

**Fred James**

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October 13, 2017

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

Dear Mr. Wruck:

**RE: Project No. 1598922  
British Columbia Utilities Commission (BCUC or Commission)  
British Columbia Hydro and Power Authority (BC Hydro)  
Site C Inquiry - Round 3 Information Responses**

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BC Hydro is writing to provide its responses to further questions that it has received from the BCUC Panel. The Commission asked that we endeavour to provide answers as they become available and we are therefore providing answers to several of the information requests today.

Our approach is to number all of these additional BCUC Panel requests starting with BCUC IR 3.1.0 (representing the first question in the third round of questions the Commission has posed to BC Hydro). The number of responses enclosed with this letter are non-sequential, as we have been providing responses as soon as they became available.

The responses to the following information requests are partially redacted for the reasons set out below. Unredacted versions have been filed with the Commission on a confidential basis:

- BCUC IR 3.13.0 – contains information that fits within Category C of the Commission's existing order relating to load and business information of individual customers.
- BCUC IR 3.15.0 – contains information that fits within Category C of the Commission's existing order relating to load and business information of individual customers.

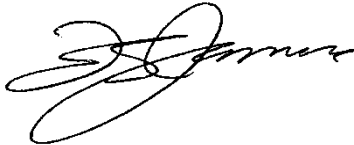
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In the event the Commission requires clarification of any of these responses, we would be pleased to do that.

For further information, please contact Fred James at 604-623-4317 or by email at [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Fred James  
Chief Regulatory Officer

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Enclosure

<b>British Columbia Utilities Commission</b> Information Request No. <b>3.12.1</b> Dated: <b>October 13, 2017</b> British Columbia Hydro & Power Authority Response issued <b>October 13, 2017</b>	Page 1 of 1
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**12.0 Reference: BC Hydro Response to BCUC IR 2.81.1 Table 2**

3.12.1 In presenting Deloitte's estimate for the Suspension scenario BC Hydro has applied the entire contingency to Reactivation costs. Please explain why.

**RESPONSE:**

Placing the entire contingency calculated by Deloitte against the reactivation costs was an error by BC Hydro. A revised table allocating the 30 per cent contingency as calculated by Deloitte against their estimate is as follows:

<b>Description</b>	<b>BCH</b>	<b>Deloitte</b>	<b>Variance</b>
	<b>(\$million)</b>	<b>(\$million)</b>	<b>(\$million)</b>
Direct Cost	341	195	146
Indirect Costs	66	5	61
Contingency	168	60	108
<b>Reactivation costs before Inflation and Management Reserve</b>	<b>575</b>	<b>260</b>	<b>315</b>
Inflation (both during suspension and required to complete construction)	585		585
Management Risk Reserve	500		500
<b>Project Reactivation Costs (Including Management Reserve)</b>	<b>1,660</b>	<b>260</b>	<b>1,400</b>
Project suspension costs Until F2023	1,090	1,158	(68)
<b>Total Estimated Costs for Project Suspension</b>	<b>2,750</b>	<b>1,418</b>	<b>1,332</b>

<b>British Columbia Utilities Commission</b> Information Request No. <b>3.12.2</b> Dated: <b>October 13, 2017</b> British Columbia Hydro & Power Authority Response issued <b>October 13, 2017</b>	Page 1 of 1
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**12.0 Reference: BC Hydro Response to BCUC IR 2.81.1 Table 2**

3.12.2 In Table 2 of this IR the inflation amount is estimated at \$585 million and is quoted as being for both the suspension period and the time to complete construction. On page 8 of this IR this amount is quoted as being exclusive to the cost to complete the project. Which is it?

