. A project reserve of $6.3 million was assigned to the Definition Phase in the Phase One Application. As discussed in section 2.2.1, the updated Definition Phase Expected Cost for the SCA Project is below the Mid-range cost. Therefore, the SCA Project will not be accessing the Definition Phase project reserve. BC Hydro has also not reserved any funds to mitigate unknown or known risks for the balance of the Definition Phase.

The forecast direct cost for the Implementation Phase is $37.9 million ($31.5 million capital cost and $6.4 million operating cost). This is $6.6 million higher than the forecast direct cost of $31.3 million ($27.9 million capital cost and $3.4 million operating cost) for the Implementation Phase included in the Phase One Application. As detailed in Table 2-3 below, the $6.6 million variance is due to an increase in the contract between BC Hydro and the System Integrator and in BC Hydro's internal costs, due to changes in the SCA Project's schedule and a need for additional resources dedicated to the SCA Project.

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

1.6.1 When BC Hydro does not use contingencies in the Definition Phase of a Project, does BC Hydro normally reduce its upper, mid or low cost estimates by the unused Project Reserve/contingency funds from the Definition Phase or do these normally carry over into later phases? Please explain.

RESPONSE:

Contingencies do not 'carry over' as the development of the Implementation Phase estimate is built bottom-up from the current Implementation Phase plans and is a separate exercise from the development of the Definition Phase estimate. The amount of the SCA Project's contingency and reserve are calculated for the Implementation Phase independent of the values that were calculated for the Definition Phase.

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.1 Please confirm or otherwise explain that PwC is the System Integrator and also the primary developer of the Verification Report information.

RESPONSE:

BC Hydro is the developer of the Verification Report. PwC is the System Integrator and as such provided supporting information used in developing the Verification

Report, such as detailed project implementation plans and resource forecasts. PwC also supported the development of the Benefits Update Report as discussed in Chapter 3 of the Verification Report.

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.2 Please provide details of the changes to the System Integrator Contract.

RESPONSE:

Please refer to BC Hydro's response to BCUC IR 1.5.1.1.

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.3 Please provide the original value of the System Integrator Contract.

RESPONSE:

The public version of this response has been redacted to maintain in confidence commercially sensitive information as public disclosure could impact the commercial interests of the System Integrator.

The fixed price cost estimates established in the Master Services Agreement with the System Integrator (executed December 15, 2017) are provided in the following table. The values are based on the fixed price cost estimates provided by the System Integrator in their best and final offer submission adjusted for inflation.

Work Package	Estimated Fee ($)
Mobilization (Definition)	[redacted]
Design and Implementation Planning (Definition)	[redacted]
Total Definition Phase - complete	[redacted]
Realization (Implementation)	[redacted]
Final Preparation (Implementation)	[redacted]
Stabilization (Implementation)	[redacted]
Total Implementation - future	[redacted]
Total Fees	[redacted]

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.4 Please provide the original value for BC Hydro's Internal cost.

RESPONSE:

The public version of this response has been redacted to maintain in confidence commercially sensitive information as public disclosure could impact the commercial interests of the System Integrator.

The value of the direct cost estimates for BC Hydro's internal costs from the Phase One Application are provided in the following table. The internal costs include all the direct costs not included in the System Integrator's contract.

Stage	Estimated Fee ($)
Supply Chain Transformation Blueprint (early design costs)	[redacted]
Identification Phase (Identification)	[redacted]
Early Definition (Definition)	[redacted]
Mobilization (Definition)	[redacted]
Design and Implementation Planning (Definition)	[redacted]
Total to the end of Definition Phase - complete	[redacted]
Realization (Implementation)	[redacted]
Final Preparation (Implementation)	[redacted]
Stabilization (Implementation)	[redacted]
Total Implementation - future	[redacted]
Total Fees	[redacted]

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.5 Please detail the 'increase in the complexity and understanding of the solution' that has led to an increase in the project schedule and required resources.

RESPONSE:

Please refer to BC Hydro's response to BCUC IR 1.5.3.

7.0 Reference: Exhibit B-1, pages 2-9 and 2-10

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

1.7.6 Would increases such as those to the System Integrator Contract and consequent increases have counted as part of the Project Reserve/contingencies under the Phase 1 application, or would these have been considered something different? Please explain.

RESPONSE:

Had the Phase One Application been for the full implementation of the SCA Project, the cost increases such as those to the System Integrator contract would have been covered through the use of the project contingency or reserve amounts. However, BC Hydro's standard is to estimate the Implementation Phase based on the updated information and detailed plans available at the end of the Definition Phase, and as such the cost increase is included in the updated estimate of the future direct costs. Contingency and reserve amounts do not carry over from the Definition Phase into the Implementation Phase, but are recalculated at the end of the Definition Phase based on the Definition Phase deliverables.

Please refer to BC Hydro's response to CEC IR 1.9.1 for discussion on BC Hydro's approach to establishing the contingency rate for the Phase One Application and for the Verification Report.

8.0 Reference: Exhibit B-1, page 2-12

> **2.3.2 Total SCA Project: Authorized Cost Estimate**
>
> The Authorized Cost of $79.3 million is the sum of the Expected Cost of $71.3 million and a revised project reserve of $8.0 million (Table 2-7, row AJ). The Authorized Cost is the same as the Upper Bound Cost in the Phase One Application.
>
> The project reserve provides for the potential cost risks to the SCA Project beyond that included in determining the Expected Cost. The project reserve has two components: 1) an additional reserve amount to mitigate cost impacts associated with two discrete known risks totaling $1.3 million (Table 2-7, row AG) and 2) an incremental contingency of $6.5 million (Table 2-7, row AH) to mitigate unknown risks. There is also incremental IDC on the project reserve of $0.2 million (Table 2-7, row AI). The project reserve is controlled by the Board of Directors, and not the project manager or project director. The SCA Project cannot access the project reserve without first obtaining approval from the Steering Committee, the President, and the Board of Directors. To secure the release of the project reserve, a formal expenditure authorization request revision is required. Furthermore, the portion of project reserve relating to known risks will only be accessible if those risks materialize.

1.8.1 What process will be followed if the project costs ultimately exceed the 'Authorized Cost'?

RESPONSE:

If the SCA Project costs are expected to exceed the Authorized Cost, a revised business case and Expenditure Authorization Request (EAR) will be prepared which will require approval from the Steering Committee, the President, and the Board of Directors before the costs are incurred. In addition, the Commission will be advised of possible project cost overrun information in proposed project progress reporting.

Please refer to BC Hydro's response to CEC IR 1.8.1.1 for further explanation regarding the process involving the Commission.

8.0 Reference: Exhibit B-1, page 2-12

> **2.3.2 Total SCA Project: Authorized Cost Estimate**
>
> The Authorized Cost of $79.3 million is the sum of the Expected Cost of $71.3 million and a revised project reserve of $8.0 million (Table 2-7, row AJ). The Authorized Cost is the same as the Upper Bound Cost in the Phase One Application.
>
> The project reserve provides for the potential cost risks to the SCA Project beyond that included in determining the Expected Cost. The project reserve has two components: 1) an additional reserve amount to mitigate cost impacts associated with two discrete known risks totaling $1.3 million (Table 2-7, row AG) and 2) an incremental contingency of $6.5 million (Table 2-7, row AH) to mitigate unknown risks. There is also incremental IDC on the project reserve of $0.2 million (Table 2-7, row AI). The project reserve is controlled by the Board of Directors, and not the project manager or project director. The SCA Project cannot access the project reserve without first obtaining approval from the Steering Committee, the President, and the Board of Directors. To secure the release of the project reserve, a formal expenditure authorization request revision is required. Furthermore, the portion of project reserve relating to known risks will only be accessible if those risks materialize.

1.8.1 What process will be followed if the project costs ultimately exceed the 'Authorized Cost'?

1.8.1.1 Under what circumstances would the Commission be advised of the potential for a cost-overrun, and what options are open to the Commission in such an event?

RESPONSE:

The Commission will be advised of a possible project cost over-run in the proposed project progress reporting. Section 1.5.3 of the Verification Report sets out BC Hydro's proposed semi-annual progress reporting schedule that will include updates on SCA Project's scope, schedule, cost, benefits, risks, and will

include a discussion on material variances. BC Hydro is also proposing to file the Final Completion Report three months after Board of Directors approval.

In the event the SCA Project is forecast to exceed its Authorized Cost, the Commission could request further information on project cost over-runs as it reviews the semi-annual progress reports. When the SCA Project is brought into service, and the final costs are known, the Commission could investigate the SCA Project's final costs and consider a prudency review.

9.0 Reference: Exhibit B-1, page 2-15

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 2-1)	6.9	5.4	0.8	1.1	7.7	6.5	-1.2
AI	Incremental Interest During Construction on project reserve	5.2	1.3	0.0	0.0	5.2	1.3	-3.9
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

Supply Chain Applications Project
Phase Two Verification Report

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Notes:
1. Minor differences attributable to rounding.
2. Contingency in Phase One Application was 20 per cent of Direct Future Costs of $42.7 million. Contingency in the Verification Report is 15 per cent of Direct Future Costs of $37.9 million.
3. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

1.9.1 Please provide the rationale for reducing the contingency from 20% of Direct Future Costs to 15% of Direct Future Costs.

RESPONSE:

BC Hydro reduced contingency from 20 per cent to 15 per cent of future direct costs because the scope of the SCA Project is more clearly defined, and the implementation plans were more fully developed. This resulted in a higher percentage of project activities being defined within the SCA Project's direct costs and a lower percentage being covered by contingency.

9.0 Reference: Exhibit B-1, page 2-15

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 2-1)	6.9	5.4	0.8	1.1	7.7	6.5	-1.2
AI	Incremental Interest During Construction on project reserve	5.2	1.3	0.0	0.0	5.2	1.3	-3.9
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

Supply Chain Applications Project
Phase Two Verification Report

Page 2-15

Notes:
1. Minor differences attributable to rounding.
2. Contingency in Phase One Application was 20 per cent of Direct Future Costs of $42.7 million. Contingency in the Verification Report is 15 per cent of Direct Future Costs of $37.9 million.
3. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

1.9.2 What percentage of Direct Future Costs or equivalent does BC Hydro normally assign for contingency, and how does this change over the course of a project?

RESPONSE:

BC Hydro's standard practice for technology projects assign a contingency of 15 per cent to each project phase subject to an adjustment based on project risk.

The adjusted percent contingency assigned at each phase depends on the overall complexity and risk assessment of the project, with projects assessed as high risk typically assigned higher contingency rates.

10.0 Reference: Exhibit B-1, page 2-17

2.4 Other SCA Project Costs

In addition to the costs described above, the SCA Project is anticipated to incur incremental annual operating and capital costs of between $2.3 million and $3.4 million[9] to provide ongoing business support and sustainment. This amount includes costs not reflected in the Phase One Application, such as ongoing Supply Chain business unit support and sustainment costs, including headcount reduction costs. The Phase One Application had ongoing IT-only support and sustainment costs of between $1.8 million to $2.9 million.

As these costs are ongoing costs following the project being placed in service, they are not included in Table 2-2 or Table 2-6. However, consistent with the Phase One Application, these costs have been incorporated into the net present value of discounted cash flow and revenue requirements described in section 3.4 and provided in Appendices F and J.

The SCA Project will result in the impairment of the remaining PassPort supply chain IT asset. The net book value of the three supply chain-related PassPort IT assets as of August 2018 is approximately $0.7 million. In accordance with International Financial Reporting Standards[10], BC Hydro will accelerate depreciation[11] of the remaining supply chain PassPort IT system costs in the Implementation Phase and will fully depreciate the asset by the in-service date of the project.

[9] Figures are in nominal dollars.
[10] International Accounting Standard 36, Paragraph 58 states the asset shall be adjusted in future periods to allocate the asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life."
[11] Under current depreciation rates, the net book value of the Passport supply chain-related IT assets will be $0.3 million by the committed in-service date (March 2020). Therefore, BC Hydro will accelerate the depreciation rate such that at the committed in-service date the assets will be fully depreciated. The accelerated depreciation of the remaining Passport supply chain-related IT assets has not been included in the revenue requirement impact analysis as it is not a material amount.

1.10.1 Is the $2.3 million to $3.3 million in incremental annual operating costs in excess of the $1.8 million to $2.9 million in anticipated IT support, or is the Phase 1 identified IT operating support included in the incremental costs of $2.3-$3.3 million? Please explain.

RESPONSE:

The Phase One identified IT ongoing operating support and sustainment costs are included in the $2.3 million to $3.4 million incremental annual operating and capital costs.

Please refer to BC Hydro's response to BCUC IR 1.9.1.2.

10.0 Reference: Exhibit B-1, page 2-17

2.4 Other SCA Project Costs

In addition to the costs described above, the SCA Project is anticipated to incur incremental annual operating and capital costs of between $2.3 million and $3.4 million[9] to provide ongoing business support and sustainment. This amount includes costs not reflected in the Phase One Application, such as ongoing Supply Chain business unit support and sustainment costs, including headcount reduction costs. The Phase One Application had ongoing IT-only support and sustainment costs of between $1.8 million to $2.9 million.

As these costs are ongoing costs following the project being placed in service, they are not included in Table 2-2 or Table 2-6. However, consistent with the Phase One Application, these costs have been incorporated into the net present value of discounted cash flow and revenue requirements described in section 3.4 and provided in Appendices F and J.

The SCA Project will result in the impairment of the remaining PassPort supply chain IT asset. The net book value of the three supply chain-related PassPort IT assets as of August 2018 is approximately $0.7 million. In accordance with International Financial Reporting Standards[10], BC Hydro will accelerate depreciation[11] of the remaining supply chain PassPort IT system costs in the Implementation Phase and will fully depreciate the asset by the in-service date of the project.

[9] Figures are in nominal dollars.
[10] International Accounting Standard 36, Paragraph 58 states the asset shall be adjusted in future periods to allocate the asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life."
[11] Under current depreciation rates, the net book value of the Passport supply chain-related IT assets will be $0.3 million by the committed in-service date (March 2020). Therefore, BC Hydro will accelerate the depreciation rate such that at the committed in-service date the assets will be fully depreciated. The accelerated depreciation of the remaining Passport supply chain-related IT assets has not been included in the revenue requirement impact analysis as it is not a material amount.

1.10.2 Is the FRS standard for accelerated depreciation of IT assets under these circumstances mandatory or is there flexibility? Please explain.

RESPONSE:

The accelerated depreciation is mandatory. As stated in paragraph 104 of the International Accounting Standard 38 (Intangible Assets), at each fiscal year end, intangible assets must be evaluated. If the useful life has changed, the intangible asset must be amortised accordingly.

10.0 Reference: Exhibit B-1, page 2-17

2.4 Other SCA Project Costs

In addition to the costs described above, the SCA Project is anticipated to incur incremental annual operating and capital costs of between $2.3 million and $3.4 million[9] to provide ongoing business support and sustainment. This amount includes costs not reflected in the Phase One Application, such as ongoing Supply Chain business unit support and sustainment costs, including headcount reduction costs. The Phase One Application had ongoing IT-only support and sustainment costs of between $1.8 million to $2.9 million.

As these costs are ongoing costs following the project being placed in service, they are not included in Table 2-2 or Table 2-6. However, consistent with the Phase One Application, these costs have been incorporated into the net present value of discounted cash flow and revenue requirements described in section 3.4 and provided in Appendices F and J.

The SCA Project will result in the impairment of the remaining PassPort supply chain IT asset. The net book value of the three supply chain-related PassPort IT assets as of August 2018 is approximately $0.7 million. In accordance with International Financial Reporting Standards[10], BC Hydro will accelerate depreciation[11] of the remaining supply chain PassPort IT system costs in the Implementation Phase and will fully depreciate the asset by the in-service date of the project.

[9] Figures are in nominal dollars.
[10] International Accounting Standard 36, Paragraph 58 states the asset shall be adjusted in future periods to allocate the asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life."
[11] Under current depreciation rates, the net book value of the Passport supply chain-related IT assets will be $0.3 million by the committed in-service date (March 2020). Therefore, BC Hydro will accelerate the depreciation rate such that at the committed in-service date the assets will be fully depreciated. The accelerated depreciation of the remaining Passport supply chain-related IT assets has not been included in the revenue requirement impact analysis as it is not a material amount.

1.10.3 If there is flexibility, please explain why BC Hydro opted for accelerated depreciation.

RESPONSE:

As stated in BC Hydro's response to CEC IR 1.10.2, there is no flexibility.

11.0 Reference: Exhibit B-1, page 3-1 and Appendix G, page 5 of 10

BC Hydro and PricewaterhouseCoopers (**PwC**) have worked together over the Definition Phase to validate and refine the analysis of the discrete benefits flowing from the SCA Project and the expected quantifiable benefits that will result. The updated analysis incorporates a distinction between benefits that can be quantified and benefits that can be monetized (i.e., expected incremental reductions in BC Hydro's revenue requirements, all else being equal). Based on PwC's advice, the analysis recognizes that benefits that save a small increment of time of many individuals across the organization are unlikely to be monetized, even though they can be quantified in dollar terms and represent a value to the organization.

Based on the Definition Phase work, the annual recurring quantifiable benefits of the SCA Project at stabilization are expected to be $34.8 million, with $23.0 million of this amount monetized. This compares to BC Hydro's mid-range estimate in the Phase One Application of $26.2 million in annual benefits that can be quantified and realized.

Annual value of benefits (Phase 1 Filing)

	Phase 1 Filing (Low Case)	Phase 1 Filing (Mid Case)	Phase 1 Filing (High Case)
Cost	$6.9 M	$11.4 M	$13.7 M
Effort	$8.8 M	$14.7 M	$17.7 M
Risk	$0.0 M	$0.0 M	$0.0 M
Total	**$15.7 M**	**$26.2 M**	**$31.4 M**

Figure 2: Summary of Low/Mid/High Case Projections from Phase 1 Filing

Annual value of benefits (Phase 2 Filing)

	Phase 2 Filing
Expected Monetized Benefit	$23.0 M
Non-Monetized Benefit	$11.8 M
Risk (Non-Quantified)	$0.0 M
Expected Quantified Benefit Total	**$34.8 M**

Figure 3: Summary of benefit estimates for Phase 2 Filing

1.11.1 Why did BC Hydro not recognize that benefits that 'save a small increment of time of many individuals' is unlikely to be monetized in its Phase 1 report?

RESPONSE:

In the Phase One Application, BC Hydro had assumed that the discounting of the benefits (i.e., 30, 50 and 60 per cent realization rate scenarios) would be sufficient to compensate for the challenges in monetizing small increments of time across many individuals. However, based on PwC's advice during the benefits review process, BC Hydro recognizes that this will be more challenging than initially thought; therefore BC Hydro is not including all effort benefits in its Expected Monetized Benefits.

11.0 Reference: Exhibit B-1, page 3-1 and Appendix G, page 5 of 10

BC Hydro and PricewaterhouseCoopers (**PwC**) have worked together over the Definition Phase to validate and refine the analysis of the discrete benefits flowing from the SCA Project and the expected quantifiable benefits that will result. The updated analysis incorporates a distinction between benefits that can be quantified and benefits that can be monetized (i.e., expected incremental reductions in BC Hydro's revenue requirements, all else being equal). Based on PwC's advice, the analysis recognizes that benefits that save a small increment of time of many individuals across the organization are unlikely to be monetized, even though they can be quantified in dollar terms and represent a value to the organization.

Based on the Definition Phase work, the annual recurring quantifiable benefits of the SCA Project at stabilization are expected to be $34.8 million, with $23.0 million of this amount monetized. This compares to BC Hydro's mid-range estimate in the Phase One Application of $26.2 million in annual benefits that can be quantified and realized.

Annual value of benefits (Phase 1 Filing)

	Phase 1 Filing (Low Case)	Phase 1 Filing (Mid Case)	Phase 1 Filing (High Case)
Cost	$6.9 M	$11.4 M	$13.7 M
Effort	$8.8 M	$14.7 M	$17.7 M
Risk	$0.0 M	$0.0 M	$0.0 M
Total	**$15.7 M**	**$26.2 M**	**$31.4 M**

Figure 2: Summary of Low/Mid/High Case Projections from Phase 1 Filing

Annual value of benefits (Phase 2 Filing)

	Phase 2 Filing
Expected Monetized Benefit	$23.0 M
Non-Monetized Benefit	$11.8 M
Risk (Non-Quantified)	$0.0 M
Expected Quantified Benefit Total	**$34.8 M**

Figure 3: Summary of benefit estimates for Phase 2 Filing

1.11.2 Please confirm or otherwise explain that the Phase 1 report with $26.2 million of annual benefits quantified and realized assumed that all the benefits were able to be 'monetized'.

RESPONSE:

The Phase One Mid Scenario benefit value of $26.2 million assumed that all the benefits would be able to be monetized. However, BC Hydro did include a range of benefit values to account for uncertainties. The Phase One Low Scenario benefit value of $15.7 million was used in BC Hydro's NPV of discounted cash flow and revenue requirements scenario analyses.

12.0 Reference: Exhibit B-2, page 3-7

Table 3-2 Changes to Identified Benefits

Benefit ID	Benefit Name	Change	Category (Cost/ Effort/ Risk)
92	Reduced spend due to systematic communication of change in the demand	New	Cost
102	Improved visibility of excess project material	New	Cost
103	Improved reel return management	New	Cost
104	Reduction in inventory obsolescence write-offs	New	Cost
60	Reduction of expedited purchasing on non-stock material	Removed	Cost
66	Reduced cost to compile spend reports	Removed	Effort
93	Inventory process effort reduction	New	Effort
94	Reduction of efforts to process manual POs	New	Effort
96	Reduction of effort to process manual change requests	New	Effort
97	Reduced effort for scheduler via improved material visibility	New	Effort
100	Reduced effort with system blocks on closing charge codes with open orders	New	Effort
105	Reduction in project forecasting effort	New	Effort
13	Reduced effort by streamlining demand management on long-lead time items	Removed	Effort
15	Effort reduction through automated inventory level management	Removed	Effort
23	Reduced effort via evaluated receipt settlement (ERS)	Removed	Effort
35	Reduced effort via centralized kitting	Removed	Effort
44	Reduced effort to execute material return from projects	Removed	Effort
56	Eliminate maintenance of duplicate work orders in PassPort	Removed	Effort
98	Reduced risk of receiving and paying for non-compliant material	New	Risk

1.12.1 Please provide a column indicating the value of each New and Removed Benefit.

RESPONSE:

Please refer to the excel version of the requested revised Table 3-2 (Table 3-2A) in Tab B2 of the updated Appendix F filed under separate cover (Exhibit B-1-2). Table 3-2A provides a column indicating the value of each new and removed benefit.

13.0 Reference: Exhibit B-1, page 3-7 and 3-8

> **3.2.3 Expected Quantified Benefits**
>
> PwC worked with BC Hydro to validate and refine the quantification of the benefits. The quantified benefits in the Verification Report equals a maximum potential benefit forecast of $64.4 million annually, assuming a 100 per cent realization rate. This has resulted in an increase in the benefits forecast of $12 million annually from the
>
> maximum potential benefit forecast in the Phase One Application of $52.4 million annually.
>
> In the Phase One Application, for its base (mid-range) case, BC Hydro assumed that 50 per cent of the identified quantifiable benefits will be realized ($26.2 million annually). For the Verification Report, for each quantified discrete benefit, a realization ratio from 50 per cent to 100 per cent was assigned based on the design work and increased confidence in the ability to achieve the benefits. Overall, the effective weighted realization ratio is now approximately 54 per cent for the Phase Two base case. The overall increase in the value of the quantified benefits and the change in the effective weighted realization ratio have resulted in expected quantified benefits (**Expected Benefits**) of $34.8 million.

1.13.1 Please provide details of the process by which the 'realization ratios' were developed and by whom these were done.

RESPONSE:

The realization ratios were developed jointly by BC Hydro and PwC based on knowledge of the SCA Project's design and how it would support the realization of the specific benefit, as well as known challenges, unique factors, or data unavailability that could have an impact on the ability to realize the benefit.

14.0 Reference: Exhibit B-1, page 3-8 and 3-10 and Appendix G page 5 of 10

The following assumptions were also used in the analysis:

(i) Based on a more refined analysis, BC Hydro has estimated that an average of 65 per cent of cost reduction benefits will be attributable to capital activities, with the remaining average of 35 per cent being attributable to operating and financing activities. In the Phase One Application 76 per cent of cost benefits were attributed to capital activities and 24 per cent to operating activities, based on an analysis of historical spend information. Benefits relating to financing activities were not included in this capital/operating allocation.

