July 10, 2017

VIA E-FILING

Erica Hamilton
Commission Secretary
BC Utilities Commission
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BCPIAC
Public Interest Advocacy Centre

Reply to: Leigha Worth
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Our File: 7647

Dear Ms. Hamilton:

Re: BC Hydro Supply Chain Applications Project Application ~ Project No.3698901

Please be advised that we continue to represent the following organizations in this regulatory process: British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, BC Poverty Reduction Coalition, Council of Senior Citizens' Organizations of BC, Disability Alliance BC, Together Against Poverty Society, and Tenant Resource & Advisory Centre ("BCOAPO *et al.*" or "BCOAPO"). Our client groups have participated in numerous regulatory proceedings before the British Columbia Utilities Commission ("the Commission" or "BCUC") representing the interests of low and fixed income residential energy consumers, and in this process the interests of BC Hydro's low and fixed income residential electricity ratepayers. As a defined ratepayer group with a long history of focussed and effective interventions before the BCUC regarding BC Hydro's rates and service, BCOAPO *et al.* has a direct and material interest in the outcome of this process and its participation has added to the Commission's understanding of the issues.

INTRODUCTION

On December 21, 2016, BC Hydro filed an application pursuant to section 44.2 of the *Utilities Commission Act*[1] ("*UCA*") seeking the BCUC's approval of the capital

[1] [RSBC 1996] CHAPTER 473.

expenditures up to the end of the Definition Phase of the Supply Chain Applications Project ("the Application"). In the Application, BC Hydro indicated that it would seek approval of the remainder of the capital expenditures for the Project upon completion of the Definition Phase[2] but BCOAPO notes that BC Hydro is proposing to limit its Phase Two filing to information only intended to, "verify that the cost, benefits, scope and schedule assumptions are still consistent with the project justification provided in Phase One. In the absence of a material change, BC Hydro proposes that Phase Two proceed expeditiously without revisiting issues such as project need, justification and alternatives already canvassed in Phase One."[3]

In its responses to the first round of information requests, BC Hydro noted that Commission approval or acceptance of capital projects was customarily sought later in project lifecycles: namely, just prior to the Implementation Phase[4]. However, the Definition Phase expenditures on the Supply Chain Applications Project (as with technology projects in general) are a greater proportion of the total project costs than normally would be the case for large generation or transmission infrastructure projects (40% vs. 2%-7%)[5].

On March 15, 2015, the BCUC issued Order G-32-17 finding that the two-phased process was appropriate under the circumstances and it established the regulatory timetable for this Phase One regulatory process.

PROJECT NEED

In the next ten years BC Hydro expects to acquire in the order of $2 billion annually in third-party materials and services. The phrase "supply chain" refers to the business processes used by BC Hydro to acquire these third-party services and materials and then deploy them within the Company.

[2] Exhibit B-1, page 1-2.
[3] Exhibit B-1, page 1-2.
[4] Exhibit B-3, BCUC IR 1.32.2.
[5] Exhibit B-1, page 1-18.

Since 2003, BC Hydro has used an information technology software application called PassPort to carry out and manage its supply chain activities. However, the current software has limitations when viewed in the context of BC Hydro's current supply chain business needs. The Supply Chain Business Requirements are documented in Exhibit B-1, Attachment L and the capability gaps in the current supply chain are set out in Section 2.5 of Exhibit B-1. The Supply Chain Applications project is expected to close these gaps and, in doing so, provide financial benefits in the form of reduced costs and reduced work effort[6] and, as a bonus, reduced risk[7].

CRITERIA FOR ACCEPTANCE

Under Section 44.2 of the UCA, the Commission must accept a capital expenditure schedule submitted by a utility if it would be in the public interest. Subsection 44.2(5) also sets out a number of factors that the Commission must consider when determining whether to accept an expenditures schedule:

(a) the applicable of British Columbia's energy objectives,

(b) the most recent long-term resource plan filed by the public utility under section 44.1, if any,

(c) the extent to which the schedule is consistent with the applicable requirements under sections 6 and 19 of the Clean Energy Act,

(d) if the schedule includes expenditures on demand-side measures, whether the demand-side measures are cost-effective within the meaning prescribed by regulation, if any, and

(e) the interests of persons in British Columbia who receive or may receive service from the public utility.

[6] Exhibit B-1, page 2-25.
[7] Exhibit B-3, BCUC IR 1.2.1.

