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February 10, 2017

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Ms. Laurel Ross, Acting Commission Secretary and Director

Dear Sirs/Mesdames:

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

We are counsel to the Commercial Energy Consumers Association of British Columbia (CEC). Attached please find the CEC's first set of Information Requests with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer

CPW/jj
cc: CEC
cc: BC Hydro
cc: Registered Interveners

CEC Information Requests

BC Hydro Supply Chain Applications Project Application

Project No. 3698901

1. Exhibit B-1, page 1-2 and page 1-2 pages 1-7 and 1-8

This Application provides BC Hydro's justification for undertaking the Supply Chain Applications Project as a whole. BC Hydro proposes a two-phase regulatory process for review and acceptance of the capital expenditures for the project under section 44.2(1)(b) of the *Utilities Commission Act*.

2. **Phase Two** – In Phase Two of the proceeding, BC Hydro will present its refined analysis of the Supply Chain Applications Project based on the Definition Phase work and will request acceptance of the balance of project capital expenditures to be incurred for the Implementation Phase. BC Hydro's Phase Two filing will 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.

BC Hydro is cognizant of the cost of the Supply Chain Applications Project and the fact that BC Hydro has not previously brought forward an IT project to the British Columbia Utilities Commission for review under section 44.2 of the *Utilities Commission Act*. BC Hydro has decided not to proceed beyond the early definition

stage, and therefore will not undertake more detailed design and planning activities until an Order is issued accepting the Definition Phase capital expenditures for the project. Accordingly, BC Hydro has not signed the Master Services Agreement with the System Integrator and has asked the Quality Assurance Advisor to undertake only a limited scope of work consisting of a project readiness report and a review of the System Integrator selection recommendation.⁴

- 1.1. Please identify and quantify any additional costs that arise from proceeding with a 2 Phase regulatory process.
- 1.2. Please identify and quantify any cost risks that could accrue from proceeding with a single phase process.
- 1.3. At what 'stage' does BC Hydro normally bring forward applications?
- 1.4. Please provide an overview of the types and details of information that would normally be included in an application, that are not included in this application as a result of proceeding at the Early Definition stage.

2. Exhibit B-1, page 1-3,

BC Hydro recognizes that the British Columbia Utilities Commission's SAP Inquiry is ongoing at the time of the filing of this application, which seeks approval of an SAP-based project. BC Hydro initially delayed the filing of the Application to wait for the conclusion of the SAP Inquiry, which BC Hydro had expected to be complete in 2016. The SAP Inquiry, however, has been in progress for approximately a year and, based on the most recent procedural order from the British Columbia Utilities Commission, will proceed well into 2017.

BC Hydro has determined that it should proceed with the filing of the Application at this time for the benefit of our ratepayers, and not wait until completion of the SAP Inquiry. A continued delay in the filing of the Application introduces several risks and consequences as follows:

A further delay in realizing the benefits of the Supply Chain Applications Project. As detailed in Chapter 2 of the Application, the Supply Chain Applications Project has a positive net present value and BC Hydro expects significant benefits in the form of cost savings, efficiencies and risk reduction.

Risks to the terms conditionally agreed to with BC Hydro's selected System Integrator. The System Integrator is the largest cost of the project. BC Hydro selected PricewaterhouseCoopers as the System Integrator through a competitive tendering process, which contemplated mobilization of the project in January 2016. Continued delay could result in the need to rerun the competitive tendering process.

- 2.1. What were BC Hydro's original reasons for waiting until the conclusion of the SAP inquiry?
- 2.2. What would be the costs associated with re-running a competitive tendering process for the System Integrator? Please identify and quantify.
- 2.3. Is there a potential for the System Integrator costs to be reduced under a new competitive tendering process? Please explain why or why not.

3. Exhibit B-1, page 1-18

BC Hydro proposes that a material change be defined as follows:

1. Cost changes where the upper range of the revised cost estimate exceeds the upper range of the cost estimate in this application;
 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 13 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.
- 3.1. Please confirm that BC Hydro's criteria for a material change would not include the situation in which the revised cost range met the upper cost range, and the revised benefit met the lower end of the benefit range.
- 3.1.1. Please provide the NPV of such a situation.

4. Exhibit B-1, Appendix F2

Pivot table summarizing the potential benefits listed in Tab F1.

Quantified Benefit?	TRUE	.F						
Row Labels	Sum of Potential Benefit Mid	Sum of Potential Benefit High	Sum of Potential Benefit Low	Sum of PPAIt Potential Benefit Mid	Sum of PPAIt Potential Benefit High	Sum of PPAIt Potential Benefit Low		
Cost	12,022	14,663	7,331	10,585	12,938	6,469		
2 - Poor contract management	5,750	6,900	3,450	4,313	5,175	2,588		
3 - Poor inventory management	6,272	7,763	3,881	6,272	7,763	3,881		
Effort	15,438	18,523	9,264	8,963	10,753	5,379		
1 - Inability to manage service related spend	12,037	14,444	7,223	6,019	7,222	3,612		
10 - No self-serve option for routine service requests	1,230	1,476	738	923	1,107	554		
11 - Inability to pay suppliers without an invoice	59	71	35	15	18	9		
12 - Inability to streamline controls and approvals process	17	21	10	11	14	7		
13 - Inability to integrate with work management systems	676	810	406	676	810	406		
2 - Poor contract management	232	278	139	174	209	104		
3 - Poor inventory management	439	525	264	439	525	264		
4 - Poor management of individual supplier performance	195	234	117	195	234	117		
6 - Lack of order, delivery and payment tracking	98	118	59	74	89	44		
7 - Inability to support return of unused materials	65	78	39	49	59	29		
8 - Inability to pre-assemble materials for field crews	390	468	234	390	468	234		
Grand Total	27,460	33,186	16,595	19,548	23,691	11,848		

- 4.1. Please confirm that 'Effort' related benefits account for more than 50% of the total benefits of the SAP project.
- 4.2. How has BC Hydro accounted for the likelihood of 'effort' savings not translating into \$ savings, in that FTE's may not necessarily be reduced, but are instead replaced with other activities. Please explain.

5. Exhibit B-1, Appendix F1

Impact to the business of the problem statement.	Potential benefit to the business through addressing the problem statement.	Logic used in the calculation of the [Baseline Effort / Cost] and [Quantified Impact] columns. Where estimates are based on saving a FTE, the standard effective annual hours (1586) is used.	Unit Type, Hours or Dollars	Current total effort or cost.	Quantification of the [Business Impact] column expressed in hours or dollars.
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- 5.1. Please confirm that the current total effort cost and the quantification of the business impact where expressed in dollars are expressed in thousands of dollars.

6. Exhibit B-1 Appendix F1

2	10 - No self-serve option for routine service requests	Limited self service capability means most procurement events go through buyers.	Effort	Higher effort in procurement.	Reduction in effort through self service.	There were 24,000 Purchase Order (PO) and Contract Order (CO) transactions in F15. Assuming 1.5 hours / transaction. The business estimates that up to 50% of those transactions could be automated.
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- 6.1. Please provide BC Hydro's evidence supporting the assumption of 1.5 hours per transaction.
- 6.2. How did BC Hydro arrive at the 50% level of possible automation?
- 6.3. Will all the 50% possible automation be achieved? Please explain why or why not.

7. Exhibit B-1, Appendix F1

	10 - No self-serve option for routine service requests	Limited self service capability means most procurement events go through buyers.	Effort	Higher effort outside of procurement working with buyers to perform sourcing.	Reduction in effort through self service.	Same transaction assumptions as #2 above (24,000 PO/CO). Assuming 3 hours / transaction (baseline being 2 plus 1 hour of dealing with a buyer). The impact is having to deal with a buyer (1 additional hour) when it could be self service for 50% of these transactions.
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- 7.1. Please provide further clarification of the 'additional hour' that would be required.

- 7.2. Please provide BC Hydro’s evidence supporting the assumption of 3 hours per transaction;
- 7.3. Please provide BC Hydro’s evidence supporting 50% automation.