Based on the projected allocation of effort reduction impacts to specific parts of the organization as a result of the Design work done to date, an average of 65 per cent of effort reduction benefits are attributable to capital activities and 35 per cent to operating activities. In the Phase One Application, the allocation of effort reduction benefits was assumed to be 40 per cent capital and 60 per cent operating, based on the portion of BC Hydro's total labour costs incurred for capital versus operating activities;

Table 3-3 Phase Two Annual Expected Benefits versus Phase One Annual Mid Benefits Scenario at Full Ramp Up ($ million)[1]

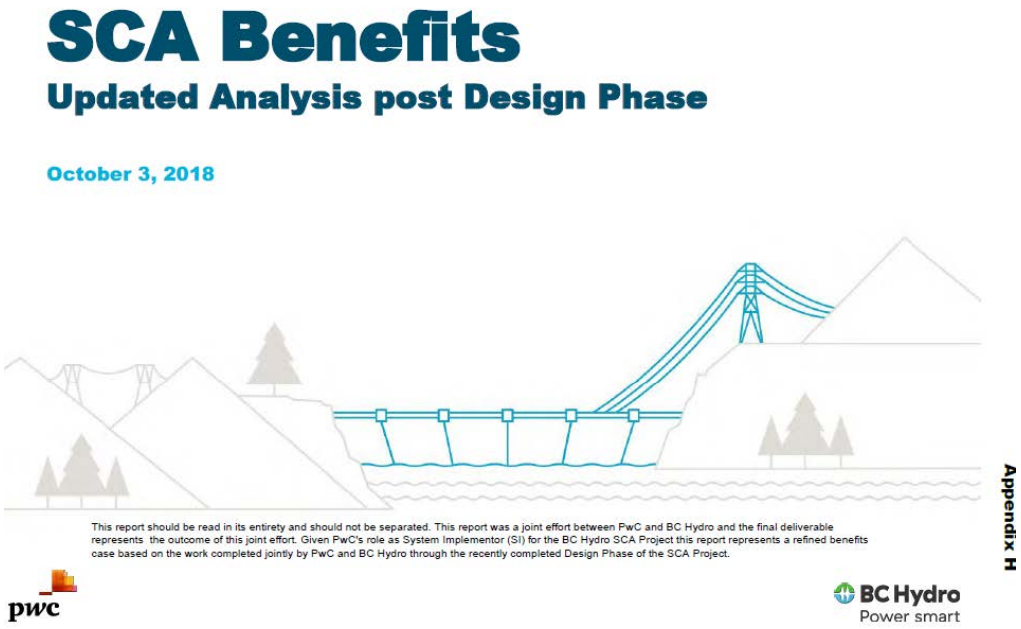
Capability Gap	Phase One Mid Scenario Benefits (A)	Verification Report Expected Benefits (B)	Variance (B - A)
1 - Inability to manage service related spend	12.04	10.85	-1.18
2 - Poor contract management	5.98	16.29	10.30
3 - Limited ability to manage inventory levels	6.04	3.55	-2.49
4 - Poor management of individual supplier performance	0.20	0.00	-0.20
5 - Limited ability to manage supply chain for capital projects	0.00	1.12	1.12
6 - Lack of order, delivery and payment tracking	0.10	0.09	-0.01
7 - Inability to support return of unused materials	0.07	0.82	0.75
8 - Inability to pre-assemble materials for field crews	0.39	0.00	-0.39
9 - Lack of mobile access to inventory information	0.00	0.00	0.00
10 - No self-serve option for routine service requests	0.62	1.33	0.72
11 - Inability to pay suppliers without an invoice	0.06	0.00	-0.06
12 - Inability to streamline controls and approvals process	0.02	0.29	0.27
13 - Inability to integrate with work management systems	0.68	0.43	-0.24
Total	**26.17**	**34.77**	**8.59**

1.14.1 Please provide a column in Table 3-3 with the total cost reduction benefits broken down by capital activities, operating and financing activities from both the Phase 1 application and the Verification Report, so that the information is available for each capability gap.

RESPONSE:

Please refer to the excel version of the requested revised Table 3-3 (Table 3-3B) in Tab B2 of the updated Appendix F filed under separate cover (Exhibit B-1-2). Table 3-3A shows the total cost reduction benefits broken down by capital activities, operating activities, and financing activities from both the Phase One Application and the Verification Report.

15.0 Reference: Exhibit B-1, Appendix H, page 1 of 87



1.15.1 Does BC Hydro agree that PwC has a vested interest in the outcome of the Verification Report and the approval for BC Hydro to proceed with the project? Please explain why or why not.

RESPONSE:

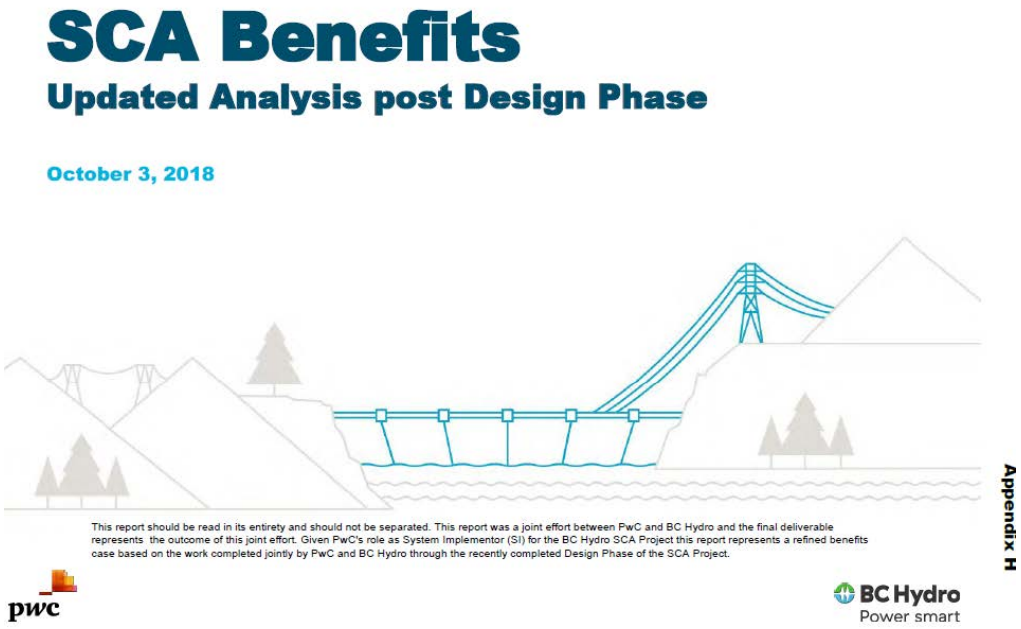
BC Hydro believes that PwC has an interest in the outcome of the Verification Report and BC Hydro proceeding with the SCA Project. Successful implementation of the SCA Project is important to the reputation of PwC.

BC Hydro relied on PwC having a standard level of professional integrity, quality assurance and ethical standards, as with any other professional services firm. In addition to add oversight to the quality of the Verification Report BC Hydro asked KPMG (the SCA Project's Quality Assurance Advisors) to review the benefits and review methodology. KPMG observed that "the SCA Project followed a suitable approach for identifying and validating benefits". KPMG's detailed observations and conclusions on the benefit assessment are included on pages 30-31 of their

Design Review Report, which is included as Appendix K-1 to the Verification Report.

BC Hydro did not employ an independent firm to conduct the benefits review for the Verification Report due to schedule and cost considerations. While the benefits review team from PwC was comprised of separate individuals from the PwC System Integrator project team, they were able to share benchmarking information, proprietary research and knowledge of the supply chain applications system design more efficiently than had a separate firm of consultants been used for this exercise.

15.0 Reference: Exhibit B-1, Appendix H, page 1 of 87



SCA Benefits

Updated Analysis post Design Phase

October 3, 2018

This report should be read in its entirety and should not be separated. This report was a joint effort between PwC and BC Hydro and the final deliverable represents the outcome of this joint effort. Given PwC's role as System Implementor (SI) for the BC Hydro SCA Project this report represents a refined benefits case based on the work completed jointly by PwC and BC Hydro through the recently completed Design Phase of the SCA Project.

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Appendix H

1.15.2 If yes, why did BC Hydro not employ an independent firm to conduct the Verification Report? Please explain.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.15.1.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.1 What additional information is required to ensure that BC Hydro only contracts with qualified suppliers?

RESPONSE:

In the Phase One proceeding, BC Hydro in its response to BCUC IR 1.2.1, explained that the Safety Risk relates to the risk that a vendor contracted to perform a certain type of work is subsequently awarded additional work that is a different type of work from what they were originally contracted to perform. The risk is not about verification of qualifications at the time of entering into a contract with a vendor, but rather about inadvertently assigning subsequent work to that vendor that they are not qualified to perform. The risk exists due to limited information about the contract being readily available in BC Hydro's current system. The Phase Two Risk Update column in Table 3-5 in the Verification Report explains how this risk will be mitigated with the supply chain applications solution.

BC Hydro has filed as Attachment 1 to this information request its response to BCUC IR 1.2.1 in the Phase One proceeding for reference.

British Columbia Utilities Commission Information Request No. **1.2.1** Dated: **February 6, 2017** British Columbia Hydro & Power Authority Response issued **March 2, 2017**	Page 1 of 4
British Columbia Hydro & Power Authority **Supply Chain Applications Project Application**	**Exhibit:** **B-3**

2.0 Topic: A. PROJECT JUSTIFICATION

Reference: CURRENT SUPPLY CHAIN
Exhibit B-1, Section 2.5.3, p. 2-28
Non-monetized risk benefits

On page 2-28 of the Application, BC Hydro states that as a result of its benefits analysis process it has identified a number of risks present within the current supply chain that will be either reduced or eliminated as a result of closing the capability gaps through the implementation of the Supply Chain Applications Project (SCA Project); and the risks identified have the potential to impact BC Hydro from a safety, financial, reputational, and reliability perspective with further details provided in Table 2-9.

1.2.1 For each of the identified risks categories listed above (and in Table 2-9), please provide BC Hydro's best available estimate (using qualitative assessment techniques if necessary) of the likely consequences (provide a dollar amount when appropriate) if the risks materialize and the probability of occurrence with and without the implementation of the SCA Project. Please include the basis of or confidence in the estimates. If beneficial, a different break down of the risks may be substituted.

RESPONSE:

BC Hydro acknowledges the request to provide an estimate of likely consequences, with dollar amounts when appropriate, if the risks were to materialize. However, as stated on page 2-25 of the Application, these risks are associated with reducing overall risk in the supply chain and cannot be specifically tied to dollars. Additionally, as stated on page 2-28, while the reduced risk is expected to result in the potential for avoided or reduced cost, there is insufficient information available to determine an economic benefit associated with the reduced risk. BC Hydro is unable to quantify the probability of occurrence and likely consequence (or equivalent financial impact) of these risks. This is due to the nature of the risks and BC Hydro's current capability gap in its ability to report on analytical supply chain information (as outlined in section 2.3 of the Application). Despite the challenges in quantifying the consequences of the risks, the project's ability to mitigate these risks is an important and relevant part of the project's justification, particularly given the number and breadth of the risks.

BC Hydro has produced the table below for the sole purpose of responding to this information request. The table expands upon Table 2-9 in the Application, by providing additional examples for each risk category, as well as a qualitative estimate of the likelihood and consequences of these risks materializing, both before and after the Supply Chain Applications project. BC Hydro has applied significant judgment in preparing the table, and does not believe the Commission should infer any operational outcome from the content of this table.

For each risk category, there is a broad range of potential likelihood and consequence combinations and the table only provides some potential examples.

While the Supply Chain Applications Project is expected to reduce the likelihood of these risks, in general the consequences of these risks materializing is expected to be unchanged as a result of the project.

The evaluation of likelihood is assessed as follows: Low likelihood represents potentially a single annual occurrence; moderate likelihood represents potentially multiple annual occurrences; and high likelihood represents regular, frequently repeated occurrences.

Consequence severity, or impact, is assessed as follows: Low represents a minor impact of limited financial consequence, limited complaints by shareholder or a minor impact on reliability. Moderate represents impact ranges from financial impacts that are substantial, customer groups impacted or significant (but mitigatable) reliability impacts. High represents financial impacts that are high, reputational impacts that are broad and involve loss of trust and reliability issues that required a reduction in BC Hydro's supply.

Risk Category & Description from Table 2-9	Likelihood & Impact		Qualitative Discussion
	Today	After SCA	
Safety The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	Moderate likelihood, low to high impact	Low likelihood, low to high impact	This risk broadly considers various qualifications for vendors, which could include safety certifications, technical qualifications, and past-performance. For example, a vendor could be contracted to perform a certain type of work which does not require safety certifications or specific technical qualifications, and then because they are already on contract, they could be assigned additional work which does require safety certifications or specific technical qualifications. While this would be of low to moderate likelihood, potential consequences could range from a near miss (low) to fatality (high). A vendor may have performed poorly in the past, and that feedback may not be known by those initiating and managing subsequent contracts. For example, a contractor consistently does not demonstrate an understanding of the hazards for a work zone and consequently does not establish proper procedures for proceeding safely with their work. This would be of low to moderate likelihood, but could have low to high consequence for the contractor's team and for BC Hydro team members.

British Columbia Utilities Commission Information Request No. **1.2.1** Dated: **February 6, 2017** British Columbia Hydro & Power Authority Response issued **March 2, 2017**	Page 3 of 4
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Risk Category & Description from Table 2-9	**Likelihood & Impact**		**Qualitative Discussion**
	Today	**After SCA**	
Financial Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)	Examples of Financial risks are as follows: BC Hydro has in some cases negotiated contracts with volume based discounts. The system does not track these volumes and automatically apply the discount. Therefore, there is a risk that the discounts will not be applied and BC Hydro will pay more than it should for the goods or services. Lack of visibility of work or project related supply chain demand (i.e. work is not planned in the system such that it is visible to supply chain) results in a risk that requests for materials or services are made with only a short lead time. Consequences of requesting materials or services with short lead times could include higher pricing for services or for rush manufacture or delivery of materials, an inability to take advantage of natural market fluctuations that affect certain commodities. Another consequence is that supply chain may carry higher inventory than is actually necessary to support the work or projects underway. Ultimately, work may need to be deferred if the required materials or services are not available in time. When materials and services are purchased together on the same Contract Order, there are no automated controls linking the receipt of the goods or services to the Contract Order. Instead invoice approval relies on a manual process where the approver is accountable for guaranteeing acceptance of the work. This process can be labour intensive and prone to error, and there is a low to moderate risk of invoices being approved for payment without the materials or services having been received, or at higher prices than the underlying Contract Order.

British Columbia Utilities Commission Information Request No. **1.2.1** Dated: **February 6, 2017** British Columbia Hydro & Power Authority Response issued **March 2, 2017**	Page 4 of 4
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Risk Category & Description from Table 2-9	Likelihood & Impact		Qualitative Discussion
	Today	**After SCA**	
Reputational Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact	The risks in this area have consequences that include complaints by other companies, or customer groups that are critical of BC Hydro, both of which could lead to adverse publicity and loss of confidence in BC Hydro. For example: There is a moderate risk that BC Hydro is unable to provide accurate financial reporting on services. The consequence of this is that we are unable to disclose the value spent on specific services, potentially leading to a perception of poor management and lack of reliability in our financial reporting in general. There is a low - moderate risk that BC Hydro conducts a procurement event without accurate knowledge of past spending, which could impact the procurement process as well as the subsequent contract. If a contract is put in place that does not accurately reflect BC Hydro's requirement, this could impact the organization's reputation with the vendor as well as the other vendors that competed for the work.
Reliability When materials and or services of low quality are introduced into the system it can impact reliability. The current supply chain system cannot automatically trigger a quality inspection for all materials that should be inspected. Reliance on manual tracking of quality inspection requirements increases the risk that poor quality items are accepted by BC Hydro and introduced into the system.	Moderate likelihood, low to moderate impact	Low to moderate likelihood, low to moderate impact	Moderate risks associated with material quality today can be lowered by linking material acceptance to quality inspections as part of the Supply Chain Applications Project. Two examples to support this include: 1. Today there is no ability to systematically associate single or multiple material quality inspections of equipment with partial acceptance and payment, as is commonly experienced in supply and install contracts. There is low to moderate risk of paying for achievement of milestones related to manufacture, delivery or installation without verifying quality. 2. Similarly, the inspection process for routine material supply contracts is highly manual, and there are low to moderate risks that materials are accepted without there having been sufficient quality checks completed. The consequences in this case are typically low.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.2 Why can BC Hydro not simply require vendors to document their qualifications with their bids?

RESPONSE:

BC Hydro does require vendor to document their qualifications with their bids. As explained in BC Hydro's response to CEC IR 1.16.1, this risk relates to subsequent assignment of work to a vendor who is already on contract to perform a different type of work than that which is being subsequently assigned.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.3 How often has BC Hydro contracted with non-qualified suppliers in the past five years? Please provide the frequency and the value of the contracts.

RESPONSE:

As explained in BC Hydro's response to CEC IR 1.16.1, this risk is not about contracting with non-qualified vendors, but rather the subsequent assignment of work to a contracted vendor, for which that vendor is not qualified. BC Hydro is unable to provide the frequency and value of contracts where it assigned work to vendors who are not qualified to perform those services. This is due to BC Hydro's current capability gap in its ability to report on analytical supply chain information.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.4 Please provide the process by which the Verification Report was able to verify and/or update the change in likelihood and impact for the Safety risk.

RESPONSE:

In the Verification Report, BC Hydro has updated the likelihood of occurrence of the Safety risk (as well as Financial, Reputational, and Reliability Risks). BC Hydro has not updated the impact of these risks. As explained in BC Hydro's response to BCUC IR 1.2.1 in the Phase One proceeding, "While the Supply Chain Applications Project is expected to reduce the likelihood of these risks, in general the consequences of these risks materializing is expected to be unchanged as a result of the project".

The process by which the change in likelihood was determined was to review the SCA design and identify the elements of SCA design and basic SAP functionality which are expected to mitigate the risk. These elements of the SCA design and SAP functionality, and how they are expected to help mitigate the risk are summarized in the Phase Two Risk Update column of Table 3-5.

Please also refer to Attachment 1 to BC Hydro's response CEC IR 1.16.1 for a discussion of the categorization of likelihood into low, moderate or high categories, and the significant judgement required to be applied to this categorization.

Despite the subjectivity of low, moderate or high categorizations, Table 3-5 clearly illustrates that the likelihood of Safety, Financial, Reputational and Reliability Risks will be lower relative to current levels, as a result of the SCA project.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.5 How does BC Hydro currently track whether or not it 'overpays' for goods and services or pays for goods and services that are not received? Please provide BC Hydro's five year history.

RESPONSE:

Please refer to Attachment 1 of BC Hydro's response to CEC IR 1.16.1 for a discussion and examples of potential overpayment for goods and services or for goods and services that are not received.

Because BC Hydro does not currently have automated controls or reporting to monitor or prevent overpayments or payment for goods and services that are not received, BC Hydro relies on manual processes for invoice approval where the approver is accountable for ensuring acceptance of the work. This process can be labour intensive and prone to error, and there is a risk of invoices being approved for payment without the materials or services having been received, or at higher prices than the underlying Contract Order.

The exception to the above is for inventory materials ordered on Purchase Orders where BC Hydro's current system has an automated control for a three-way match between the invoice, goods receipt and underlying Purchase Order.

BC Hydro is unable to provide the history of overpayment or payment for goods and services that are not received due to BC Hydro's current capability gap in its ability to report on analytical supply chain information.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.6 Please provide the process by which the Verification Report was able to verify and/or update the change in likelihood and impact for the financial risk.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.16.4.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.7 How often does BC Hydro currently pay for non-compliant material? Please provide BC Hydro's history of receiving and paying for non-compliant material over the last five years including the value and frequency of such events.

RESPONSE:

BC Hydro is unable to provide the history of paying for non-compliant material or quantify the value and frequency of such events. This is due to BC Hydro's current capability gap in its ability to report on analytical supply chain information. Currently, there is high dependency on manual efforts to ensure quality assurance requirements for materials are identified. There is no systematic control to stop payment for material that does not clear required quality assurance inspection.

The reduced risk of receiving and paying for non-compliant material is a new benefit identified during the Design Stage of the SCA Project. Additional details of this benefit are provided on row 98 in Tab F1 in Appendix F filed as an attachment to the Verification Report. Consistent with other risk reduction benefits, this is a non-quantified benefit.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.8 Please provide examples of the specific goods and services for which BC Hydro is not able to report on the spending.

RESPONSE:

Please refer to Attachment 1 to BC Hydro's response to CEC IR 1.16.1 for a discussion and examples of goods and services for which BC Hydro is not able to report on the spending.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.9 Please provide the process by which the Verification Report was able to verify and/or update the change in likelihood and impact for the Reputational risk.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.16.4.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.10 Please discuss why being able to report on the spending for such goods and services is necessary for the future, when it has not been required in the past.

RESPONSE:

The ability to report on spending for different types of goods and services has been required in the past. Please refer to Attachment 1 of BC Hydro's response to CEC IR 1.16.1.

As stated in the Phase One proceeding in BC Hydro's response to CEC IR 1.12.1, the Corporate Risk Guidelines lists "loss of trust leading to strategic change imposed by regulator and/or shareholder" as one of the more severe impacts of a reputational risk materializing. In this context, not being able to provide responses to information requests can lead to a loss of trust by the regulator. A loss of trust may lead to increases in regulatory costs from longer regulatory processes or ad-hoc inquiries into the activities of the company, or costs from making organizational changes due to changes imposed by the regulator or shareholder.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.11 Please elaborate on why the reliance on manual tracking of quality inspection items increases the risk that poor-quality items are accepted by BC Hydro.

RESPONSE:

Inherently, reliance on manual processes is more prone to error than relying on automated controls. If goods requiring quality inspection are not automatically flagged as such, despite the existence of manual processes to track quality inspection requirements, there is a risk that these items will not be inspected and any potential quality issues not identified and addressed.

Please refer to Attachment 1 to BC Hydro's response to CEC IR 1.16.1 for a discussion and examples of risk related to the current manual tracking of quality inspection requirements.

Another example is project material that is purchased without a catalogue ID. Any required inspection of these materials currently has to be manually tracked as there is no system visibility for the inspection requirement.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.	SAP functionality includes service masters and outline agreements, which allows for the creation of standardized service contracts, and the creation of Purchase Orders for Services will enable more active contract management, thereby reducing the risk of paying suppliers at incorrect rates. One incremental benefit identified was the reduced risk of receiving and paying for non-compliant material.	Low to moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact (impacts could also reduce)
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.11 Please elaborate on why the reliance on manual tracking of quality inspection items increases the risk that poor-quality items are accepted by BC Hydro.

1.16.11.1 Please provide evidence that this is the case.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.16.11.

16.0 Reference: Exhibit B-1, page 3-16

Table 3-5 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description		Updated Likelihood & Impact	
	Phase One	Phase Two Risk Update	Today	After SCA
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.	No incremental safety risk benefits were identified and the risk profile was validated based on design. SAP functionality such as source lists, outline agreements and service masters (line item level tracking), and more real-time visibility of operational contract information will help reduce the risk of non-preferred / non-qualified contractors performing the work.	Moderate likelihood, low to high impact	Low likelihood, low to high impact
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Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.	No incremental reputational risk benefits were identified, risk profile was validated based on design. SAP reporting functionality will enhance the level of detail and quality of costs - enriching the spend data for more accurate reporting, thereby reducing reputational risk.	Moderate likelihood, low to moderate impact	Low likelihood, low to moderate impact

1.16.12 Please provide the process by which the Verification Report was able to verify and/or update the change in likelihood and impact for the Reliability risk.

RESPONSE:

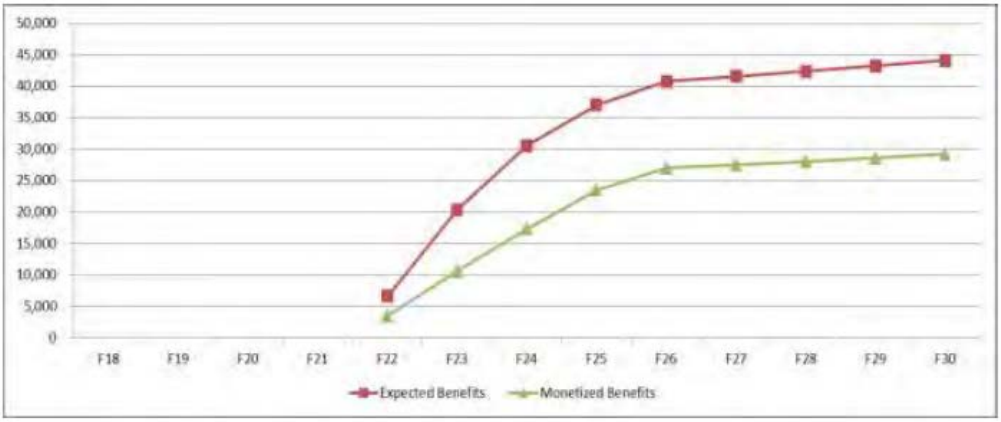
Please refer to BC Hydro's response to CEC IR 1.16.4.

17.0 Reference: Exhibit B-1, page 3-18 and 3-19 and 3-21

3.4 Net Present Value

Based on the updated benefits analysis described in sections 3.2.3 and 3.2.4, once benefits stabilize, the SCA Project will result in $20.4 million per year (fiscal 2018 dollars) of cost reduction savings (for materials and services) and $14.4 million of expected effort reduction savings (of this amount there is $2.6 million of monetized effort reduction savings) per year (fiscal 2018 dollars) as explained in section 3.2.4). All benefits are estimated to stabilize by fiscal 2026 and have been forecast to increase by inflation.