In its Final Submission, BC Hydro submitted that the public interest factors that are relevant to Supply Chain Applications Project are: i) the interests of persons in British Columbia who receive or may receive service from BC Hydro; and (ii) the government's energy objective of ensuring that BC Hydro's rates remain among the most competitive of rates charged by public utilities in North America.[8]

BCOAPO agrees with this assessment. The Project's need is directly tied to shortcomings in the current supply chain software and related processes which purportedly lead to cost inefficiencies and unnecessary business risks. In order for the Commission to accept the Project's capital expenditures, this Panel needs to be satisfied that project is cost effective and reduces risk. Doing so would clearly be the in interests of persons in British Columbia who receive or may receive service from BC Hydro and contribute to ensuring that BC Hydro's rates remain among the most competitive of rates charged by public utilities in North America.

It is noted that approval is not being sought for the operating costs associated with the Project. Instead, the operating costs are included in BC Hydro's 2017-2019 RRA. However, the operating costs are relevant and have been included in the assessment of the cost effectiveness of the Project[9].

ALTERNATIVES CONSIDERED

The Conceptual Design Report completed during the Identification Phase demonstrated that SAP could meet the Company's business needs and was a viable platform for the Supply Chain Project. As a result, no formal alternatives analysis was done during the Identification Phase of the project as BC Hydro had made the decision to shift to an

[8] BC Hydro Final Submission, page 7.
[9] Exhibit B-3, BCUC IR 1.31.1.

enterprise-wide SAP IT platform and BC Hydro completed the Transformation[10] Blueprint of a SAP-based solution in 2013[11].

BC Hydro did consider alternatives to SAP as part of the Definition Phase Business Case analyzing two PassPort alternatives as well as the SAP alternative. The two PassPort alternatives consisted of:

i) Deploying additional capabilities in PassPort that are not currently in use to meet as many of the business requirements as possible, and
ii) Deploying the additional capabilities in PassPort and customizing PassPort where functional gaps exist.[12]

The second PassPort alternative was based on the assumption that with sufficient customization it could fully meet the Supply Chain Business Requirements. However, further analysis demonstrated that this was not possible[13]. As result, for purposes of the Application, the two PassPort alternatives were combined into one[14] which allowed for a "reasonable" amount of customization[15].

BC Hydro did not consider any alternative IT systems because it came to the conclusion that a third alternative IT system would be very unlikely to provide a material advantage over SAP or PassPort for the following reasons[16]:

a) Since SAP can fully address the capability gaps, no other alternative (including PassPort) would provide incremental functional benefits over SAP.

[10] The Transformation Initiative identified four IT projects dealing with asset management; work management; scheduling, dispatch and mobility; and customer connections as well as the supply chain project that were all contemplated to be on a SAP platform. Exhibit B-1, page 4-7.
[11] Exhibit B-1-1, page 3-1.
[12] Exhibit B-1, Attachment P, page 21.
[13] Exhibit B-1, page 3-2 and Exhibit B-4, CEC IR 1.39.1.
[14] Exhibit B-1, page 3-2.
[15] Exhibit B-3, BCUC IR 1.7.1 and Exhibit B-4, CEC IR 1.39.1.
[16] Exhibit B-1, page 3-3.

b) Since all PassPort and SAP licenses and hardware for a new supply chain are already owned by BC Hydro, incremental software licenses and hardware costs including ongoing maintenance would add unnecessary cost to the project and ongoing maintenance costs.
c) New resources with the system skills necessary to train existing personnel in the use of a new system would be required, which would add additional incremental operating costs. In addition, support resources cannot as easily be shared across existing platforms.
d) A third alternative would result in a need to develop at least one additional set of interfaces to allow users of the new IT system to access the existing SAP and PassPort systems, adding complexity and cost to the IT environment.
e) BC Hydro resources have experience with PassPort and SAP, which means that any third alternative would entail more risk both to the project and its ongoing sustainment.

BCOPAO agrees with BC Hydro's decision to limit the alternatives considered to SAP and PassPort. There is no evidence to suggest that there is another IT system that is superior[17].

BC Hydro also restricted its consideration[18] of alternatives to its current versions of SAP and PassPort (i.e., ECC6/EhP8 for SAP and Asset Suite 8 for PassPort) as opposed to considering newer versions. The major reasons cited for this decision were that doing so would avoid major system upgrades and that for the new products available (S/4 HANA for SAP and Asset Suite 9 for PassPort) there were few examples of them having been implemented.