8. Exhibit B-1, Appendix F1

2 - Poor contract management	The current data model doesn't currently support unitization of Services. Also Materials have poor master data in the system.	Cost	Lack of information regarding historical and anticipated future demand inhibits ability to negotiate lower prices.	Reduction in cost of non-stock materials and services through category management.	The baseline is the total addressable spend (\$2.5 billion materials & services that flow through the supply chain) minus inventoried materials spend (\$200 million, excluded because stock materials are included in item #6D). Potential savings are estimated to be 0.5% of the baseline.
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- 8.1. Please provide BC Hydro’s rationale for assumption of savings at 0.5% of the total addressable spend.

9. Exhibit B-1, Appendix F1

2 - Poor contract management	BC Hydro's current systems don't have a catalogue of services regularly purchased and the materials catalogue is incomplete.	Risk	Because BC Hydro has limited data to negotiate with vendors there is often a dependence on volume discounts vs. negotiated prices. This results in higher per unit prices in the system which may result in business users trying to find better prices, instead of using established contracts (off contract spend) which is a risk to BC Hydro. Off contract spend creates a financial risk to BC Hydro that it won't hit targets and achieve volume discounts, and creates a reputational risk through BC Hydro not meeting contract expectations.		
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- 9.1. Please provide examples of when BC Hydro has experienced a financial risk and/or reputational risk as a result of business users seeking higher prices.
- 9.2. Please provide an estimate of the net costs that BC Hydro has incurred as a result of not having a catalogue of services regularly purchased.
- 9.3. Are there no other simple options, such as flags or notes in the system to alert business users that there are outstanding volume contracts associated with the unit price? Please explain.

10. Exhibit B-1, Appendix F1

2 - Poor contract management	Limited data for contracts, no system automation to take advantage of specific conditions, and limited visibility of contract conditions.	Cost	Higher cost of materials and services because discounts, claw backs, and other rebates are not taken advantage of by BC Hydro.	Cash benefit included in #5.	
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- 10.1. Please provide BC Hydro’s evidence that BC Hydro has not taken advantage of discounts, rebates and clawbacks in the past.
- 10.2. Please quantify the costs that BC Hydro has incurred by not taking advantage of these opportunities over the last 5 years.

11. Exhibit B-1, Appendix F1

1- Inability to manage service related spend	No ability to manage the completion of services work. Tracking of work completion has to be done manually.	Effort	Greater effort within the business to manage contracts effectively, spreadsheets, other systems created to track / approve / report work.	Reduction of effort in operations managing completion of work.	Approximately 4,000 people work in PassPort performing supply chain functions. Estimated that 50% are involved in downstream activities, spending 10% of their annual effective time (1586 hours) managing contracts. A conservative estimate is that 30% of their time is inefficient.
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11.1. Please provide BC Hydro's evidence that 50% of people working in Passport spend 10% of their time managing contracts, and that 30% of this time is inefficient.

11.2. Has BC Hydro assumed that all the inefficient time be eliminated under SAP.

11.2.1. If yes, please provide BC Hydro's evidence that this would be the case.

12. Exhibit B-1, Appendix F1

2 - Poor contract management	The data model doesn't currently support unitization of Services. Also Materials have poor master data in the system.	Risk	Inaccuracy in spend data can lead to poor financial reporting or difficulty responding to external requests (e.g. there have been 27 BCUC IRs where BC Hydro has been unable to respond with the value spent on Services) which is a reputational risk.
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12.1. Please provide BC Hydro's view of how 'reputational risk' affects ratepayers.

12.2. Please provide the BCUC IRs that BC Hydro has been unable to answer.

13. Exhibit B-1, Appendix F1

2 - Poor contract management	Limited data model for contracts does not include extension options and status.	Effort	No system ability to forecast and manage contract expiry and extension provisions increases the manual effort required to manage these processes. People have to read through contracts to look for standard data points (like expiry and extensions).	Reduction in effort renewing contracts through better access to standard terms and conditions.	Approximately 1,500 contracts expire per year. Assume 5 hours per contract to renew using standard conditions. When information required to renew the contract is missing it takes an additional 10 hours (for a total of 15 hours). It is estimated that information is missing from roughly 1/3 of all contracts (500/1500).
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13.1. On what basis has BC Hydro assumed that information is missing from 1/3 of BC Hydro contracts?

13.2. Please provide the basis for BC Hydro's assumptions regarding the initial 5 hours and the additional 10 hours attributable to missing information.

13.3. Please confirm that missing information can be attributable to human error in inputs that would not necessarily be recoverable with new IT technologies.

13.3.1. If not confirmed, please explain why not.

13.4. Has BC Hydro assumed that all 15 hours would be eliminated under the SAP proposal?

13.5. If yes, please explain why the SAP would improve the initial 5 hours of renewal time.

14. Exhibit B-1, Appendix F1

3 - Poor inventory management	There is no ability to enter consumable independent demand into the system (planned independent requirements).	Effort	There is additional effort required for long lead time items when planning for and entering demand into the system. This is because the current system requires multiple entries to handle these requests and they have to be manually managed once created.	Reduction of effort managing multiple requests related to long lead time items.	Estimated that there are 5,000 long lead items a year, and that each one takes 30 minutes extra to create a Material Request (MR) and then remove the duplicate.
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14.1. Please provide the basis for BC Hydro's estimate of 5,000 'long lead times' per year.

14.2. Please provide the basis for BC Hydro's estimate of 30 minutes to create a Materials Request and remove the extra.

15. Exhibit B-1, Appendix F1

3 - Poor inventory management	Limited visibility of material demand in the system to determine stock levels.	Cost	Higher cost of materials. Without accurate visibility of demand BC Hydro must carry higher stock to ensure material availability. This adds to the internal cost of materials (cost of capital, cost of storage, etc.).	Reduction of cost of capital through an increase in inventory turns.	Calculation financial benefit resulting from an increase in the inventory turn ratio is calculated differently than other benefits in this list. The current inventory turn metric for active stock materials is 1.6 on \$200 million annual spend (\$125 million active stock on hand) costing \$5.6 million per year in carrying costs. BC Hydro estimates that the inventory turn metric could be increased to between 2 and 2.5 which would result in a savings of \$1.2 to \$2.4 million a year through lower carrying costs.
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15.1. What is the basis for BC Hydro's estimate of the increase in stock turn? Please explain.

16. Exhibit B-1, Appendix F1

3 - Poor inventory management	Limited visibility of material demand in the system to determine stock levels.	Effort	Greater effort is required to manage inventory levels because it is done manually.	Reduction of effort in the materials planning department through automation of inventory management.	Currently there are 9 people performing this function, equating to 14,274 hours (9 x 1,586 hours). It is estimated that this is twice as many people as required for the amount of work being performed due to system and process inefficiency (i.e. estimate is that there is a 50% increase in effort doing this function manually).
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16.1. On what basis has BC Hydro identified a 50% increase in the labour?

16.2. Does BC Hydro have comparators for this assumption? If so, please provide.

17. Exhibit B-1, Appendix F1

3 - Poor inventory management	No system visibility of requirements until work is approved.	Risk	Lack of visibility creates supply security risks (material availability) because planners and therefore vendors are not prepared for BC Hydro demand requirements.
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17.1. Does BC Hydro not typically account for supply lead times in its work approvals?

17.1.1. If not, please explain why not.

17.2. Has BC Hydro experienced significant risks from situations in which materials supply is unavailable when required as a result of there being no 'visibility' in the system for future requirements?

17.2.1. If yes, please provide examples and quantification of the financial impact.

17.3. What is BC Hydro's typical time between when work is approved and when materials are required? Please answer with regard to situations in which vendors would be required to supply materials.