Figure 3-1 Ramp Up of Expected and Monetized Benefits Cash Flow ($ '000)



Similar to what was done in the Phase One application, BC Hydro has performed two sets of NPV analyses: 1) NPV of discounted cash flows, and 2) NPV of the revenue requirements. The NPV of discounted cash flows measures the profitability or the value added of a potential investment. The calculated NPV of discounted cash flows excludes the sunk costs as described in the Phase One Application[16] and Interest during Construction, which is consistent with prior applications for major capital projects. The NPV of the revenue requirements measures the net value that will flow to ratepayers. The NPV of revenue requirements analysis is discussed further in section 3.4.2.

[16] Sunk costs are defined for modeling purposes as project costs incurred up to November 30, 2016.

Table 3-6 NPV of Discounted Cash Flows: Sensitivity and Breakeven Analysis

Scenarios	NPV of Discounted Cash Flows ($ million)	Benefit Percentage Required to Breakeven (%)
Expected Costs / Monetized Benefits	41.8	60
Authorized Costs / Monetized Benefits	31.9	69
Expected Costs / Expected Benefits	102.5	38
Authorized Costs / Expected Benefits	92.6	44

1.17.1 Please provide the sunk costs.

RESPONSE:

Below are the sunk costs excluded from the net present value of discounted cash flow analysis. These are the same sunk costs removed from the analysis in the Phase One Application.

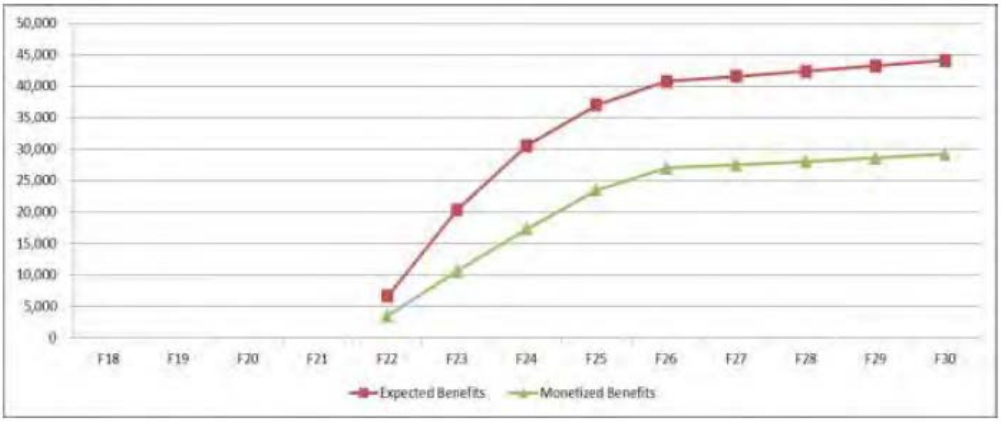
- **Capital Sunk Costs - $10.3 million**
- **Operating Sunk Costs - $1.4 million**

17.0 Reference: Exhibit B-1, page 3-18 and 3-19 and 3-21

3.4 Net Present Value

Based on the updated benefits analysis described in sections 3.2.3 and 3.2.4, once benefits stabilize, the SCA Project will result in $20.4 million per year (fiscal 2018 dollars) of cost reduction savings (for materials and services) and $14.4 million of expected effort reduction savings (of this amount there is $2.6 million of monetized effort reduction savings) per year (fiscal 2018 dollars) as explained in section 3.2.4). All benefits are estimated to stabilize by fiscal 2026 and have been forecast to increase by inflation.

Figure 3-1 Ramp Up of Expected and Monetized Benefits Cash Flow ($ '000)



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Expected Costs / Monetized Benefits	41.8	60
Authorized Costs / Monetized Benefits	31.9	69
Expected Costs / Expected Benefits	102.5	38
Authorized Costs / Expected Benefits	92.6	44

1.17.2 Please provide the NPV values and Figure 3-1 including all the sunk costs.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.17.3 for the requested NPV.

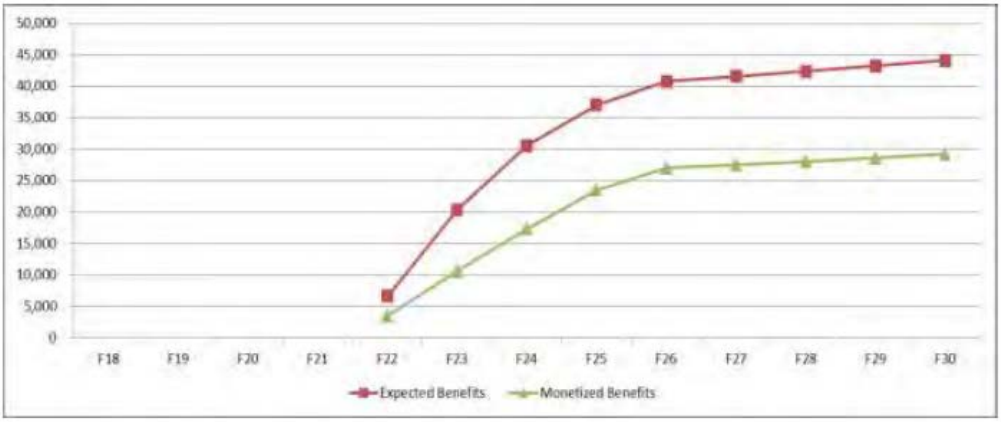
Figure 3-1 in the Verification Report shows the ramp up of Expected and Monetized Benefits and does not include any costs.

17.0 Reference: Exhibit B-1, page 3-18 and 3-19 and 3-21

3.4 Net Present Value

Based on the updated benefits analysis described in sections 3.2.3 and 3.2.4, once benefits stabilize, the SCA Project will result in $20.4 million per year (fiscal 2018 dollars) of cost reduction savings (for materials and services) and $14.4 million of expected effort reduction savings (of this amount there is $2.6 million of monetized effort reduction savings) per year (fiscal 2018 dollars) as explained in section 3.2.4). All benefits are estimated to stabilize by fiscal 2026 and have been forecast to increase by inflation.

Figure 3-1 Ramp Up of Expected and Monetized Benefits Cash Flow ($ '000)



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[16] Sunk costs are defined for modeling purposes as project costs incurred up to November 30, 2016.

Table 3-6 NPV of Discounted Cash Flows: Sensitivity and Breakeven Analysis

Scenarios	NPV of Discounted Cash Flows ($ million)	Benefit Percentage Required to Breakeven (%)
Expected Costs / Monetized Benefits	41.8	60
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Expected Costs / Expected Benefits	102.5	38
Authorized Costs / Expected Benefits	92.6	44

1.17.3 Please provide Table 3-6 including sunk costs.

RESPONSE:

Below is a table with the results of the NPV analysis including sunk costs.

Scenarios	NPV of Discounted Cash Flows including Sunk Costs ($ million)	Benefit Percentage Required to Breakeven (reflecting Sunk Costs) (%)
Expected Costs / Monetized Benefits	**34.5**	**67**
Authorized Costs / Monetized Benefits	**24.6**	**76**
Expected Costs / Expected Benefits	**95.2**	**42**
Authorized Costs / Expected Benefits	**85.3**	**48**

18.0 Exhibit B-1, page 3-20 and 3-21

[17] The nominal discount rate used for the NPV analysis in the Phase One Application was 7 per cent as this was BC Hydro's weighted average cost of capital at the time. The current discount rate is based on the weighted average cost of capital provided under BC Hydro Business Planning Common Rates of 6.0 per cent nominal. The inputs and calculation of the discount rate is as follows:

- BC Hydro's target debt-equity ratio: 60:40
- Cost of Debt: 4.01 per cent (forecast incremental cost of debt based on information provided by the Ministry of Finance)
- Return on Equity: 8.75 per cent (benchmark return on equity determined by Commission Order No. G-129-16)
- WACC = (% of debt x cost of debt) + (% of equity x return on equity) = (60% x 4.01%) + (40% x 8.75%) = 5.906% = 6% rounded to the nearest 25 basis points.

Base Case – Expected Cost / Monetized Benefits Scenario: The NPV of discounted cash flows for the Base Case scenario is positive at $41.8 million. The equivalent mid scenario NPV of discounted cash flows in the Phase One proceeding was $68.3 million[18]. The NPV of discounted cash flows in the Base Case scenario is lower than the Phase One Application Mid-range scenario NPV of discounted cash flows by $26.5 million due primarily to the determination that approximately only 18 per cent of the financial value of the expected effort reduction benefits can be reasonably monetized as discussed in section 3.2.4. This is a departure from the approach taken in the Phase One Application, where BC Hydro assumed it could monetize all the Mid-range effort reduction benefits. The $5.4 million increase in the Expected Cost also has a negative impact on the NPV of discounted cash flows. All else being equal, the change in the nominal discount rate from 7 per cent to 6 per cent had a positive impact of $7.2 million on the Base Case NPV of discounted cash flows.

1.18.1 Does BC Hydro expect that its discount rate could change over the period of the project?

RESPONSE:

Based on current interest rates, BC Hydro's current debt to equity ratio and BC Hydro's hedging programs, which are the inputs to the discount rates, there are no indications that the discount rate will materially change over the period of the project.

18.0 Exhibit B-1, page 3-20 and 3-21

[17] The nominal discount rate used for the NPV analysis in the Phase One Application was 7 per cent as this was BC Hydro's weighted average cost of capital at the time. The current discount rate is based on the weighted average cost of capital provided under BC Hydro Business Planning Common Rates of 6.0 per cent nominal. The inputs and calculation of the discount rate is as follows:

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1.18.1 Does BC Hydro expect that its discount rate could change over the period of the project?

1.18.1.1 If yes, what changes does BC Hydro anticipate for its discount rate over the next 5 and 10 years? Please explain.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.18.1.

19.0 Reference: Exhibit B-1, page 3-22

> **Authorized Cost / Monetized Benefits Scenario:** BC Hydro calculated a scenario where the SCA Project draws on the full amount of the project reserve and realizes the Monetized Benefits. In this Authorized Cost / Monetized Benefits scenario, the NPV of discounted cash flows based on monetized benefits is $31.9 million.

1.19.1 Please conduct a sensitivity analysis in which the Monetized Benefits are reduced by 15%, 20%, 25% and 50%.

RESPONSE:

Below is a table showing the Monetized Benefits reduced by 15 per cent, 20 per cent, 25 per cent, and 50 per cent as requested.

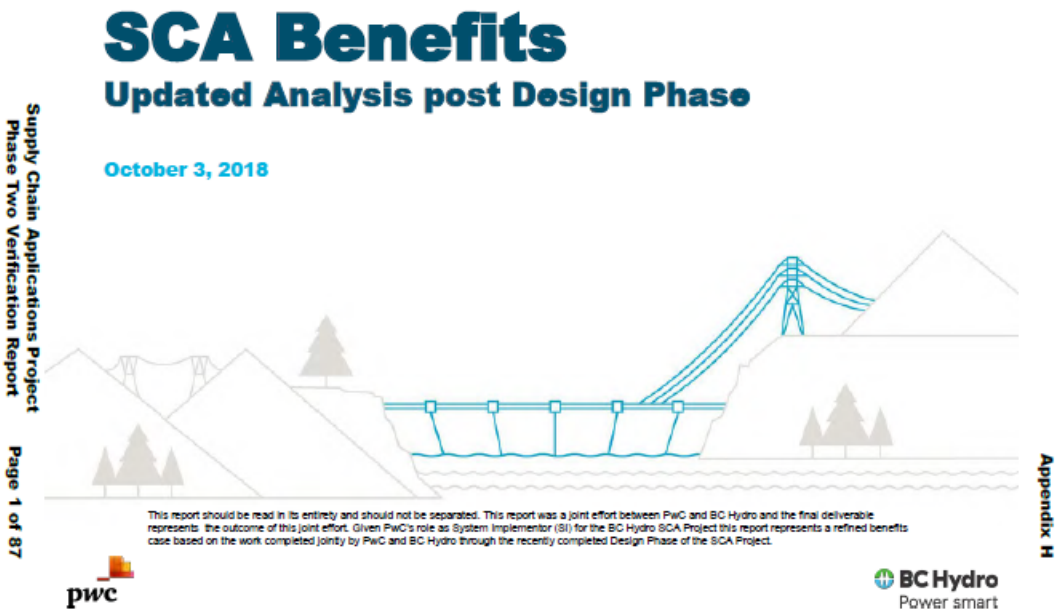
Scenarios	Net Present Value of Discounted Cash Flows ($ million)			
	15%	20%	25%	50%
Expected Costs / Monetized Benefits	26.2	21.0	15.8	(10.2)
Authorized Costs / Monetized Benefits	16.3	11.1	5.9	(20.2)

20.0 Reference: Exhibit B-1, Appendix G Cover and Exhibit B-1, page 3-9, and Appendix H Cover page 1 of 87

Appendix G

PwC Conclusion & Summary on SCA Benefits Analysis Post Design Phase

For each quantified benefit, the calculation logic and realization ratio was reviewed, validated, and refined. In addition to the information in Appendix F, included in the Benefits Report is a detailed benefits analysis for each identified benefit including the realization ratio, the Expected Benefit, the SCA Project Design considerations, and how the benefit was calculated.



1.20.1 Do Appendix G and H together with Appendix F, represent the complete report provided by PwC?

RESPONSE:

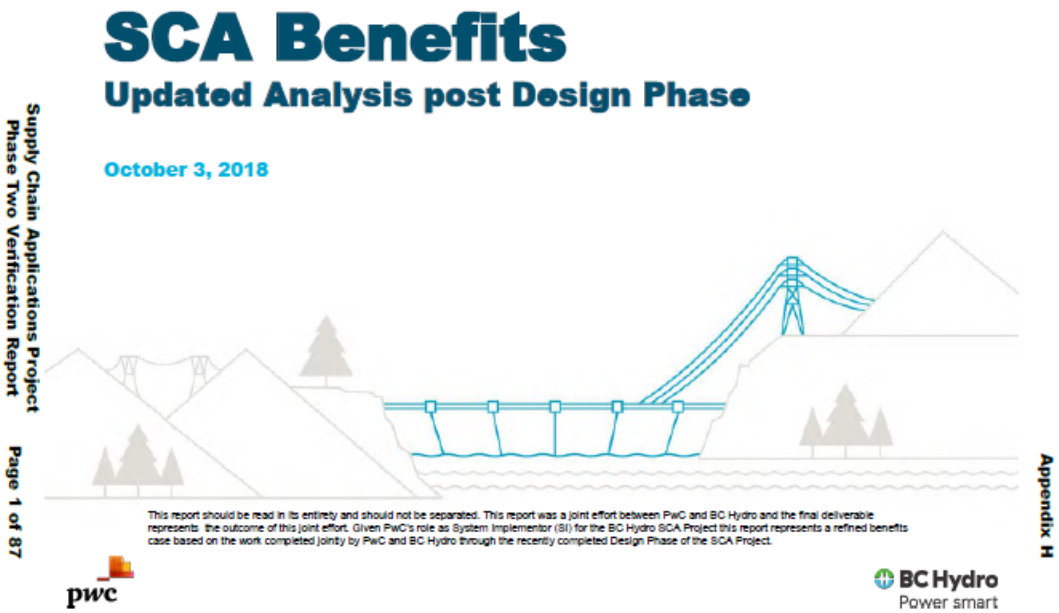
Appendixes G and H of the Verification Report represent the complete report provided by PwC. Appendix F of the Verification Report was produced by BC Hydro, incorporating the findings from Appendices G and H.

20.0 Reference: Exhibit B-1, Appendix G Cover and Exhibit B-1, page 3-9, and Appendix H Cover page 1 of 87

Appendix G

PwC Conclusion & Summary on SCA Benefits Analysis Post Design Phase

For each quantified benefit, the calculation logic and realization ratio was reviewed, validated, and refined. In addition to the information in Appendix F, included in the Benefits Report is a detailed benefits analysis for each identified benefit including the realization ratio, the Expected Benefit, the SCA Project Design considerations, and how the benefit was calculated.



1.20.2 If no, please provide the complete report provided by PwC.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.20.1.

21.0 Reference: Please confirm that Appendix H is the Benefits Report referenced on page 3-9 of the Application.

1.21.1 If not confirmed, please provide the report or identify where it is included in the application.

RESPONSE:

As stated on pages 3-2 and 3-5 of the Verification Report, the Benefits Report referenced on page 3-9 of the Verification Report is contained in Appendix H.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

Benefits dependencies

The realization of benefits will be dependent on the adoption of tools available to BC Hydro, the level of change management that goes into project implementation and governance and benefits tracking. The following dependencies are overarching to all benefits identified in the review.

- **Master data management**: This includes a commitment to master data governance and stewardship such as the timely entering of information into the system to enable benefits associated with contract management and negotiations. The creation of new material masters in a timely manner for all materials, which will flow through the BC Hydro distribution network or require quality inspection. The development of new service masters to eliminate or minimize the need for free text services. The SCA project will require an increased awareness of the dependant master data requirements and potential process design efforts supported by appropriate training and change management efforts.

- **Governance and benefits tracking**: Active supply chain governance with clear lines of accountability need to be established to deliver the benefits, including ongoing benefits tracking and key performance indicator reporting. As part of the governance and reporting, it is necessary to make sure the baseline metrics (in the "IT Benefits Tracking" form) are well understood and the tracking and measuring mechanisms are agreed upon early and then managed (and governed) through a sustainment team or organization.

- **Supplier engagement**: BC Hydro must be willing to execute on savings opportunities and make decisions to engage suppliers to hold them to contractual commitments, service levels and obligations to reduce and recover contract leakage benefits.

- **Demand management**: Improved demand management capabilities to align supply strategies to materials requirements to reduce excess materials. Commitment to accuracy of material needs dates coming out of work orders and projects.

- **Change management**: There will be a need to change behaviors and practices for effective use of the new system, such as the discipline to capture more transactions for various supply chain activities. Dedicated change management support and training will be necessary to help achieve the realization of the benefits.

Conclusion

The SCA project is expected to continue to show a net positive return for BC Hydro and its ratepayers. The PwC analysis is based on experience with many like projects in the Utility sector and indicates an Expected Quantified Benefit of **$34.8 million** per year including an Expected Monetized Benefit of **$23.0 million** in cost and effort benefits. Additionally there are significant non-quantified benefits, including the ability to close the capability gaps in BC Hydro's Supply Chain function, reduce the current risk profile as outlined earlier in the summary and re-deploy effort and operational resources to help actively manage costs and improve service.

Considering the premise of monetization (the likely realization of a financial reduction) when deploying supply chain transformations across many disparate areas, and with much of the effort benefits yielded in smaller time increments shared between thousands of employees, we are supportive of BC Hydro's project strategy of focusing on monetizing the cost benefits and select few (most achievable) effort benefits. This approach is conservative, yielding a highly achievable Expected Monetized Benefit of $23.0 million ($20.4 million of cost and $2.6 million of effort benefits).

1.22.1 Please provide a quantitative assessment of the value of master data management activities needed.

RESPONSE:

Please find below PwC's response to this information request.

Change Management, Demand Management, Supplier Engagement, Master Data management are all project and business activities that are highly integrated and have been accepted as leading practice activities during Supply Chain transformation projects. The effort required to perform a quantitative analysis of each of these elements could be substantial and the value of trying to isolate these activities is not only uncommon and not seen within the industry, but may only be academic in nature as systems, process, and people considerations go hand in hand in a transformation and all need to be addressed equally to achieve the objectives.

Master data requirements in the system are designed to produce a specific outcome (appropriate controls, designed levels of reporting, ability to make decisions). Master data is a foundational element of every system. Each transaction that occurs within a system is reliant on the appropriate master data to be entered or the transaction will not produce the intended result. Segmenting the master data activities in a quantitative assessment of value requires a baseline of what the design is intended to achieve. Master data design is intended to enable a desired outcome which is a functioning usable system that provides desired transactional, control and reporting capabilities to close the 13 capability gaps and provide a desired level of benefits. Calculating the cost of master data may provide a number for general reference but the value created is equal to the benefit of the project itself.

A similar argument holds true for Demand Management, Supplier Engagement and Change Management. Each of these functions is designing their activities to enable the successful delivery of the goals of the project. Therefore the value generation is the delivery of value of the project by itself. To provide a detailed quantitative analysis of the costs of each of these functions may be possible, but to equate those hours to a defined percentage of the value insinuates that elimination of some portion of the effort will not have a cascading effect on the potential for value delivery.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

Benefits dependencies

The realization of benefits will be dependent on the adoption of tools available to BC Hydro, the level of change management that goes into project implementation and governance and benefits tracking. The following dependencies are overarching to all benefits identified in the review.

- **Master data management**: This includes a commitment to master data governance and stewardship such as the timely entering of information into the system to enable benefits associated with contract management and negotiations. The creation of new material masters in a timely manner for all materials, which will flow through the BC Hydro distribution network or require quality inspection. The development of new service masters to eliminate or minimize the need for free text services. The SCA project will require an increased awareness of the dependant master data requirements and potential process design efforts supported by appropriate training and change management efforts.

- **Governance and benefits tracking**: Active supply chain governance with clear lines of accountability need to be established to deliver the benefits, including ongoing benefits tracking and key performance indicator reporting. As part of the governance and reporting, it is necessary to make sure the baseline metrics (in the "IT Benefits Tracking" form) are well understood and the tracking and measuring mechanisms are agreed upon early and then managed (and governed) through a sustainment team or organization.

- **Supplier engagement**: BC Hydro must be willing to execute on savings opportunities and make decisions to engage suppliers to hold them to contractual commitments, service levels and obligations to reduce and recover contract leakage benefits.

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Conclusion

The SCA project is expected to continue to show a net positive return for BC Hydro and its ratepayers. The PwC analysis is based on experience with many like projects in the Utility sector and indicates an Expected Quantified Benefit of **$34.8 million** per year including an Expected Monetized Benefit of **$23.0 million** in cost and effort benefits. Additionally there are significant non-quantified benefits, including the ability to close the capability gaps in BC Hydro's Supply Chain function, reduce the current risk profile as outlined earlier in the summary and re-deploy effort and operational resources to help actively manage costs and improve service.

Considering the premise of monetization (the likely realization of a financial reduction) when deploying supply chain transformations across many disparate areas, and with much of the effort benefits yielded in smaller time increments shared between thousands of employees, we are supportive of BC Hydro's project strategy of focusing on monetizing the cost benefits and select few (most achievable) effort benefits. This approach is conservative, yielding a highly achievable Expected Monetized Benefit of $23.0 million ($20.4 million of cost and $2.6 million of effort benefits).

1.22.1 Please provide a quantitative assessment of the value of master data management activities needed.

1.22.1.1 Please discuss BC Hydro's current practices with regard to data management activities and how these will change under the Supply Chain project.

RESPONSE:

BC Hydro has well established Master Data Management (MDM) processes for Material and Vendor Master Data, which are the two key master data record sets applicable to BC Hydro's current supply chain processes. The MDM processes address the roles, responsibilities and controls for the request, creation and editing of supply chain master data. Currently, requests for new Material Masters are addressed in a timely manner, typically completed on the day of the request. Timeliness of the completion of Material Master requests is not expected to change with the implementation of the SCA project.

The SCA project will introduce Service Masters to BC Hydro. The current MDM processes used to manage Material and Vendor Master Data will be expanded to include Service Masters. The SCA Project has created formal process flow documentation for the creation and maintenance of master data and will also introduce a more formal governance structure over the master data record sets used in supply chain processes. The governance structure will clearly identify senior leadership accountability for data quality, ensuring that MDM processes are adhered to, and that the overall quality of master data at BC Hydro remains high.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

Benefits dependencies

The realization of benefits will be dependent on the adoption of tools available to BC Hydro, the level of change management that goes into project implementation and governance and benefits tracking. The following dependencies are overarching to all benefits identified in the review.

- **Master data management**: This includes a commitment to master data governance and stewardship such as the timely entering of information into the system to enable benefits associated with contract management and negotiations. The creation of new material masters in a timely manner for all materials, which will flow through the BC Hydro distribution network or require quality inspection. The development of new service masters to eliminate or minimize the need for free text services. The SCA project will require an increased awareness of the dependant master data requirements and potential process design efforts supported by appropriate training and change management efforts.

- **Governance and benefits tracking**: Active supply chain governance with clear lines of accountability need to be established to deliver the benefits, including ongoing benefits tracking and key performance indicator reporting. As part of the governance and reporting, it is necessary to make sure the baseline metrics (in the "IT Benefits Tracking" form) are well understood and the tracking and measuring mechanisms are agreed upon early and then managed (and governed) through a sustainment team or organization.

- **Supplier engagement**: BC Hydro must be willing to execute on savings opportunities and make decisions to engage suppliers to hold them to contractual commitments, service levels and obligations to reduce and recover contract leakage benefits.

- **Demand management**: Improved demand management capabilities to align supply strategies to materials requirements to reduce excess materials. Commitment to accuracy of material needs dates coming out of work orders and projects.

- **Change management**: There will be a need to change behaviors and practices for effective use of the new system, such as the discipline to capture more transactions for various supply chain activities. Dedicated change management support and training will be necessary to help achieve the realization of the benefits.