BCOAPO agrees with BC Hydro's decision to base its choices on the established IT systems that it already uses because it recognizes and shares BC Hydro's concerns about the risks associated with being an "early adopter" – particularly when It comes to

[17] Exhibit B-3, BCUC IR's 1.1.4; 1.8.3 and 1.8.3.1.
[18] Exhibit B-3, BCUC IR 1.7.2 and Exhibit B-5, ABB IR 1.6.

IT systems. There are advantages, as noted by BC Hydro[19], in waiting until an IT product has matured and the inevitable new system bugs are addressed.

Furthermore, BCOAPO notes that the adoption of PassPort's Asset Suite 9 would necessitate an upgrade to BC Hydro's work management and asset management functions which also currently use Asset Suite 8 – thereby greatly expanding the scope and cost of the project[20]. BCOAPO assumes that similar issues with respect to expanding project scope and costs would also arise if BC Hydro were to implement the most recent version of SAP (S/4 HANA) as there are other systems in the Corporation (e.g., Customer Care and Finance) that are SAP based[21] and operate using an earlier system.

ALTERNATIVE ASSESSMENT

CAPABILITIES

SAP

In 2012, BC Hydro initiated a process to identify its supply chain business needs. The resulting Supply Chain Business Model identified 153 unique supply chain business requirements[22]. BC Hydro also analyzed its existing supply chain IT systems and business processes and identified 13 capability gaps[23].

Implementation of the Supply Chain Project using SAP is expected to address 150 of the 153 business requirements[24] and address (albeit not completely) all 13 capability

[19] Exhibit B-6, BCUC IR 2.42.1.
[20] Exhibit B-11, Rebuttal Evidence, page 2.
[21] Exhibit B-3, BCUC IR 1.29.3.3.
[22] Exhibit B-1, page 4-6 and Exhibit B-4, BCOAPO IR 1.25.1.
[23] Exhibit B-1, page 2-8.
[24] Exhibit B-1, page 4-13.

gaps[25]. Overall, SAP scored 50 (out of a possible 52) in the assessment of its ability to close the capability gaps[26].

BC Hydro indicated the three business requirements not addressed by the Project do not require technology[27]. In the case of the capability gaps, these cannot be fully eliminated until Work Management and Asset Management are also undertaken in SAP[28].

It is noted that the assessment was undertaken with only limited direct input from SAP regarding the functionality or features of the SAP solution[29]. However, it is also noted that:

i) SAP has been BC Hydro's choice for its enterprise-wide IT platform[30] since 2008;

ii) the Supply Chain Project has focused on SAP since the Identification Phase[31];

iii) BC Hydro contracted a senior resource from SAP to support the development of the conceptual design[32]; and

iv) BC Hydro engaged PricewaterhouseCoopers to confirm that the conceptual design (based on SAP) supports the supply chain business requirements[33].

As a result, BCOAPO is of the view that BC Hydro has sufficient in-house knowledge to carry out the capability assessment and it has no issues with results.

PassPort

The PassPort based solution was determined to have shortcomings: it could not fully meet 9 out of the 13 capability gaps and scored 36 (out of 52) overall[34]. As a result of the evidence provided by ABB this scoring was revised to 37[35].

[25] Exhibit B-1, page 3-5.
[26] Exhibit B-1, page 3-8.
[27] Exhibit B-1, page 4-13 and Attachment L.
[28] Exhibit B-1, page 3-12 and Exhibit B-4, BCOAPO IR's 1.17.2 and 1.17.2.1.
[29] Exhibit B-3, BCUC IR 1.9.2.
[30] Exhibit B-1, page 3-13.
[31] Exhibit B-1, page 4-13.
[32] Exhibit B-3, BCUC IR 1.9.2.
[33] Exhibit B-1, page 4-13.

Again, BC Hydro relied on in-house knowledge of PassPort to undertake the assessment[36] of its capabilities. BC Hydro claims that while it has recently made limited investments in PassPort in terms of expanding and/or adjusting business functionality, it does operate a current version of PassPort (Asset Suit 8) and has access to the documentation and release notes associated with this version such that it understands the product's features[37].

