

Fred James

Chief Regulatory Officer

Phone: 604-623-4046

Fax: 604-623-4407

bchydroregulatorygroup@bchydro.com

July 20, 2017

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: Project No. 3698901
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Supply Chain Applications Project Application
Reply Submission**

BC Hydro writes in compliance with Commission Order No. G-78-17 to provide its Final Submission.

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/rh

Enclosure (1)

BRITISH COLUMBIA UTILITIES COMMISSION
IN THE MATTER OF THE UTILITIES COMMISSION ACT
R.S.B.C. 1996, CHAPTER 473
and
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
SUPPLY CHAIN APPLICATIONS PROJECT

Reply Submissions of BC Hydro

July 21, 2017

FASKEN MARTINEAU DUMOULIN LLP:
Attn: Chris Bystrom and Matthew Ghikas
cbystrom@fasken.com; mghikas@fasken.com
(604) 631-3131

TABLE OF CONTENTS

PART ONE: INTRODUCTION	1
PART TWO: TWO-PHASE PROCESS FACILITATES EARLY STAKEHOLDER INVOLVEMENT AND MITIGATES	
PROJECT RISK.....	2
A. INTRODUCTION	2
B. CEC MISCONSTRUES THE TWO-PHASE PROCESS AND IS CONTRADICTING ITS PREVIOUS POSITION.....	2
C. BCOAPO’S SUGGESTIONS FOR THE PHASE TWO PROCESS ARE UNNECESSARY	4
D. CONCLUSION AND REQUESTED FINDINGS.....	4
PART THREE: PROJECT SCOPE AND COST.....	6
A. INTRODUCTION	6
B. REPLY TO CEC ON PROJECT SCOPE AND COST	6
(a) BC Hydro Has Established Project Need Based On Business Requirements.....	6
(b) Project Scope Is Well Defined and the Risk of Scope Change is Low.....	8
(c) BC Hydro Prepared the Cost Estimate Using Robust Quantitative Analysis	10
(d) CEC is Misinterpreting the Purpose and Significance of Contingencies	12
C. CONCLUSION AND REQUESTED FINDINGS.....	15
PART FOUR: THERE IS A COMPELLING RATIONALE FOR THE SCA PROJECT	16
A. INTRODUCTION	16
B. REPLY TO CEC ON BENEFITS ANALYSIS.....	16
(a) BC Hydro’s Benefits Analysis is Robust	16
(b) CEC Is Misapplying the 25 Percent Inclusion Rate from BC Hydro’s Capital Investment Analysis Guide.....	18
(c) Risk Reduction Benefits Are Real and Should Be Considered.....	20
(d) BC Hydro Will Track Benefits Appropriately	20
(e) The Fact that Some Work Remains to Be Completed is Inherent in the Two-Phase Process	22
C. REPLY TO BCOAPO REGARDING BENEFITS ANALYSIS.....	23
(a) BC Hydro’s Assumed 50 Percent Benefit Realization Rate is Conservative	23
(b) SAP Upgrade Costs Should Be Excluded From Benefits Analysis	24
(c) Benefits Realization Plans	25

D.	CONCLUSION AND REQUESTED FINDINGS.....	25
PART FIVE: SAP IS THE SUPERIOR ALTERNATIVE FOR BC HYDRO		26
A.	INTRODUCTION	26
B.	REPLY TO CEC ON ALTERNATIVES ANALYSIS	26
(a)	SCA Project Business Case is Based on Meeting BC Hydro’s Business Needs.....	26
(b)	BC Hydro’s SAP Platform is Fully Integrated and Up to Date.....	26
(c)	BC Hydro Has Presented the SCA Project in its Broader Context	27
(d)	BC Hydro’s Approach to Consultation with SAP and ABB Was Reasonable	28
(e)	Alternatives Analysis Should be Based on Costs, Benefits and other Relevant Factors.....	30
(f)	BC Hydro Considered Adjustments to PassPort and Upgrades to Asset Suite 9 / S/4 HANA.....	30
C.	REPLY TO BCOAPO REGARDING ALTERNATIVES ANALYSIS	31
(a)	Cost Estimate for Passport Takes Into Account Level Of Effort	32
(b)	Customization of Passport Would Be Required Due to Nature of Passport Itself	32
(c)	BC Hydro Has Expertise with PassPort	33
(d)	BC Hydro Assessed Capability Gaps Without Assistance of SAP	34
(e)	BC Hydro’s Assessment of PassPort Likely Overstates Monetized Benefits of PassPort Alternative.....	34
D.	CONCLUSION AND REQUESTED FINDING	35
PART SIX: CONCLUSION AND ORDER SOUGHT.....		36

PART ONE: INTRODUCTION

1. Interveners expressed a range of views regarding the Application in their final comments or arguments. Mr. Landale states that he supports BC Hydro's Application.¹ ABB Enterprise Software ("ABB") does not take a position in its final argument, stating that its intent is to support BC Hydro in however the Commission decides to move forward.² British Columbia Old Age Pensioners' Organization et al. ("BCOAPO") submit that the Commission should accept the capital expenditures for the Supply Chain Applications (SCA) Project up to the end of Definition Phase, assuming a revised analysis accounting for platform upgrade costs would show that there are financial benefits from the SCA Project.³ Only the Commercial Energy Consumers Association of British Columbia ("CEC") recommends that the Commission reject the Application, but it does so based on flawed reasoning.⁴

2. Given the significant amount of third-party services and materials that BC Hydro acquires through its supply chain,⁵ it is imperative that BC Hydro move forward with the SCA Project to meet current and future business needs, reduce risk, and benefit customers.⁶ The SCA Project is justified by a robust business case that demonstrates that the proposed capital expenditures are in the public interest. BC Hydro respectfully submits that the Commission should approve the Application as sought.

3. The remainder of this Reply Submission generally follows the organization of BC Hydro's June 23, 2017 Final Submission, but avoids repeating the content of that submission. BC Hydro focusses on the main submissions of CEC and BCOAPO.⁷

¹ Exhibit C5-6.

² ABB Submission.

³ BCOAPO Submission, p. 19.

⁴ CEC Submission.

⁵ Exhibit B-1, Application, p. 1-1.

⁶ Exhibit B-1, Application, p. 1-1.

⁷ BC Hydro has not attempted to reply to their submissions line-by-line, as to do so would be inefficient. The Commission should not interpret BC Hydro's silence on a particular intervenor argument as agreement.

PART TWO: TWO-PHASE PROCESS FACILITATES EARLY STAKEHOLDER INVOLVEMENT AND MITIGATES PROJECT RISK

A. INTRODUCTION

4. In this Part, BC Hydro responds to CEC's and BCOAPO's comments on the two-phase process. CEC's submissions on the two-phase process are based on a mistaken premise, contradict its own procedural conference submission, and contradict the Commission's approval of a two-phase regulatory process. BCOAPO, by contrast, accepts the two-phase process. It has suggested additional procedural steps that BC Hydro believes are unnecessary; however, BC Hydro is content to proceed with additional process if the Commission concludes that it would assist in the effective disposition of Phase Two.

B. CEC MISCONSTRUES THE TWO-PHASE PROCESS AND IS CONTRADICTING ITS PREVIOUS POSITION

5. CEC states that it accepts BC Hydro's rationale for the two-phase process,⁸ but makes arguments critical of the process and recommends against approving the Application until further work has been completed. CEC's arguments are without merit.

6. CEC suggests that the two-stage process has introduced project risk, stating "BC Hydro has acquired a risk of regulatory delay should the application be denied at this time as a result of inadequate definition."⁹ There will be no "regulatory delay" if the Application is denied because BC Hydro would not proceed with the SCA Project. BC Hydro stated in the Application that it "will not undertake more detailed design and planning activities until an Order is issued accepting the Definition Phase capital expenditures for the project."¹⁰

7. CEC also says that "it becomes increasingly important that project justification, alternatives analysis and key financial metrics represent a clearly valid project with few

⁸ CEC Submission, p. 4, para. 18.

⁹ CEC Submission, p. 4, para. 17.

¹⁰ Exhibit B-1, Application, p. 1-8.

issues.”¹¹ The two-stage process recognizes the importance of project justification, alternatives analysis and financial metrics. BC Hydro has presented a project justification in this Application representing a valid project, inclusive of detailed cost and benefits analysis. The Phase Two Verification Report and regulatory process will permit the Commission to re-confirm that the remaining Definition Phase activities support the SCA Project justification.