Conclusion

The SCA project is expected to continue to show a net positive return for BC Hydro and its ratepayers. The PwC analysis is based on experience with many like projects in the Utility sector and indicates an Expected Quantified Benefit of **$34.8 million** per year including an Expected Monetized Benefit of **$23.0 million** in cost and effort benefits. Additionally there are significant non-quantified benefits, including the ability to close the capability gaps in BC Hydro's Supply Chain function, reduce the current risk profile as outlined earlier in the summary and re-deploy effort and operational resources to help actively manage costs and improve service.

Considering the premise of monetization (the likely realization of a financial reduction) when deploying supply chain transformations across many disparate areas, and with much of the effort benefits yielded in smaller time increments shared between thousands of employees, we are supportive of BC Hydro's project strategy of focusing on monetizing the cost benefits and select few (most achievable) effort benefits. This approach is conservative, yielding a highly achievable Expected Monetized Benefit of $23.0 million ($20.4 million of cost and $2.6 million of effort benefits).

1.22.2 Please provide a quantitative assessment of the value of governance and benefits tracking activities needed.

RESPONSE:

Please refer to PwC's response to CEC IR 1.22.1.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

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1.22.3 Please discuss BC Hydro's current practices with regard to governance and benefits tracking activities and how these will change under the Supply Chain project.

RESPONSE:

BC Hydro recently developed a benefit realization process for identification and tracking of benefits arising from business driven technology projects. The initial focus is for projects over $2 million. The benefit realization process tracks actual benefits delivered by the initiative, and provides periodic reporting to the sponsoring business unit and Technology Planning and Performance group. Corrective actions will be initiated when reports identify that planned benefits are at risk or that additional benefits are possible.

Currently, BC Hydro is piloting this benefit realization process on four projects, three were placed into service in fiscal 2018, the other is the Supply Chain Application project. Other business driven technology projects over $2 million will be added to the pilot as they reach their in service dates, or as significant delivery activity begins.

The Supply Chain Applications project will use this new process to track benefits realization as explained in the section 3.3 of the Verification Report.

BC Hydro expects the benefit realization process will mature over time and learnings from the piloted projects will be applied to the SCA Project and future projects, where applicable.

Please also refer to BC Hydro's response to BCUC IR 1.18.1.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

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1.22.4 Please provide a quantitative assessment of the value of supplier engagement activities needed.

RESPONSE:

Please refer to PwC's response to CEC IR 1.22.1.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

Benefits dependencies

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1.22.5 Please discuss BC Hydro's current practices with regard to supplier engagement activities and how these will change under the Supply Chain project.

RESPONSE:

BC Hydro's response to CEC IR 1.26.2 describes BC Hydro's current supplier engagement activities to hold them to contractual commitments, service levels and obligations, in order to recover contract leakage benefits. This activity is currently done manually, using different approaches across the organization.

The SCA Project will deliver the tools and functionality, as well as standardized process flows for contract management across the organization, enabling more effective and consistent contract and supplier relationship management and tracking of contract compliance across BC Hydro.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

Benefits dependencies

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1.22.6 Please provide a quantitative assessment of the value of the demand management activities needed.

RESPONSE:

Please refer to PwC's response to CEC IR 1.22.1.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

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1.22.7 Please discuss BC Hydro's current practices with regard to demand management activities and how these will change under the Supply Chain project.

RESPONSE:

For work orders, BC Hydro's current practice is to enter work orders (including material needs dates) in the Passport Work Management System, SAP or other systems depending on the type of work order. The work is then scheduled either in SAP or in stand-alone systems, again depending on the operating group and type of work. Scheduling of the work could result in material needs dates that are different than what was entered on the work orders. However, since updating the original work order requires double entries in different systems, the material needs dates are not always updated in BC Hydro's current supply chain system. This results in unreliable material needs dates for Demand Management (i.e., inventory planning). Also, the definition of material needs dates is currently not consistent across different operating groups within BC Hydro.

For projects, BC Hydro uses the SAP Project Systems module, which is not integrated to Passport. Therefore, currently, any changes in project schedules do not automatically update material needs dates for Demand Management.

With the SCA solution, all work orders will be interfaced into SAP regardless of the originating system, and scheduling for all work orders and projects with materials requirements will be done in SAP. Since SAP will also be the Supply Chain system, any changes to needs dates resulting from the scheduling process will automatically update material needs dates for Demand Management. The SCA Project is also introducing a common definition for material needs dates across the different operating groups, as well as reports to monitor accuracy of scheduling and material needs dates entered into the system.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

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1.22.8 Please provide a quantitative assessment of the value of the change management

RESPONSE:

Please refer to PwC's response to CEC IR 1.22.1.

22.0 Reference: Exhibit B-1, Appendix G, page 9 of 10

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1.22.9 Please discuss BC Hydro's current practices with regard to change management activities and how these will change under the Supply Chain project.

RESPONSE:

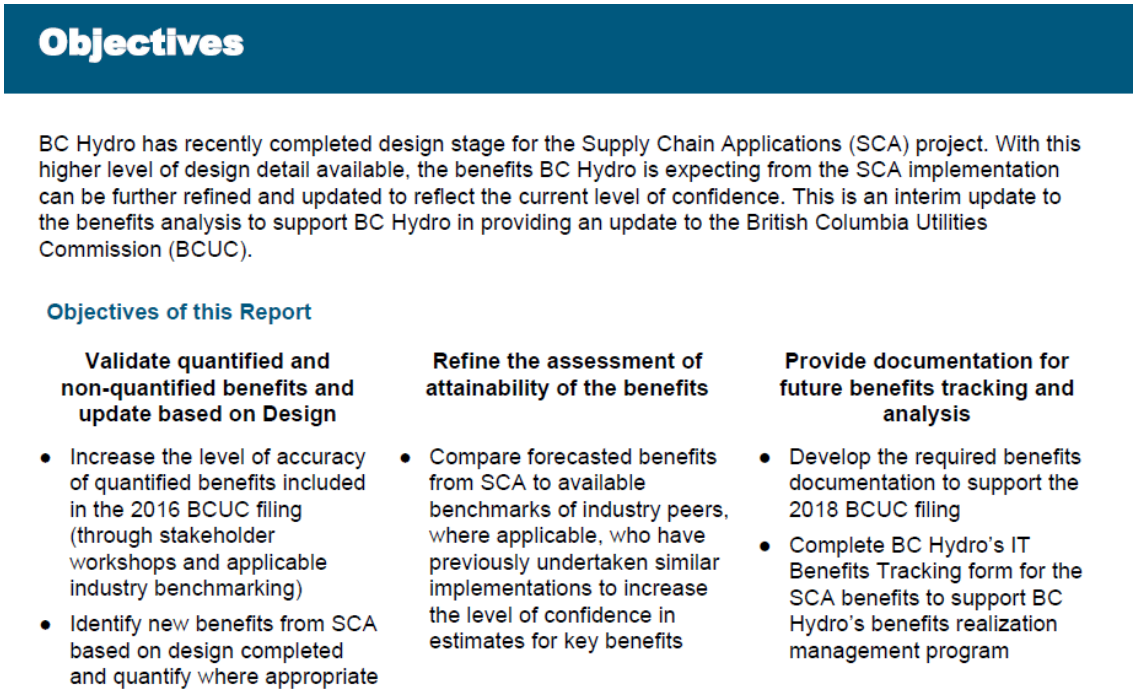
BC Hydro has a mature Change Management practice that is centralized in the organization to support priority projects. It is a structured approach using a common methodology based on industry best practices and professional standards with standard deliverables. It is formally aligned and integrated into BC Hydro's Information Technology Delivery Standard Practices (ITDSP). The goal of the Change Management practice is to accelerate the rate of adoption and sustainment of the change to improve benefits realization. BC Hydro is not expecting to change its Change Management practice as a result of the SCA Project.

A robust and detailed Change Management approach and plan has been developed for the Supply Chain Application (SCA) project, which is aligned to BC Hydro's Change Management practice and methodology. To achieve full and sustained adoption of the SCA Project changes and their related benefits, the Change Management plan addresses the change on two levels:

a) To understand the stakeholders, how they will be impacted by the SCA project and ensure that the change management tactics and activities equips them with the knowledge, skills and abilities to perform their roles; and

b) To drive leadership support and business ownership for ensuring that the necessary shifts in behaviors are attained (as referenced in BCUC IR 1.18.1). The detailed Change Management Plan will continue to be refined throughout Implementation phase.

23.0 Reference: Exhibit B-1, Appendix H, page 4 of 87



Objectives

BC Hydro has recently completed design stage for the Supply Chain Applications (SCA) project. With this higher level of design detail available, the benefits BC Hydro is expecting from the SCA implementation can be further refined and updated to reflect the current level of confidence. This is an interim update to the benefits analysis to support BC Hydro in providing an update to the British Columbia Utilities Commission (BCUC).

Objectives of this Report

Validate quantified and non-quantified benefits and update based on Design

- Increase the level of accuracy of quantified benefits included in the 2016 BCUC filing (through stakeholder workshops and applicable industry benchmarking)
- Identify new benefits from SCA based on design completed and quantify where appropriate

Refine the assessment of attainability of the benefits

- Compare forecasted benefits from SCA to available benchmarks of industry peers, where applicable, who have previously undertaken similar implementations to increase the level of confidence in estimates for key benefits

Provide documentation for future benefits tracking and analysis

- Develop the required benefits documentation to support the 2018 BCUC filing
- Complete BC Hydro's IT Benefits Tracking form for the SCA benefits to support BC Hydro's benefits realization management program

1.23.1 Please provide the PwC Building Trust and Transparency - A Holistic Approach to Third Party Contracts 2016 or identify where it is included in the application.

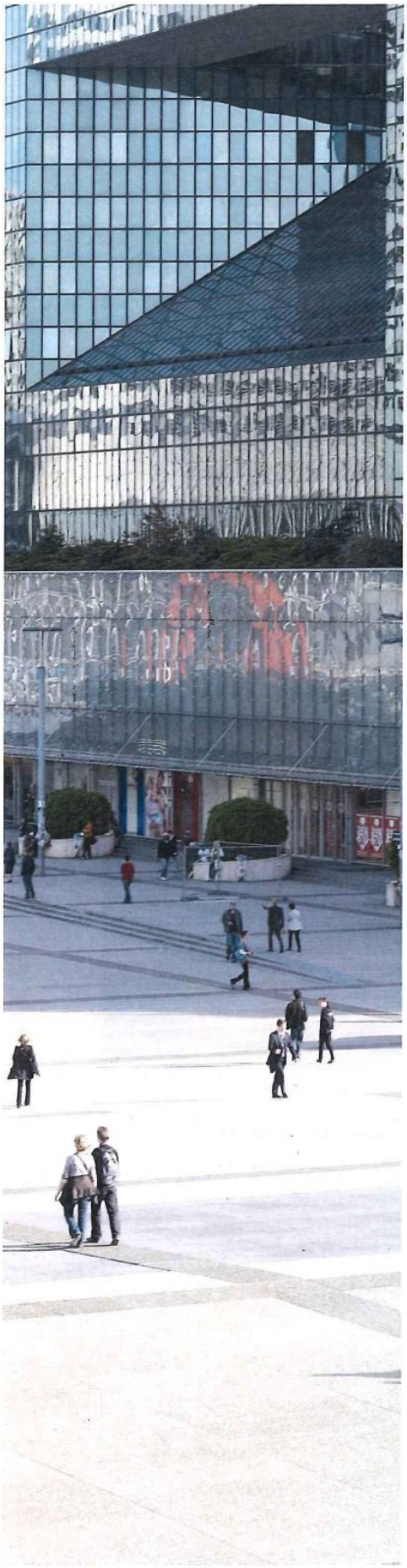
RESPONSE:

BC Hydro files as Attachment 1 to this information request "PwC Building Trust and Transparency - A Holistic Approach to Third Party Contracts 2016".

Building trust and transparency

A holistic approach to third party contracts

pwc

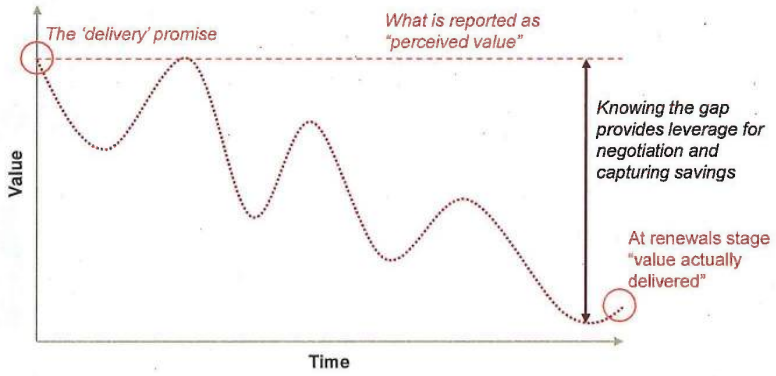


Companies typically struggle to address contract value leakage

As they enter into relationships with third parties, businesses look to contracts to protect their interests and to secure the benefits they hope to receive from those relationships. Over time, though, companies might see the value of those contracts erode for various reasons including bad planning, creep in the scope of work, or changes in the quality of what's delivered.

That "value leakage" in third party contracts presents a significant challenge for companies, particularly as they face other issues such as cost-cutting initiatives, efforts to improve margins, or merger and acquisition activity. The more companies rely on third parties, the more that leakage increases. To fully meet their business goals, they need to eliminate that value leakage.

Value delivered changes over time



Identifying and addressing that value leakage requires a holistic approach that looks both internally across the various constituents of a company's contract to determine whether contract is delivering what was intended, and externally at the third party to make sure the company is getting what it's paying for.

The benefits of the more effective management and administration of third party contracts delivered through such a holistic approach include greater transparency into third party relationships which can translate into savings, security that third party partners are meeting compliance requirements, and the potential to drive additional value for the company.

Building trust and transparency

The impact of value leakage

Every company, whatever the business, has third party contracts—some will have hundreds, some will have thousands.

But the impact of "value leakage" in their third party contracts can be significant: the resulting gap can be 5% to 15% of the contract's value.

The issue is particularly significant today as businesses continue to outsource many tasks and regulatory oversight is extending to third parties in some areas. Reviewing key contracts is an element of good contract management, especially in the lead-up to contract renegotiation, renewal, and exit.

These third party contractual relationships touch many areas that are critical to a company's success. This interconnected network of third party relationships is commonly referred to as a company's Contract Risk Universe ("the CRU").

The way in which companies govern third party arrangements and manage requirements and documentation should be clearly defined. But it can be difficult for companies to ensure that third parties are adhering to company policies under the best of circumstances, even more so after the passage of time has led to contract erosion and value leakage.

Once a contract has been negotiated and executed there is often a lack of governance and management of that contract. Most companies view the hard work of the contract ending at the execution of the agreement, and the governance and management of the contract isn't in place as the world around the contract changes.

In some cases procurement's and business units' roles in and responsibilities for contract monitoring might be poorly defined, adding to the value leakage problem.

Achieving a holistic approach to third party contracts

A holistic approach to third party contract management and achieving assurance is a dual-sided coin, involving a review of contracts across internal constituencies along with an external review to make sure that third party partners are meeting contract terms. That includes monitoring activities in the company's own backyard: how it governs and manages contracts, addresses developments with the third party provider and confirms the company is getting what it agreed to and paid for.

A framework for reviewing third party relationships and contracts includes a holistic assessment of both internal contract management and governance, as well as a contract compliance assessment through transactional testing that enables value to be maximized.

Who's involved: The process for achieving a holistic approach for contract management and achieving a level of comfort that contracts are being managed appropriately isn't one-size-fits-all. But it typically begins by working closely with those involved in sourcing and procurement—the people who negotiated the contract and helped the business over subsequent years—negotiating pricing for various goods and services.

Companies' review of third party contracts also typically include the primary buyer at the company—the individual who owns the relationship and leads the people who work with the vendor/supplier on a daily basis. It may include other key stakeholders as well. For example, an IT outsourcing contract might be co-owned by the chief information officer, while finance, accounting, and other areas of the business all have a role in the outsourcing contract.

How it's done: The internal review includes contract management and vendor governance and involves interviewing stakeholders and determining what processes they have in place to manage contracts. Meanwhile, the external aspect focuses more on contract compliance based on transactional testing and data analysis. This involves validating that the third party billings are accurate and correct, the work is supported appropriately, and that the third party is in compliance with the contract. The goal is to answer the company's questions as to whether they're getting what they paid for: is there proof of service performance, did the third party comply with the terms and conditions of the contract, and do the terms of the contract still make sense.

Transparency is key when a company relies on third party partners, and becomes even more so as its reliance on third parties increases.

The process in action

A recent report by the ANA found non-transparent business practices to be pervasive. "Transparency is commonly defined, in a business context, as the full disclosure of relevant information required for informed and intelligent decision-making." [1]

The experience of a global pharmaceuticals company's vendor audit program demonstrates how the holistic approach to third party contracts is applied and the benefits it can deliver.

The company sought to identify cost savings and efficiencies across its entire vendor portfolio. The vendor audit program included identifying negotiating leverage, commercial management and monitoring enhancements, and areas for improvement within the contracts.

The program included risk analysis of the vendor contract portfolio and identification of high risk contracts for review. It also included detailed commercial reviews of 15 key vendor agreements, a benchmarking review relating to leading practice contract management/governance processes, and evaluating the cost profile of the services delivered to identify areas of value leakage.

The effort delivered significant value. It identified more than $3.4 million in value leakage, including leakage from contracts that had been previously reviewed, and 90 recommendations related to enhancing the client's contract and commercial management function.

The program's findings included potential to realize nearly $2 million in recurring annual cost savings through tighter controls over systematic circumvention of the client's labor sourcing model and over $1.4 million in recovery opportunities.

[1] *An Independent Study of Media Transparency in the U.S. Advertising Industry* (K2 Intelligence, Prepared for: The Association of National Advertisers, June 7, 2016).

Reaping the benefits of effective contract management

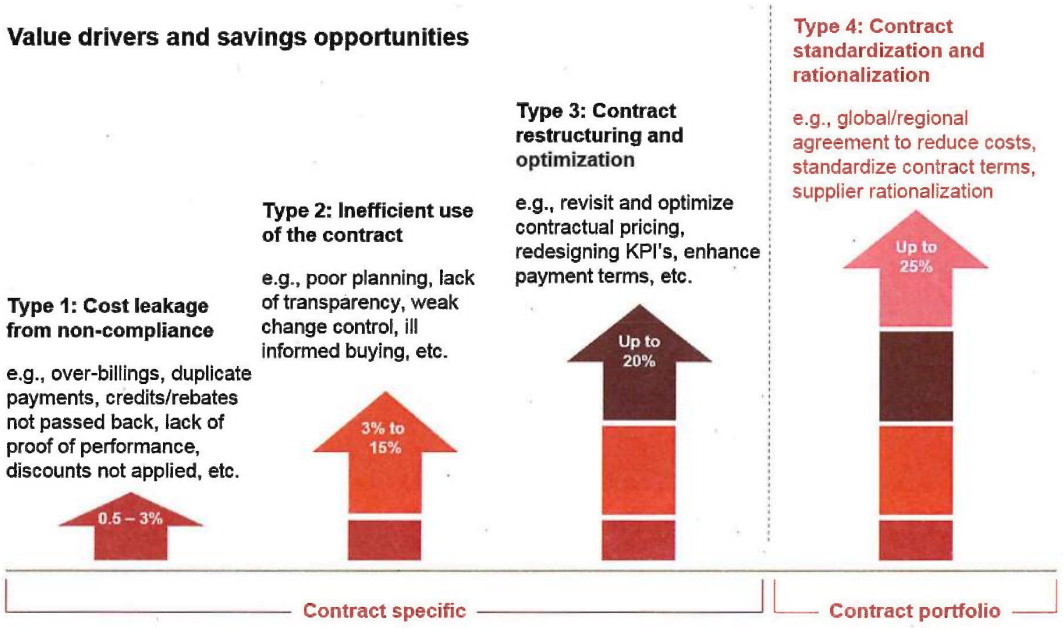
The increased transparency into third party relationships gained through a holistic approach to third party contracts can allow a company to strike better deals in the future. For contracts in place, while vendors/suppliers will often be long-term business partners, a contract review nearly always produces opportunities for recoveries, recoveries that can more than pay for the cost of the review.

Such an approach can help ensure that third parties are complying with company policies and regulatory requirements. The approach also allows contracts to be revised to perform more effectively or to be aggregated into global arrangements that reduce costs and increase standardization. Benefits can be gained through the identification of opportunities for strategic sourcing and economies of scale: replacing what had been a number of local contracts with a single global agreement.

This approach and more effective management and administration of contracts can drive value for the organization. But achieving that value requires looking at "both sides of the coin": internally across all contract constituents and externally at third party providers' contract performance.

While there is no set approach, a holistic approach to contract management should typically include:

- Working closely with those who negotiate the company's contracts such as sourcing and procurement
- Involving those who work with the vendor on a daily basis and finance if it's a large contract or there's a significant financing component
- Reviewing contract management and vendor governance
- Vendor transactional testing to gauge contract compliance
- Review of vendor billings for accuracy



Conquering third party contract value leakage

As companies increase their reliance on third parties, it's not unusual for contracts to be signed and forgotten, with little attention to changes in conditions that might have affected the third party relationship or whether the third party is meeting the terms of the contract. Such leakage can have an impact on companies' margins or even become an obstacle to meeting business goals.

That value leakage can be successfully addressed, however, through a holistic approach. Companies that have done so have experienced success bringing contracts back in line with their original intent, controlling costs, generating recurring savings, and developing deeper understandings that allow them to enter into better contracts with third parties in the future.

With every business engaged in third party relationships—and consequently subject to contract value leakage—it's essential that companies review contracts across their Contract Risk Universe. To achieve the greatest value from those reviews companies should take a holistic approach to addressing third party contract value leakage.

Our services

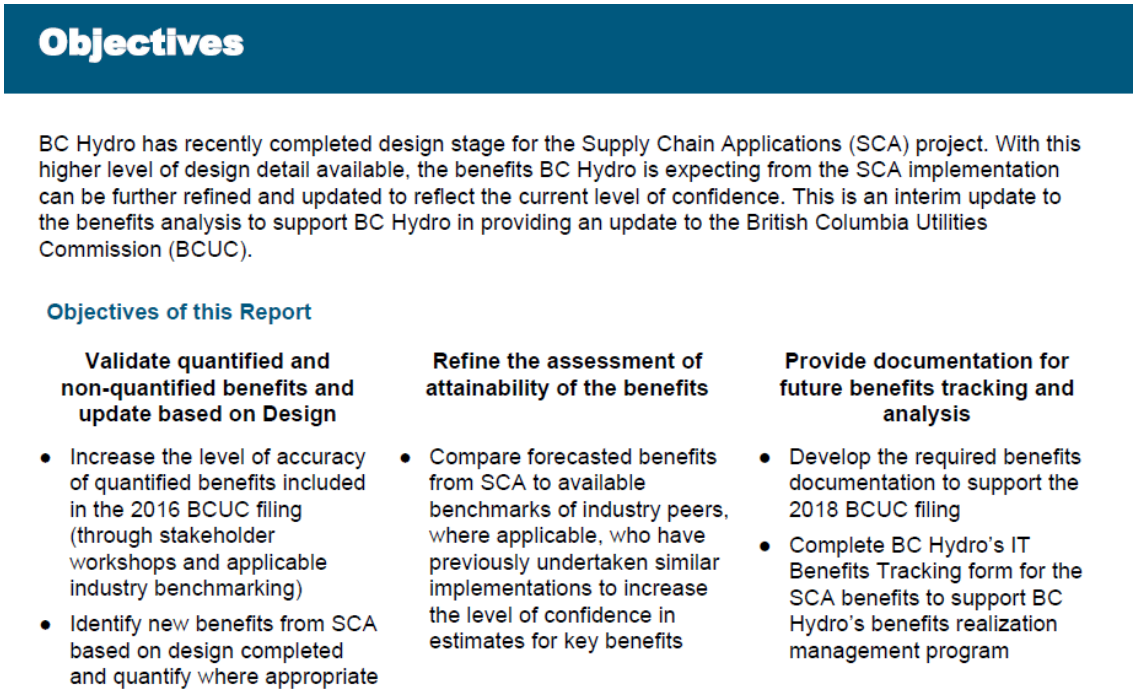
PwC's Trust and Transparency Solutions practice takes an integrated approach to building and maintaining mutual trust; helping identify weaknesses and interconnected risks; building better protections across your business network; and providing the assurance your company, customers, suppliers, investors, and regulators need. By bringing together industry-specific skills in technology, regulatory compliance, financial and accounting, and other business processes, the PwC Trust and Transparency Solutions teams can help you assess your third party risk management program, with a focus on controlling costs, mitigating risk, and enhancing trust and transparency.