18. Exhibit B-1, Appendix F1

11 - Inability to pay suppliers without an invoice	As the current system does not support evaluated receipt settlement (ERS), every transaction requires BC Hydro to receive an invoice from a vendor. This results in additional effort to receive and process invoices and deal with invoice errors.	Effort	A percentage of all invoices received from vendors have errors (e.g. the quantity does not match what BC Hydro has received or the price does not match the contract). When vendor submitted invoices have errors it creates additional overhead within BC Hydro to resolve the errors.	Where ERS can be used to replace vendor generated invoices, it eliminates the risk that the vendor invoice is incorrect, and therefore reduces the effort required to resolve invoice errors.	BC Hydro processes 144,000 invoices per year. Assuming that 20% of those invoices would be suitable for ERS. The benefit to BC Hydro would be a reduction in effort dealing with errors on these invoices. Approximately 20% of invoices are multi touch (i.e. where accounts payable is unable to process the invoice on first attempt), assuming that 1/4 of multi touch invoices are due to the invoice not matching receipt or contract price, and that it takes one hour to deal with an error of this nature (including dealing with the supplier).
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18.1. Is it BC Hydro's intention that it would pay suppliers without receiving an invoice?

18.2. Please provide BC Hydro's basis for the assumptions relating to the number of invoices that are multi-touch; the proportion of multi-touch invoices; the nature of the errors and the requirement of 1 hour to deal with suppliers.

18.3. Please confirm or otherwise explain that suppliers maintain their own records in order to generate invoices.

18.4. Please confirm that a discrepancy between a supplier and the BC Hydro invoice would still require BC Hydro to allot time to deal with the discrepancy.

18.4.1. If not confirmed, please explain why not.

19. Exhibit B-1, Appendix F1

1- Inability to manage service related spend	No automated 3 way match for the majority of services received and no visibility to the unit price on a contract.	Effort	Extra effort approving invoices because people have to manually perform the 3 way match and they don't have visibility to the unit price in the system.	Reduction of effort in operations and projects approving invoices.	BC Hydro processes 144,000 invoices per year. It is estimated (based on the distribution of spend) that 75% are for services and are manually approved. It is also estimated that to approve an invoice takes on average 1 hour total effort (submitter, reviewer, and approver) and that 30% of invoices are more complicated and take 2 hours.
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19.1. Please provide the evidence supporting the assumptions for this benefit.

20. Exhibit B-1, Appendix F1

1- Inability to manage service related spend	No automated 3 way match for the majority of services received and no visibility to the unit price on a contract.	Effort	Extra effort approving invoices because people have to manually perform the 3 way match and they don't have visibility to the unit price in the system.	Reduction of effort in operations and projects approving invoices.	BC Hydro processes 144,000 invoices per year. It is estimated (based on the distribution of spend) that 75% are for services and are manually approved. It is also estimated that to approve an invoice takes on average 1 hour total effort (submitter, reviewer, and approver) and that 30% of invoices are more complicated and take 2 hours.
1- Inability to manage service related spend	No ability to enter work completed (but not invoiced) for services into the system.	Effort	There is manual effort required to post and process accruals across multiple business units. Using project delivery as an example, project administrators, project managers, finance, contract management, are all involved in the process of managing accruals on projects. A similar situation is present in operations.	Reduction of effort manually performing accruals.	Assume that processing the accrual for an invoice (total across all business units) is approximately 30 minutes of time per invoice that has to be accrued. Using the same logic as #26, 75% of all invoices are manually approved. Assume that 80% of invoices require an accrual (smaller invoices, 20%, don't require accruals).

20.1. Please provide the basis for BC Hydro's estimate of the time it takes to approve invoices and processing accruals.

21. Exhibit B-1, Appendix F1

8- Inability to pre-assemble materials for field crews	No centralized kitting functionality.	Effort	Greater effort required at remote stores to prepare materials for crews and managing multiple stock transfers to stores.	Reduction of effort within Supply Chain realized through centralized kitting.	There would be an effort savings for each of the field store keepers, slightly offset by additional work to kit materials at the central stores. Estimate an overall 10% effort savings for each of the 60 field store keepers after offsetting additional effort at central stores.
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21.1. Please provide the basis for BC Hydro's estimate of the overall 10% effort savings.

21.2. Please explain how the 10% 'effort' savings would translate into \$ savings for BC Hydro.

22. Exhibit B-1, Appendix F1

12 - Inability to streamline controls and approvals process	No ability to inherit financial approvals between objects, specifically projects and dependant objects. Today at BC Hydro both the Contract Requisition (CR) and CO have to be approved under a project.	Effort	Greater effort approving expenditures and changes in multiple places and systems.	Reduction of effort to approve CRs under projects.	BC Hydro estimates that there are 1,000 CR/CO transaction pairs per year that occur under projects. For each of these transaction pairs both the CR (initial) and CO (award) transactions must be approved. Each approval requires on average 2.5 people to approve (increasing number of people with higher financial amounts) and each approval takes approximately 10 minutes in the system. The benefit would be the elimination (under SAP) of the second approval.
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- 22.1. Does the second approval provide any benefit to BC Hydro, such as reducing risk?
Please explain why or why not.
- 22.2. If yes, please discuss the benefits provided by the second approval.
- 22.3. What is BC Hydro's basis for the estimate of approval time?

23. Exhibit B-1, Appendix F1

13 - Inability to integrate with work management systems	Work orders spread out between multiple systems.	Effort	Multiple source systems for work orders (SAM, STAR, SAP, and PassPort) leads to additional work updating and maintaining duplicate work orders in order to facilitate the reservation of materials which is currently done in PassPort.	Work orders from SAM and STARR are already interfaced to SAP today. The benefit is a reduction of effort in operations creating and maintaining duplicate transactions in PassPort for the purpose of entering MRs.	Of the approximate 50,000 annual MRs it is estimated that 50% of those are for work which is coming out of SAM or STARR, and that each requires 30 minutes of work to create and maintain the duplicate transaction in PassPort.
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- 23.1. Please provide the basis for BC Hydro's assumptions regarding the numbers 'coming out of Sam or Starr' and the time required to create the duplicate.

24. Exhibit B-1, Appendix F1

3 - Poor inventory management	No visibility of demand in the system until the transport window is reached. In PassPort stock transfers aren't created until the transport window.	Effort	Lack of visibility of material requirements outside of the transportation window forces planners to track material requirements manually in spreadsheets.	Reduction of effort in operations tracking requests for stock materials manually.	The project estimates that approximately 20 planners spend 1 hour a week manually tracking items because they can't see them in the system.
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- 24.1. Please provide the basis for BC Hydro's assumptions regarding the time spent manually tracking items.

25. Exhibit B-1, Appendix F1

Cost	Results in rush buy / spot buy activity which increases the cost of the materials bought.		Reduction of cost of materials by reducing premiums paid for spot buy activity.		BC Hydro spends approximately \$200 million a year on stock materials. It is estimated that approximately 30% of MRs result in an expedited purchase, and this creates a 15% increase in cost.
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- 25.1. Please provide the evidence supporting BC Hydro's assumptions that expedited purchasing creates a 15% increase in costs, and that this holds true overall.

26. Exhibit B-1, Appendix F1

1 - Inability to manage service related spend	No service catalogue.	Effort	Additional effort within the business creating CRs because there is no ability to look up a list of services, so the scope has to be manually written out and then sent to procurement.	Reduction of effort in the business creating requisitions for services because a standard catalogue can be used.	There are 24,000 CO/PO transactions. Assume that 70% of those are for COs, and that 50% of those are for simple services that could be requested through a catalogue. Currently the requester spends approximately 2 hours defining and approving the scope of work. With a catalogue this could be reduced to 15 minutes (saving 105 minutes).
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- 26.1. Please provide the evidence behind BC Hydro's assumptions of the 35% of COs being for simple services; the 2 hour time commitments defining and approving the scope of work, and reduction to 15 minutes.
- 26.2. Has BC Hydro considered any other options for developing a Service Catalogue?
26.2.1. If no, why not?

26.2.2. If yes, are there any other options for BC Hydro to develop and maintain a service catalogue?

26.2.3. If yes, please describe the lowest cost option and provide an estimate of the costs and savings that would accrue from that option.

27. Exhibit B-1, Appendix F1

2- Poor contract management	Cannot close contracts in PassPort with value or time remaining.	Effort	PassPort will not allow a contract to be closed unless the value remaining is \$0 and the contract has expired. This results in additional manual effort processing a change request to reduce the value or change the date before a contract can be closed.	Reduction in effort closing contracts through elimination of additional steps.	Roughly 500-800 contracts a year expire (650 for calculation purposes) with a value remaining. When this happens it requires an hour of additional work. This effort could be eliminated under SAP.
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27.1. Please provide BC Hydro's evidentiary basis for the hour of additional work.