8. CEC’s recommendation that the Commission deny Phase One approval and request that BC Hydro continue its project through the Definition Phase¹² is equivalent to arguing that there should be a single-phase process, and that BC Hydro should file its Application at the end of the Definition Phase of the SCA Project. CEC, in making this argument, is contradicting its earlier position on process. CEC had supported the current two-phase process during the procedural conference, stating:

...I will start off with saying that I agree with much of what Mr. Bystrom has had to say in terms of the procedure to be followed, and the strength of the options.

...

With respect to the conundrum of the conditional approval, and that Hydro has set out a second phase, we think there is a value to doing that, and we think the simple answer to dealing with a cost overrun or any other issue that can arise in a technology-related project is that you schedule a procedural conference immediately after the verification report comes in, so that any issues anybody may have with respect to what's been filed can be put forward. And if nothing is there, then move to accepting the verification report and approving Phase A [sic]. But at least it reserves the right for the Commission or any other stakeholder to identify – including Hydro – an unexpected occurrence. So, we would support the Phase 2 as scheduled. But with a procedural conference almost immediately after filing, so the "no surprises" issue can be addressed at that time.¹³

¹¹ CEC Submission, p. 4, para. 18.

¹² CEC Submission, p. 4, para. 22.

¹³ Transcript, p. 15, lines 22-25, and p. 16, lines 5-22.

9. The Commission determined in Order G-32-17 that a two-phase process is appropriate. The Commission's Reasons for Decision noted that there was agreement among the parties (including CEC) that some type of two-phase review is the best option.¹⁴

10. BC Hydro submits that the time for CEC to oppose the two-phase process has passed. The Commission should continue with the two-phase process confirmed at the procedural conference. It allows the Commission to make an earlier determination about the project justification based on a sound business case, and reconfirm the project business case following the completion of the remaining Definition Phase activities.

C. BCOAPO'S SUGGESTIONS FOR THE PHASE TWO PROCESS ARE UNNECESSARY

11. BCOAPO agrees that, if the BCUC accepts the capital expenditures for the SCA Project and makes the associated determination that the SCA Project is in the public interest, the Phase Two review should be able to proceed expeditiously subject to a satisfactory verification report.¹⁵ BCOAPO makes two suggestions. First, it suggests that BC Hydro prepare a compliance filing following the Commission's decision in the Phase One proceeding.¹⁶ Second, BCOAPO suggests that the filing of the Phase Two Verification Report be followed by a brief workshop and procedural conference.¹⁷ BC Hydro submits the process is sufficient without these additional steps, but is content to proceed with additional process if the Commission concludes that it would assist in the effective disposition of Phase Two.

D. CONCLUSION AND REQUESTED FINDINGS

12. The Commission should consider the SCA Project within the parameters of the two-phase process established following the procedural conference. The Commission should conclude that the Phase One expenditure schedule is in the public interest, and will have the

¹⁴ Exhibit A-5, Order G-32-17, Appendix A, p. 3.

¹⁵ BCOAPO Submission, p. 21.

¹⁶ BCOAPO Submission, p. 22.

¹⁷ BCOAPO Submission, p. 22.

benefit of considering BC Hydro's Phase Two Verification Report and the remaining Definition Phase activities in Phase Two.

PART THREE: PROJECT SCOPE AND COST

A. INTRODUCTION

13. In this Part, BC Hydro replies to CEC's submissions on project scope and cost. CEC's submissions are without merit. BC Hydro has established the need for the SCA Project based on a sound business case. The cost and scope of the SCA Project are well defined.

B. REPLY TO CEC ON PROJECT SCOPE AND COST

(a) BC Hydro Has Established Project Need Based On Business Requirements

14. CEC's key submission on the need for the SCA Project is that "the Supply Chain Business Model is intimately linked with the Common Platform Strategy which is not in the scope of this proceeding."¹⁸ CEC goes on to state that "the 'capability gaps' should represent independently established business needs, for which a solution is required, whereas in this case it appears that the business needs have been largely justified based on capability gaps associated with the transition to the platform."¹⁹ CEC cites no evidence to support these assertions, and they are based on an incorrect understanding of the Supply Chain Business Model, the capability gaps, and the justification for the SCA Project. BC Hydro has presented a compelling business case for the SCA Project based on established business needs that are independent of any particular IT solution.

15. BC Hydro highlighted the evidence in this regard in its Final Submission. The evidence includes:

(a) The Supply Chain Business Model is independent of the Common Platform Strategy. The Supply Chain Business Model, included as Attachment K to the Application, is the outcome of a formal process to identify BC Hydro's supply chain needs across the organization.²⁰ The Technology Requirements listed in

¹⁸ CEC Submission, p. 5, para. 26.

¹⁹ CEC Submission, p. 5, para. 27.

²⁰ Exhibit B-1, Application, p. 4-6.

the model are described generically, and do not specify an SAP solution.²¹ BC Hydro acknowledges that the Supply Chain Business Model includes a Cost and Monetized Benefits Table which references SAP, Ariba, and Power Advocate models; however, the business requirements identified in the Supply Chain Business Model are technology neutral.

- (b) The Application stands on its own merits. The purpose of the SCA Project is to implement a supply chain IT solution and business process that will enable BC Hydro to meet the business requirements identified in the Supply Chain Business Model.²² The project justification is based on the benefits to ratepayers from meeting those business requirements.²³ Given the significant amount of third party services and material acquired through BC Hydro's supply chain, it is imperative that BC Hydro improve its supply chain system and processes.
- (c) The Application describes the Common Platform Strategy²⁴ and the strategy was the subject of information requests.²⁵
- (d) The Common Platform Strategy allows for alternative solutions to be considered for any project, if SAP does not prove to be the appropriate solution.²⁶ Since adopting the Common Platform Strategy, BC Hydro has installed non-SAP systems where the alternative to SAP was materially superior. For example, Oracle Primavera P6 for project scheduling was implemented in 2011 for the management of resource-loaded schedules to better support BC Hydro's infrastructure projects.²⁷

²¹ Exhibit B-1, Attachment K, pp. 52-53 of 228.

²² Exhibit B-1, Application, pp. 1-1 to 1-6.

²³ BC Hydro Reply Submission, Part Three.

²⁴ For example, Attachments P and Q.

²⁵ For example, Exhibit B-3, BCUC IRs 1.8.2 and 1.12.3; Exhibit B-4, ABB IR 1.2.0, CEC IRs 1.43.1, 1.51.1, and 1.63.1, and BCOAPO IR 1.21.1; Exhibit B-7, BCOAPO IR 2.34.1.

²⁶ Exhibit B-1, Application, p. 4-3.

²⁷ Exhibit B-1, Application, p. 4-4.

(e) The capability gaps reflect the gaps in BC Hydro’s current system and processes that must be filled to meet established business needs. Following completion of the Supply Chain Business Model, BC Hydro performed a gap assessment of its current supply chain IT system and business processes.²⁸ The 13 capability gaps are specific to technology limitations that prevent BC Hydro from fully implementing the Supply Chain Business Model.²⁹ The successful implementation of the Supply Chain Business Model contemplates the closing of all of the capability gaps.³⁰

(b) Project Scope Is Well Defined and the Risk of Scope Change is Low

16. CEC states, without citing any evidence, that “given the early definition phase scope risk are fundamental to the cost outcomes, it is reasonable to expect that scope definition may be inadequately justified and likely is not appropriate for Commission approval at this time.”³¹ The evidence is that the SCA Project has been well-scoped at this stage and the risk of scope change is low.³²

17. BC Hydro has developed and approved the Supply Chain Business Model, Supply Chain Business Requirements, and Conceptual Design Report. Each of these documents are attached to the Application for review by the Commission, and demonstrate the significant level of planning undertaken to date to define the scope of the SCA Project.³³ The SCA Project is more defined than is typically the case for a project in the early definition phase. BC Hydro stated, for example: “It should be noted that given the prior work undertaken as part of the Supply Chain Transformation Blueprint work plus the procurement work to identify a System

²⁸ Exhibit B-3, BCUC IR 1.11.1.

²⁹ Exhibit B-3, BCUC IR 1.3.1.

³⁰ Exhibit B-4, CEC IR 1.42.1.

³¹ CEC Submission, p. 6, para. 37.

³² Exhibit B-4, CEC IR 1.74.1.