To have a deeper conversation about PwC's Commercial Assurance services and increasing trust and transparency through third party assurance, please contact:

Todd Bialick
Trust and Transparency Solutions Leader
973-236-4902
todd.bialick@pwc.com
Connect with Todd

Rick Gonzalez
Commercial Assurance Leader
212-461-9376
rick.gonzalez@pwc.com
Connect with Rick

23.0 Reference: Exhibit B-1, Appendix H, page 4 of 87



Objectives

BC Hydro has recently completed design stage for the Supply Chain Applications (SCA) project. With this higher level of design detail available, the benefits BC Hydro is expecting from the SCA implementation can be further refined and updated to reflect the current level of confidence. This is an interim update to the benefits analysis to support BC Hydro in providing an update to the British Columbia Utilities Commission (BCUC).

Objectives of this Report

Validate quantified and non-quantified benefits and update based on Design

- Increase the level of accuracy of quantified benefits included in the 2016 BCUC filing (through stakeholder workshops and applicable industry benchmarking)
- Identify new benefits from SCA based on design completed and quantify where appropriate

Refine the assessment of attainability of the benefits

- Compare forecasted benefits from SCA to available benchmarks of industry peers, where applicable, who have previously undertaken similar implementations to increase the level of confidence in estimates for key benefits

Provide documentation for future benefits tracking and analysis

- Develop the required benefits documentation to support the 2018 BCUC filing
- Complete BC Hydro's IT Benefits Tracking form for the SCA benefits to support BC Hydro's benefits realization management program

1.23.2 Please identify the industry peers and the project implementations included in the report.

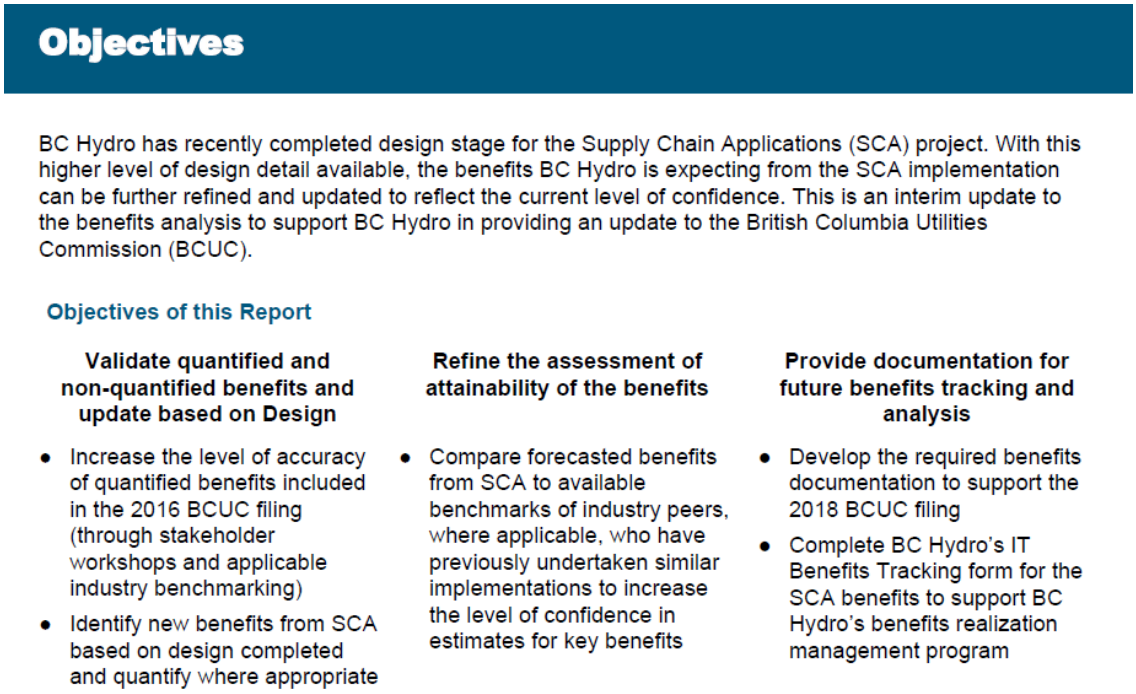
RESPONSE:

Please find below PwC's response to this information request.

Please refer to PwC's response to BCUC IR 1.12.5.

This report is a generic PwC report applied across a wide-range of organizations and supply chains. The report itself is not targeted specifically at utilities. As stated in the response to BCUC IR 1.12.4, this report was tested against other available market intelligence and PwC's experience at industry peers which were determined to align with recommendations provided in this report.

23.0 Reference: Exhibit B-1, Appendix H, page 4 of 87



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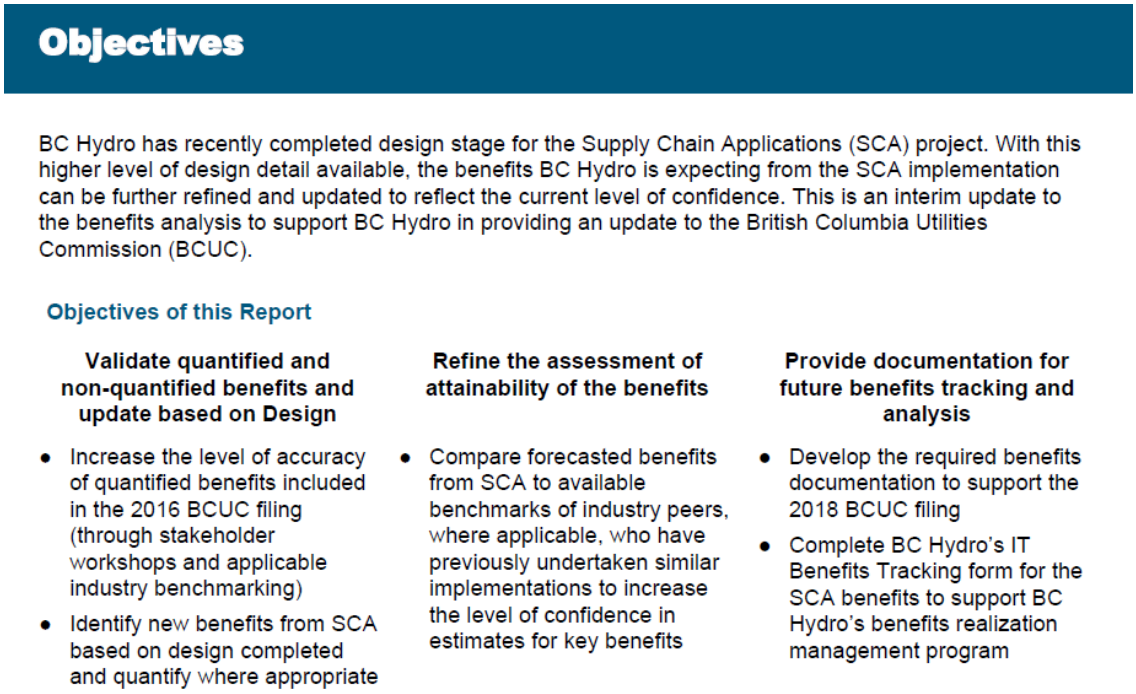
1.23.3 Please discuss the ways in which BC Hydro differs from the industry peers in the report.

RESPONSE:

Please refer to PwC's responses to BCUC IR 1.12.4 and CEC IR 1.23.4.

23.0 Reference: Exhibit B-1, Appendix H, page 4 of 87



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1.23.4 Please discuss the ways in which the BC Hydro project differs from the industry peer projects in the report.

RESPONSE:

Please find below PwC's response to this information request.

Comparing BC Hydro to the peers referenced in the report on a macro level serves little value as some of the peers in the report would be very similar while others would be greatly different as some of the projects included different elements of supply chain.

Few companies are the same, just as few projects are exactly the same. BC Hydro is implementing sweeping system changes to its supply chain, where other projects were focused on key elements such as materials management, procurement or contracts.

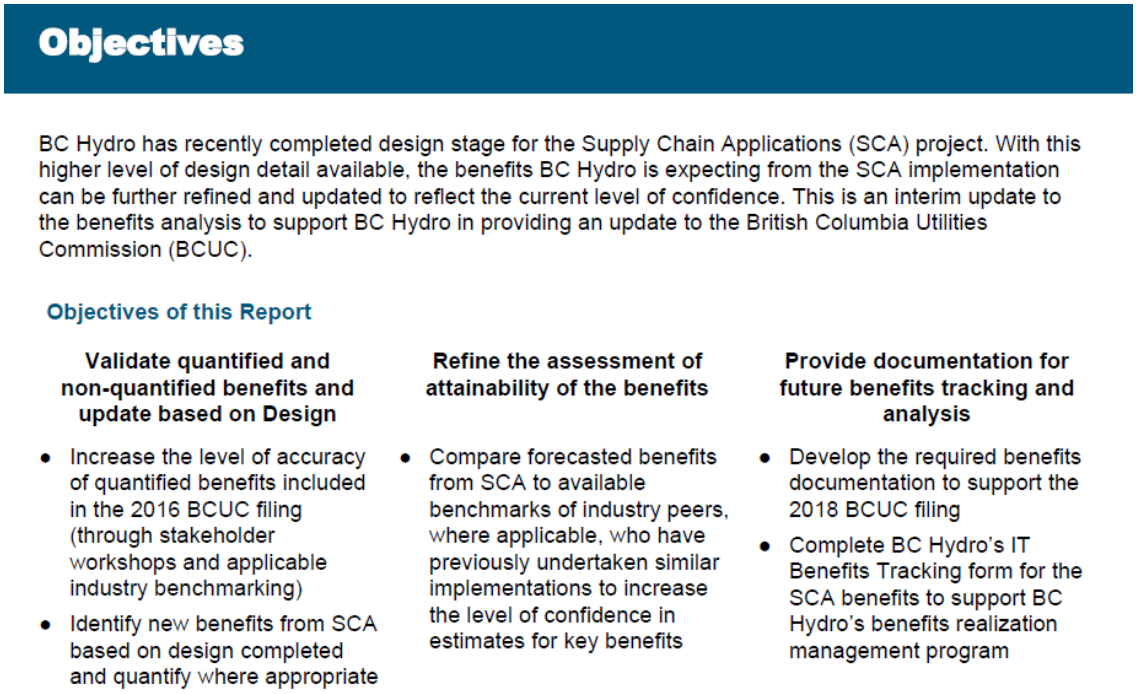
Comparison of BC Hydro's SAP Project to industry peer projects being referenced in the report first required segmentation of project comparators into project

elements for analysis purposes. This allowed us to begin with a bottom-up comparison. The value of the segmented bottom-up comparison is the potential for isolation of differences between corporations. BC Hydro, for example, is involved in Generation, Transmission and Distribution, while other corporations may only operate in one of those areas or may have more retail focus.

Each area of transformation is segmented to assure a reasonable basis of comparison and then for reporting purposes reconstructed to provide a higher level view.

When comparing the forecast benefits from the SCA Project to industry peers, PwC performed macro level analysis and micro level analysis to build a bottom-up and top-down evaluation to weed out the differences that could possibly impact an evaluation such as this one if only considering top-down benchmarking.

23.0 Reference: Exhibit B-1, Appendix H, page 4 of 87



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1.23.5 Please provide a discussion of how PwC modified its expectations from the 'benchmark range' to account for the unique aspects of BC Hydro and its current project.

RESPONSE:

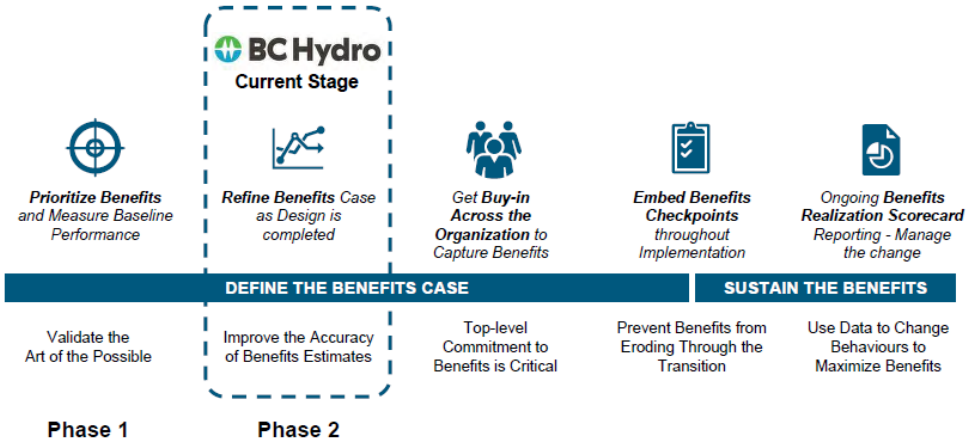
Please find below PwC's response to this information request.

PwC has executed a wide variety of transformation and technology projects with companies who in some respects are very similar to BC Hydro. Modification of benchmark ranges starts with an evaluation of similarities and differences. Differences in operations are a contributing factor as well as differences in operational and technological maturity. Considering these factors allows PwC to modify its expectations from macro level benchmarking by performing more segmented and micro level analysis. This approach creates a more accurate basis of comparison to specific project outcomes, and allows for refinement of benchmarks.

24.0 Exhibit B-1, page 3-18 and Appendix H, page 5 of 87

The benefits tracking sheet is used to capture changes in tracked benefits, metrics and measures over time. Each benefit tracking sheet includes the baselines, the target benefits, and the metrics and/or measures used to assess the benefit. BC Hydro will prepare a tracking sheet for every effort reduction benefit with an annual Expected Benefit above $500,000 at stabilization, and for every cost reduction benefit. At this materiality limit, BC Hydro will be tracking the twelve benefits that comprise approximately 96 per cent of the total Expected Benefits and 99 percent of the total Monetized Benefits. BC Hydro includes as Appendix I the benefits tracking sheets.

The updated Phase 2 SCA Benefits Case captures the design work completed to date through to the end of the C2 Design phase. It refines the benefits based on the more detailed data available.



1.24.1 Please confirm or otherwise explain that the ‘baseline metrics’ against which BC Hydro will evaluate the project represent a ‘Business As Usual’ approach, rather than any kind of post-internal efforts that could be taken in the absence of the project.

RESPONSE:

The baselines metrics against which BC Hydro will evaluate the SCA Project represent the status quo of existing systems and business processes.

24.0 Exhibit B-1, page 3-18 and Appendix H, page 5 of 87

The benefits tracking sheet is used to capture changes in tracked benefits, metrics and measures over time. Each benefit tracking sheet includes the baselines, the target benefits, and the metrics and/or measures used to assess the benefit. BC Hydro will prepare a tracking sheet for every effort reduction benefit with an annual Expected Benefit above $500,000 at stabilization, and for every cost reduction benefit. At this materiality limit, BC Hydro will be tracking the twelve benefits that comprise approximately 96 per cent of the total Expected Benefits and 99 percent of the total Monetized Benefits. BC Hydro includes as Appendix I the benefits tracking sheets.

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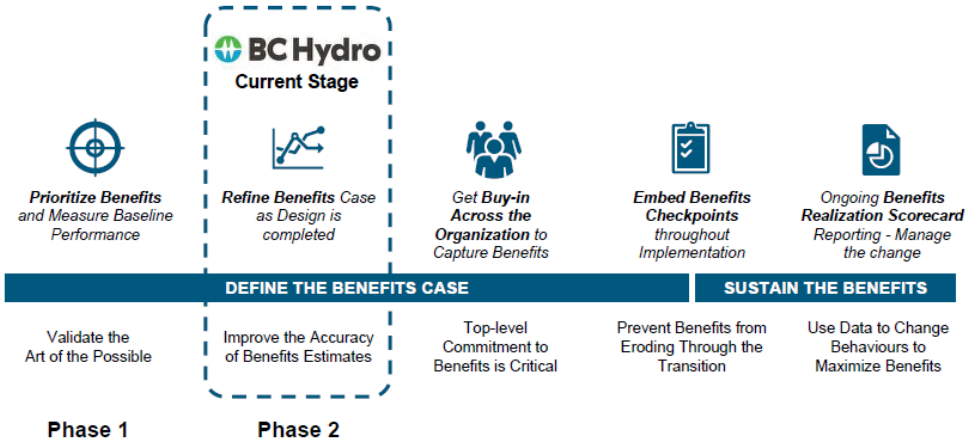

1.24.2 The above illustration shows the Measurement of Baseline Performance occurring prior to Refining the Benefits case, refining the benefits and getting buy in across the organization and top-level commitment to achieving benefits. Please explain how the Benefits measurement ensures that the benefits are attributable only to the capital expenditures associated with the Supply Chain project, and not to the other activities which could

be generated as a result of the corporate buy in and top-level commitment.

RESPONSE:

The SCA Project benefits require buy-in across the organization and top-level commitment. However, organizational buy-in and top-level commitment will not generate any benefits without the SCA Project.

Below is PwC's response to this information request.

Transformations by nature are successful due to the synergies of combining people, process and technology within a robust change management framework.

Some benefits which have been identified are clearly enabled through the adoption of technology by creating visibility to demand, automatic processing of invoices or a reduced number of transaction steps. Some benefits will require additional oversight, additional training and additional corporate buy-in to be fully realized.

The great enabling factor of Supply Chain transformation projects is that personnel can spend less time focusing on tedious repetitive work and spend more time focused on value added activities. This is enabled through the elimination of steps, automation of repetitive transactions and increased visibility and data for making better decisions.

The value of trying to segment from where the value creation is derived is difficult and often a fruitless endeavor. Except in the cases where technology is eliminating transactions, benefits measurement does not provide value creation segmentation.

24.0 Exhibit B-1, page 3-18 and Appendix H, page 5 of 87

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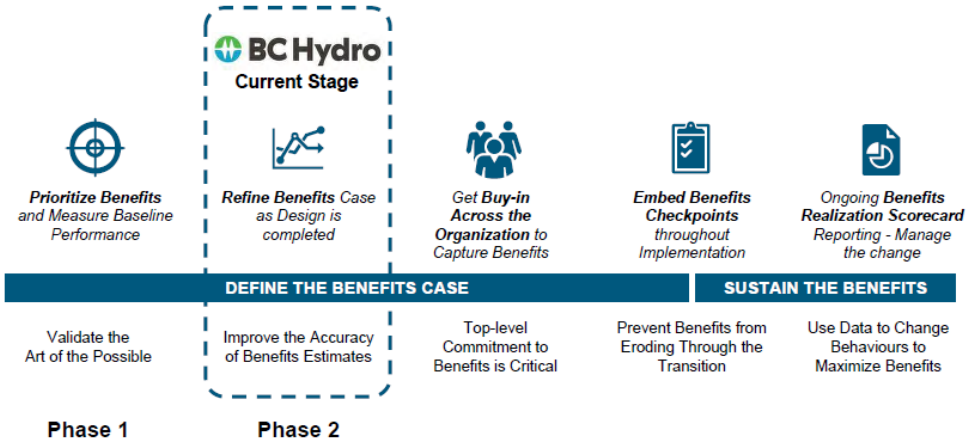


1.24.3 Please provide the complete set of baseline metrics or identify where these are included in the application.

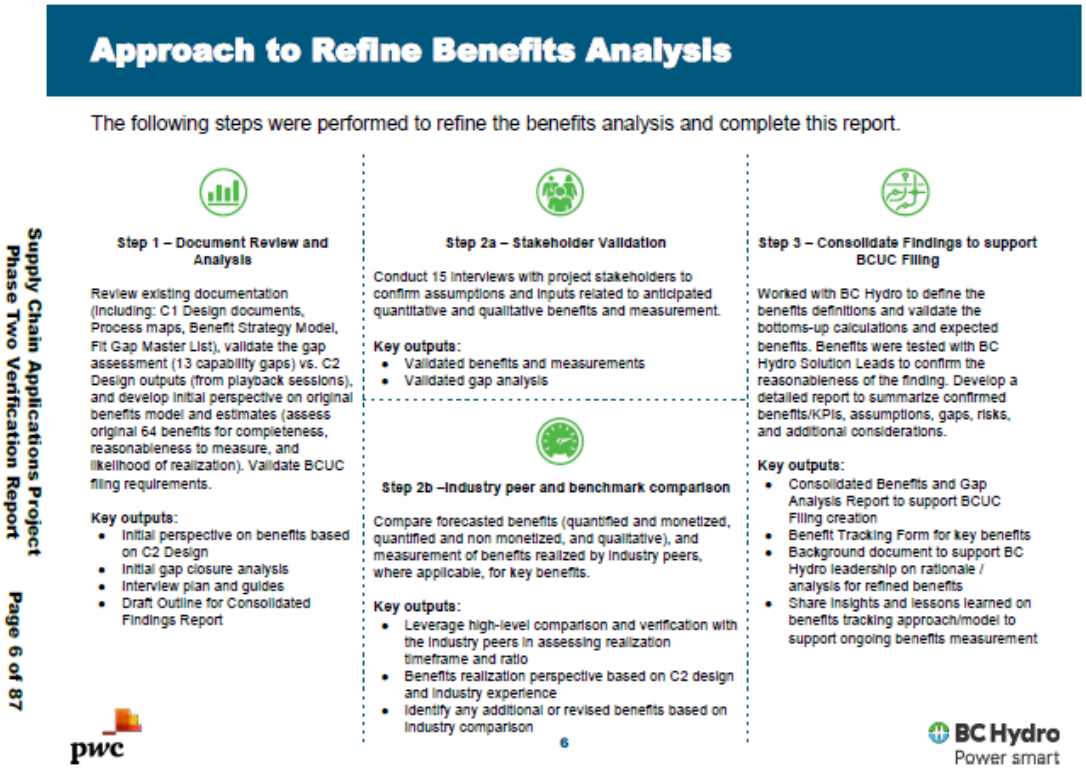
RESPONSE:

The current baselines and metrics are included in the Benefits Tracking Sheet filed as Appendix I-1 of the Verification Report.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

- **Step 1:** Document Review and Analysis - Reviewed existing documentation and validated capability gap assessments against design stage outputs to assess benefits for completeness, reasonableness to measure, and likelihood of realization;

- **Step 2a:** Stakeholder Validation - Conducted interviews with SCA Project stakeholders to confirm assumptions and inputs for forecasted quantitative and qualitative benefits and measurement;
- **Step 2b:** Industry Peer and Benchmark Comparison – Compared forecasted benefits to the measurement of benefits realized by industry peers for key benefits to assess realization timeframe and ratio and identify any changes to the benefits that might be necessary; and
- **Step 3:** Tested benefits with BC Hydro stakeholders to confirm reasonableness of findings and developed a detailed report to summarize confirmed benefits, key performance indicators, assumptions, gaps, risks, and any other additional considerations.



Approach to Refine Benefits Analysis

The following steps were performed to refine the benefits analysis and complete this report.

Step 1 – Document Review and Analysis

Review existing documentation (including: C1 Design documents, Process maps, Benefit Strategy Model, Fit Gap Master List), validate the gap assessment (13 capability gaps) vs. C2 Design outputs (from playback sessions), and develop initial perspective on original benefits model and estimates (assess original 64 benefits for completeness, reasonableness to measure, and likelihood of realization). Validate BCUC filing requirements.

Key outputs:
- Initial perspective on benefits based on C2 Design
- Initial gap closure analysis
- Interview plan and guides
- Draft Outline for Consolidated Findings Report

Step 2a – Stakeholder Validation

Conduct 15 interviews with project stakeholders to confirm assumptions and inputs related to anticipated quantitative and qualitative benefits and measurement.

Key outputs:
- Validated benefits and measurements
- Validated gap analysis

Step 2b –Industry peer and benchmark comparison

Compare forecasted benefits (quantified and monetized, quantified and non monetized, and qualitative), and measurement of benefits realized by industry peers, where applicable, for key benefits.

Key outputs:
- Leverage high-level comparison and verification with the industry peers in assessing realization timeframe and ratio
- Benefits realization perspective based on C2 design and industry experience
- Identify any additional or revised benefits based on industry comparison

Step 3 – Consolidate Findings to support BCUC Filing

Worked with BC Hydro to define the benefits definitions and validate the bottoms-up calculations and expected benefits. Benefits were tested with BC Hydro Solution Leads to confirm the reasonableness of the finding. Develop a detailed report to summarize confirmed benefits/KPIs, assumptions, gaps, risks, and additional considerations.

Key outputs:
- Consolidated Benefits and Gap Analysis Report to support BCUC Filing creation
- Benefit Tracking Form for key benefits
- Background document to support BC Hydro leadership on rationale / analysis for refined benefits
- Share insights and lessons learned on benefits tracking approach/model to support ongoing benefits measurement

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BC Hydro
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Appendix H

1.25.1 Please provide a description of C1 and C2 Design documents.

RESPONSE:

Please find below PwC's response to this information request.