28. Exhibit B-1, Appendix F1

1- Inability to manage service related spend	No service catalogue.	Effort	Because there is no service catalogue linked to existing contracts there is wasted effort when CRs are created for scope which is included in other contracts.	Reduction of effort in procurement and the business working on sourcing events when contracts are already in place.	BC Hydro runs 500 to 800 sourcing events annually. Approximately 5% of the time a sourcing event is started and then stopped after realizing that an appropriate contract is already in place. It is estimated that the wasted time per stopped event is 5 hours for complex events and 2 hours for simple events with a 50/50 ratio between complex and simple events.
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28.1. Please provide BC Hydro's evidence with respect to the number of times a sourcing event is started, and the hours attributed to wasted effort.

29. Exhibit B-1, page 2-13

Table 2-2 Mid-Range Cost Estimate (\$ million)

Ref	Cost Components	Capital Cost	Operating Costs	Total Cost
	Direct Costs			
A	Supply Chain Transformation Blueprint (Early Design Costs)	7.3	-	7.3
B	Identification	-	1.2	1.2
C	Definition (Early Definition Life to Date)	3.0	0.1	3.1
D	Definition (Early Definition Future)	1.0	0.3	1.2
E	Definition (Mobilization, Design & Implementation Planning)	9.4	0.8	10.2
F	Implementation (Costs to Go-Live)	22.9	2.2	25.1
G	Implementation (Stabilization & Completion)	4.9	1.2	6.2
H	Total Direct (Life to Date) (A + B + C)	10.3	1.4	11.7
I	Total Direct (Future) (D + E + F + G)	38.2	4.5	42.7
J	Total Direct (H + I)	48.5	5.8	54.3
K	Contingency (I x 20%)	7.6	0.9	8.5
L	Total Direct plus Contingency (J + K)	56.2	6.7	62.9
M	Interest During Construction	3.0	-	3.0
N	Mid-Range Cost Estimate (L + M)	59.2	6.7	65.9

Notes:

1. Minor differences attributable to rounding.
2. Direct costs are inclusive of inflation. Contracts with third parties are inclusive of inflation. Internal labour cost estimates are built using BC Hydro's standard labour rates, which are also inclusive of inflation. Refer to Worksheet C2 – Mid-Range Cost, Table 11 in Attachment F.
3. Interest During Construction rates are 4.10 per cent (F2016), 4.05 per cent (F2017), 4.12 per cent (F2018), 4.23 per cent (F2019) and 4.41 per cent (F2020) and are applied to the direct costs accumulated in each year.
4. As BC Hydro resources charge their time directly to Information Technology projects, capitalized overheads are not allocated to BC Hydro's Information Technology projects.

The Identification Phase and Early Definition Stage costs up to the end of November 2016 are the actual recorded costs. 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. BC Hydro's procurement and contracting approach is described in section 4.4.5. BC Hydro has included its detailed estimate of Definition and Implementation Phase costs in Attachment F, workbook Tab C1 – Direct Cost Detail.

29.1. Please confirm that the costs to date are \$4.3 million, and include the Identification costs (\$1.2 million) but do not include the Supply chain Transformation costs (\$7.3 million).

A contingency amount has been included in the Mid-Range cost estimate. The contingency has been calculated as 20 per cent of the total value of future direct costs.¹⁵ Contingency provides for costs that cannot be specifically identified at the time of estimate preparation but can be expected with varying degrees of probability. Approval from the Supply Chain Applications Project Steering Committee is required to access and spend from the contingency.

A schedule contingency of four months has been incorporated into the overall project schedule. The schedule contingency is shown as a four-month period between the target in-service date and the committed in-service date. Ongoing benefits, costs, and interest incurred throughout the duration of the project (**Interest During Construction**), are all calculated using the committed in-service date. Please also refer to section 4.7.

- 30.1. Does BC Hydro normally assume a 20% contingency for similar IT projects?
 - 30.1.1. If no, what is BC Hydro's normal contingency for similar projects?
 - 30.1.2. If no, why did BC Hydro use a 20% contingency instead of its normal contingency?
- 30.2. Does BC Hydro normally assume a 4 month schedule contingency for similar IT projects?
 - 30.2.1. If no, what is BC Hydro's normal schedule contingency for similar projects?
 - 30.2.2. If no, why did BC Hydro use a 4 month contingency for this project instead of its normal schedule contingency?

Project Reserve

The Project Reserve provides for the additional impact of cost risks to the Supply Chain Applications Project beyond that included in the Mid-Range cost estimate. The Project Reserve calculated here has two components: 1) an incremental contingency of 15 per cent to mitigate unknown risks, and 2) an additional reserve amount to mitigate cost impacts associated with three discrete known risks.

The first component of the Project Reserve, the incremental contingency of 15 per cent, is based on the estimating accuracy range described above in section [2.4.1](#) and is meant to mitigate unknown risks. This incremental contingency is calculated on the sum of the future direct costs plus the 20 per cent contingency described in section [2.4.1](#).

31.1. Please describe the types of risks that might be incurred under 'Unknown Risks'.

32. Exhibit B-1, page 2-18

Table 2-4 Project Reserve Component for Known Risk (\$ million)

#	Components addressing the following known risk items	Amount
Definition Risks		
1	Incremental costs associated with a risk that the regulatory process to review the Supply Chain Applications Project is of a longer duration than currently contemplated (four months of additional time assumed).	0.6
2	Delay between definition and implementation (four month delay assumed)	3.6
U	Total of Definition Risks	4.2
Implementation Risks		
3	Offshore development model proves to be infeasible	1.0
V	Total of Implementation Risks	1.0
W	Total Known Risk Reserve	5.2

32.1. Please provide a more detailed explanation of the Offshore development model risk.

33. Exhibit B-1, page 2-26

To be conservative, BC Hydro assumed as its base case that 50 per cent of the identified potential monetized benefits will be achieved and converted into a cost reduction (Mid Scenario). For its sensitivity analysis, BC Hydro assumed the benefits realization rate has an upper ceiling of 60 per cent (High Scenario), and a lower floor of 30 per cent (Low Scenario). The Mid, High, and Low scenarios are applied to calculate the annual benefit cash flows, which are used in the NPV and Revenue Requirements analyses described in sections [2.6](#) and [2.7](#).

33.1. On what basis did BC Hydro select 50% as the potential for monetized benefits to be achieved, and an upper ceiling of 60% and lower floor of 30%?

34. Exhibit B-1, page 2-26

(ii) No benefits are forecast within the first year after the project is placed into service (also known as the go-live date) as the system and processes require time to stabilize.

(iii) Cost and monetized effort benefits begin one year after the project goes into service and ramp up over either a two or four year period, as described below.

► Monetized effort benefits require that users are proficient with the new tools and processes. As outlined in section 4.6, stabilization and onboarding activities will continue for one year after the project is in service. It is assumed that users may require up to a year following onboarding to become fully proficient in the new tools and processes. As a result, effort-based benefits are expected to ramp up linearly over a two year period beyond the one-year stabilization period.

34.1. On what basis did BC Hydro select one year as the appropriate stabilization time?

34.2. Did BC Hydro consider the possibility that ramp-up could result in hindrances to the processes and increased costs associated with effort-based activities?