³³ Exhibit B-1, Attachments K, L, and H, respectively.

Integrator, BC Hydro has a better understanding of the project and project cost than would normally be the case this early in the Definition Phase.”³⁴

18. The impact of any unanticipated scope change is reduced through the procurement process undertaken for the System Integrator. The list of enhancements identified by BC Hydro as being required for the SCA Project

...was added to through the procurement process by the System Integrator based on their experience on similar projects. For example, the System Integrator added items they would typically expect to see on a project of this scope that were not already on the list. The System Integrator also included a number of as yet undefined enhancements, creating a contingency or allowance for additional enhancements that may be added through the design process.³⁵

The input from the System Integrator reduces the chance of any material change to the System Integrator’s estimate if further enhancements are identified. If the System Integrator’s estimate does change, the change would be covered through the release of project contingency.³⁶

19. BC Hydro’s assessment of the SCA Project is endorsed by the Quality Assurance Advisor, KPMG. In its Interim Project Readiness Assessment, KPMG’s overall interim Project readiness assessment was as follows (page 12):³⁷

Based on this Interim Project Readiness Assessment Report, KPMG’s assessment is that the overall SCA Project readiness activities completed by BC Hydro have been strong with much thought and diligence employed in the assessment of the need for change, planning and readiness for the next phase of this project. The Program status is well aligned to KPMG’s expectations at this stage of the project.

20. KPMG summarized its observations as follows:

- Strong leadership commitment and involvement for an extended period of time: Business and IT Steering Committee members interviewed to date

³⁴ Exhibit B-1, Application, p. 2-16.

³⁵ Exhibit B-3, BCUC IR 1.30.2.

³⁶ Exhibit B-3, BCUC IR 1.30.2.

³⁷ Exhibit B-1, Application, p. 4-21.

have clearly articulated the need for a unified platform in order to effectively run business processes and bring standardization to BC Hydro.

- Clear articulation of the case for change: Business stakeholders are ready to support the Project and to enable the capture of business benefits as outlined.
- Effective tailoring and deployment of a robust BC Hydro Information Technology Delivery Standard Practices (ITDSP) methodology for delivering projects of this scale with the appropriate control and approvals.
- Evidence of a rigorous financial model with quantifiable benefits expected to be driven by the technology implementation, along with inclusion of the required contingency and risk reserves.
- A robust SI procurement and selection process with an appropriate level of control and input from key decision makers. BC Hydro has incorporated contractual measures to mitigate and share risk and reward scenarios.³⁸

21. BC Hydro submits that the scope of the SCA Project is sufficiently defined. BC Hydro is well-positioned to move forward with the remaining Definition Phase activities.

(c) BC Hydro Prepared the Cost Estimate Using Robust Quantitative Analysis

22. CEC asserts that “given the early stage of definition phase, the reliance on ‘professional opinion’ approach to the cost estimate seriously undermines the validity of the cost estimate.”³⁹ CEC does not identify any specific shortcoming in BC Hydro’s estimate. BC Hydro submits that its estimating approach made sense and the resulting estimate is robust.

23. CEC’s submission is made in reference to BC Hydro’s use of ‘professional opinion’ to determine the accuracy range of the cost estimate.⁴⁰ Professional opinion was an appropriate basis to develop the accuracy ranges in this case. BC Hydro has high confidence that it can complete the SCA Project without exceeding the upper accuracy range.⁴¹ The cost

³⁸ Exhibit B-1, Application, pp. 4-21 to 4-22.

³⁹ CEC Submission, p. 7, para. 37.

⁴⁰ Exhibit B-1, Application, p. 2-16, footnote 17; Exhibit B-6, BCUC IR 2.43.1.

⁴¹ Exhibit B-6, BCUC IR 2.43.1.

estimate for the SCA Project is robust due a number of facts noted in BC Hydro's Final Submission, as follows:⁴²

- The Identification Phase and Early Definition Stage costs up to the end of November 2016 are the actual recorded costs.⁴³
- The remaining Definition and Implementation Phase forecast costs have been developed using a bottom-up approach based on pricing and proposal information submitted to BC Hydro from the System Integrator and Quality Assurance Advisor.⁴⁴
- A significant portion of the direct costs are subject to fixed price contracts with the Systems Integrator and Quality Assurance Advisor.⁴⁵
- BC Hydro has used the System Integrator's proposed cost in the project cost estimate, without incorporating any potential cost savings from the gain sharing provision in the Master Services Agreement with the Systems Integrator. Under this provision, BC Hydro and the System Integrator will share any cost savings that occur if the notional calculated fees for the System Integrator's work regarding a fixed-price statement of work are less than the fixed price for the statement of work. If any cost savings due to the gain sharing provision occurs, this would reduce the project cost.⁴⁶
- BC Hydro calculated Interest During Construction based on the committed in-service date, rather than the earlier target date. BC Hydro's approach was conservative, since it leads to higher interest costs being reflected in the SCA

⁴² BC Hydro Final Submission, paras. 21-27.

⁴³ Exhibit B-1, Application, p. 2-14.

⁴⁴ Exhibit B-1, Application, p. 2-14.

⁴⁵ Exhibit B-3, BCUC IR 1.4.3. BC Hydro's response to BCOAPO IR 1.4.1 (Confidential) provides a breakdown of the mid-range cost estimate categorized by spend area, such as System Integrator, QA Consultant, Other Consultants, Hardware, Software, BC Hydro Labour, Contingency, Reserve.

⁴⁶ Exhibit B-3, BCUC IR 1.30.9; Exhibit B-6, BCUC IR 2.41.2.

Project estimate. The mid-range cost estimate would be reduced by \$770,000 in interest costs if the target in-service date was used rather than the committed in-service date.⁴⁷

- The SCA Project estimate includes a 20 percent contingency, calculated on the costs still to be incurred. It represents costs that BC Hydro expects to expend, but that are not detailed in the base estimate of the direct project costs. The 20 percent contingency is consistent with the cost contingency used on other BC Hydro projects.⁴⁸
- The upper bound of the cost estimate incorporates a project reserve, with incremental interest during construction. The project reserve includes an incremental contingency of 15 percent to mitigate unknown risks and an additional reserve amount to mitigate cost impacts associated with known risks.⁴⁹

24. BC Hydro will provide an updated cost estimate in the Phase Two Verification Report.⁵⁰

(d) CEC is Misinterpreting the Purpose and Significance of Contingencies

25. CEC is misinterpreting the purpose and significance of BC Hydro's cost and schedule contingencies.

26. CEC submits that "a 20 percent contingency on the total value of future direct costs is also reflective of considerable uncertainty in this project and should be factored in to the Commission's determination as to the likelihood of the benefits that are expected to accrue from the project."⁵¹ The size of a contingency is related to project *cost and complexity*, and not

⁴⁷ Exhibit B-3, BCUC IR 1.13.4.

⁴⁸ Exhibit B-3, BCUC IR 1.13.7.

⁴⁹ Exhibit B-1, Application, pp. 2-17 to 2-18.

⁵⁰ Exhibit B-1, Application, p. 1-18.

⁵¹ CEC Submission, p. 8, para. 44.

the likelihood of benefits. It is BC Hydro's practice to include contingency in the cost estimate, and the level of contingency for the SCA Project was appropriately set with regard to the size and complexity of the project.⁵² The contingency represents funds that BC Hydro expects to spend.⁵³ The cost contingency is reflected in the NPV analyses, which indicate that the SCA Project will create value.⁵⁴

27. CEC submits that the 4-month schedule contingency also illustrates the uncertainty "surrounding the project fundamentals".⁵⁵ Schedule contingency relates to the time it will take to complete a project, and is not indicative of uncertainty in "project fundamentals". It is BC Hydro's practice to include schedule contingency. The schedule contingency for the SCA Project was appropriately set based on the size and complexity of the SCA Project.⁵⁶ BC Hydro expects to use some or all of the schedule contingency, and the committed in-service date is based on the use of the full schedule contingency.⁵⁷ The schedule contingency is therefore included in the project plan and has been fully taken into account.