Despite this assurance, BCOAPO is concerned that BC Hydro may not be have been fully familiar with PassPort's current version - Asset Suite 8 – when undertaking the assessment, particularly those features it is not currently utilizing. This concern is based on the fact that:

i) BC Hydro has only made limited investments in PassPort since 2008[38];

ii) BC Hydro's decision (about the same time) adopt SAP as its enterprise-side IT platform will have limited its need to maintain knowledge of Asset Suite 8 beyond that required to support current functionalities;

iii) there was no senior (or other resource) contracted from Passport to assist with the assessment (as was the case for SAP);

iv) its acknowledgement that there is limited BC Hydro technical knowledge with PassPort available internally[39]; and

v) as a result of the current process BC Hydro has acknowledged the need to revise its initial assessment of PassPort's ability to address the capability gaps[40].

However, despite these concerns, BCOAPO is prepared to accept BC Hydro's overall assessment that SAP better addresses the current capability gaps in its supply chain IT

[34] Exhibit B-1, page 3-8.
[35] Exhibit B-7, BCOAPO IR 2.28.1.
[36] Exhibit B-5, ABB IR 1.4.
[37] Exhibit B-7, BCOAPO IR 2.33.2.
[38] Exhibit B-3, BCUC IR 1.12.3.
[39] Exhibit B-1, page 3-14 (line 26) to page 3-15 (line2).
[40] Exhibit B-7, BCOAPO IR 2.28.1.

systems than PassPort due to the key points of which are summarized in CEC 1.49.2, Attachment 1.

BCOAPO notes that one of the reasons for SAP's superior score was the fact that Passport's score for three of the capability gaps was reduced due to BC Hydro's choice of SAP as its enterprise-wide IT platform and BC Hydro's view that integration between the PassPort-based solution and other business processes could not reasonably be built[41]. Indeed, of the 13 point difference[42] in score, four points is due to this "integration" issue[43]. Given that BC Hydro has adopted SAP as it enterprise-side IT platform, integration is a legitimate concern for purposes of assessment. However, it does point to and highlight the importance/significance of BC Hydro's decision regarding a common IT platform strategy: a matter of relevance in the SAP Inquiry that is currently underway.

COST

SAP

The mid-cost estimate for the proposed project (i.e., based on SAP) is $65.9 M of which $59.2 M is capital and $6.7 M is operating costs[44]. Of this total, $11.8 M had been spent as of Application[45] and $11.9 M as of January 2017[46]. Included in this cost is a contingency of $8.5 M – based on 20% of the estimated future costs as of the Application[47].

[41] Exhibit B-7, BCOAPO IR 2.27.1.
[42] After allowing for the adjustment noted in Exhibit B-7, BCOAPO IR 2.28.1.
[43] Exhibit B-7, BCOAPO IR 2.27.3.
[44] Exhibit B-1, page 2-13.
[45] Exhibit B-1, page 2-13.
[46] Exhibit B-4, BCOAPO IR 1.3.1.
[47] Exhibit B-1, page 2-15.

The costs incurred to date consist of $7.3 M transferred from the Supply Chain Transformation Blueprint work and $1.2 M for the Identification Phase work, with the balance being costs associated with early Definition Phase work[48].

The balance of the project costs are based on the activities in the detailed project plan and, to a large part, on the fixed price bid from the selected System Integrator[49].

This mid-cost estimate has been assigned an accuracy range of +15%/-10% which corresponds with an AACE International Class 3 cost estimate, the minimum required by the BCUC's CPCN Guidelines[50].

A Lower Bound estimate was established by reducing the costs by 10% of the estimated future costs of the Project – the same percentage as assigned to the accuracy range. The Upper Bound cost estimate for the project was developed by applying the +15% allowance for the accuracy range to the estimated future costs and also adding allowances for known "delay" risks. The results were $60.5 M and $79.3 M respectively[51].

BCOAPO has no issues with the accuracy of BC Hydro's cost estimate of the SAP-based alternative.

Passport

BC Hydro has not developed a conceptual design for the PassPort-based alternative. In the absence of such a design, BC Hydro used the detailed SAP cost estimate as a base from which to develop a cost range for the PassPort alternative. This was done by estimating the level of effort reasonable for the PassPort alternative (relative to the SAP alternative) for each cost component and applying the resulting percentage to the SAP

[48] Exhibit B-1, page 2014.
[49] Exhibit B-3, BCUC IR 1.4.3.
[50] Exhibit B-1, page 3-5.
[51] Exhibit B-1, pages 2-17 and 2-19

costs. A contingency of 20% (same as used for SAP) was then applied and IDC (interest during construction) costs were added. The result was an expected cost of $57.2 M ($50.7 M capital and $6.5 M operating costs)[52].