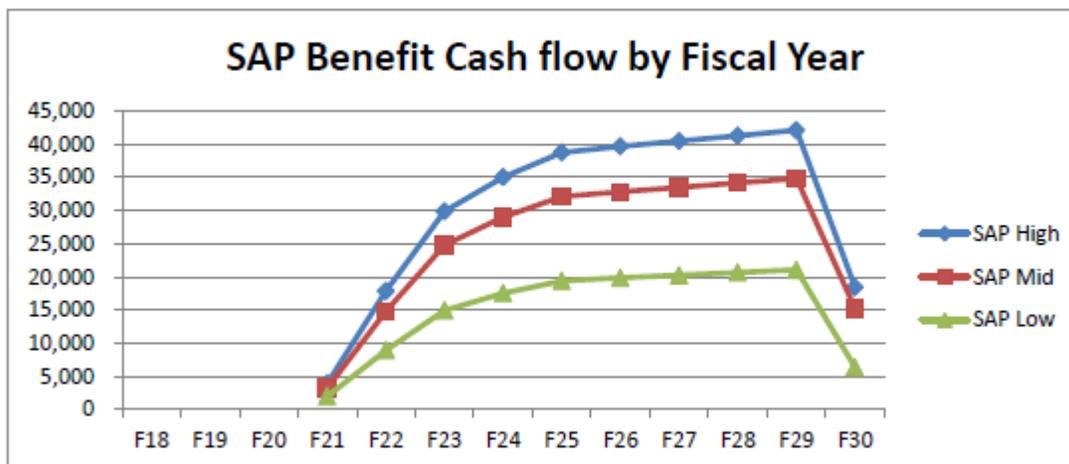
34.2.1.1. If not, please explain why not.

34.2.1.2. If yes, please provide quantification for effort-based costs that could accrue as a result of the transition.

2.5.2 Monetized Benefits

Based on the benefits analysis described in section [2.5.1](#), once monetized benefits stabilize, between \$7.3 and \$14.7 million per year (F2016 dollars) of cost reduction savings (for material and services) and between \$9.3 and \$18.5 million per year (F2016 dollars) of effort reduction savings (through the reduction or redeployment of BC Hydro employees) are realizable as a result of the Supply Chain Applications Project.

Figure 2-1 Ramp-up of Monetized Benefits Cash Flow (\$ 000)



- 35.1. At what stage will BC Hydro be able to refine its expectations with respect to the monetized benefits for cost reduction and effort benefits?
- 35.2. What reporting will the Commission and BC Hydro ratepayers receive with respect to the performance of the project and its delivery of monetized benefits? Please explain.

36. Exhibit B-1, page 2-28

2.5.3 Non-monetized Benefits

As noted in section [2.5.1](#), the benefits analysis process identified a number of risks present within the current supply chain that will be either reduced or eliminated as a result of closing the capability gaps. The risks identified have the potential to impact BC Hydro from a safety, financial, reputational, and reliability perspective. While the reduced risk is expected to result in the potential for avoided or reduced costs, there is not sufficient information to calculate an economic benefit associated with the reduced risk. [Table 2-9](#) provides qualitative examples of some key non-monetized risks that the project will mitigate.

1

Table 2-9 Summary of Key Risk Reduction Benefits

Risk Category	Risk Description
Safety	The current system does not maintain adequate information regarding what services vendors are qualified to perform for BC Hydro. As such there is a risk that vendors perform work that they are not fully qualified to do which could result in a safety incident.
Financial	Risks in the supply chain process can lead to situations where BC Hydro pays too much for goods and services or pays for goods not actually received.
Reputational	Not being able to accurately report on how much BC Hydro spends on specific categories of goods or services and where it is spent is a reputational risk for BC Hydro.
Reliability	When materials and or services of low quality are introduced into the system it can impact reliability. The current supply chain system cannot automatically trigger a quality inspection for all materials that should be inspected. Reliance on manual tracking of quality inspection requirements increases the risk that poor quality items are accepted by BC Hydro and introduced into the system.

36.1. Do the non-monetized risks offer any benefits to BC Hydro in terms of its overall risk assessment in financial markets? Please explain.

37. Exhibit B-1, page 2-30

For the NPV analyses, the following inputs were used:

1. The estimate of future costs to operate and maintain the supply chain IT system as described in section [2.4.6](#).
 2. An inflation rate of 2 per cent per year;
 3. The benefits ramp-up periods described in section [2.5](#);
 4. A 7 per cent nominal discount rate; and
 5. A ten-year economic life from the anticipated in-service date of July 2019 (F2020);
-
- 37.1. Please provide the basis for the inflation rate of 2%.
 - 37.2. Please provide the basis for the 7% nominal discount rate.
 - 37.3. Please provide BC Hydro's basis for the 10 year economic life.
 - 37.4. What is BC Hydro's typical economic life of its IT projects?

38. Exhibit B-1, Page 3-1

19 In the Identification Phase, the Conceptual Design Report was developed in early
20 2015 as discussed in section 4.4.2. At that time, no formal alternatives analysis was
21 performed given that BC Hydro made a decision to shift to an enterprise-wide SAP
22 IT platform (please refer to section 4.2.3) and BC Hydro had completed the
23 Transformation Blueprint of a SAP-based solution in 2013 (please refer to
24 section 4.2.7). As SAP is BC Hydro's technology standard for enterprise resource
25 planning projects, BC Hydro typically uses SAP technology for such projects unless
26 it discovers during the Identification Phase of the project that SAP provides a poor fit

1 to meet business needs. The Conceptual Design Report demonstrated that SAP can
2 meet BC Hydro's business needs and is a viable platform for the Supply Chain
3 Applications Project.

4 BC Hydro considered alternatives to SAP as part of its Definition Phase Business
5 case in mid-2015 to ensure that SAP is the superior platform choice for the Supply
6 Chain Applications Project. The Definition Phase Business Case analyzed two
7 PassPort alternatives and one SAP alternative.

38.1. As described the criteria for using SAP is that it is not a 'poor fit' to meet the business needs.
Please confirm that this is BC Hydro's policy on alternative selection or otherwise provide the
criteria BC Hydro uses to select alternatives.

38.2. If BC Hydro's criteria for not being a poor fit is that SAP can provide a viable platform please
confirm this or otherwise explain BC Hydro's criteria for selecting alternatives.

38.3. Please describe in detail how BC Hydro determines that SAP is a superior platform choice for
Supply Chain Applications.

39. Exhibit B-1, Page 3-2

11 the project costs and benefits compared to the Definition Phase Business Case. The
12 alternatives analysis included in the Application also eliminated one of the two
13 PassPort options considered in the Definition Phase Business Case. The additional
14 PassPort option included in the Definition Phase Business Case analysis was based
15 on the assumption that, with sufficient customization, Passport could fully meet the
16 Supply Chain Business Requirements outlined in the Supply Chain Business Model.
17 Through further analysis, this was determined not to be true and that in fact
18 PassPort could not be customized to meet all the Business Requirements. For this
19 reason, the two PassPort options in the Definition Phase Business Case were
20 combined to become the single PassPort option considered in the alternatives
21 analysis presented below.

39.1. How did BC Hydro go about determining if the PassPort platform could be customized to meet the Business Requirements?

39.2. Did BC Hydro put out an RFP or RFI to determine whether or not PassPort could meet the Business Requirements?

40. Exhibit B-1, Page 3-3

1 new supply chain are already owned by BC Hydro. Both SAP and PassPort were
2 therefore selected as viable alternatives for the project.

40.1. Were there any other criteria than BC Hydro ownership of the licenses and hardware to determine viable alternatives.

40.2. Were any other software providers examined as potential alternatives?

40.3. What other software providers could have been examined?

41. Exhibit B-1, Page 3-3

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

41.1. Please confirm that, from a strict logic point of view, the fact that one software platform can meet capability gaps does not determine whether there can be differences in the incremental benefits. If BC Hydro does not agree then please explain BC Hydro’s logic.

41.2. Please confirm that BC Hydro has evidence from PassPort vendors in writing that the PassPort platform cannot meet capability gaps and under what conditions this may or may not be true. Please supply the evidence.

42. Exhibit B-1, Page 3-4

Ability to support the implementation of the SC Business Model	Degree to which capability gaps are closed by the alternative, with all capability gaps weighted equally. Scored out of 52	50	36
--	--	----	----

42.1. Please explain why BC Hydro evaluated this criterium with number of gaps instead of the value of the gaps.

42.2. Does BC Hydro have confirmation in writing from the PassPort vendor that these gaps cannot be met by PassPort and if so please provide this evidence.

43. Exhibit B-1, Page 3-4

Alignment with BC Hydro Common Platform Strategy	Binary (Yes / No)	Yes	No
--	-------------------	-----	----

43.1. Did BC Hydro make a quantitative evaluation of the value of a common platform strategy and if it did could BC Hydro please provide this?