28. CEC goes on to assert that "a 4-month schedule delay can also be expected to impact project benefits, particularly as no benefits are forecast within the first year due to the need for 'time to stabilize'".⁵⁸ The use of the schedule contingency will in fact have no impact on costs, benefits, or interest, as these are all calculated assuming use of the contingency. The committed in-service date reflects the full use of the four-month schedule contingency, and ongoing benefits, costs, and interest incurred throughout the duration of the project (Interest during Construction), are all calculated using the committed in-service date.⁵⁹ BC Hydro's estimate of benefits of the SCA Project also incorporates the expectation that there will be a

⁵² Exhibit B-1, Application, p. 2-15; Exhibit B-3, BCUC IR 1.13.7.

⁵³ Exhibit B-3, BCUC IR 1.13.7.

⁵⁴ Exhibit B-1, Application, pp. 1-2, 1-6.

⁵⁵ CEC Submission, p. 8, para. 46.

⁵⁶ Exhibit B-3, BCUC IR 1.13.3.

⁵⁷ Exhibit B-1, Application, p. 2-15.

⁵⁸ CEC Submission, p. 8, para. 46.

⁵⁹ Exhibit B-1, Application, p. 2-15.

one-year stabilization period before benefits begin to be achieved.⁶⁰ This one-year stabilization period begins after the committed in-service date and is unrelated to the schedule contingency.

29. CEC suggests, without citation to any evidence, that “the complexities and uncertainties identified could result in lost benefits and incremental costs, especially when there is only a ten-year economic life from the anticipated in-service date”.⁶¹ CEC’s submissions are without merit. BC Hydro has identified the uncertainties in cost and schedule and accounted for them in the cost and schedule contingencies included in the project cost estimate.⁶² These uncertainties are therefore accounted for in the cost-benefit analysis.

30. CEC also suggests, without citation to evidence, that “IT projects are subject to technology advancement which could result in reduced economic life in the face of delays.”⁶³ CEC’s claim that IT projects are subject to reduced economic life in the face of delays is incorrect. The 10-year economic life is from the in-service date,⁶⁴ and is based on the useful life of BC Hydro’s Enterprise System software asset class.⁶⁵ Schedule or cost uncertainties would impact the cost or time to reach the in-service date, but not the economic life of the asset placed in service. BC Hydro’s current SAP Customer Care System has been in service for 14 years and continues to support BC Hydro’s operations.⁶⁶ CEC provides no evidence that a delay would affect the useful life.

31. CEC makes the broad assertion that “the evidence shows considerably greater risk and uncertainties than have been allowed for.”⁶⁷ CEC’s assertion is without merit. CEC has not identified any risk or uncertainty that BC Hydro has omitted from its cost or schedule estimates, Project Reserve, or project planning.

⁶⁰ Exhibit B-1, Application, p. 2-26.

⁶¹ CEC Submission, p. 9, para. 48.

⁶² Exhibit B-1, Application, p. 2-15.

⁶³ CEC Submission, p. 9, para. 48.

⁶⁴ Exhibit B-1, Application, p. 2-31.

⁶⁵ Exhibit B-4, CEC IR 1.37.3.

⁶⁶ Exhibit B-1, Application, p. 4-2; Exhibit B-12, CEC IR 3.91.1.

⁶⁷ CEC Submission, p. 9, para. 50.

C. CONCLUSION AND REQUESTED FINDINGS

32. The Commission should find that BC Hydro has established the need for the SCA Project based on a sound business case, and that the cost and scope of the SCA Project are well defined.

PART FOUR: THERE IS A COMPELLING RATIONALE FOR THE SCA PROJECT

A. INTRODUCTION

33. In this section, BC Hydro responds to BCOAPO's and CEC's submissions on the benefits of the SCA Project.

B. REPLY TO CEC ON BENEFITS ANALYSIS

(a) BC Hydro's Benefits Analysis is Robust

34. CEC states that "BC Hydro has made use of many 'judgments' and assumptions in its assessment, and that these have been significant and relevant to the benefits assessment, and ultimately may result in a false granularity of data."⁶⁸ CEC cites examples of the use of judgment and argues that they are "evidence of a significant level of uncertainty and a level of granularity that is not justified with quantified evidence."⁶⁹ There are several answers to CEC's argument:

- First, BC Hydro has expended significant effort to identify specific project benefits, such as specific tasks undertaken by employees that could be automated by the new IT system and business processes.⁷⁰ This granularity speaks to the level of detail at which the project benefits were calculated, which is appropriate and reasonable.
- Second, many factors in BC Hydro's benefit calculations are actual quantified values. Examples include: the number of purchase and contract orders for Benefit ID 2, 3, and 61;⁷¹ the actual annual spend in materials and services of \$2.5 billion and inventoried materials spend of \$200 million for Benefit ID 5;⁷²

⁶⁸ CEC Submission, p. 10, para. 33.

⁶⁹ CEC Submission, p. 12, para. 40.

⁷⁰ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1.

⁷¹ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1, Cells G4 and G5.

⁷² Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1, Cell G7.

1,500 contracts expiring per year for Benefit ID 10;⁷³ the spend on inventoried materials, inventory turns and carrying costs for Benefit ID 14;⁷⁴ the number of accounts payable invoices per year for Benefit ID 19, 23, 26 and 29.⁷⁵

- Third, BC Hydro's benefits are based on realistic targets. For example, for Benefit ID 14, BC Hydro based its target inventory turn ratio on available benchmarking information that indicates that members of BC Hydro's peer group have, on average, been able to attain an inventory turn ratio of 2.79.⁷⁶ As another example, for Benefit ID 2, BC Hydro's estimate that up to 50 percent of Purchase Order and Contract Order transactions could be automated is based on CAPS Research Utilities Industry 2012 Supply Management Performance Benchmarking Report, which shows that, on average, automated transactions represent 53 percent of total procurement transactions.⁷⁷ As final example, for Benefit ID 7, BC Hydro's estimate of the amount of inefficient time spent managing contracts (i.e., the use of spreadsheets and other systems to track, approve, and report work) is conservative (30 percent of 10 percent of the time of 50 percent of the people working in PassPort).⁷⁸
- Fourth, in the absence of completing the project and ascertaining how the new system and processes will work, the time and effort saved from the improved systems and process cannot be quantified. Using professional judgment is sensible in these cases. For example, employees performing the relevant tasks are in the best position to estimate the amount of time that could be saved from automation.

⁷³ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1, Cell G12.

⁷⁴ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1, Cell G15.

⁷⁵ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1, e.g. Cell G21.

⁷⁶ Exhibit B-6, BCUC IR 2.35.2.

⁷⁷ Exhibit B-4, CEC IR 1.6.2.

⁷⁸ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab F1.

- Fifth, BC Hydro accounted for uncertainty by estimating benefits at the 30 percent, 50 percent, and 60 percent range.⁷⁹ Using a percentage of calculated benefits discounts for any uncertainty due to using judgment.

(b) CEC Is Misapplying the 25 Percent Inclusion Rate from BC Hydro's Capital Investment Analysis Guide

35. CEC argues that the 25 percent inclusion rate from BC Hydro's Capital Investment Analysis Guide should be used to estimate project benefits.⁸⁰ CEC's approach would represent a misapplication of the guideline, and would be inappropriate.

36. BC Hydro explained that the 25 percent inclusion rate is a guideline for the purpose of investment prioritization.⁸¹ BC Hydro explained:

The Guide is used as one of the inputs to decision making when prioritizing investments across BC Hydro, and is not used in the business justification of individual projects. The Guide aims to ensure uniformity in assessing the impact of undertaking a risk or value-driven project to support the prioritization of capital investments across BC Hydro. This prioritization process also applies to capital investments that have not yet been initiated. A large proportion of the projects to be prioritized are forecast with minimal definition of the project's deliverables and with varying levels of benefit and cost certainty. At the current level of definition of the Supply Chain Applications project, adhering to these guidelines, as opposed to the judgment of the project team, is not appropriate.⁸²

37. As a project's deliverables become better defined, it is up to the project team and/or steering committee to determine what the appropriate benefit inclusion rate should be for economic evaluation and/or future capital investment prioritization purposes.⁸³ The 25 percent would not be appropriate for the SCA Project given the level of definition. BC Hydro explained:

⁷⁹ Exhibit B-1, Application, p. 2-26.

⁸⁰ CEC Submission, p. 14, para. 56.

⁸¹ Exhibit B-6, BCUC IR 2.33.5.

⁸² Exhibit B-6, BCUC IR 2.33.2.

⁸³ Exhibit B-6, BCUC IR 2.33.5.