As no conceptual design was undertaken, an uncertainty range of +100%/-35% was applied to calculate the upper and lower bound estimates of $114.9 M and $37.3 M respectively[53].

BC Hydro has indicated that no conceptual design was undertaken for the PassPort alternative as SAP was considered the leading alternative through the Identification Phase, just as it was during the earlier Transformation Project[54]. In BCOAPO's view this reflects a clear bias on BC Hydro's part towards the SAP alternative throughout the process. Indeed, such a bias is inherent in BC Hydro's overall decision to adopt a common IT platform strategy based on SAP and to utilize SAP-based IT solutions unless they are demonstrated not to be an appropriate solution to meet BC Hydro's business needs[55].

Overall, given the difference in degree of development as between the two alternatives, the differences in how the cost estimates were derived and the differences in the cost ranges for the two alternatives, BCOAPO agrees with BC Hydro's statement that "it is difficult to draw a specific conclusion as to which alternative is preferable based on project cost alone"[56]. However, in BCOAPO's view, it is reasonable to conclude that, 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[57], that the PassPort alternative would have a lower cost. It is noted, though, that the fact any customization is required is due to BC Hydro's decision to shift to an enterprise-wide SAP IT platform and this fact again highlights the significance of this decision.

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[52] Exhibit B-1, pages 3-15 to 3-16 and Exhibit B-3, BCUC IR's 1.11.1 and 1.11.2.
[53] Exhibit B-1, page 3-16.
[54] Exhibit B-3, BCUC IR 1.9.1.
[55] Exhibit B-1, page 4-3.
[56] Exhibit B-1, page 3-17.
[57] Exhibit B-4, CEC IR 1.39.1.

BENEFITS AND OVERALL FINANCIAL EVALUATION

SAP

Closing the gaps that exist with the current supply chain's capabilities will result in reduced costs (e.g., better inventory management), reduced effort (e.g., savings in employee time) and reduced risks[58]. In the Application BC Hydro has identified 64 discrete benefits and monetized those attributable to cost savings or reduced efforts, assuming the project is fully in service and stabilized. However, for purposes of the financial evaluation BC Hydro has assumed, as its base case, that 50% of the potential benefits will be achieved. For sensitivity analysis, it has assumed an upper ceiling of 60% benefit realization and a lower bound of 30%[59].

BC Hydro has not attempted to monetize the risk reduction benefits but has documented them in the Application. Areas of risk reduction include safety, financial, reputational and reliability[60].

The following table summarizes the anticipated benefits by category (cost vs. effort reduction) and by capability gap[61] once the project is fully implemented and the realization of benefits has fully ramped up.

[58] Exhibit B-1, page 2-25.
[59] Exhibit B-1, page 2-26.
[60] Exhibit B-1, page 2-29.
[61] Exhibit B-3, BCUC IR 1.39.1 – Attachment (Note – the benefits shown here are based on revised inputs and are slightly less than those set out in the initial Application).

Cost	**11,450**
2 - Poor contract management	5,750
3 - Poor inventory management	5,700
Effort	**14,722**
1 - Inability to manage service related spend	12,037
10 - No self-serve option for routine service requests	615
11 - Inability to pay suppliers without an invoice	59
12 - Inability to streamline controls and approvals process	17
13 - Inability to integrate with work management systems	676
2 - Poor contract management	232
3 - Poor inventory management	338
4 - Poor management of individual supplier performance	195
6 - Lack of order, delivery and payment tracking	98
7 - Inability to support return of unused materials	65
8 - Inability to pre-assemble materials for field crews	390
Grand Total	**26,172**

BC Hydro has performed two sets of Net Present Value (NPV) analyses: i) an NPV of cash flows and ii) an NPV of the revenue requirement impact. The cash flow analysis is akin to an "economic analysis" and excludes sunk costs and interest during construction. In contrast, the revenue requirements analysis includes these costs as they will eventually flow to customers' rates[62]. The analysis assumes a 10-year economic life span for the project with an in-service date of July 2019.