C1 & C2 Design documents are an extensive repository of over 100 documents compiled through both phases of the design cycle. The documents were cited by PwC in the References and Citations section of the SCA Benefits Analysis report. The documents were comprised of several document types:

1. **Workshop Decks - Workshop decks were documents created by the joint BC Hydro and PwC design teams to identify and guide the conversations and activities taking place during the preparation for and execution of functional and technical design workshops. Workshop decks included some or all of the following:**

- **Identification of decisions which had to be made in order to develop a system design;**
- **Process considerations;**
- **Rules, regulations, policies which may affect an outcome or decision;**
- **Leading practices in the fields related to the workshop;**
- **Capabilities of the SAP system being installed; and**
- **Current pain points or limitations of the current system or process.**

2. **Scenario Prep Documents - many scenarios that occur during execution of supply chain processes must be considered while designing a supply chain application. Scenario Prep documents outlined the material or service required to be purchased and the key considerations associated with the procurement or handling of said material or service;**

3. **L3 Process Maps - Process maps of each key process at an L3 (task) level of detail including: each task being performed, which role performs the task, how it is related to previous and future tasks in the process, whether it is a control step, how it relates to the system, other systems, documents or other artefacts; and**

4. **C1 Findings Documents - C1 Findings documents outlined by workstream the key considerations and gaps that were addressed during the C1 design phase. These documents also summarized some of the activities that needed to be considered during C2 design.**

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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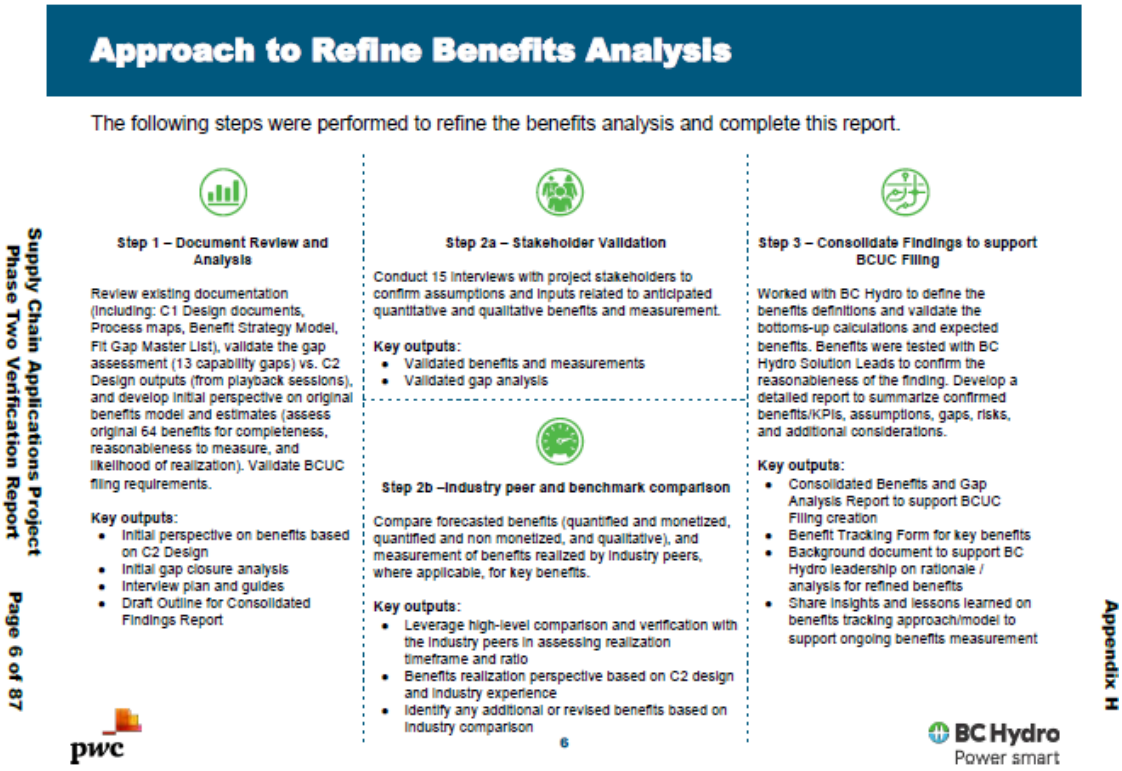

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Key outputs:
- Leverage high-level comparison and verification with the industry peers in assessing realization timeframe and ratio
- Benefits realization perspective based on C2 design and industry experience
- Identify any additional or revised benefits based on industry comparison

Step 3 – Consolidate Findings to support BCUC Filing

Worked with BC Hydro to define the benefits definitions and validate the bottoms-up calculations and expected benefits. Benefits were tested with BC Hydro Solution Leads to confirm the reasonableness of the finding. Develop a detailed report to summarize confirmed benefits/KPIs, assumptions, gaps, risks, and additional considerations.

Key outputs:
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Appendix H

1.25.2 Please explain the process by which PwC validated the gap assessment vs C2 Design outputs.

RESPONSE:

Please find below PwC's response to this information request.

During C1 Design cycle each of the 13 Capability Gaps were validated against each individual workstream and their contribution to closing these gaps. These closures were reported out by functional leads at the final reporting sessions at the end of the C1 Design Cycle. Fit-gap log entries were made during C1 and C2 to assure each of these Capability Gaps were addressed during design. Each fit-gap log entry was addressed by end of C2 to assure closure of design requirements, thereby addressing the fit-gap entries.

As a secondary validation, during C2, the team produced a list of Business Process Performance Measures to be developed during realization. This list of

measures was validated against each benefit and each of the 13 Capability Gaps as a cross-check.

Finally, in the Integrated Design Report (which was the culmination of C2 Design cycle), each Capability Gap and the functionality designed related to its closure was reported by each functional stream.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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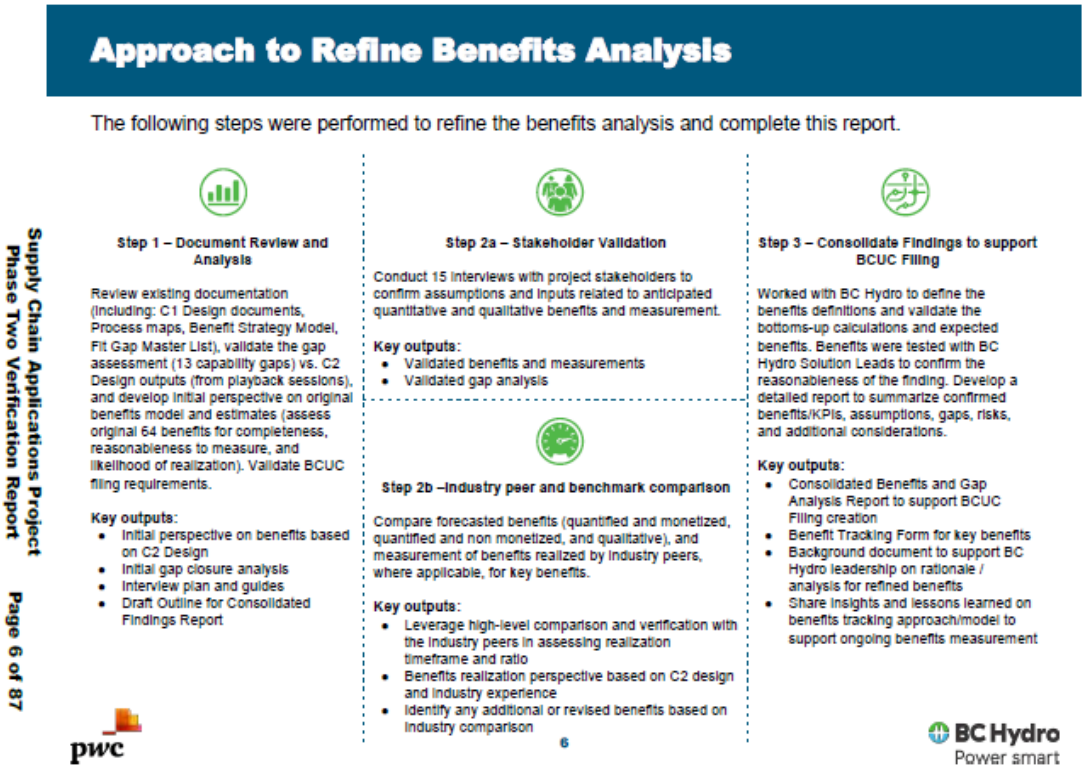

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Key outputs:
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Step 3 – Consolidate Findings to support BCUC Filing

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Key outputs:
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Appendix H

1.25.3 Please describe the process used for assessing the original 64 benefits for "completeness, reasonableness to measure and likelihood of realization".

RESPONSE:

Please find below PwC's response to the information request.

Each of the 64 benefits was tested by the teams during the design cycles. Recommendations for additions and deletions were identified as the design cycles progressed.

Secondarily, the PwC Benefit Review Team evaluated the proposed benefits based on experience and history in similar projects. This allowed for the identification and discussion of any potential gaps or discrepancies.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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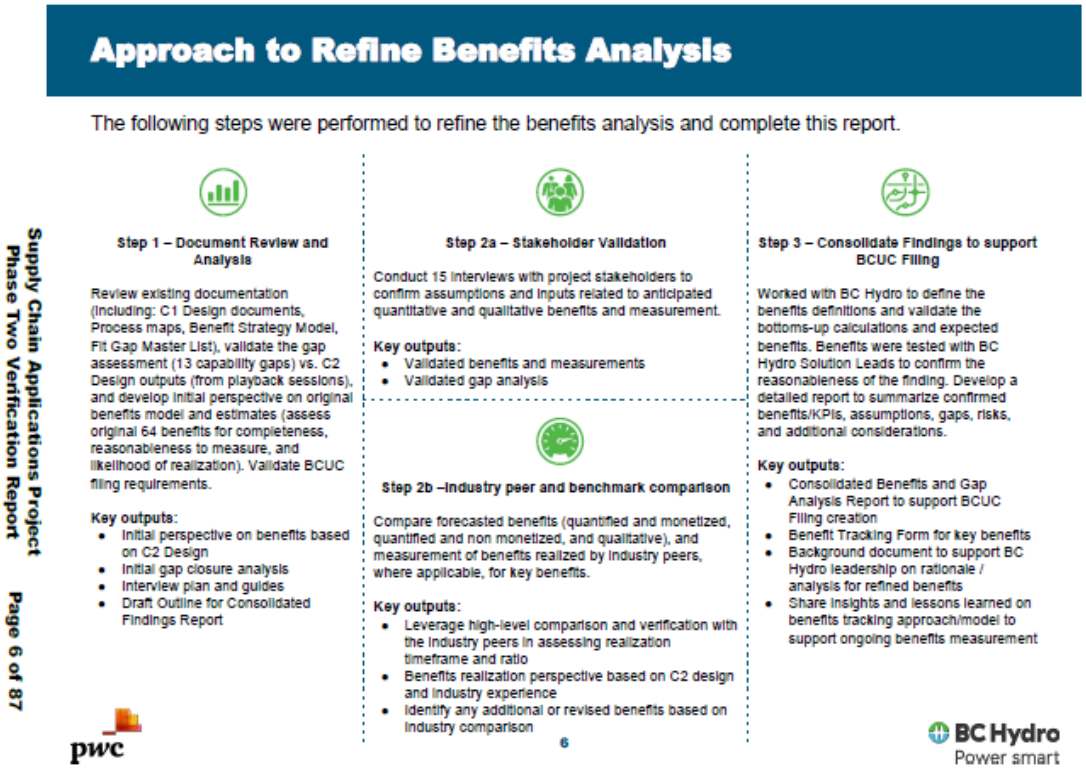

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Step 3 – Consolidate Findings to support BCUC Filing

Worked with BC Hydro to define the benefits definitions and validate the bottoms-up calculations and expected benefits. Benefits were tested with BC Hydro Solution Leads to confirm the reasonableness of the finding. Develop a detailed report to summarize confirmed benefits/KPIs, assumptions, gaps, risks, and additional considerations.

Key outputs:
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- Share insights and lessons learned on benefits tracking approach/model to support ongoing benefits measurement

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Appendix H

1.25.4 Please identify the positions of the 15 stakeholders who were interviewed.

RESPONSE:

Many of the interviews were conducted in group format, so there were more than 15 stakeholders interviewed. Page 64 of Appendix H of the Verification Report lists the stakeholders consulted. This includes both BC Hydro representatives as well as PwC system integrator project team members. The table below provides the names and positions of the BC Hydro stakeholders listed on page 64 of Appendix H.

Name	Position
Philip Li	**Information Technology Enterprise Solution Lead**
Irene Liang	**Accounts Payable Manager**
Kiernan Dixon	**Manager, Procurement Sourcing and Purchasing**
Haroon Raza	**Senior Procurement Advisor**
Randie Levetsovitis	**Senior Procurement Advisor**
Wayne Martell	**Manager, Trouble and Operations Support**
Rowen Espina	**Information Technology Project Manager**
Janice Yick	**Contracts Professional, Operations**
Brian Plunkett	**Finance Professional, Business Services**
Danielle Rogers	**Senior Finance Manager, Operations**
Maryna Korsei	**SCA Business Lead**
Ben Setiawan	**SCA Solution Lead**
Zaheer Shivji	**Business Director, SCA Project**
Harold Schellekens	**Senior Program Manager, Technology Delivery**
Fred Jongeneel	**Project and Portfolio Management Business Lead**
Darlene Blackall	**Contract Manager, Capital Infrastructure Project Delivery**
Darren Gebert	**Materials Management Manager**
Greg Kowal	**Engineering Team Lead**
Joe Googel	**Manager, Materials Management Operations**
Ken MacPherson	**Field Storekeeper Foreman**
Jeff Kennedy	**Information Technology Project Manager**
Tim Kikkert	**Manager, Master Data Management**
Tania Cernezel	**Project Manager, Operations and Enterprise Supply Chain**
Tania Dashko	**Project Manager, Category Management PMO**
Joseph Sathianathan	**Project Manager, Category Management Program**
Michael O'Grady	**Manager, Materials Planning**
Wayne Nichiporik	**Operations Manager, Material Management Business Unit**

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

- **Step 1:** Document Review and Analysis - Reviewed existing documentation and validated capability gap assessments against design stage outputs to assess benefits for completeness, reasonableness to measure, and likelihood of realization;

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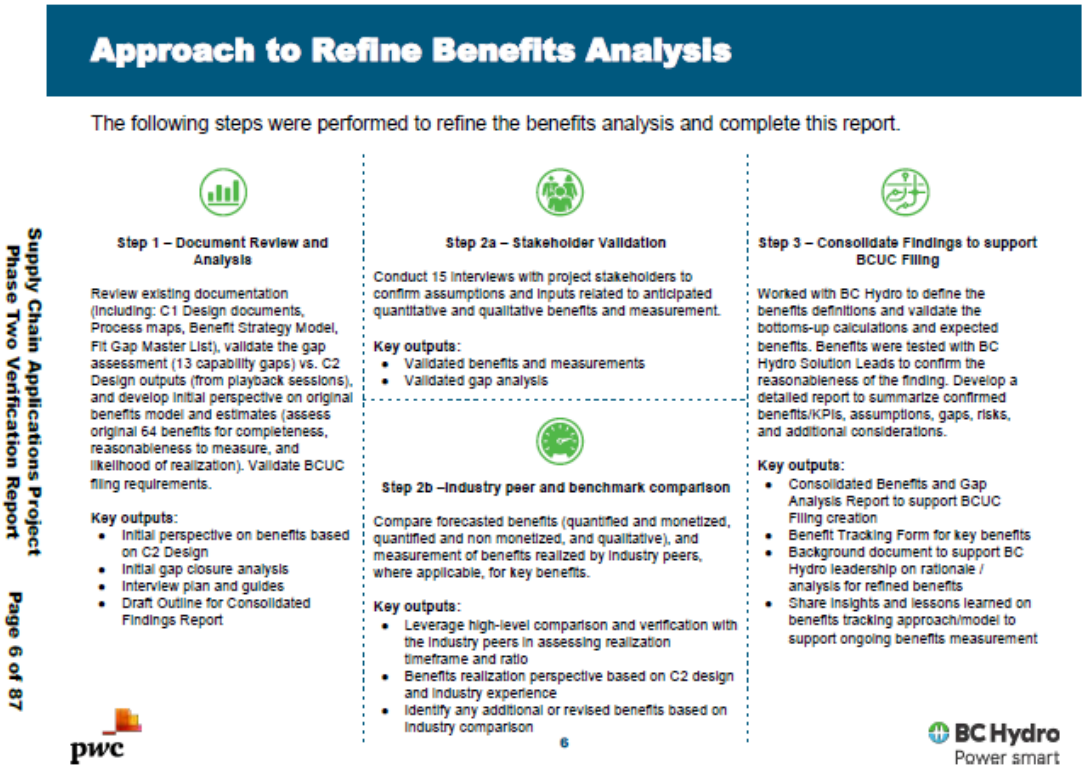

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Appendix H

1.25.5 Please provide a discussion of how the interviews were conducted.

RESPONSE:

Please find below PwC's response to this information request.

Following the evaluation of project documentation the benefits team scheduled interviews with key pre-identified stakeholders. As the benefits team was comprised of three members from PwC the interview took place in a panel format with one consultant asking questions while the others were taking notes and contemplating follow-on questions or potential gaps. Notes were compiled and analyzed, any necessary follow-up questions were asked and secondary follow-up sessions were held as needed.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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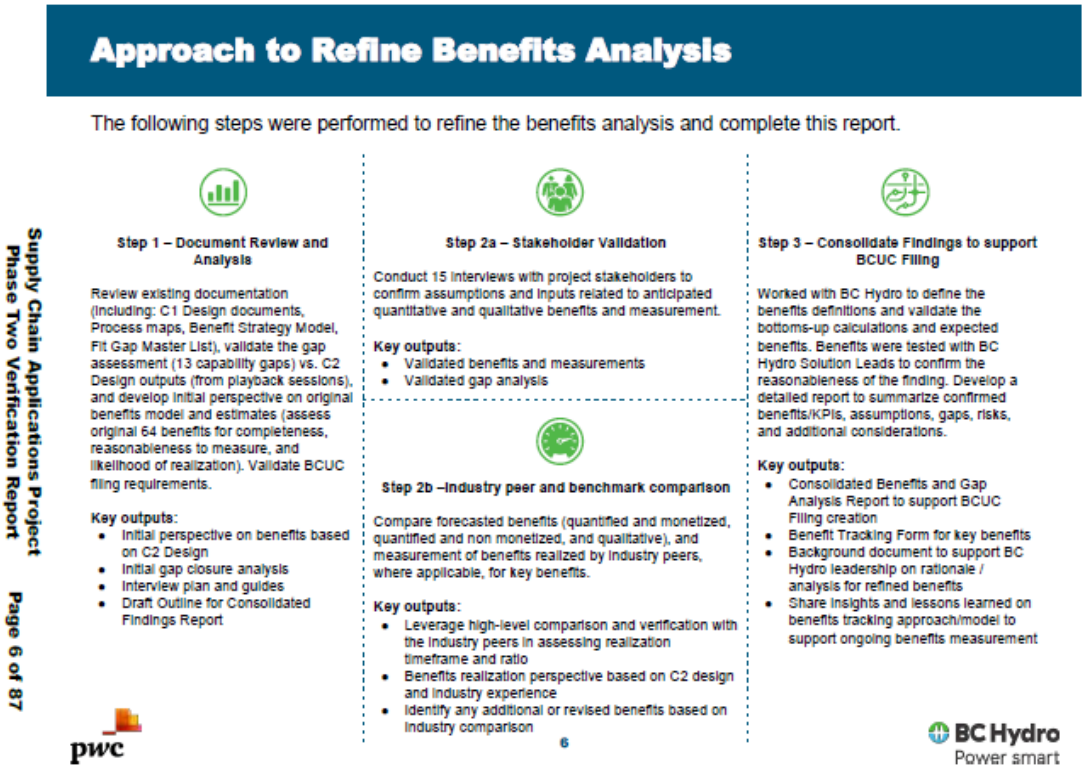

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Appendix H

1.25.6 Please provide a discussion of the types of evidence PwC collected to validate stakeholder claims developed during the interviews.

RESPONSE:

Please find below PwC's response to this information request.

PwC reviewed the current state process documents and validated those with the stakeholders.

PwC cross-checked the processes and claims from different teams. For example, PwC interviewed the Projects Integration team and noted the demand creation process and noted the claims and challenges related to materials management. PwC also met with the Materials Management team and independently verified those claims. By verifying and validating from both sides, PwC was able to validate stakeholder claims.

In addition, the PwC team reviewed C1 Findings documents that outlined by workstream the key considerations and Capability Gaps that were addressed during the C1 design phase.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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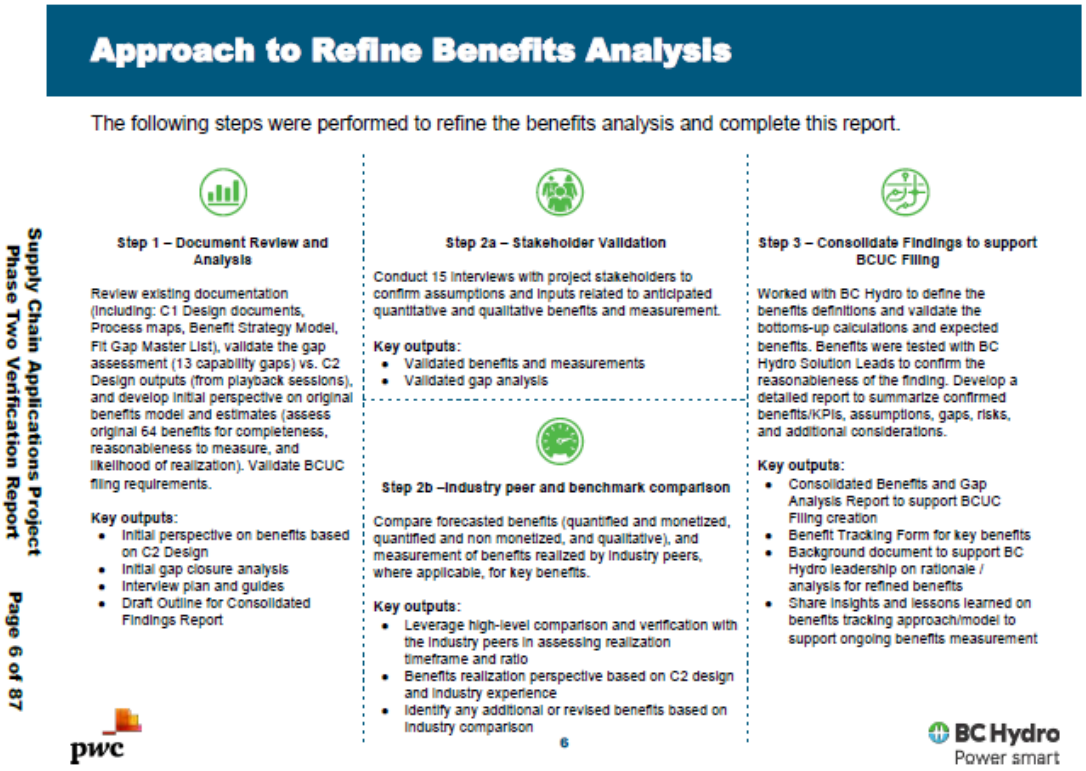

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Appendix H

1.25.7 Please explain the meaning of 'Leverage' as an output in high level comparison and verification.

RESPONSE:

Please find below PwC's response to the information request.

"Leverage high-level comparison and verification with the industry peers in assessing realization timeframe and ratio" refers to the comparison to benchmark data and further project documentation available from previous consulting engagements that could be used in the analysis of the benefits at BC Hydro.

For several benefit evaluations we also phoned our network of consultants and previous clients to further explore the intricacies of the data and evaluate other factors to improve the basis of comparison while validating realization timeframes and realization ratios.

25.0 Reference: Exhibit B-1, page 3-4 and 3-5 and Appendix H, page 6

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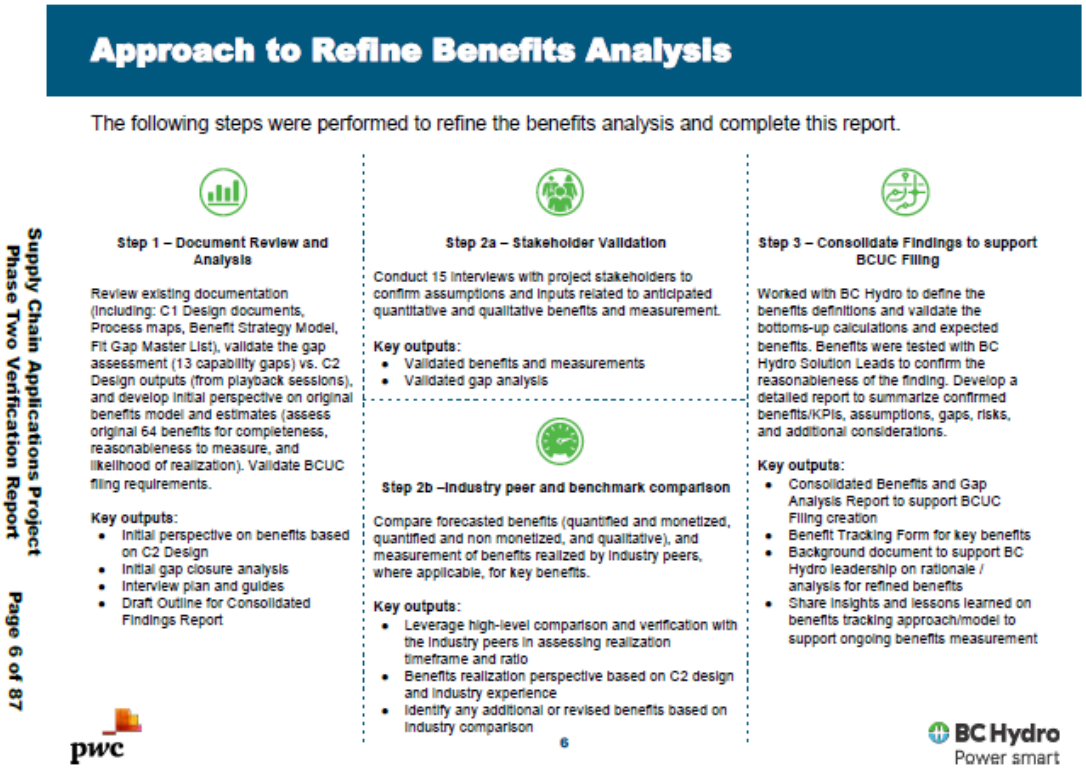

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Appendix H

1.25.8 Please provide the full Consolidated Benefits and Gap Analysis Report or identify where it is included in this application.