As the Supply Chain Applications Project progressed through the Identification Phase into the early Definition Phase, the definition of the project's deliverables matured. This maturity allowed for the bottom-up development and refinement of forecast benefits, which reduced the overall level of uncertainty. BC Hydro believes 50 percent is a conservative estimate of the benefits that can be achieved by the Project, and appropriate to be used in the net present value analysis at this time.⁸⁴

38. The SCA Project would still be beneficial even if the 25 percent were used, with a positive NPV of \$6.5 million.⁸⁵ (If the PassPort alternative were assessed on the same basis, the NPV would be negative \$8.7 million.)⁸⁶

39. CEC's view is that "on a project of \$65.9 million cost, a Project NPV of \$6.5 million [that would result from incorrectly applying a 25 percent value as CEC advocates] would not suggest reasonable value for the significant size of the investment."⁸⁷ There is a logical flaw in CEC's argument. An NPV analysis already accounts for the size of the investment. BC Hydro explained:

BC Hydro has analyzed the cost and benefits of the Project. To do this, BC Hydro used a net present value analysis that takes into account upfront capital costs, future benefits, and ongoing capital and operating costs to measure the total value-added to the organization. The net present value in general terms is calculated as: PV Future Benefits – PV Capital Costs – PV Future Operating Costs. Please refer to the updated net present value analysis tables in BC Hydro's response to BCUC IR 2.39.1. A net present value greater than zero means the project creates economic value.⁸⁸

An NPV of \$6.5 million indicates that the SCA Project would create a \$6.5 million value for ratepayers. This, in addition to the risk reduction benefits of the SCA Project, means that the SCA Project would still be in the interest of ratepayers and should be undertaken.

⁸⁴ Exhibit B-6, BCUC IR 2.33.5.

⁸⁵ Exhibit B-6, BCUC IR 2.33.2.

⁸⁶ Exhibit B-6, BCUC IR 2.39.1 Attachment 1 (Updated Financial Model), Tab A1 (changing the default mid benefit realization ratio from 0.5 to 0.25 (cell C36 on Tab A1) changes the SAP Mid NPV of DCF to \$6.463 million and PassPort to \$(8.676) million).

⁸⁷ CEC Submission, p. 13, para. 52.

⁸⁸ Exhibit B-7, Landale IR 2.3.1 [emphasis added].

(c) Risk Reduction Benefits Are Real and Should Be Considered

40. CEC submits that the risk reduction benefits should be viewed as uncertain and lacking evidentiary support, and that they do not provide significant project justification.⁸⁹ BC Hydro submits that the benefits are intuitive, despite the inherent challenges in quantifying the consequences of the risks and risk reduction benefits.⁹⁰ Thousands of BC Hydro employees use BC Hydro's supply chain system and process each year to acquire billions of dollars of third party services and materials. The SCA Project reduces the overall risk in the supply chain by reducing the likelihood of risks materializing through these processes.⁹¹ BC Hydro has identified particular risks associated with these transactions and has identified the particular mechanisms from the SCA Project that will reduce those risks. The risk reduction benefits should be recognized and given weight in the Commission's public interest assessment.

(d) BC Hydro Will Track Benefits Appropriately

41. In its Final Submission, BC Hydro describes how it will identify measures and metrics for tracking the realization of financial benefits from the SCA Project. BC Hydro will file the initial set of baselines and metrics and measures in the Phase Two Verification Report.⁹² CEC suggests that the current absence of measures and metrics "is caused by inadequate analysis of costs and benefits in the first place, thus jeopardizing the justification of the project."⁹³ CEC argues that "it may be appropriate" for the Commission to require the SCA Project to be deferred until after the development of the benefits realization process at BC Hydro.⁹⁴ These arguments, and other similar comments in CEC's submissions,⁹⁵ are at odds with the evidence and should not be accepted.

⁸⁹ CEC Submission, p. 15, para. 36.

⁹⁰ Exhibit B-1, Application, p. 2-28; Exhibit B-3, BCUC IR 1.2.1.

⁹¹ Exhibit B-1, Application, p. 2-25; Exhibit B-3, BCUC IR 1.2.1; Exhibit B-7, CEC IR 2.78.1.

⁹² Exhibit B-6, BCUC IR 2.51.4.

⁹³ CEC Submission, p. 15, para. 36.

⁹⁴ CEC Submission, p. 15, para. 39.

⁹⁵ CEC Submission, p. 17, para. 36.

42. The measures and metrics that will be used to measure the realization of project benefits are not required to identify expected benefits or to justify the SCA Project. The metrics and measures can only be finalized as the design of the SCA Project progresses.⁹⁶ BC Hydro explained the next step in the process as follows:

The current list of potential benefits will be used as a key input to the next iteration of design work, which will take place during the Design and Implementation Planning Stage of the project. A key task of the project team will be to design processes and systems that will enable the delivery of the expected benefits. In this way, the expected benefits and business impacts will directly impact the solution options considered and selected by the team. As designs are further developed through the Design and Implementation Planning Stage, the stakeholder impact assessment and list of benefits will be updated to reflect the more detailed understanding of the design.⁹⁷

43. The above passage explains how BC Hydro must develop the metrics and measures on an iterative basis, in tandem with the design and implementation of the project. BC Hydro proposed ongoing reporting throughout the iterative process:

In the Definition Phase, the Project team will continue to work on designing the Supply Chain Applications processes and system to facilitate the realization of the forecasted benefits. Based on the Definition Phase work, BC Hydro will file a verification report updating benefit, cost, scope, and schedule information in Phase Two of the regulatory process. BC Hydro will include baselines, metrics, and measures in the verification report.

During the Implementation Phase, as part of its semi-annual project progress reports, BC Hydro will provide updates on the benefits realization monitoring plan, which will include updates on planned baselines, metrics, and measures for tracking the realization of benefits.

The Project's final completion report will provide an update on the status and plans for the realization of benefits. As benefits will be realized over a ten year period, beginning a year after onboarding and ramping up over two to four

⁹⁶ Exhibit B-6, BCUC IR 2.51.4.

⁹⁷ Exhibit B-6, BCUC IR 2.51.4.

years, progress on realized benefits will be reflected in future Revenue Requirement Applications.⁹⁸

This proposed reporting provides the Commission with oversight over the benefits realization process from start to finish.

44. CEC is assuming, in the above-quoted submissions, that deferring the SCA Project will result in a better benefits realization process or increased benefit for ratepayers. There is no evidence to support CEC's assumption. Rather, the evidence is that deferring the SCA Project would result in an unnecessary delay in the realization of the benefits from the SCA Project. BC Hydro's proposal to file metrics and measures in the Phase Two Verification Report and ongoing reporting is reasonable.

45. CEC claims that the use of indirect measures is indicative of additional uncertainty in the realization of benefits.⁹⁹ In fact, BC Hydro will use direct measures wherever feasible. Where direct measures are not feasible, BC Hydro will seek to develop indirect metrics and measures that are effective and accurate.¹⁰⁰ Any uncertainty in achieving benefits has been addressed by discounting estimated benefits in the cost-benefit analysis (by 30 percent, 50 percent, or 60 percent).¹⁰¹

(e) The Fact that Some Work Remains to Be Completed is Inherent in the Two-Phase Process

46. CEC suggests that BC Hydro has not presented an adequate case for the SCA project because there are significant determinations yet to be undertaken.¹⁰² This is not a reason to deny the Application. The Commission's project-approval processes are forward looking. There will always be determinations not yet complete at the time an Application is

⁹⁸ Exhibit B-6, CEC IR 2.51.3.

⁹⁹ CEC Submission, p. 17, para. 34.

¹⁰⁰ Exhibit B-6, BCUC IR 2.51.2.

¹⁰¹ Exhibit B-1, Application, p. 2-26.