44. Exhibit B-1, Page 3-5

Criteria	Measure	Alternative 1 - (SAP)	Alternative 2 – (PassPort)
Risk	Risk assessment rating relative to baseline	Baseline	Higher Business and Delivery Risk
Project cost	Cash flow (\$ millions)	60 to 79	37 to 115
Monetized benefits	Cash flow savings at stabilization (\$ million/year). ²⁴	17 to 33	12 to 24
	NPV of discounted cash flows (\$ millions)	6 to 112	(44) to 76
	NPV of revenue requirements impact (\$ millions)	(4) to 94	(39) to 70

44.1. BC Hydro did not have a competitive bid process, but did BC Hydro ask the PassPort vendor what their estimate would be for a project cost, particularly because BC Hydro estimated a lower cost for PassPort than for SAP was possible?

44.1.1. If so please provide the written evidence of this?

44.2. With the BC Hydro cashflow savings at stabilization being estimated to be close to each other did BC Hydro ascertain from the PassPort vendor whether or not the gaps could be closed and if so at what estimated price?

44.3. Please provide the NPV calculations in working excel spreadsheet form.

45. Exhibit B-1, Page 3-5

16 certainty. The estimate accuracy range of +100%/-35% corresponds to an AACE
 17 International Class 5 cost estimate. As a result of the uncertainty of Alternative 2
 18 (PassPort) costs, it is difficult to draw a conclusion as to which alternative is
 19 preferable based on project cost alone.

45.1. Please confirm that the reason BC Hydro does not have comparable cost estimating accuracy is because BC Hydro did not run a process to obtain comparable cost accuracy.

46. Exhibit B-1, Page 3-6

- 1 Given the range of project costs and benefits, and resulting NPV ranges shown in
- 2 Table 3-1 above, BC Hydro plotted the NPV of each alternative for varying costs and
- 3 benefits (in F2017 dollars) to compare the two alternatives under the potential cost
- 4 and benefit scenarios. This analysis is presented in Table 3-2 and Table 3-3 below.

46.1. Please confirm that the analysis shows differences based on the differences in the inputs, which BC Hydro has not attempted to make comparable, because BC Hydro did not seek comparable data from the PassPort vendor.

47. Exhibit B-1, Page 3-7

- 11 Based on [Table 3-1](#), [Table 3-2](#), and [Table 3-3](#) above, Alternative 1 (SAP) is the
- 12 preferred alternative compared to Alternative 2 (PassPort):

47.1. Please confirm that this analysis is the extent of the BC Hydro basis for determining that SAP is preferred over PassPort.

48. Exhibit B-1, Page 3-8

4
5

Table 3-5 Alternatives Assessment Results for Closing the Capability Gaps

Capability Gap	Alternative 1 (SAP)	Alternative 2 (PassPort)
1 - Inability to manage service-related spend	4	2
2 - Limited contract management	4	3
3 - Limited ability to manage inventory levels	4	4
4 - Limited ability to manage individual supplier performance	4	4
5 - Difficulty managing the supply chain for capital projects	4	0
6 - Lack of order, delivery and payment tracking	4	3
7 - Inability to support sales and returns of unused materials	4	3
8 - Inability to support pre-packaging of materials for field crews	4	4
9 - Lack of wireless access to inventory information	4	4
10 - No self-serve option for routine service requests	4	3
11 - Inability to pay suppliers without an invoice	4	1
12 - Inability to streamline controls and approvals process	3	2
13 - Inability to integrate the work management systems	3	3
Total Score (out of 52)	50	36

48.1. Please provide any evidence BC Hydro has that the PassPort Vendor agrees that it cannot meet these gaps and any evidence that they agree that the differential in qualitative assessment is an appropriate measurement of the degree to which they are not able to meet these gaps.

48.2. Please provide any evidence BC Hydro has of any benefits PassPort would claim that SAP cannot deliver if BC Hydro has made such an assessment.

3.3.2 Ability to Support Implementation of the SC Business Model

The basis of this analysis was an assessment of the extent to which SAP and PassPort-based solutions are able to address the 13 capability gaps. BC Hydro determined that Alternative 1 (SAP) addresses the capability gaps significantly better than Alternative 2 (PassPort). To determine this, each alternative was qualitatively assessed on its ability to address the capability gaps and was given a score between 0 and 4 using the following criteria:

Table 3-5 Alternatives Assessment Results for Closing the Capability Gaps

Capability Gap	Alternative 1 (SAP)	Alternative 2 (PassPort)
1 - Inability to manage service-related spend	4	2
2 - Limited contract management	4	3
3 - Limited ability to manage inventory levels	4	4
4 - Limited ability to manage individual supplier performance	4	4
5 - Difficulty managing the supply chain for capital projects	4	0
6 - Lack of order, delivery and payment tracking	4	3
7 - Inability to support sales and returns of unused materials	4	3
8 - Inability to support pre-packaging of materials for field crews	4	4
9 - Lack of wireless access to inventory information	4	4
10 - No self-serve option for routine service requests	4	3
11 - Inability to pay suppliers without an invoice	4	1
12 - Inability to streamline controls and approvals process	3	2
13 - Inability to integrate the work management systems	3	3
Total Score (out of 52)	50	36

Table 6: PassPort Benefit Ratio by Capability

For each capability gap the ratio of benefit available under the PassPort alternative is provided. Discussed in section 3.11 of the application.

Application Capability	PPAltRatio
1 - Inability to manage service related spend	50%
10 - No self-serve option for routine service requests	75%
11 - Inability to pay suppliers without an invoice	25%
12 - Inability to streamline controls and approvals process	67%
13 - Inability to integrate with work management systems	100%
2 - Poor contract management	75%
3 - Poor inventory management	100%
4 - Poor management of individual supplier performance	100%
5 - Difficulty planning capital projects	0%
6 - Lack of order, delivery and payment tracking	75%
7 - Inability to support return of unused materials	75%
8 - Inability to pre-assemble materials for field crews	100%
9 - Lack of mobile access to inventory information	100%

- 49.1. Please confirm that the 'PPAlt Ratio' is based on the results depicted in Table 3-5, and is critical in assessing the costs for the PassPort alternative.
- 49.2. Please provide details of the analysis that was provided in arriving at the above ratios.
- 49.3. Who was responsible for developing the qualitative assessment of the ability of the two options to address the capability gaps?
- 49.4. Please provide the qualifications for the person(s) responsible for the Alternatives Assessment results.
- 49.5. Please identify and elaborate on any benefits (as opposed to capability gaps) that are provided under the PassPort alternative that are not available under the SAP alternative.
 - 49.5.1. Please assign a rating for each Alternative as was done in the table above.

50. Exhibit B-1, Page 3-10

3 Through BC Hydro's PPM project, the SAP Project Systems module was deployed
4 to support capital project delivery. By its nature this capability requires integration.
5 BC Hydro has previously investigated, during both the Finance and Project and
6 Portfolio Management SAP module projects, building additional integration between
7 PassPort and SAP Project Systems module and determined that additional
8 integration was not feasible. As such the PassPort option was given a score of 0.

50.1. Please provide the quantum of investment BC Hydro made with SAP, prior to this assessment, to have the ability to integrate capital project delivery.

50.2. At the time this investment was made did BC Hydro ask Passport to provide an estimate of what it would take to provide this feature and if so please provide the documentation of this.

51. Exhibit B-1, Page 3-13

- 7 1. A reduction in overall complexity of BC Hydro's IT environment;
- 8 2. More streamlined business processes;
- 9 3. A single source of information and thus consistency of analysis and reporting;
- 10 4. Reduction in the cost of future business and technology changes.

51.1. Does BC Hydro have a quantified assessment of these reasons or has the assessment just been qualitative?

52. Exhibit B-1, Page 3-13

18 projects would likely be on an SAP platform. Generally, both PassPort and SAP are
19 designed to operate as integrated systems performing multiple business functions,
20 not as standalone systems integrated with other systems. Selection of PassPort as
21 the preferred alternative for supply chain would complicate BC Hydro's IT systems,
22 potentially impacting its ability to successfully execute future projects.