**RESPONSE:**

**The \$585 million inflation figure is the inflation component of the reactivation costs as well as the effect of suspension of the remaining cost to complete the base scope of work. It includes the incremental effect of inflation during the period of suspension, as well as the compounding effect of such inflation after reactivation. It represents the incremental inflation cost only, i.e. it is net of already budgeted inflation. As described on page 8 of BC Hydro’s previous response, the \$585 million does not include the inflation component of the project suspension costs themselves, which are reflected in the “Project Suspension Costs Until F2023” row.**

<b>British Columbia Utilities Commission</b> Information Request No. <b>3.12.3</b> Dated: <b>October 13, 2017</b> British Columbia Hydro & Power Authority Response issued <b>October 18, 2017</b>	Page 1 of 1
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**12.0 Reference: BC Hydro Response to BCUC IR 2.81.1 Table 2**

3.12.3 In Table 2 BC Hydro quotes the direct reactivation costs as \$341 Million. This is significantly higher than Deloitte's estimate of \$195 million. Could BC Hydro provide an explanation for the variance?

**RESPONSE:**

**BC Hydro does not know the details of Deloitte's estimate and is unable to provide a detailed variance analysis of the differences between the two estimates. BC Hydro has provided a fulsome description of the basis and nature of costs for reactivation through its response to BCUC IR 2.81.1. BC Hydro has based this estimate on its recent experience with project start-up over the past two years.**

<b>British Columbia Utilities Commission</b> Information Request No. <b>3.13.0</b> Dated: <b>October 13, 2017</b> British Columbia Hydro & Power Authority <b>PUBLIC</b> Response issued <b>October 13, 2017</b>	Page 1 of 1
British Columbia Hydro & Power Authority <b>Site C Inquiry</b>	

**13.0 Reference: BC Hydro Response to BCUC IR 2.22.1**

3.13.0 On page 72 of the Preliminary Report the following information was requested: Has BC Hydro pursued the sale of surplus (capacity) in other jurisdictions? If so what have been the results? Could BC Hydro provide an answer to this?

**RESPONSE:**

**BC Hydro does not sell products in other Jurisdictions. However, Powerex sells multiple different short-term capacity and flexibility products in other jurisdictions as opportunities arise. These sales are generally provided from the surplus capacity and flexibility of the BC Hydro system, the Canadian Entitlement or other Powerex assets. These are described (and partially redacted) in the narrative in our response to BCUC IR 2.22.1.**

**One recent example of the capacity and flexibility products that Powerex has sold is**

[REDACTED]

**This capacity compensation is in addition to payments for any energy that was dispatched. The capacity for this product was held in B.C., utilizing surplus capacity and flexibility created by BC Hydro’s large storage hydro facilities. Any surplus capabilities of Site C would also be able to support sales of this type of product. In contrast, run-of-river, wind, solar, or geothermal resources could not support sales of these products. In fact, the key driver of [REDACTED] demand for this product, which has emerged in recent years, is the variability in wind output [REDACTED].**

**Powerex is always engaged with its counterparties regarding commercial opportunities including the prospect of longer-term sales of capacity and flexibility. For example, Powerex recently responded to one entity’s request for offers for [REDACTED]**

**[REDACTED] Other parties are in the early stages of planning how they will meet their capacity requirements over the course of the next decade in the face of the coal retirements that were identified in the response to 22.1, along with the needs for flexibility to assist in the management of renewable energy resources.**

<b>British Columbia Utilities Commission</b> Information Request No. <b>3.15.0</b> Dated: <b>October 13, 2017</b> British Columbia Hydro & Power Authority Response issued <b>October 13, 2017</b>	Page 1 of 1
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**15.0 Reference: BC Hydro Response to BCUC IR 2.9.0 Confidential Attachment**