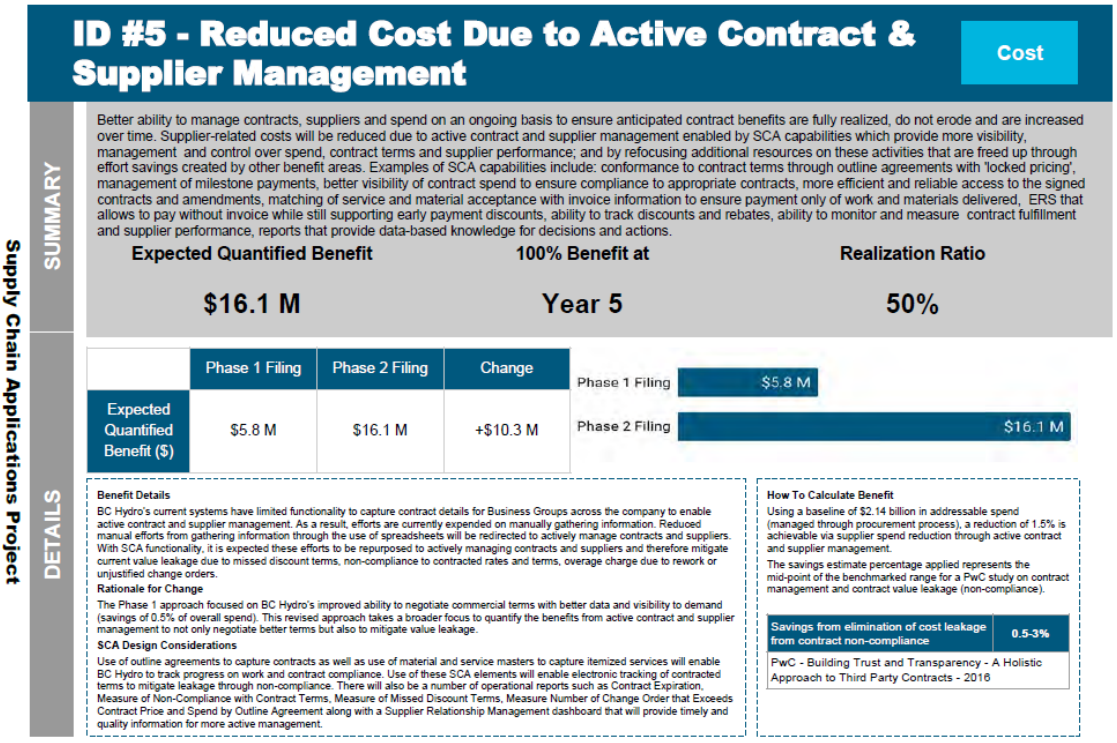
RESPONSE:

The Consolidated Benefits and Gap Analysis Report were filed as Appendices G and H to the Verification Report.

26.0 Reference: Exhibit B-1, page 3-11 and Appendix H page 20 of 87

- **Capability Gap No. 2 – Poor Contract Management:** The Expected Benefits for capability gap No. 2 increased by $10.3 million annually. This increase is as a result of a change in the underlying approach to Benefit ID No. 5 – "Reduced Cost Due to Active Contract & Supplier Management." Benefit ID No. 5 quantifies BC Hydro's increased ability to better manage contracts and suppliers to ensure anticipated contract benefits are fully realized, do not erode, and are increased over time. In the Phase One Application, BC Hydro had forecasted the value of this benefit as a reduction of 0.5 per cent of overall spend based on its improved ability to negotiate commercial terms with better data and visibility to demand. PwC advised taking a broader focus to quantify the benefits from active contract and supplier management not only to negotiate better terms, but also to mitigate value leakage. The benchmarked range for savings from the elimination of cost leakage from contract non-compliance was determined to be between 0.5 per cent and 3 per cent in a PwC study[14].
  BC Hydro and PwC determined that a reduction of 1.5 per cent, which is just below the mid-point, is achievable and reasonable.

[14] PwC – Building Trust and Transparency – A Holistic Approach to Third Party Contracts – 2016.



Supply Chain Applications Project

ID #5 - Reduced Cost Due to Active Contract & Supplier Management

Cost

SUMMARY

Better ability to manage contracts, suppliers and spend on an ongoing basis to ensure anticipated contract benefits are fully realized, do not erode and are increased over time. Supplier-related costs will be reduced due to active contract and supplier management enabled by SCA capabilities which provide more visibility, management and control over spend, contract terms and supplier performance; and by refocusing additional resources on these activities that are freed up through effort savings created by other benefit areas. Examples of SCA capabilities include: conformance to contract terms through outline agreements with 'locked pricing', management of milestone payments, better visibility of contract spend to ensure compliance to appropriate contracts, more efficient and reliable access to the signed contracts and amendments, matching of service and material acceptance with invoice information to ensure payment only of work and materials delivered, ERS that allows to pay without invoice while still supporting early payment discounts, ability to track discounts and rebates, ability to monitor and measure contract fulfillment and supplier performance, reports that provide data-based knowledge for decisions and actions.

Expected Quantified Benefit	100% Benefit at	Realization Ratio
$16.1 M	Year 5	50%

DETAILS

	Phase 1 Filing	Phase 2 Filing	Change
Expected Quantified Benefit ($)	$5.8 M	$16.1 M	+$10.3 M

Phase 1 Filing $5.8 M

Phase 2 Filing $16.1 M

Benefit Details

BC Hydro's current systems have limited functionality to capture contract details for Business Groups across the company to enable active contract and supplier management. As a result, efforts are currently expended on manually gathering information. Reduced manual efforts from gathering information through the use of spreadsheets will be redirected to actively manage contracts and suppliers. With SCA functionality, it is expected these efforts to be repurposed to actively managing contracts and suppliers and therefore mitigate current value leakage due to missed discount terms, non-compliance to contracted rates and terms, overage charge due to rework or unjustified change orders.

Rationale for Change

The Phase 1 approach focused on BC Hydro's improved ability to negotiate commercial terms with better data and visibility to demand (savings of 0.5% of overall spend). This revised approach takes a broader focus to quantify the benefits from active contract and supplier management to not only negotiate better terms but also to mitigate value leakage.

SCA Design Considerations

Use of outline agreements to capture contracts as well as use of material and service masters to capture itemized services will enable BC Hydro to track progress on work and contract compliance. Use of these SCA elements will enable electronic tracking of contracted terms to mitigate leakage through non-compliance. There will also be a number of operational reports such as Contract Expiration, Measure of Non-Compliance with Contract Terms, Measure of Missed Discount Terms, Measure Number of Change Order that Exceeds Contract Price and Spend by Outline Agreement along with a Supplier Relationship Management dashboard that will provide timely and quality information for more active management.

How To Calculate Benefit

Using a baseline of $2.14 billion in addressable spend (managed through procurement process), a reduction of 1.5% is achievable via supplier spend reduction through active contract and supplier management.

The savings estimate percentage applied represents the mid-point of the benchmarked range for a PwC study on contract management and contract value leakage (non-compliance).

Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

Benefit Details

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1.26.1 Please elaborate with specific examples and quantification where possible on the 'broader focus' that was advised to be included by PwC.

RESPONSE:

In BC Hydro's Phase One filing this benefit was generally focused on the potential reduction of 0.5 per cent of spend due to an enhanced ability to negotiate better commercial terms with better data and visibility to demand.

PwC experience and additional market research indicates that by taking a 'broader' more holistic view through the consideration of post-contract value leakage that these savings could potentially be increased.

PwC's report 'A Holistic Approach to Third Party Contracts' included in Attachment 1 to BC Hydro's response to CEC IR 1.23.1, indicates that cost leakage from contract non-compliance can generate between 0.5 per cent and 3 per cent in contract specific savings. As this report is generated from a wider supply chain sampling than solely the utility industry, PwC corroborated this range by evaluating confidential benchmark data derived from previous utility industry consulting engagements. Secondarily this range was evaluated against other commercially available market intelligence.

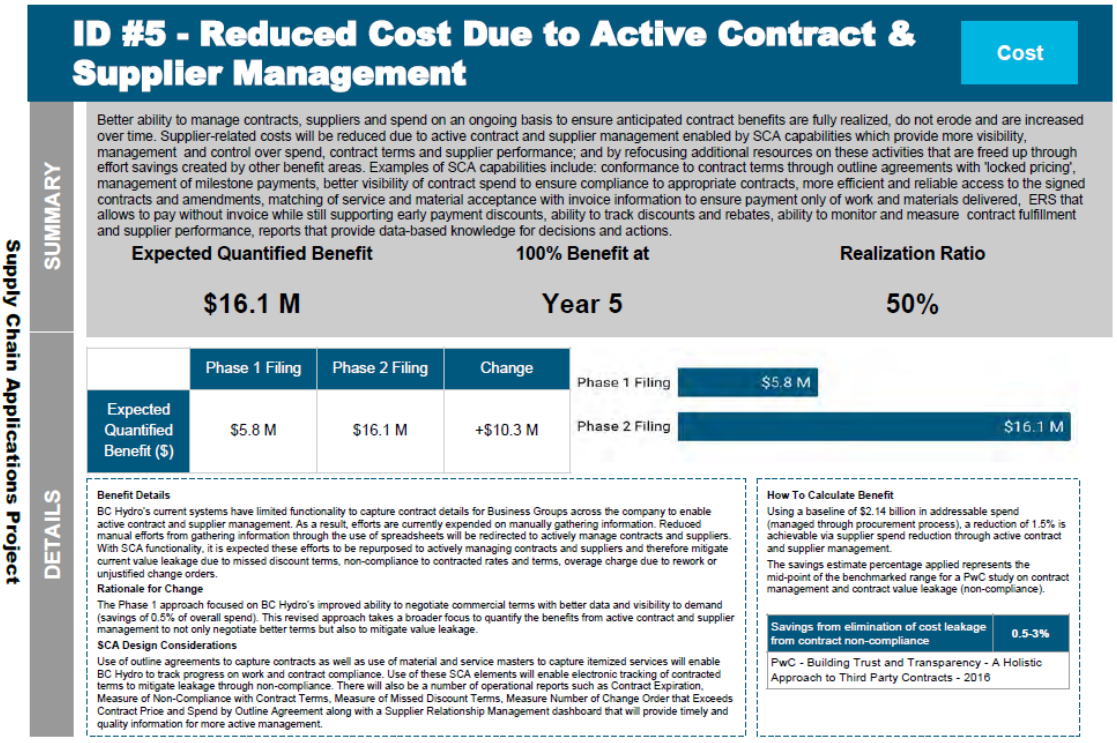
Beyond the research, our evaluation considered the potential for success for BC Hydro relative to the range reported in the data. Mitigating contract value leakage can be greatly enhanced through improvements to systems and processes that increase controls through enhanced reporting capabilities including the ability to compare contractual terms to invoices. BC Hydro possess a higher than average complexity of transactions due to its ratio of service Purchase Orders (POs) to material POs. The SCA Project will enhance the ability to govern service POs and will in turn enhance the ability to mitigate contract value leakage on a high percentage of contracts.

Following an evaluation, it was concluded that the potential for success to achieve this savings was high and 1.5 per cent was an appropriate and reasonable estimate.

26.0 Reference: Exhibit B-1, page 3-11 and Appendix H page 20 of 87

- **Capability Gap No. 2 – Poor Contract Management:** The Expected Benefits for capability gap No. 2 increased by $10.3 million annually. This increase is as a result of a change in the underlying approach to Benefit ID No. 5 – "Reduced Cost Due to Active Contract & Supplier Management." Benefit ID No. 5 quantifies BC Hydro's increased ability to better manage contracts and suppliers to ensure anticipated contract benefits are fully realized, do not erode, and are increased over time. In the Phase One Application, BC Hydro had forecasted the value of this benefit as a reduction of 0.5 per cent of overall spend based on its improved ability to negotiate commercial terms with better data and visibility to demand. PwC advised taking a broader focus to quantify the benefits from active contract and supplier management not only to negotiate better terms, but also to mitigate value leakage. The benchmarked range for savings from the elimination of cost leakage from contract non-compliance was determined to be between 0.5 per cent and 3 per cent in a PwC study[14].
  BC Hydro and PwC determined that a reduction of 1.5 per cent, which is just below the mid-point, is achievable and reasonable.

[14] PwC – Building Trust and Transparency – A Holistic Approach to Third Party Contracts – 2016.



Supply Chain Applications Project

ID #5 - Reduced Cost Due to Active Contract & Supplier Management

Cost

SUMMARY

Better ability to manage contracts, suppliers and spend on an ongoing basis to ensure anticipated contract benefits are fully realized, do not erode and are increased over time. Supplier-related costs will be reduced due to active contract and supplier management enabled by SCA capabilities which provide more visibility, management and control over spend, contract terms and supplier performance; and by refocusing additional resources on these activities that are freed up through effort savings created by other benefit areas. Examples of SCA capabilities include: conformance to contract terms through outline agreements with 'locked pricing', management of milestone payments, better visibility of contract spend to ensure compliance to appropriate contracts, more efficient and reliable access to the signed contracts and amendments, matching of service and material acceptance with invoice information to ensure payment only of work and materials delivered, ERS that allows to pay without invoice while still supporting early payment discounts, ability to track discounts and rebates, ability to monitor and measure contract fulfillment and supplier performance, reports that provide data-based knowledge for decisions and actions.

Expected Quantified Benefit	100% Benefit at	Realization Ratio
$16.1 M	Year 5	50%

DETAILS

	Phase 1 Filing	Phase 2 Filing	Change
Expected Quantified Benefit ($)	$5.8 M	$16.1 M	+$10.3 M

Phase 1 Filing $5.8 M

Phase 2 Filing $16.1 M

Benefit Details

BC Hydro's current systems have limited functionality to capture contract details for Business Groups across the company to enable active contract and supplier management. As a result, efforts are currently expended on manually gathering information. Reduced manual efforts from gathering information through the use of spreadsheets will be redirected to actively manage contracts and suppliers. With SCA functionality, it is expected these efforts to be repurposed to actively managing contracts and suppliers and therefore mitigate current value leakage due to missed discount terms, non-compliance to contracted rates and terms, overage charge due to rework or unjustified change orders.

Rationale for Change

The Phase 1 approach focused on BC Hydro's improved ability to negotiate commercial terms with better data and visibility to demand (savings of 0.5% of overall spend). This revised approach takes a broader focus to quantify the benefits from active contract and supplier management to not only negotiate better terms but also to mitigate value leakage.

SCA Design Considerations

Use of outline agreements to capture contracts as well as use of material and service masters to capture itemized services will enable BC Hydro to track progress on work and contract compliance. Use of these SCA elements will enable electronic tracking of contracted terms to mitigate leakage through non-compliance. There will also be a number of operational reports such as Contract Expiration, Measure of Non-Compliance with Contract Terms, Measure of Missed Discount Terms, Measure Number of Change Order that Exceeds Contract Price and Spend by Outline Agreement along with a Supplier Relationship Management dashboard that will provide timely and quality information for more active management.

How To Calculate Benefit

Using a baseline of $2.14 billion in addressable spend (managed through procurement process), a reduction of 1.5% is achievable via supplier spend reduction through active contract and supplier management.

The savings estimate percentage applied represents the mid-point of the benchmarked range for a PwC study on contract management and contract value leakage (non-compliance).

Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

Benefit Details

BC Hydro's current systems have limited functionality to capture contract details for Business Groups across the company to enable active contract and supplier management. As a result, efforts are currently expended on manually gathering information. Reduced manual efforts from gathering information through the use of spreadsheets will be redirected to actively manage contracts and suppliers. With SCA functionality, it is expected these efforts to be repurposed to actively managing contracts and suppliers and therefore mitigate current value leakage due to missed discount terms, non-compliance to contracted rates and terms, overage charge due to rework or unjustified change orders.

Rationale for Change

The Phase 1 approach focused on BC Hydro's improved ability to negotiate commercial terms with better data and visibility to demand (savings of 0.5% of overall spend). This revised approach takes a broader focus to quantify the benefits from active contract and supplier management to not only negotiate better terms but also to mitigate value leakage.

SCA Design Considerations

Use of outline agreements to capture contracts as well as use of material and service masters to capture itemized services will enable BC Hydro to track progress on work and contract compliance. Use of these SCA elements will enable electronic tracking of contracted terms to mitigate leakage through non-compliance. There will also be a number of operational reports such as Contract Expiration, Measure of Non-Compliance with Contract Terms, Measure of Missed Discount Terms, Measure Number of Change Order that Exceeds Contract Price and Spend by Outline Agreement along with a Supplier Relationship Management dashboard that will provide timely and quality information for more active management.

1.26.2 Please confirm that BC Hydro staff are currently tracking progress on work and contract compliance.

RESPONSE:

The wording included in Appendix H of the Verification Report for Benefit ID No. 5, under the heading SCA Design Considerations should have been "Use of outline agreements to capture contracts as well as use of material and service masters to capture itemized services will enable BC Hydro to track progress on work assigned to vendors, and to track contract compliance".

BC Hydro has staff who currently track progress on work assigned to vendors and attempt to ensure contract compliance. However this is done manually, using different approaches across the organization. This has occurred partly because various approaches have developed in each department organically due to the limitations of the current tools and partly because of the different types of contracts and work managed by different departments. Some of the types of roles involved in these activities include Contract Managers, Project Managers, Field Support Administrators and Service Contract Administrators.

Examples of current tracking of work assigned to vendors and contract compliance activities are:

- **The Program and Contract Management (PCM) department in Operations utilizes the SAP Contractor Portal to track work progress on line contracting work issued to external line contractors. A Service Contract Administrator reviews contract rates manually upon receipt of invoice prior to invoice approval by a Contract Manager; and**

- **The Capital Infrastructure and Project Delivery (CIPD) department utilizes Primavera Unifier to track work progress on contracts >$50,000 and >3 months in duration. A Service Contract Administrator reviews contract rates manually upon receipt of invoice prior to invoice approval by a Contract Manager.**

BC Hydro's staff currently makes best attempts through manual efforts to monitor work progress and reconcile items such as progress payments, rates and overall invoices on individual contracts. In areas of the company with large usage of suppliers and significant contract spend, BC Hydro has often assigned significant human resources and effort to complete these tasks. However, BC Hydro does not currently have the tools that would help ensure efficient and robust work progress and contract compliance tracking on a consistent basis across all contracts. As stated previously, gaps include not having a single source of truth for detailed contract information, and lack of functionality within Passport and integration among various systems and tools. BC Hydro also does not have the tools to systematically evaluate contract compliance overall.

Periodically BC Hydro's Internal Audit group performs audits related to contract management. The most recent such audit was conducted in fiscal 2016 and

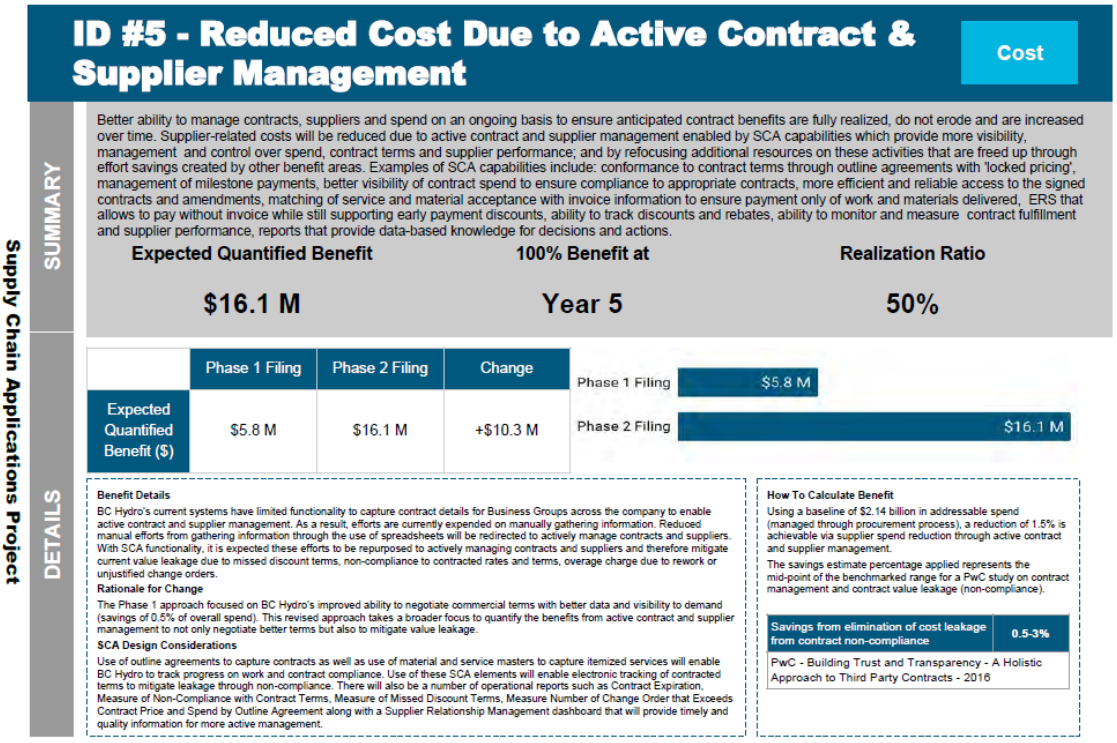
included findings which point to the gaps outlined above. As noted in BC Hydro's response to Phase One CEC IR 1.10.1, this audit also found that "Responsibility for tracking and collecting volume discounts has not been formally assigned. There is a potential financial exposure that advantage may not always be taken of these discounts".

The SCA Project will deliver the tools and functionality outlined in Appendix H, as well as standardized process flows for contract management across the organization, enabling more effective and consistent contract and supplier relationship management and tracking of contract compliance across BC Hydro.

26.0 Reference: Exhibit B-1, page 3-11 and Appendix H page 20 of 87

- **Capability Gap No. 2 – Poor Contract Management:** The Expected Benefits for capability gap No. 2 increased by $10.3 million annually. This increase is as a result of a change in the underlying approach to Benefit ID No. 5 – "Reduced Cost Due to Active Contract & Supplier Management." Benefit ID No. 5 quantifies BC Hydro's increased ability to better manage contracts and suppliers to ensure anticipated contract benefits are fully realized, do not erode, and are increased over time. In the Phase One Application, BC Hydro had forecasted the value of this benefit as a reduction of 0.5 per cent of overall spend based on its improved ability to negotiate commercial terms with better data and visibility to demand. PwC advised taking a broader focus to quantify the benefits from active contract and supplier management not only to negotiate better terms, but also to mitigate value leakage. The benchmarked range for savings from the elimination of cost leakage from contract non-compliance was determined to be between 0.5 per cent and 3 per cent in a PwC study[14].
  BC Hydro and PwC determined that a reduction of 1.5 per cent, which is just below the mid-point, is achievable and reasonable.

[14] PwC – Building Trust and Transparency – A Holistic Approach to Third Party Contracts – 2016.



Supply Chain Applications Project

ID #5 - Reduced Cost Due to Active Contract & Supplier Management

Cost

SUMMARY

Better ability to manage contracts, suppliers and spend on an ongoing basis to ensure anticipated contract benefits are fully realized, do not erode and are increased over time. Supplier-related costs will be reduced due to active contract and supplier management enabled by SCA capabilities which provide more visibility, management and control over spend, contract terms and supplier performance; and by refocusing additional resources on these activities that are freed up through effort savings created by other benefit areas. Examples of SCA capabilities include: conformance to contract terms through outline agreements with 'locked pricing', management of milestone payments, better visibility of contract spend to ensure compliance to appropriate contracts, more efficient and reliable access to the signed contracts and amendments, matching of service and material acceptance with invoice information to ensure payment only of work and materials delivered, ERS that allows to pay without invoice while still supporting early payment discounts, ability to track discounts and rebates, ability to monitor and measure contract fulfillment and supplier performance, reports that provide data-based knowledge for decisions and actions.

Expected Quantified Benefit	100% Benefit at	Realization Ratio
$16.1 M	Year 5	50%

DETAILS

	Phase 1 Filing	Phase 2 Filing	Change
Expected Quantified Benefit ($)	$5.8 M	$16.1 M	+$10.3 M

Phase 1 Filing $5.8 M

Phase 2 Filing $16.1 M

Benefit Details

BC Hydro's current systems have limited functionality to capture contract details for Business Groups across the company to enable active contract and supplier management. As a result, efforts are currently expended on manually gathering information. Reduced manual efforts from gathering information through the use of spreadsheets will be redirected to actively manage contracts and suppliers. With SCA functionality, it is expected these efforts to be repurposed to actively managing contracts and suppliers and therefore mitigate current value leakage due to missed discount terms, non-compliance to contracted rates and terms, overage charge due to rework or unjustified change orders.