Table 2-10 in the Application sets out the results of the analysis using both mid-range costs and benefits as well as extremes based on: i) high cost/low benefits and ii) low cost/high benefits. This analysis was updated during the interrogatory phase[63] of the proceeding to reflect a number of revisions made to the benefit analysis (see following table). The discounted cash flow is positive (favourable) in all three cases while the discounted revenue requirement is negative only in the high cost/low benefit case.

[62] Exhibit B-1, page 2-29.
[63] Exhibit B-6, BCUC IR 2.39.1.

Table 2.10 – NPV Sensitivity Analysis Results ($ millions)		
	NPV of Discounted Cash Flows	NPV of Incremental Revenue Requirement Impact
Upper Bound Cost Estimate - Low Benefits	2.2	(7.8)
Mid-Range Cost Estimate - Mid-Range Benefits	68.3	53.5
Lower Bound Cost Estimate – High Benefits	103.3	86.2

In its Application BC Hydro characterizes the benefit realization rate of 50% as used for the base case as "conservative"[64]. However, in BCOAPO's view the use of such a benefit realization rate for the base case is realistic, and far from conservative. The monetization analysis performed by BC Hydro assumes a 100% success rate in both reducing costs, reducing work effort and, particularly important, translating the reduced work effort into labour savings. There are a number of key reasons why a 100% success is likely not achievable:

- There are roughly 4,000 BC Hydro employees that interact with the current PassPort-based system performing supply chain functions[65]. BC Hydro has acknowledged this project will result in a high degree of change for its employees and that considerable effort will be required to provide training to enable an effective transition to the new processes and IT systems (i.e., SAP)[66]. It would be unreasonable to assume that the change will be 100% effective – particularly given the number of staff involved.

- Over one-half of the savings are due to effort reduction. Furthermore, this effort reduction is spread across multiple employees and departments[67]. Again, it would be unrealistic to assume that 100% of the reduction will be translated into staff savings dollars.

[64] Exhibit B-1, page 2-26.
[65] BC Hydro Final Submission, page 23.
[66] Exhibit B-1, page 4-14.
[67] Exhibit B-3, BCUC IR 1.30.13.

In terms of the overall benefits analysis, BCOAPO has one major concern. The analysis assumes a 10-year life for the project and includes benefits for the years F2021 through F2030[68]. At the same time, BC Hydro has indicated that vendor support for the current SAP platform level (which is the one being use for the supply chain project) will expire in 2025 and that it intends to undertake a platform upgrade prior to that date[69]. However, BC Hydro has explicitly excluded any costs associated with upgrading the current SAP-based platform from the analysis[70]. In BCOAPO's view it is inappropriate for BC Hydro to include "benefits" for the years beyond 2025 in its NPV analysis of SAP without also recognizing the additional costs that will be incurred to support the new supply chain IT system.

One approach would be to exclude any post-2025 benefits from the analysis. Simple adjustments to the spreadsheets provided in response to BCUC 2.39.1 would suggest that doing so would result in a negative value for the cash flow NPV based on the mid-cost/mid-benefit scenario.

However, such a scenario is unrealistic. A better approach would be for BC Hydro to attribute a portion of the estimated future platform upgrade costs to the Supply Chain Applications Project. While BC Hydro states that it has not undertaken the detailed planning or estimation exercises related to such upgrade[71], BCOAPO notes that an allowance of $10 M was included in BC Hydro's Ten Year Capital Forecast to cover SAP platform upgrades[72].

BCOAPO submits that the BCUC should require BC Hydro to re-do its benefit analyses so as to recognize (as part of the cost of project) an appropriate portion of the future SAP platform upgrade costs[73]. However, BCOAPO also notes that since both the cash flow and revenue requirements NPVs for the mid-cost/mid-benefit scenario are $68.3 M

[68] See Exhibit B-1, Attachment F.
[69] Exhibit B-3, BCUC IR 1.29.3.3.
[70] Exhibit B-6, BCUC IR 2.41.2.
[71] Exhibit B-6, BCUC IR 2.41.2.
[72] Exhibit B-3, BCUC IR 1.29.3.
[73] Only a portion needs be attributed to the supply chain as the platform upgrade will support other applications of SAP used by BC Hydro.

and $53.5 M respectively, adding something less than $10 M to be spent in 2025 will not likely lead to negative NPV values in either case.

PassPort

The benefits analysis for the PassPort alternative draws on the analysis undertaken for SAP. For each capability gap, the monetized benefits calculated for the SAP alternative were multiplied by the ratio of the PassPort/SAP score (from the capability analysis) to estimate the monetary value of the Pass Port-based alternative[74].