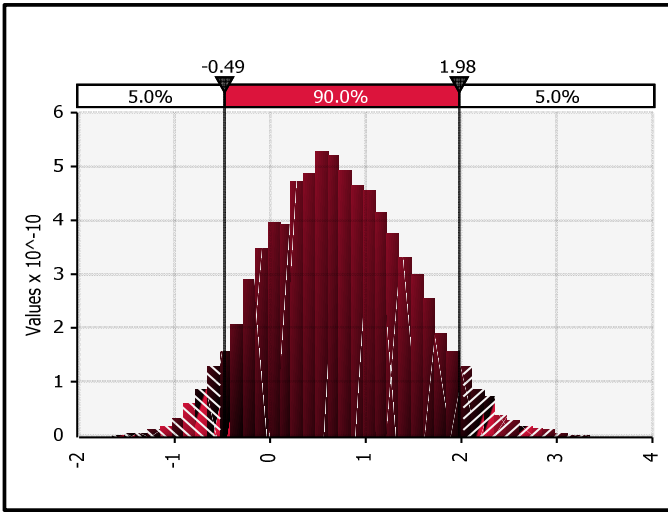
3.15.0 Will BC Hydro please provide the total P90 contingency figure for the Site C construction costs from its Monte Carlo analysis. This was contained in the confidential attachment to F1-10 in answer 2.9.0.

**RESPONSE:**

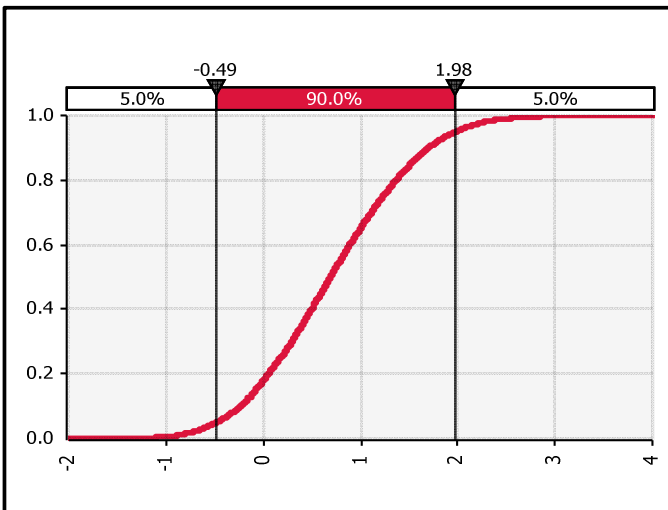
**Attached is page 15 of Attachment 2 of our response to BCUC IR 2.9.0 (Filing F1-10), which includes the P90 amount. This was previously filed on a confidential basis, and has been partially unredacted in order to respond to the Commission's request.**

**@RISK Output Report for Grand Total Direct Costs**

Date: 2017, September 28 10:30:58 AM



Simulation Summary Information	
Workbook Name	2014 Cost Estimate Master - File Used
Number of Simulations	1
Number of Iterations	10000
Number of Inputs	271
Number of Outputs	174
Sampling Type	Latin Hypercube
Simulation Start Time	2017-09-28 10:22
Simulation Stop Time	2017-09-28 10:23
Simulation Duration	00:01:23
Random # Generator	Mersenne Twister
Random Seed	911864696
Total Errors	0
Collect Distribution Samples	All
Convergence Testing	Disabled
Smart Sensitivity Analysis	Enabled



Summary Statistics for GRAND TOTAL			
Statistics		Percentile	
Minimum	(1,657,323,394)	1.0%	(879,364,427)
Maximum	3,357,418,738	2.5%	(669,498,534)
Mean	715,557,308	5.0%	(487,254,754)
Std Dev	747,762,349	10.0%	(237,357,720)
Variance	5.59149E+17	20.0%	51,637,807
Skewness	0.145595842	25.0%	180,648,048
Kurtosis	2.735519623	50.0%	690,057,675
Median	690,057,675	75.0%	1,231,019,443
Mode	660,122,356	80.0%	1,365,987,539
Left X	(487,254,754)	90.0%	1,699,825,000
Left P	5%	95.0%	1,980,191,128
Right X	1,980,191,128	97.5%	2,212,701,900
Right P	95%	99.0%	2,465,260,438
#Errors	0		