Rationale for Change

The Phase 1 approach focused on BC Hydro's improved ability to negotiate commercial terms with better data and visibility to demand (savings of 0.5% of overall spend). This revised approach takes a broader focus to quantify the benefits from active contract and supplier management to not only negotiate better terms but also to mitigate value leakage.

SCA Design Considerations

Use of outline agreements to capture contracts as well as use of material and service masters to capture itemized services will enable BC Hydro to track progress on work and contract compliance. Use of these SCA elements will enable electronic tracking of contracted terms to mitigate leakage through non-compliance. There will also be a number of operational reports such as Contract Expiration, Measure of Non-Compliance with Contract Terms, Measure of Missed Discount Terms, Measure Number of Change Order that Exceeds Contract Price and Spend by Outline Agreement along with a Supplier Relationship Management dashboard that will provide timely and quality information for more active management.

How To Calculate Benefit

Using a baseline of $2.14 billion in addressable spend (managed through procurement process), a reduction of 1.5% is achievable via supplier spend reduction through active contract and supplier management.

The savings estimate percentage applied represents the mid-point of the benchmarked range for a PwC study on contract management and contract value leakage (non-compliance).

Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

Benefit Details

BC Hydro's current systems have limited functionality to capture contract details for Business Groups across the company to enable active contract and supplier management. As a result, efforts are currently expended on manually gathering information. Reduced manual efforts from gathering information through the use of spreadsheets will be redirected to actively manage contracts and suppliers. With SCA functionality, it is expected these efforts to be repurposed to actively managing contracts and suppliers and therefore mitigate current value leakage due to missed discount terms, non-compliance to contracted rates and terms, overage charge due to rework or unjustified change orders.

Rationale for Change

The Phase 1 approach focused on BC Hydro's improved ability to negotiate commercial terms with better data and visibility to demand (savings of 0.5% of overall spend). This revised approach takes a broader focus to quantify the benefits from active contract and supplier management to not only negotiate better terms but also to mitigate value leakage.

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1.26.3 How does BC Hydro currently evaluate its progress on work and contract compliance? Please explain, and provide how often this assessment is undertaken by BC Hydro.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.26.2.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.

How To Calculate Benefit

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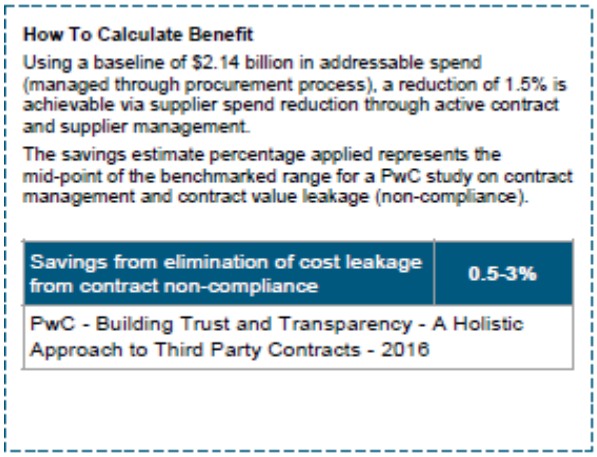
Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

1.27.1 Please confirm that the full dataset supporting the benefits attributed to 'Reduced Cost Due to Active Contract and Supplier Management' is included in Appendix F, page F2, or identify the other sources of information.

RESPONSE:

Confirmed. Benefit No. 5 is included under Capability Gap 2 - Poor Contract Management in Tab F2 in Appendix F.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.



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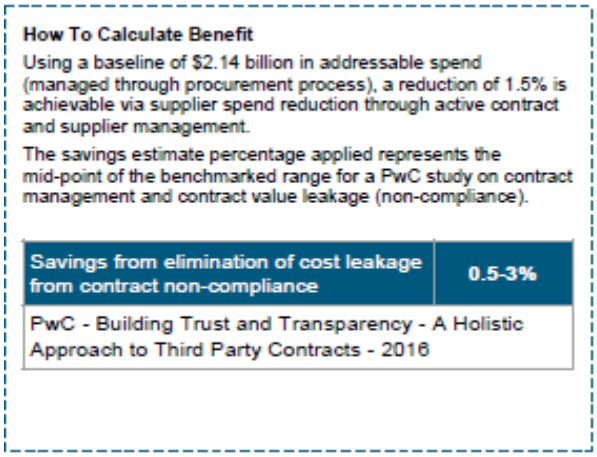
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

1.27.2 F2 references page numbers in multiple locations. Please identify the page references.

RESPONSE:

Tab F2 in Appendix F contains a pivot table summarizing data from Tab F1. There are no references to page numbers. All details for Benefit ID No. 5 can be found in Tab F1, row 8 in Appendix F and on page 20 of 87 of Appendix H.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.



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Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

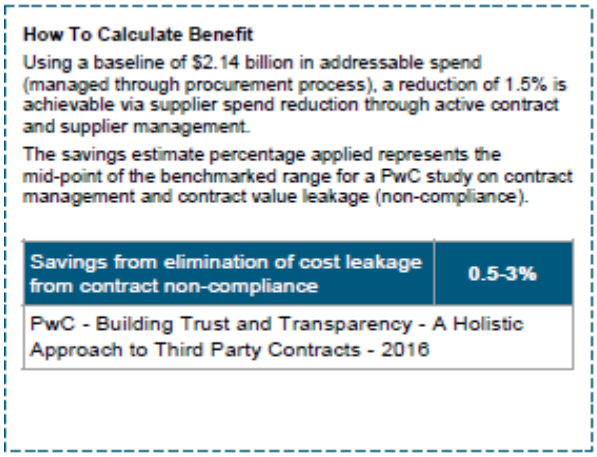
1.27.3 Please provide further details of the $32,145,000 Phase 2 total effort (F2, Row 8, Column N or identify where this can be found in the application).

RESPONSE:

BC Hydro assumes the question refers to the calculation in Tab F1 of Appendix F.

The potential realizable benefit was calculated as follows: 1.5 per cent of $2.14 billion of 'Addressable Spend' is equal to $32.145 million. The $32.145 million amount multiplied by the realization ratio of 50 per cent equates to a total Expected (and Monetized) Benefit value of $16.1 million.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.



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Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

1.27.4 Does BC Hydro currently establish percentage or other objectives for procurement savings? Please explain.

RESPONSE:

BC Hydro does not establish an across-the-board percentage for "procurement savings".

BC Hydro is well into the process of implementing category management for its key spend categories that comprise the majority of ongoing spend. When developing and executing specific category strategies, BC Hydro sets high-level objectives in eight areas to reflect what good performance would be in that specific category to meet BC Hydro's needs. The eight areas include: reliability, responsiveness, safety, organizational productivity and efficiency, First Nations, compliance and control, supplier performance and relationships and total lifecycle cost.

BC Hydro has been piloting a category management benefits framework. As BC Hydro implements specific actions associated with various spending categories, the cost benefits related to the associated spend are forecasted. Only starting in fiscal 2018 has there been substantive activity to capture.

Given current limitations with available tools and information, BC Hydro only has directional high-level estimates of potential cost benefits. Forecasted cost benefits (cost avoidance and cost reduction benefits) related to specific category

management activities underway have been approximately $7.8 million (4.5 per cent) in fiscal 2018 and $16.2 million (5.5 per cent) for fiscal 2019 year-to-date. The per cent is based on the cost benefit related to the assumed spend or cost connected to the specific action. The cost benefit is an annual amount for that given year given the assumed spend or cost.

BC Hydro is currently unable to determine with confidence the benefits that are actually realized for the following reasons:

- **BC Hydro does not have tools to accurately and efficiently know what spend is happening in which categories, particularly as it relates to services spend. This means that it is difficult to track and update the actual spend or costs and confirm the actual associated benefit and the time period; and**

- **The actual benefits are dependent upon the category strategies and contract terms being followed. Without the right tools in place there could be significant 'contract leakage' that erode the actual benefits.**

The SCA Project will provide capabilities that help to ensure the category strategies and contract terms are being followed and also categorization of spend, information and reporting to make the calculation of actual cost benefits more feasible.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.

How To Calculate Benefit

Using a baseline of $2.14 billion in addressable spend (managed through procurement process), a reduction of 1.5% is achievable via supplier spend reduction through active contract and supplier management.

The savings estimate percentage applied represents the mid-point of the benchmarked range for a PwC study on contract management and contract value leakage (non-compliance).

Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

1.27.4 Does BC Hydro currently establish percentage or other objectives for procurement savings? Please explain.

1.27.4.1 If yes, please provide BC Hydro's objectives and results for the last five years.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.27.4.

27.0 Reference: Exhibit B-1, Appendix H page 20 of 87 and Appendix F, page F2.

How To Calculate Benefit

Using a baseline of $2.14 billion in addressable spend (managed through procurement process), a reduction of 1.5% is achievable via supplier spend reduction through active contract and supplier management.

The savings estimate percentage applied represents the mid-point of the benchmarked range for a PwC study on contract management and contract value leakage (non-compliance).

Savings from elimination of cost leakage from contract non-compliance	0.5-3%
PwC - Building Trust and Transparency - A Holistic Approach to Third Party Contracts - 2016	

1.27.4 Does BC Hydro currently establish percentage or other objectives for procurement savings? Please explain.

1.27.4.2 If not, please explain why not.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.27.4.

28.0 Reference: Exhibit B-1, page 4-5 and 4-6

SCA Project Team Formation and Training

The core project team is comprised of roughly 65 individuals from BC Hydro and the Systems Integrator. During the Mobilization Stage, the core project team was on-boarded and received training on the project plans and procedures, including

design methodology and approach, BC Hydro's supply chain process model, SAP's functionality and capabilities, and BC Hydro's existing processes and information technology systems.

Develop Plan for the Design and Implementation Planning Stage

During the Mobilization Stage, BC Hydro and the System Integrator worked together to develop a series of documents that outline how the project will be governed; the procedures it will utilize; the project organization, roles and responsibilities; and the detailed work plans of the activities to be performed.

1.28.1 Please provide the number of individuals in the core project team from BC Hydro and the number of individuals from the System Integrator.

RESPONSE:

During the Design and Implementation Planning Stage, there were 37 individuals from BC Hydro and 28 individuals from the System Integrator on the core project team (totalling the 65 individuals referenced in the preamble above).

Since that time, the core project team has expanded and there are currently 46 individuals from BC Hydro and 41 from the System Integrator.

29.0 Reference: Exhibit B-1, page 2-9 and page 2-10 and page 4-2

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

Based on the updated design work, the System Integrator has agreed to a fixed price for the remaining scope of work for the Implementation Phase of the SCA Project. The scope of work includes what System Integrator previously divided into the following three work packages: 3) Realization - Build and Testing

(Implementation); 4) Final Preparation - User Acceptance Testing and Training (Implementation) and 5) Stabilization - Post go-live (Implementation). The fixed price contract with the System Integrator is reflected in the updated direct cost estimate.

In summary, the updated forecast direct cost better reflects the required additional resources and extended project schedule to meet the solution design, and is supported by the fixed price contract with the System Integrator.

4.2 Scope of the Supply Chain Applications Project

The functional and technical components of SAP that are in scope for the SCA Project are materially the same as discussed in section 4.3 of the Phase One Application. The key scope elements include the installation of the following SAP-based systems: materials management; purchasing; and integration. In section 4.3 of the Phase One Application, BC Hydro also stated that the objectives of the SCA Project were to close the capability gaps in the existing supply chain IT system; meet the Supply Chain Business Requirements; and deliver the benefits.

The sections below include a discussion of any changes to the functional and technical components of SAP that are in scope and a re-assessment of the SCA Project's ability to meet the stated objectives.

1.29.1 Please provide the cost of the original system integrator contract.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 1.7.3.

29.0 Reference: Exhibit B-1, page 2-9 and page 2-10 and page 4-2

Table 2-3 Future Direct Cost Variance Breakdown ($ million)

Variance Explanation	Cost Variance ($ million)
Change in System Integrator Contract	3.4
Change in BC Hydro's Internal Cost	3.2

The underlying driver for the increase in the Implementation Phase direct costs is an overall increase in the complexity and understanding of the solution, which has led to an increase in the project schedule and estimated resource levels that will be required to complete it. See section 4.3.3 and section 6.3 for a discussion of the Design and Implementation Planning stage activities and the changes to the project schedule, respectively.

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The sections below include a discussion of any changes to the functional and technical components of SAP that are in scope and a re-assessment of the SCA Project's ability to meet the stated objectives.

1.29.2 Please rationalize the increase in the system integrator contract with the statement that the scope of the project has not changed materially.

RESPONSE:

Please refer to BC Hydro's response to BCUC IR's 1.5.1 and 1.5.1.1.

30.0 Reference: Exhibit B-1, page 5-3 and page 5-7

> The only newly identified risk is the potential for low data quality and/or data not being ready according to the Project Schedule. The main type of data relevant to this risk is information on BC Hydro's contracts. If this risk materializes, it would not impact project costs, but could result in increased operating cost pressures as BC Hydro works to increase the data quality and availability; any impact to the project schedule due to this risk would be addressed through the project schedule contingency.
>
> In Table 5-1 below, for each identified risk, the applicable risk category, and the status of the risk (active, inactive, new, updated) is provided. Risks with a status that includes the words "Updated" or "Inactive" were previously included in the Phase One Application. The newly identified risk is highlighted for easy identification.

6	Project Delivery	Active, Updated	Requirement to undertake a protracted regulatory process in order to proceed with Implementation phase work	Comprehensive Application; propose a schedule that facilitates a decision by April 2018. Incremental funding included in Project Reserve as described in section 2.4.2, Table 2-4	In progress Completed	Potential impact will vary depending on date and wording of British Columbia Utilities Commission decision.	Board of Directors resolution passed enabling the project to proceed with Implementation Phase activities for up to six months while the regulatory approval process continues in parallel. Some residual risk remains that delay may be required if regulatory process extends beyond six months.	Monitoring	Low probability: High impact

1.30.1 Please define Low, Medium and High Probability, with quantification.

RESPONSE:

The following guidelines were used when assigning probability to the SCA Project's risks:

- **A high probability risk has a greater than 50 per cent chance of occurring;**
- **A medium probability risk has between a 25 per cent and 50 per cent chance of occurring; and**

- **A low probability risk has a less than 25 per cent chance of occurring.**

Risks assessed at greater than 80 per cent chance of occurring are treated as if they will occur and are managed as project issues rather than risks.

BC Hydro uses judgment in applying these guidelines to assign a probability rating to any given risk.

30.0 Reference: Exhibit B-1, page 5-3 and page 5-7

The only newly identified risk is the potential for low data quality and/or data not being ready according to the Project Schedule. The main type of data relevant to this risk is information on BC Hydro's contracts. If this risk materializes, it would not impact project costs, but could result in increased operating cost pressures as BC Hydro works to increase the data quality and availability; any impact to the project schedule due to this risk would be addressed through the project schedule contingency.

In Table 5-1 below, for each identified risk, the applicable risk category, and the status of the risk (active, inactive, new, updated) is provided. Risks with a status that includes the words "Updated" or "Inactive" were previously included in the Phase One Application. The newly identified risk is highlighted for easy identification.

6	Project Delivery	Active, Updated	Requirement to undertake a protracted regulatory process in order to proceed with Implementation phase work	Comprehensive Application; propose a schedule that facilitates a decision by April 2018. Incremental funding included in Project Reserve as described in section 2.4.2, Table 2-4	In progress Completed	Potential impact will vary depending on date and wording of British Columbia Utilities Commission decision.	Board of Directors resolution passed enabling the project to proceed with Implementation Phase activities for up to six months while the regulatory approval process continues in parallel. Some residual risk remains that delay may be required if regulatory process extends beyond six months.	Monitoring	Low probability: High impact

1.30.2 Please define Low, Medium and High Impact, with quantification.

RESPONSE:

BC Hydro does not have specific quantification for the impact of the SCA Project's risks. The following guidelines were used when assessing impact of the SCA Project's risks:

- **A low impact risk is defined as a risk that could threaten the efficiency or effectiveness of some aspect of the project, but will be dealt with internally;**
- **A medium impact risk is defined as a risk that could significantly affect the project in some manner but not threaten its survival;**

- **A high impact risk is defined as a risk that could threaten the survival of the project as presently defined; and**

- **A catastrophic impact risk is defined as a risk that will almost certainly kill the project.**

BC Hydro uses judgment in applying these guidelines to assign an impact rating to any given risk.

30.0 Reference: Exhibit B-1, page 5-3 and page 5-7

> The only newly identified risk is the potential for low data quality and/or data not being ready according to the Project Schedule. The main type of data relevant to this risk is information on BC Hydro's contracts. If this risk materializes, it would not impact project costs, but could result in increased operating cost pressures as BC Hydro works to increase the data quality and availability; any impact to the project schedule due to this risk would be addressed through the project schedule contingency.
>
> In Table 5-1 below, for each identified risk, the applicable risk category, and the status of the risk (active, inactive, new, updated) is provided. Risks with a status that includes the words "Updated" or "Inactive" were previously included in the Phase One Application. The newly identified risk is highlighted for easy identification.

6	Project Delivery	Active, Updated	Requirement to undertake a protracted regulatory process in order to proceed with Implementation phase work	Comprehensive Application; propose a schedule that facilitates a decision by April 2018. Incremental funding included in Project Reserve as described in section 2.4.2, Table 2-4	In progress Completed	Potential impact will vary depending on date and wording of British Columbia Utilities Commission decision.	Board of Directors resolution passed enabling the project to proceed with Implementation Phase activities for up to six months while the regulatory approval process continues in parallel. Some residual risk remains that delay may be required if regulatory process extends beyond six months.	Monitoring	Low probability: High impact

1.30.3 Please provide a quantification for the 'High Impact' noted for the regulatory risk.

RESPONSE:

BC Hydro does not have a quantified amount for this risk. The risk of stopping the SCA Project during a protracted regulatory process was assessed using the guidelines discussed in BC Hydro's response to CEC IR 1.30.2.

As discussed in paragraphs 6 to 11 on page 1-8 of the Verification Report '…a delay could lead to the SCA Project losing key resources whom have the depth and knowledge built up over the Definition Phase. The impact of losing key resources would, in turn, increase the overall risk of the SCA Project and could

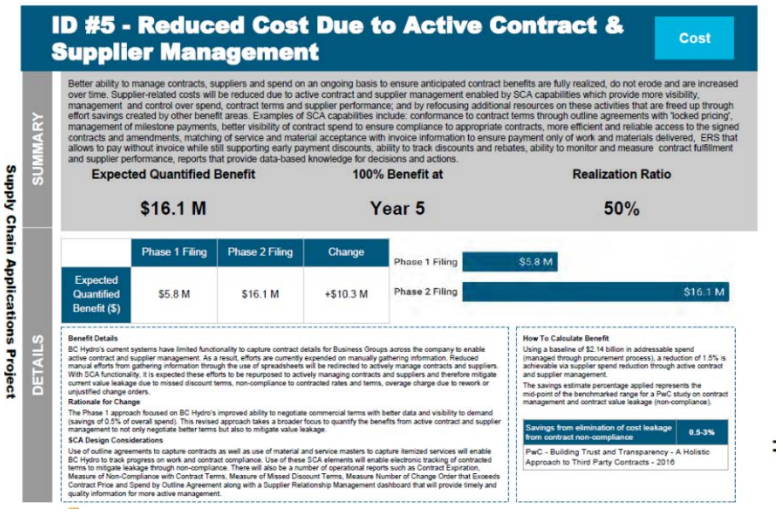
have significant impacts on the cost, schedule, and / or quality of the project.' The SCA Project may not have proceeded as planned due the significance of these impacts.

For clarity, the risk assessment provided in the Table 5-1 of the Verification Report is assessing the risk of a protracted regulatory process, not the residual risk of a minor additional delay beyond the currently funded six-month period. BC Hydro believes, were the residual risk to occur, the impact would be low to medium depending on the required length of the additional delay beyond six months.

31.0 Reference: Exhibit B-1, page 5-3, page 5-13 and Appendix H, page 20 of 87

The only newly identified risk is the potential for low data quality and/or data not being ready according to the Project Schedule. The main type of data relevant to this risk is information on BC Hydro's contracts. If this risk materializes, it would not impact project costs, but could result in increased operating cost pressures as BC Hydro works to increase the data quality and availability; any impact to the project schedule due to this risk would be addressed through the project schedule contingency.

15	Project Delivery	New	Low data quality and or data not being ready according to Project Schedule				Continue detailed assessment and planning of data conversion requirements in early Realization	In Progress	Medium Probability, medium impact
							Alignment of the data conversion tasks with business transition and resource plans	Planned	



RESPONSE:

No question identified.

32.0 Reference: Please provide a full discussion as to the extent to which the risk related to 'information of BC Hydro's contracts' relates to the 'Reduced Cost Due to Active Contract and Supplier Management' benefit ID#5.

RESPONSE:

Please refer to BC Hydro's response to CEC IRs 1.32.1 to 1.32.4.

32.0 Reference: Please provide a full discussion as to the extent to which the risk related to 'information of BC Hydro's contracts' relates to the 'Reduced Cost Due to Active Contract and Supplier Management' benefit ID#5.

1.32.1 Please define 'low quality data' and provide examples.

RESPONSE:

'Low quality data' is considered to be any data that is not in an appropriate electronic format such that manual clean-up, enhancement or creation activities are necessary before it can be programmatically loaded into SAP.

Some examples include:

- **Inconsistent use of the contract commodity code field in PassPort. While the data currently exists in an electronic format, it is known to be inconsistent and inaccurate requiring manual review and assignment of updated commodity codes prior to conversion into SAP;**

- **Material type data currently stored in PassPort is defined at a higher level than is called for in the new SAP design (i.e., the current material types need to be broken down into more detailed groupings). The data therefore requires enrichment before it can be converted into SAP;**

- **Contract details, such as the schedules of quantities and prices for service contracts, do not exist in an electronic format in PassPort today. While some of this data is stored in electronic form in other systems, much of it only exists in paper or PDF documents. This data will need to be manually converted to a structured electronic format such as spreadsheets prior to conversion; and**

- **Some concepts such as service masters simply do not exist in PassPort today. Service master data will be manually created in spreadsheets based on a review of existing service contracts in order to be loaded into SAP.**

32.0 Reference: Please provide a full discussion as to the extent to which the risk related to 'information of BC Hydro's contracts' relates to the 'Reduced Cost Due to Active Contract and Supplier Management' benefit ID#5.

1.32.2 If the data related to BC Hydro's contracts is of low quality, how will BC Hydro ensure that the project benefits are maintained? Please discuss.

RESPONSE:

The data related to BC Hydro's contracts is not considered to be low quality due to any issues with the information in the contracts themselves. Rather, the data is considered to be low quality because it is not all currently stored in an electronic format, and will therefore require manual effort to convert the data to an electronic format for loading into SAP. Please refer to BC Hydro's response to CEC IR 1.32.1 for further discussion on why some data is considered to be low quality. As a result, the risk impacts the time and effort to successfully convert the data into SAP, not the delivery of the SCA Project benefits.

Realization of benefits, including Benefit ID No. 5, requires that contract information be detailed in SAP. Post go-live, the transition of contracts to a detailed state will occur as contracts expire and are replaced with new contracts in SAP. Approximately 90 per cent of current contracts subject to active management, and therefore impacting this benefit, will expire by the end of calendar 2022, within the five-year timeframe used when calculating the realization of this benefit. Replacement contracts will be entered in an electronic format in SAP.

32.0 Reference: Please provide a full discussion as to the extent to which the risk related to 'information of BC Hydro's contracts' relates to the 'Reduced Cost Due to Active Contract and Supplier Management' benefit ID#5.

1.32.3 Please provide a discussion of why the new Risk was provided with a "medium" probability rating.

RESPONSE:

The risk was provided a probability rating of medium based on the judgement of the SCA Project team and by applying the guidelines discussed in BC Hydro's response to CEC IR 1.30.1.

As a result of the risk mitigation work completed by BC Hydro since the beginning of the Implementation Phase, the risk is now assessed with a probability of low. Please refer to BC Hydro's response to BCUC IR 1.21.3 for a discussion of the risk mitigation work.

32.0 Reference: Please provide a full discussion as to the extent to which the risk related to 'information of BC Hydro's contracts' relates to the 'Reduced Cost Due to Active Contract and Supplier Management' benefit ID#5.

1.32.4 Please provide a discussion of why the new Risk was provided with a "medium' impact rating and provide quantification of the potential impact.

RESPONSE:

The risk was provided an impact rating of medium based on the judgement of the SCA Project team and by applying the guidelines discussed in BC Hydro's response to CEC IR 1.30.2. The impact of the risk was assessed as having the potential to significantly affect the project but not to threaten its survival.

BC Hydro does not have specific quantification for the impact of the risk.