52.1. Has BC Hydro produced a quantified estimate of the future impacts it thinks may affect execution of future projects and if so could this please be provided?

53. Exhibit B-1, Page 3-14

4 (a) Business Risk

5 An additional business risk exists with Alternative 2 (PassPort) that does not exist
6 with Alternative 1 (SAP). BC Hydro's supply chain system has been on a PassPort
7 platform since 2003. Once an IT system has been in use for a significant amount of
8 time, as with PassPort, user behaviour becomes entrenched. Changing processes
9 and changing behaviour in PassPort may therefore be difficult and challenging. For
10 these reasons, staying with PassPort introduces a risk of not achieving the benefits
11 of the new supply chain. The other specific risks in this category (Table 4-3) are the
12 same for both alternatives.

53.1. Please confirm that with the SAP alternative everyone using the PassPort system would have to undergo behaviour changes.

53.2. Please provide an estimate of the number of people using the PassPort platform.

54. Exhibit B-1, Page 3-14

13 (b) Technology Risk

14 Alternative 2 (PassPort) introduces an additional technology risk not present in
15 Alternative 1 (SAP). PassPort and SAP are each meant to run as a single integrated
16 system. Alternative 2 (PassPort) would result in a more complex IT environment
17 than under Alternative 1 (SAP). Alternative 2 (PassPort) would also be more
18 challenging to modify in future. For these reasons Alternative 2 (PassPort) has an
19 incremental technology risk relative to Alternative 1 (SAP).

54.1. Please confirm that the PassPort system as it is currently being run integrates to the SAP functions BC Hydro is currently running.

54.2. Please provide the written evidence BC Hydro has from the PassPort vendor acknowledging that they would be challenged to modify their platform to continue to integrate with SAP.

55. Exhibit B-1, Page 3-14

22 (c) Project Delivery Risk

23 Overall project delivery risk is higher for Alternative 2 (PassPort) than Alternative 1
24 (SAP). Alternative 2 (PassPort) has a higher likelihood of an unsuccessful system
25 integrator RFP given the relative lack of PassPort resources in the market.
26 Alternative 2 (PassPort) has a higher risk of poor quality due to the limited internal

55.1. Has BC Hydro asked the PassPort vendor whether or not they have any recommendations with respect to how to ensure delivery with PassPort?

55.1.1. Iso please provide the written documentation of these assurances?

56. Exhibit B-1, Page 3-15

13 The Supply Chain Applications Project conceptual design was developed on the
14 basis of implementing SAP and not on the basis of implementing a PassPort
15 solution. In the absence of having a PassPort-specific conceptual design, BC Hydro
16 used the detailed SAP definition phase cost estimate as a base from which it
17 developed a cost range for the PassPort alternative for this evaluation.²⁵

56.1. Did BC Hydro ask the PassPort vendor to provide a conceptual design of what they would recommend considering in regard to the issues BC Hydro wished to address and if so please provide the written documentation of their advice?

57. Exhibit B-1, Page 3-15 & Page 3-16

18 For each cost component, BC Hydro estimated the level of effort (as a percentage)
19 reasonable for a PassPort-based solution relative to the SAP based solution.
20 Overall, the level of effort to complete the implementation of Passport is estimated to
21 be lower given that the existing supply chain system is PassPort-based. BC Hydro
22 then multiplied the level of effort percentage by the SAP project cost estimate for
23 each project activity and summed each cost to calculate a base cost for PassPort.²⁶

1 BC Hydro then applied a contingency of 20% on the cost estimate and added IDC to
2 calculate a mid-range cost estimate. As no conceptual design exists for the PassPort
3 project, and consistent with BC Hydro standards, an uncertainty range of +100% / -
4 35%²⁷ was applied to calculate the upper and lower bounds for the estimate. The
5 calculation of the Alternative 2 (PassPort) cost estimate is included in tabs D1 and
6 D2 of Attachment F.

57.1. Given the lower level of effort for PassPort please confirm that the failure to have a conceptual design and BC Hydro's estimating process resulted in this benefit of the PassPort solution being nullified.

58. Exhibit B-1, Page 3-16

11 **Table 3-7 Comparison of Project Costs for Alternatives**

Alternative	Total Estimated Project Cost Range (\$ million)
1 – SAP	60.5 - 79.3
2 – PassPort	37.3 - 114.8

58.1. Please confirm that the project cost range differences are primarily driven by BC Hydro's decision not to have a conceptual design and then to apply a much wider uncertainty range.

59. Exhibit B-1, Page 3-17

16 **Table 3-8 Annual Recurring Benefits Range at**
17 **Stabilization (F2017 Dollars)**

Alternative	Annual Benefits Range (\$ million)
1 – SAP	16.6 to 33.2
2 – PassPort	11.8 to 23.7

59.1. Please explain why the benefits range is much narrower for the PassPort alternative than the range for the costs.

60. Exhibit B-1, Page 3-18

22 The alternatives analysis demonstrates that Alternative 1 (SAP) is the preferred
23 alternative for undertaking the Supply Chain Applications Project as it:

60.1. Please confirm that the evaluation leading to the above conclusion is not based on comparable levels of design, which resulted in uncertainty evaluations that diminished the PassPort alternative assessment.

61. Exhibit B-1, Page 4-5

23 *“Adopt the Government’s formalized Vendor Complaint Review*
24 *Process to provide vendors with a fair and transparent way of*
25 *addressing their concerns. This process will also provide a*
26 *means to identify gaps in policy, or procedures, thereby acting*
27 *as a process improvement tool” (#25);*

61.1. Has the PassPort vendor made any complaint to BC Hydro with respect to the fairness of BC Hydro’s Supply Chain decisions?

61.2. Does BC Hydro have the proposed vendor complaint process in place now?

62. Exhibit B-1, Page 4-5

33 *Work with the province to fully adopt the functionalities of*
34 *Government’s BC Bid technology to maximize efficiencies by*
35 *leveraging existing government technology and through*
36 *strategic sourcing and consolidation of new bid opportunities*
37 *and purchases” (#27);*

62.1. How many government entities use the SAP platform?

62.2. How does BC Hydro leverage BC Government technology and bidding technology in regard to IT and specifically this Supply Chain decision?

63. Exhibit B-1, Page 4-7

7 and operations performance. In addition, in 2012 the Transformation Initiative
8 identified four IT projects that dealt with asset management; work management;
9 scheduling, dispatch and mobility; and customer connections. These four projects
10 were focussed on delivering the required functionality within BC Hydro’s SAP
11 platform.

63.1. Please describe the alternatives to SAP examined for these four projects.

64. Exhibit B-1, Page 4-8

6 As of March 2014, the total expenditures for the five Transformation Blueprint IT
7 Projects for which the Transformation Blueprint was prepared were about
8 \$33.1 million,³⁷ including about \$15.5 million for the supply chain component.³⁸ A
9 portion of the \$33.1 million has been attributed to subsequent projects, based on the
10 proportion of the Transformation Blueprint design used in each project. The balance
11 of remaining Transformation Blueprint costs that have not been expensed or
12 capitalized and put into service are accounted for as work-in-progress.

64.1. Please describe what the \$15.5 million for the supply chain component was spent on and whether or not it was spent on SAP related actions or on the PassPort related actions.

65. Exhibit B-1, Page 4-14

18 The Supply Chain Applications Project will expand BC Hydro's use of these
19 applications. While BC Hydro already owns and uses these applications, some
20 additional licensing will be required for Ariba.

65.1. Is this cost in the current Supply Chain Application or is it outside of the applied for project?

66. Exhibit B-1, Page 4-15

2 During the Identification Phase, BC Hydro assessed whether to retain a System
3 Integrator for the project and, if so, what the scope of the System Integrator's role on
4 the project should be. The following four options were assessed:

66.1. Please provide any quantitative analysis BC Hydro made of this decision or describe the qualitative nature of the decision depending on which methodology BC Hydro used to make this decision.