The cash flow NPVs for the PassPort alternative relative to the SAP alternative are summarized in the following table based on both the initial application and after the revisions noted in BCUC 2.39.1[75].

Table 2: NPV of discounted cash flows (millions)

	Mid	Low	High
SAP (Dec 21, 2016 Application)	74.4	6.4	111.6
SAP (Updated)	68.3	2.2	103.2
PassPort (Dec 21, 2016 Application)	39.4	(43.6)	75.8
PassPort (Updated)	34.2	(47.3)	68.5

Similarly, the following table compares the revenue requirement NPVs for the PassPort alternative relative to the SAP alternative based on both the initial application and after the revisions set out in BCUC 2.39.1.

[74] Exhibit B-1, page 3-17.
[75] Table can be found in the response to Exhibit B-6, BCUC IR 2.39.1.

Table 3: NPV of incremental revenue requirements impact (millions)

	Mid	Low	High
SAP (Dec 21, 2016 Application)	59.0	(4.0)	94.0
SAP (Updated)	53.5	(7.8)	86.2
PassPort (Dec 21, 2016 Application)	36.6	(39.1)	69.9
PassPort (Updated)	31.8	(42.5)	63.2

BC Hydro clearly considers its assumption that there is a linear relationship between capability and monetized benefits to be reasonable but to its credit it acknowledges that this may not be the case. Indeed, it does not have any data that would provide a more detailed understanding of the potential relationship between the two[76]. Given this admission, BCOAPO submits that BCUC should view BC Hydro's claim that its approach likely overstates the monetized benefits of the PassPort alternative[77] as unsubstantiated.

Indeed, as was the case with the capital cost comparison, BCOAPO notes that the lack of a conceptual design for the PassPort alternative precludes the development of a more precise estimate of the associated monetized benefits and creates significant uncertainty regarding the accuracy of the resulting NPV analyses.

However, there is a substantial difference between the NPV values of the two alternatives (almost double in the case of the cash flow NPVs based on the mid-cost/mid-benefit scenario). Simple manipulation of the cash flow models provided in response to BCUC 2.39.1 indicates that the cash flow NPV for the SAP alternative under the mid-cost/mid-benefit scenario would still exceed that of the PassPort alternative even if the capital cost of the PassPort alternative was reduced by 20% and the value of the benefits increased by 20%. Given this robustness of results, BCOAPO considers the results presented by BC Hydro to be indicative of the relative financial merits of the two alternatives.

[76] Exhibit B-3, BCUC IR 1.10.2.
[77] Exhibit B-1, page 3-17.

That does not negate the fact that there are shortcomings with the analysis of the PassPort alternative similar to those noted above with respect to SAP in that BC Hydro would have to eventually upgrade the current Asset Suite 8 platform if it continued to use PassPort for its supply chain activities[78] but not upgrade costs have been factored into the analysis[79]. However, BC Hydro has provided no indication as to when ABB's vendor support for the current platform is likely to expire or what the cost of the upgrade is likely to be, making it impossible to assess the additional risks.

Finally, BCOAPO considers it important to note that (as was the case with the capital cost determination) the benefits evaluation of the PassPort alternative is negatively affected by BC Hydro's decision to adopt SAP as its enterprise-wide IT platform[80].

RISK

In BC Hydro's assessment, PassPort was viewed as having higher business and project delivery risk than SAP; however, both alternatives were seen as having similar technology and readiness risk[81].

Apart from the need to recognize the additional project delivery risk arising from the need to deactivate the current PassPort system[82], BCOAPO has no major issues with BC Hydro's assessment of relative risks of the two alternatives.

OVERALL

BCOAPO submits that, assuming the revised analysis (accounting for platform upgrade costs) confirms there are financial benefits from the Project, the BCUC should accept as being in the public interest the proposed capital expenditures for the Supply Chain Project up to the end of the Definition Phase.

[78] Exhibit B-6, BCUC IR 2.42.1.
[79] Exhibit B-7, BCOAPO IR 2.31.2.
[80] Exhibit B-4, CEC IR 1.43.1.
[81] Exhibit B-7, BCOAPO IR 2.29.1.
[82] Exhibit B-7, BCOAPO IR 2.29.2.