¹⁰² CEC Submission, p. 1, para. 3.5.

filed. The Phase Two Verification Report will update the Commission on the results of the remaining Definition Phase work on the SCA Project.¹⁰³

47. CEC suggests that BC Hydro has not presented an adequate case for the SCA project because the risk register will not be refreshed until after the Commission issues its approval.¹⁰⁴ This is also not a reason to deny the Application. BC Hydro has a risk register for the SCA Project,¹⁰⁵ and has demonstrated that it is prudently planning to mitigate project risks.¹⁰⁶ BC Hydro's decision not to update the risk register while the project is on hold for review by the Commission is reasonable. The risk register is a "living" document and will be continually refreshed.¹⁰⁷

C. REPLY TO BCOAPO REGARDING BENEFITS ANALYSIS

(a) BC Hydro's Assumed 50 Percent Benefit Realization Rate is Conservative

48. BC Hydro employed a 50 percent benefit realization rate assumption in its mid-range benefit estimate. BCOAPO does not dispute BC Hydro's assumption of 50 percent. However, BCOAPO characterizes the assumption as realistic, rather than conservative.¹⁰⁸ BCOAPO provides two rationales for this characterization, related to the number of staff involved and the challenge of translating effort reduction benefits into savings.¹⁰⁹

49. In response to BCOAPO's point regarding the number of employees involved, BC Hydro is planning the appropriate steps to transition to the new system and realize the estimated benefits of the SCA Project. BC Hydro's analysis took into account the number of staff involved and the need for training and change management.¹¹⁰ BC Hydro's plans include the

¹⁰³ Exhibit B-1, Application, p. 1-18.

¹⁰⁴ CEC Final Submission, p. 1, para. 3.6.

¹⁰⁵ Exhibit B-3, BCUC IR 1.30.7.

¹⁰⁶ BC Hydro Final Submission, Part Seven.

¹⁰⁷ Exhibit B-3, BCUC IR 1.30.7.

¹⁰⁸ BCOAPO Submission, p. 15.

¹⁰⁹ BCOAPO Submission, p. 15.

¹¹⁰ For example, Exhibit B-1, Application, p. 4-14.

development of detailed change management and benefit realization plans, as well as an extended stabilization period.¹¹¹

50. In response to BCOAPO's point regarding effort reduction benefits, BC Hydro expects that some FTEs will be reduced and some FTEs will be diverted to other activities based on operational requirements.¹¹² Effort reduction benefits will therefore result either in cost reductions or the offsetting of cost increases. BC Hydro has already eliminated 28 full time equivalent positions as part of the implementation of the Supply Chain Business Model, and in anticipation of the Supply Chain Applications project.¹¹³

51. For these and the other reasons noted in response to CEC above and in BC Hydro's Final Submission,¹¹⁴ BC Hydro's 50 percent benefits realization rate assumption is a conservative estimate.

(b) SAP Upgrade Costs Should Be Excluded From Benefits Analysis

52. BCOAPO's only major concern with the benefits analysis is that it should include a portion of costs for upgrading the SAP Platform in the future.¹¹⁵ As described in paragraph 26 of BC Hydro's Final Submission, there are a number of reasons why it was appropriate for BC Hydro not to include upgrade costs for the SAP Platform in the benefits analysis. BC Hydro already uses SAP for other functions and will upgrade its SAP platform in the future whether or not the SCA Project proceeds.¹¹⁶ SAP upgrades involve the entire platform, not individual modules.¹¹⁷ Therefore, the cost of an upgrade to the SAP platform would not be new or incremental cost caused by the SCA Project and should not be included in the cost-benefit analysis.

¹¹¹ Exhibit B-1, Application, p. 4-32.

¹¹² Exhibit B-7, CEC IR 2.76.1.

¹¹³ Exhibit B-3, BCUC IR 1.30.13.

¹¹⁴ BC Hydro Final Submission, Part Five, Section C.

¹¹⁵ BCOAPO Submission, p. 16.

¹¹⁶ Exhibit B-6, BCUC IRs 2.42.1 and 2.42.2.

¹¹⁷ Exhibit B-6, BCUC IR 2.42.2.

(c) Benefits Realization Plans

53. BCOAPO submits that BC Hydro's benefit realization plans and metrics and measures for tracking the realization of financial benefits should be subject to review and acceptance by the BCUC.¹¹⁸ The Commission will have the opportunity to review BC Hydro's benefit realization plans and metrics and measures in the Phase Two process, BC Hydro's ongoing compliance reporting on the SCA Project and BC Hydro's future revenue requirements proceedings. There is no need for additional process.

D. CONCLUSION AND REQUESTED FINDINGS

54. The Commission should find that BC Hydro has provided a compelling rationale for undertaking the SCA Project. The SCA Project will address the identified capability gaps in BC Hydro's existing supply chain system, allowing BC Hydro to meet the supply chain business requirements identified in the Supply Chain Business Model. The SCA Project will provide net financial benefits and will reduce risk related to BC Hydro's supply chain. It will also enable BC Hydro to achieve the full benefits from additional investments in work management and asset management business processes and IT systems.

¹¹⁸ BCOAPO Submission, p. 22.

PART FIVE: SAP IS THE SUPERIOR ALTERNATIVE FOR BC HYDRO

A. INTRODUCTION

55. In this Part, BC Hydro responds to the submissions of BCOAPO and CEC on the alternatives analysis. The concerns that BCOAPO and CEC have identified regarding BC Hydro's analysis are unjustified. The evidence demonstrates that BC Hydro has conducted an appropriate alternatives analysis, which has demonstrated that Alternative 1 (SAP) is the preferred alternative for undertaking the SCA Project. BC Hydro's assessment is supported by independent third-party research.

B. REPLY TO CEC ON ALTERNATIVES ANALYSIS

(a) SCA Project Business Case is Based on Meeting BC Hydro's Business Needs

56. In the context of addressing the alternatives analysis, CEC suggests that the SCA Project was developed as part of the Common Platform Strategy and was designed to match the SAP platform, rather than being based on a business case founded on benefits to ratepayers¹¹⁹ or a review of BC Hydro's business needs.¹²⁰ BC Hydro has responded to this argument above in Part Three, Section B (a) of this Reply Submission. As discussed there, BC Hydro established a business case for the SCA Project based on a review of its business needs in the Supply Chain Business Model. The SCA Project business case stands on its own merits, irrespective of the Common Platform Strategy. The choice of the SAP Alternative to meet BC Hydro's supply chain business needs is supported by BC Hydro's alternatives assessment. Part Six of BC Hydro's Final Submission summarizes the evidence on BC Hydro's alternatives analysis.

(b) BC Hydro's SAP Platform is Fully Integrated and Up to Date

57. CEC references ABB's comment that having a common platform "comprised of modules in various states can actually drive up project and technological costs, as well as future

¹¹⁹ For example, CEC Submission, p. 19, paras. 33 and 37. BCOAPO also voices concern regarding BC Hydro's bias in favour of SAP (BCOAPO Submission, p. 12).

¹²⁰ CEC Submission, p. 21, para. 45.

support and upgrade costs.”¹²¹ CEC states that it “agrees that there is a risk of increased costs in such a scenario.”¹²² ABB’s assertion, which CEC is echoing, is counter-intuitive and unsupported by evidence.

58. BC Hydro does not have “modules in various states”, as suggested by ABB. BC Hydro confirmed in its Rebuttal Evidence that its SAP platform is fully integrated and up to date.¹²³ Further, as indicated by BC Hydro, the benefits of the Common Platform Strategy are:

- A reduction in overall complexity of BC Hydro’s IT environment;
- More streamlined business processes;
- A single source of information and thus consistency of analysis and reporting; and
- Reduction in the cost of future business and technology changes.¹²⁴

59. Attachment P to the Application provides further background on the benefits of adopting SAP as a common platform.¹²⁵

(c) BC Hydro Has Presented the SCA Project in its Broader Context

60. CEC states that bringing projects forward individually “can have a negative effect of limiting the oversight of the larger picture by the BC Utilities Commission which is not in evidence.”¹²⁶ There are several answers to this argument.

- First, BC Hydro has provided evidence on the “bigger picture” in this proceeding. In Chapter 4 and Attachments to the Application,¹²⁷ BC Hydro set out in detail the background to the SCA Project, including the Common Platform Strategy. BC

¹²¹ CEC Submission, p. 19, para. 34.

¹²² CEC Submission, p. 19, para. 35.

¹²³ Exhibit B-11, pp. 10 to 11.

¹²⁴ Exhibit B-1, Application, p. 3-13.

¹²⁵ Exhibit B-1, Attachment P, pp. 54 and 55 of 114.

¹²⁶ CEC Submission, p. 19, para. 36.

¹²⁷ For example, Attachments P and Q.

Hydro also responded to numerous information requests on the Common Platform Strategy¹²⁸ and plans for related future projects, such as Asset and Work Management.¹²⁹ The Commission has the necessary context to assess the SCA Project.