67. Exhibit B-1, Page 4-16

22 The System Integrator is the single largest component of the Supply Chain
23 Applications Project's cost. To ensure that BC Hydro is able to retain the best
24 System Integrator and maximize the full benefits of doing so, BC Hydro developed a
25 robust procurement process to retain the System Integrator. One of the concluding
26 activities of the Identification Phase of the project was the development of a public,
27 multi-stage procurement process culminating in a Request-for-Proposal for a System
28 Integrator. The request for proposal has been completed, providing BC Hydro with a

67.1. Did BC Hydro use the BC Government bidding system technology for this RFP process?

68. Exhibit B-1, Page 4-20

16 The Supply Chain Application Steering Committee granted permission to
17 conditionally award the System Integrator work to PricewaterhouseCoopers and to
18 work with PricewaterhouseCoopers to develop and finalize the Master Services
19 Agreement and Statement of Work for the Mobilization work package and the
20 Design work package. The Master Services Agreement sets out the overall

68.1. Is PricewaterhouseCoopers the System Integrator chosen for the Supply Chain SAP project?

68.2. Has BC Hydro worked with PricewaterhouseCoopers as a System Integrator before?

69. Exhibit B-1, Page 4-23

12 The final deliverable of the Early Definition Stage is the preparation and filing of this
13 application and an Order in Phase One of the proposed regulatory process.
14 BC Hydro does not intend to proceed into the Mobilization Stage of the Definition
15 Phase of the project until an Order in Phase One of the proposed regulatory process
16 is received accepting Definition Phase expenditures for the Supply Chain
17 Applications Project.

69.1. Please identify the project costs to date and identify the regulatory risk issues BC Hydro sees as relevant.

70. Exhibit B-1, Page 4-26

13 2. Development of the detailed design, including functional and technical
 14 specification documents, writing of custom program code, and testing that the
 15 code executes correctly. A portion of the writing of custom program code is
 16 currently planned to be undertaken offshore. Should this approach prove
 17 infeasible, incremental funding has been estimated and is included the Upper
 18 Bound cost estimate for the project within the Project Reserve covering known
 19 risks, described in Table 2-3 of section 2.4.22.

70.1. Where would the custom program code be undertaken offshore?

70.2. Has BC Hydro had custom program code undertaken offshore before?

70.3. Why might this approach prove infeasible?

71. Exhibit B-1, Page 4-28

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Table 4-2 Supply Chain Applications Project Key Milestones and Activities

Stage	Key Milestones and Activities
Application filed with British Columbia Utilities Commission	December 2016
British Columbia Utilities Commission Decision Issued for Phase One	August 2017
BC Hydro releases Mobilization, Design and Implementation Planning work to System Integrator and Quality Assurance Advisor	September 2017
Definition - Mobilization Activities	October 2017
Design and Implementation Planning	November 2017 to April 2018
British Columbia Utilities Commission Review of Verification Report & Phase Two Decision Issued	March to April 2018
BC Hydro releases Implementation Phase work to System Integrator and Quality Assurance Advisor	May 2018
Implementation - Build Solution ⁴¹	May 2018 to March 2019
Target In-Service Date	Late March 2019
Committed In-Service Date	Late July 2019
Implementation – Stabilization	August 2019 to November 2019
Implementation – Onboarding	December 2019 to July 2020
Project Completion	End of July 2020

71.1. Is this length of project implementation typical of SAP project implementations?

71.2. Please provide any factual data on SAP project implementation time schedules as a comparison to this schedule.

Table 4-3 Project Business Risks and Risk Mitigation Summary

Risk Event/ Threats	Mitigation Plans	Mitigation Status	Current Probability and Impact
Scale of business process changes is too large to be absorbed successfully by BC Hydro	<ul style="list-style-type: none"> Separating of Supply Chain Applications Project from Asset Management and Work Management projects 	Complete	Medium probability; medium impact.
	<ul style="list-style-type: none"> Detailed change management plan 	Planned	
	<ul style="list-style-type: none"> Extended stabilization period and onboarding plan for implementation and benefits realization 	Planned	
	<ul style="list-style-type: none"> Strong governance and project management 	In Progress	
	<ul style="list-style-type: none"> Detailed benefit realization plans 	Planned	
Reduced productivity experienced by the business while it transitions to the new supply chain	<ul style="list-style-type: none"> Separating of the Supply Chain Applications Project from Asset Management and Work Management projects. 	Complete	High probability; low impact.
	<ul style="list-style-type: none"> Prototyping of certain work through Supply Chain Solutions projects 	Complete	
	<ul style="list-style-type: none"> Detailed change management plan 	In Progress	
	<ul style="list-style-type: none"> Extended stabilization period and onboarding plan for implementation and benefits realization 	Planned	

72.1. Is BC Hydro able to apply any financial assessment of the business risks outlined in Table 4-3?

72.1.1. If yes, please provide the estimated costs of the outlined risks.

72.1.2. How does BC Hydro define 'strong governance and project management' as distinct from business as usual practices? Please explain.

Table 4-5 Project Delivery Risks and Risk Mitigation

Risk Event/Threats	Mitigation Plans	Mitigation Status	Current Probability and Impact
Adverse or Delayed British Columbia Utilities Commission Order	<ul style="list-style-type: none"> Comprehensive Application; propose a schedule that facilitates a decision by August 2017. Incremental funding included in Project Reserve as described in section 2.4.2, Table 2-4. 	In progress Completed	Potential impact will vary depending on date and wording of British Columbia Utilities Commission decision.
Requirement to undertake a protracted regulatory process in order to proceed with Implementation phase work	<ul style="list-style-type: none"> Comprehensive Application; propose a schedule that facilitates a decision by April 2018. Incremental funding included in Project Reserve as described in section 2.4.2, Table 2-4 	In progress Completed	Potential impact will vary depending on date and wording of British Columbia Utilities Commission decision.
Proposed offshore development model is determined to be impractical or ineffective	<ul style="list-style-type: none"> Decision point in Definition Phase to determine if privacy concerns relating to data access adequately met. Development of detailed work procedures to mitigate quality risks associated with offshore development Incremental funding included in Project Reserve. 	Future Future Completed	Medium probability; impact estimated at \$1 million.
Unsuccessful System Integrator Request for Proposal	<ul style="list-style-type: none"> Market sounding Proponent review of relevant information (Transformation Blueprint, Conceptual Design, etc.) Comprehensive Request for Proposal process Request for Proposal proponent proposals in line with expectations (Quality, Service, Cost) 	Completed Completed Completed	Risk has passed.
Weak project governance	<ul style="list-style-type: none"> External Quality Assurance Advisor Project Director with significant SAP implementation experience Following BC Hydro's internal project management standard 	In Progress Completed In Progress	Medium probability, high impact
Poor project management	<ul style="list-style-type: none"> External Quality Assurance Advisor Strong project governance Strong project management procedures from the System Integrator 	Completed In Progress Planned	Medium probability, high impact

While the risk reserve amount represents an additional cost contingency for the project, it does not include any additional schedule contingency. The assumed four month delay used in the calculation of the value assigned to risk item 2 in [Table 2-4](#) should not be confused with the schedule contingency of four months discussed in section [2.4.1](#) which is only intended to cover unknown risks.

73.1. Please confirm that incremental funding in the Project Reserve is intended to address the potential for an adverse or delayed BCUC order that could impact the project schedule.

74. Exhibit B-1, page 4-37

Risk Event/Threats	Mitigation Plans	Mitigation Status	Current Probability and Impact
Lack of clear Supply Chain Business Requirements	<ul style="list-style-type: none"> The Supply Chain Business Model sets out a clear vision of the desired outcomes. The Supply Chain Business Model is supported by signed-off business requirements and a conceptual design, which have both been reviewed and endorsed by PricewaterhouseCoopers 	Completed	Low probability; high impact.
	<ul style="list-style-type: none"> The Supply Chain Business Requirements have been further articulated through the Transformation Blueprint, providing a much better understanding than is generally available at this stage 	Completed	
	<ul style="list-style-type: none"> Strong project governance and project management to control scope and raise issues 	In Progress	

74.1. Please provide further explanation as to the risk of “Lack of clear Supply Chain Business Requirements’ including examples of what the risks might be, and what the financial impact would be of such risks occurring.