BCOAPO also submits that the quality of the "alternatives analysis" and, in particular, the quality of the cost and benefits assessment of the PassPort alternative was less than what is normally expected and/or provided in such applications. This is evidenced by the fact that a formal alternatives analysis was not undertaken until the Definition (as opposed to the Identification) Phase and the fact that neither the capital cost nor the benefits estimates for the PassPort alternative were independently derived but rather estimated using the values for the SAP alternative. In BCOAPO's view this is a direct result of BC Hydro's decision to adopt SAP as it enterprise-side IT platform. While the relative merits of the SAP alternative were sufficiently positive to allow for a reasoned decision, even in light of these shortcomings, such may not be the case in the future.

PHASE TWO

As noted in the Introduction, the BCUC has agreed that a two-phase process is appropriate wherein, in the second phase, BC Hydro will request acceptance of the balance of the project costs to be incurred for the Implementation Phase.

For this phase BC Hydro proposes that it will file a verification report updating the cost, benefit, scope and schedule for the project. BC Hydro is also proposing that, in the interests of regulatory efficiency and minimizing project costs, if the associated assumptions have not changed materially as compared to what was reviewed in Phase One then the BCUC order accepting the expenditures should be issued with minimal regulatory process[83].

BC Hydro has defined a "material change" as follows[84]:

1. Cost changes where the upper range of the revised cost estimate exceeds the upper range of the cost estimate in this Application;

[83] Exhibit B-1, page 1-18
[84] Exhibit B-1, page 1-18

2. Benefit changes where the lower range of the revised benefits estimate is lower than the lower end of the benefit range in this application;
3. Scope changes such that the project no longer addresses one of the Capability gaps identified in section 2.3 of the Application, or meets the Supply Chain Business Requirements described in section 4.2.6 of the Application; and
4. Schedule changes resulting in a delay of more than the 4 months included in the calculation of Project schedule contingency.

To the extent any material change occurs and BC Hydro is still of the view the project should proceed, BC Hydro would explain such changes in its verification report and present its justification for proceeding with the project.

In the Reasons for Decision[85] attached to Order G-32-17 the BCUC invited parties to provide any additional comments on future process as part of their Final Submissions.

BCOAPO appreciates the cost implications[86] associated with a protracted Phase Two regulatory process. However, there is a need for the BCUC to exercise due diligence prior to issuing any order. BCOAPO agrees that, if the BCUC accepts the capital expenditures for the Supply Chain Applications Project up to the end of the Definition Phase and makes the associated determination that the Supply Chain Applications Project (as a whole) is the public interest, the Phase Two review should be able to proceed expeditiously subject to a satisfactory verification report (i.e., not require written interrogatories and written submissions from other Parties).

In terms of future process, BCOAPO submits that, after BC Hydro files its verification report, the BCUC should convene a procedural conference and request input from parties as to whether there have been material changes. If the Commission determines there have been no material changes then acceptance of the balance of the capital

[85] Page 3.
[86] Exhibit B-1, page 1-19.

expenditures should be left to the Commission. Should the Commission determine that a more fulsome review is needed, the nature of the review could be established at that time. In order to assist parties, it may also be useful if the procedural conference was preceded (either the same or the preceding day) by a brief workshop where BC Hydro could present the results of the verification report and parties could ask clarification questions.

Furthermore, to facilitate the Phase Two process, BCOAPO respectfully suggests that the BCUC should direct that BC Hydro prepare a compliance filing that clearly sets out the current project's cost estimates and benefits estimates incorporating all of the revisions noted to date as well as any adjustments required as a result of the BCUC Phase One Decision.

BC Hydro has indicated[87] that it plans to prepare "detailed benefit realization plans" and that such plans will include direct and indirect metrics and measures for tracking the realization of financial benefits[88]. BC Hydro has also indicated that it expects file an initial set of baselines and metrics and measures in its Phase Two verification report[89].

BCOAPO submits that these proposals should also be subject to review and acceptance by the BCUC. However, if a more detailed process is needed to consider the baselines, metrics and measures, it should be possible to do so without delaying the Implementation Phase of the project.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

BC Public Interest Advocacy Centre

Original on file signed by:

Leigha Worth
Barrister & Solicitor/Executive Director

[87] Exhibit B-1, page 4-32.
[88] Exhibit B-3, BCUC IR 1.28.1.
[89] Exhibit B-6, BCUC IR 2.51.4.