- Second, there are multiple avenues for the Commission to review BC Hydro's IT capital expenditures. BC Hydro's IT capital investments are reviewed in BC Hydro's revenue requirements proceedings and major project applications. The Commission is also conducting a separate historical review of BC Hydro's investment in SAP in the SAP Inquiry. This SCA Project proceeding is focused on a particular IT project.
- Third, the subject of the review of projects linked to capital strategies is within the scope of the BC Hydro Capital Expenditures and Projects Review proceeding.

(d) BC Hydro's Approach to Consultation with SAP and ABB Was Reasonable

61. CEC asserts that the consultation with SAP during the development of the conceptual design "had the potential to shape the project into an SAP specific project"¹³⁰ and could "restrict the development of beneficial options".¹³¹ CEC says that BC Hydro should have consulted with ABB regarding the possibility for PassPort to meet its business needs.¹³² CEC's arguments are without merit.

62. BC Hydro's business case for the SCA Project is based on the need to fill the capability gaps in the current system and business processes so that BC Hydro can meet its identified supply chain business requirements, as discussed in part Three, Section B of this

¹²⁸ For example, Exhibit B-3, BCUC IRs 1.8.2, and 1.12.3; Exhibit B-4, ABB IR 1.2.0, CEC IRs 1.43.1, 1.51.1, and 1.63.1, and BCOAPO IR 1.21.1; Exhibit B-7, BCOAPO IR 2.34.1.

¹²⁹ Exhibit B-3, BCUC IRs 1.6.1, 1.6.2, 1.6.3, 1.6.3.1, 1.6.4, 1.6.5, 1.6.6, 1.6.7, 1.6.8, and 1.24.5; Exhibit B-6, BCUC IR 2.42.1.

¹³⁰ CEC Submission, p. 20, para. 44.

¹³¹ CEC Submission, p. 21, para. 44.

¹³² CEC Submission, p. 21, para. 45.

Reply Submission. Part Six, Section A (b) of BC Hydro's Final Submission addresses why any other IT system would be unlikely to address the capability gaps better than PassPort or SAP. PassPort's ability to meet the capability gaps identified by BC Hydro is unaffected by BC Hydro's consultation with SAP for the Conceptual Design Report. BC Hydro's internal resources and contractors assessed the ability of SAP and PassPort to meet the capability gaps, independently from ABB or SAP.¹³³ BC Hydro's alternatives analysis demonstrates that an SAP IT system is the preferable alternative for the SCA Project.

63. BC Hydro had no need to consult with ABB. BC Hydro has been operating a PassPort solution for 14 years (since 2003) and has extensive internal knowledge of the system.¹³⁴ BC Hydro's experience includes developing and maintaining 30 interfaces between PassPort and other systems.¹³⁵ The evidence does not support ABB's claims that its product can close all the capability gaps with a rating of 4 out of 4.¹³⁶ CEC has not responded to BC Hydro's substantive submissions on why BC Hydro's assessment on each capability gap should be preferred to ABB's assessment. Further, BC Hydro's conclusion that SAP is a superior supply chain solution compared to Asset Suite is confirmed by multiple independent third-party reports.¹³⁷

64. ABB filed intervenor evidence in this proceeding and had the opportunity to rebut BC Hydro's assessment.¹³⁸ BC Hydro confirmed that it was aware of and accounted for all of the information provided by ABB, except in one instance:¹³⁹

BC Hydro confirms that, with one exception, it was aware of and accounted for the PassPort capabilities discussed by ABB in Exhibit C3-3 in its assessment of a PassPort-based solution's ability to close the capability gaps. Based on the evidence provided by ABB, BC Hydro has changed its scoring for capability gap 11 "Inability to pay suppliers without an invoice", which BC Hydro has revised from

¹³³ Exhibit B-3, BCUC IR 1.9.2 and 1.9.3; Exhibit B-4, CEC IR 1.41.2.

¹³⁴ Exhibit B-1, Application, p. 1-10; Exhibit B-3, BCUC IR 1.11.1.

¹³⁵ Exhibit B-6, BCUC IR 2.49.1.

¹³⁶ BC Hydro Final Submission, pp. 45 to 59.

¹³⁷ BC Hydro Final Submission, para. 154.

¹³⁸ Exhibit C3-3.

¹³⁹ Exhibit B-7-2, BCOAPO IR 2.28.1.

1 to 2. PassPort provides capability to pay for materials without an invoice; however, it does not provide this ability for contract services.

BC Hydro has not changed its scoring for any of the other capability gaps based on the information provided by ABB in Exhibit C3-3.

65. BC Hydro's assessment therefore reflects a full appreciation of the capabilities of PassPort.

(e) Alternatives Analysis Should be Based on Costs, Benefits and other Relevant Factors

66. CEC submits that the inability to draw a conclusion between the SAP and PassPort alternatives based on cost alone is "significant".¹⁴⁰ CEC's reasoning is flawed. The primary reason no definitive conclusion can be drawn based on costs alone is due to the wider accuracy range on the PassPort alternative.¹⁴¹ More fundamentally, cost is only one factor in the alternatives analysis. The SCA Project is a value-driven project, where the benefits are the key to the project justification. The cost-benefit analysis as a whole favours an SAP solution.¹⁴²

(f) BC Hydro Considered Adjustments to PassPort and Upgrades to Asset Suite 9 / S/4 HANA

67. CEC maintains that BC Hydro should have developed an understanding of potential adjustments to PassPort and Asset Suite 9 as well as an SAP S/4 HANA solution in order to assess current and future capabilities.¹⁴³ There is ample evidence on the record demonstrating that BC Hydro understood the capabilities of the products. BC Hydro has extensive experience with PassPort, arising from its use of the system for 14 years.¹⁴⁴ BC Hydro's internal resources and contractors conducting the assessment had extensive

¹⁴⁰ CEC Submission, p. 22, para. 39.

¹⁴¹ Exhibit B-1, Application, p. 3-16 line 12 to p. 3-17, line 3.

¹⁴² Exhibit B-1, Application, Chapter 3.3; BC Hydro Final Submission, Part Six.

¹⁴³ CEC Submission, p. 22, para. 44.

¹⁴⁴ Exhibit B-1, Application, pp. 4-1 to 4-2; Exhibit B-4, ABB IR 1.2.0, CEC IR 1.41.2; Exhibit B-6, BCUC IR 2.49.1; Exhibit B-7, BCOAPO IR 2.33.2.

experience to draw upon.¹⁴⁵ BC Hydro stated in its Rebuttal Evidence that Asset Suite 9 also does not meet BC Hydro's requirements as well as SAP:

Asset Suite (either version 8 or 9) does not meet BC Hydro's supply chain business requirements as well as SAP. Asset Suite is primarily an Enterprise Asset Management product. Enterprise Asset Management products focus on the maintenance of plant assets. Asset Suite focuses on asset and work management functionality, and has supply chain functionality primarily focused on the maintenance of plant assets. While Asset Suite is a leading Enterprise Asset Management product for power generation utilities, it is not a leading product for transmission and distribution or a leading supply chain product.¹⁴⁶

BC Hydro's views of PassPort (Asset Suite) and SAP are confirmed by multiple third-party expert reports.¹⁴⁷

68. CEC's apparent view that BC Hydro should consider being an early adopter of Asset Suite 9 or S/4 HANA contradicts CEC's own argument that BC Hydro should justify the project based on identified business needs. Implementing these solutions would be a much broader undertaking than the SCA Project. It would be more costly. BC Hydro does not require either Asset Suite 9 or S/4 HANA to meet its identified supply chain business requirements.¹⁴⁸

C. REPLY TO BCOAPO REGARDING ALTERNATIVES ANALYSIS

69. BCOAPO accepts BC Hydro's overall assessment that SAP addresses the capability gaps better than PassPort, but identified concerns about certain elements of BC Hydro's analysis. BC Hydro submits, for the reasons discussed below, that BCOAPO's concerns are misplaced.

¹⁴⁵ Exhibit B-3, BCUC IR 1.11.1; Exhibit B-4, CEC IR 1.41.2.

¹⁴⁶ Exhibit B-11, Rebuttal Evidence, pp. 3 to 4. As stated in BC Hydro's response to BCUC IR 1.7.2 and 2.42.1, given the recent introduction of Asset Suite 9, there are few examples of it having been implemented by major utilities. ABB's responses to information requests confirm this (Exhibit C3-5-1, FEI-ABB IR 3.4; BCUC-ABB IR 1.1 and 3.3).

¹⁴⁷ Exhibit B-3, BCUC IR 1.8.2.

¹⁴⁸ Exhibit B-3, BCUC IR 1.7.2; Exhibit B-4, ABB IRs 1.4.0, 1.6.0.

(a) Cost Estimate for Passport Takes Into Account Level Of Effort

70. BCOAPO agrees with BC Hydro that it is difficult to draw a specific conclusion based on project cost alone, but states that in its view it is reasonable to conclude that Passport would have a lower cost “given that Passport’s Asset Suite 8 is the current supply chain application and that BC Hydro is only proposing to do a moderate amount of customization.”¹⁴⁹ BC Hydro’s cost estimate for the PassPort Alternative already reflects BC Hydro’s estimation that the level of effort to implement PassPort would be lower, given that the existing supply chain system is PassPort-based.¹⁵⁰

(b) Customization of Passport Would Be Required Due to Nature of Passport Itself

71. BCOAPO maintains, without citing any supporting evidence, that “any customization required [for PassPort] is due to BC Hydro’s decision to shift to an enterprise-wide SAP IT platform”.¹⁵¹ BCOAPO also expresses the general view that the PassPort cost and benefit analyses are negatively impacted by BC Hydro’s decision to adopt SAP as its enterprise-wide IT platform.¹⁵² BCOAPO is incorrect. The degree of required customization from the PassPort software’s standard configuration¹⁵³ and need to interface with other systems is attributable to the nature of PassPort itself. For example:

- Customization would be required to address the fact that PassPort does not have a services catalogue.¹⁵⁴
- Customization for interfaces between PassPort and other systems is attributable to the scope of the Passport system, and not to the use of the SAP IT platform. For example, since PassPort does not include a finance module, it would be

¹⁴⁹ BCOAPO Submission, p. 12.

¹⁵⁰ Exhibit B-1, Application, p. 3-15.

¹⁵¹ BCOAPO Submission, p. 12.

¹⁵² BCOAPO Submission, pp. 10 and 19.

¹⁵³ Exhibit B-4, CEC IR 1.39.1.

¹⁵⁴ Exhibit B-6-2, BCUC IR 2.50.1.

necessary for PassPort to integrate with whichever IT system BC Hydro used for finance.¹⁵⁵

- Customization of PassPort would also be necessary because there is no Human Resources module in PassPort to support the use of organizational roles to determine approval authority.¹⁵⁶

72. As explained in BC Hydro's Rebuttal Evidence, PassPort has a narrower functionality compared to SAP.¹⁵⁷ As indicated above, this narrower functionality gives rise to the need for more customization and interfaces to meet BC Hydro's business needs. Ultimately, this results in the inability of PassPort to meet BC Hydro's needs as well as SAP.¹⁵⁸

(c) BC Hydro Has Expertise with PassPort

73. BCOAPO indicates that it is concerned that BC Hydro may not have been fully familiar with PassPort's current version - Asset Suite 8.¹⁵⁹ BC Hydro was, in fact, well placed to conduct the analysis of PassPort. BC Hydro used five evaluators to conduct its review. Three evaluators had between 10 and 20 years of experience managing and implementing SAP or PassPort at BC Hydro and other companies, including working with the product versions of SAP and PassPort that were considered by BC Hydro. The other two evaluators had more than 15 years of experience working with PassPort and SAP, and combined, have implemented or sustained PassPort or SAP at more than 50 businesses around the world.¹⁶⁰ BC Hydro's experience includes developing and maintaining 30 interfaces between PassPort and other systems,¹⁶¹ and a technical upgrade in 2015.¹⁶² BC Hydro's reference to its more limited "technical" knowledge and capacity was not in reference to assessing PassPort's capabilities,

¹⁵⁵ Exhibit B-11, p. 7.

¹⁵⁶ Exhibit B-1, Application, p. 3-12.

¹⁵⁷ Exhibit B-11, pp. 3 to 4; BC Hydro Final Submission, Part Six, Section C(a).

¹⁵⁸ Exhibit B-11, pp. 3 to 4, and 7.

¹⁵⁹ BCOAPO Submission, p. 9.

¹⁶⁰ Exhibit B-3, BCUC IR 1.11.1.

¹⁶¹ Exhibit B-6, BCUC IR 2.49.1.

¹⁶² Exhibit B-7, BCOAPO IR 2.33.2.

but in reference to its capacity to implement a PassPort solution compared to its capacity to implement a SAP solution.¹⁶³ These are entirely distinct tasks. Implementing a PassPort solution would require many more technical tasks than simply identifying the capabilities of the system. BC Hydro clearly stated that it had sufficient in-house knowledge to perform the assessment of Passport's capabilities.¹⁶⁴ BC Hydro's employees that support PassPort have access to the documentation and release notes associated with Asset Suite 8, and are aware of and understand the features implemented at BC Hydro, as well as other product features.¹⁶⁵

(d) BC Hydro Assessed Capability Gaps Without Assistance of SAP

74. BCOAPO states that BC Hydro's assessment of the capability of SAP was conducted with assistance from SAP.¹⁶⁶ This is incorrect. BC Hydro's resources assessed the ability of SAP to meet the capability gaps, independent of SAP.¹⁶⁷ BC Hydro's use of SAP resources was for the development of the conceptual design report, which is separate from the alternatives analysis that was conducted.

(e) BC Hydro's Assessment of PassPort Likely Overstates Monetized Benefits of PassPort Alternative

75. BCOAPO questions BC Hydro's assessment that BC Hydro's approach likely overstates the monetized benefits of the PassPort alternative on the basis that there may not be a linear relationship between capability and monetized benefits.¹⁶⁸ BC Hydro recognizes that the relationship may not be entirely linear.¹⁶⁹ However, BC Hydro's view that it has likely overstated the monetized benefits of the PassPort alternative is logical. BC Hydro stated in the Application:

¹⁶³ Exhibit B-1, Application, pp. 3-14 to 3-15

¹⁶⁴ Exhibit B-3, BCUC IR 1.9.3.

¹⁶⁵ Exhibit B-7, BCOAPO IR 2.33.2.

¹⁶⁶ BCOAPO Submission, pp. 8 and 9.

¹⁶⁷ Exhibit B-3, BCUC IR 1.9.2; Exhibit B-4, CEC IR 1.41.2.

¹⁶⁸ BCOAPO Submission, p. 18.

¹⁶⁹ Exhibit B-3, BCUC IR 1.10.2.

It is important to note that the method used for this analysis likely overstates the monetized benefits associated with Alternative 2 (Passport) as this analysis assumes that addressing a proportion of a capability gap will result in a comparable proportion of benefits of Alternative 1 (SAP). As many of the problems to be addressed by the closing of the capability gaps are interrelated, some of the PassPort benefits calculated through this method may not be realizable.¹⁷⁰

Since capability gaps are interrelated, not fully meeting several capability gaps (as is the case with the PassPort alternative) could only decrease the monetized benefits.

D. CONCLUSION AND REQUESTED FINDING

76. The Commission should find that BC Hydro performed an appropriate alternatives analysis, which demonstrated the superiority of Alternative 1 (SAP) in terms of closing the capability gaps, alignment with the Common Platform Strategy, risk, and financial benefits. Independent third-party research supports BC Hydro's assessment.

¹⁷⁰ Exhibit B-1, Application, pp. 3-17 to 3-18.

PART SIX: CONCLUSION AND ORDER SOUGHT

77. The evidence demonstrates that the SCA Project is in the public interest. The SCA Project positions BC Hydro to meet its identified supply chain business requirements, reduce risk, and benefit customers. The preferred project option delivers the greatest benefits with the least risk. BC Hydro requests that the Commission accept the Definition Phase capital expenditures as being in the public interest.¹⁷¹ If the Commission accepts the capital expenditures as in the public interest, BC Hydro will commence Definition Phase activities on the SCA Project and will file its Phase Two Verification Report seeking acceptance of Implementation Phase capital expenditures in due course.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

Dated: July 21, 2017 ***[original signed by Chris Bystrom]***
Christopher Bystrom
Counsel for BC Hydro

Dated: July 21, 2017 ***[original signed by Matthew Ghikas]***
Matthew Ghikas
Counsel for BC Hydro

¹⁷¹ Exhibit B-1, Application, Attachments A and B. BC Hydro has set out the specific approvals it is seeking in section 1.3 of the Application, and they are reflected in the draft Orders.