Q. Further explanation of Hydro's decision to use a demonstration version of ValidRisk to complete the revised cost estimate, addressing

(i) whether Hydro could request Hatch to revise the original Monte-Carlo Analysis, acknowledging the expressed concern of a potential conflict and

(ii) the importance of using the same proprietary tool.

A. **(i)** Newfoundland and Labrador Hydro ("Hydro") engaged Hatch Ltd.'s ("Hatch") Eastern Canada Regional Risk Manager, who conducted the Quantitative Risk Analysis ("QRA") during Front-End Engineering and Design ("FEED") to utilize the Hatch Model to test the process and outcomes that Hydro had determined using the demonstration version of ValidRisk. Hydro made this request after the bids for the EPCM[1] contract were submitted, which, while not eliminating the commercial risk of this engagement, did reduce it.

Hatch used its original QRA model, updated using the same modified inputs that Hydro used in its updated cost estimate.[2] Hatch's results from this model are similar to the model results that Hydro generated (within 3%, which is within the expected statistical accuracy range). Hatch's analysis resulted in a value for Contingency of $78 million and a value of Management Reserve of $148 million. This results in a total project cost, including Escalation and Interest During Construction ("IDC"), based on the Hatch Model Run of approximately $1,024.8 million versus the results from Hydro's updated cost analysis, approximately $995.9 million.

Attachment 1 to this response contains a memo from Hatch indicating the values for Contingency and Management Reserve from the Hatch Model Run. Hydro calculated

[1] Engineering, Procurement, and Construction Management ("EPCM").
[2] "Application for the Purchase and Installation of Bay d'Espoir Unit 8 and Avalon Combustion Turbine – Revision 1 and Evidentiary Update," Newfoundland and Labrador Hydro, April 16, 2026.

and added the IDC and Escalation values, using the same process as in the application, to ensure a fulsome comparison.

Given that the Hatch Model output is within the expected statistical range of modelling outcomes, Hydro does not feel that a change in budget is warranted.

For comparison purposes, Table 1 illustrates the results of each Hydro Model Run, the average of the five Hydro Model Runs, as well as the Hatch Model Run. Hydro's response to Request 8 contains additional information on the model runs conducted by Hydro.

Table 1: Comparison of ValidRisk Model Runs ($thousands)

	Run 1	Run 2	Run3	Run 4	Run 5	Average	Hatch Run[3]
Base Estimate	688,971	688,971	688,971	688,971	688,971	**688,971**	688,971
Contingency (Pmean)	74,388	73,589	74,934	77,313	77,049	**75,455**	78,000
Escalation[4]	33,684	33,684	33,684	33,684	33,684	**33,684**	33,684
IDC[5]	76,137	76,137	76,137	76,137	76,137	**76,137**	76,137
Management Reserve (P85-Pmean)	125,225	117,679	117,300	121,502	126,436	**121,628**	148,000
Total Planned Cost	**998,405**	**990,060**	**991,026**	**997,607**	**1,002,277**	**995,875**	**1,024,792**

(ii) The tool used by Hatch for the QRA performed on the Avalon Combustion Turbine Project uses the John Hollmann Industrial Model,[6] which is a spreadsheet version of the ValidRisk tool that John Hollmann had provided for years before converting the tool to a cloud-based solution. As stated on the ValidRisk website, "ValidRisk (in non-cloud form) has been used by owners, contractors and financiers in the engineering and construction project world in many industries for over a decade."[7] The demonstration version used by Hydro was the newer, cloud-based version of the ValidRisk tool, as used by Hatch—effectively the same tool using the same underlying data, and providing, effectively, the same results.

[3] The cost delta between Hydro's ValidRisk Model Run Average and the Hatch Model Run is attributed to Contingency ($2.5 million delta) and Management Reserve ($26.4 million delta), for a total of $28.9 million.
[4] Carrying as a constant for simplicity of comparisons.
[5] Carrying as a constant for simplicity of comparisons.
[6] "2025 Build Application," Newfoundland and Labrador Hydro, March 21, 2025, sch. 5, att. 1, s. 4, p. 94 of 125.
[7] https://www.validrisk.com/

Hydro initially benchmarked the demonstration version of ValidRisk by replicating the inputs used by Hatch, contained in the initial Hatch QRA report[8] and the risks in Table 6-1 of the impact analysis memo submitted as part of the evidentiary update,[9] and compared the output to that produced by Hatch during the FEED QRA. The results from this modelling were very close to the Hatch results (within 3%) and, in Hydro's opinion, are statistically equivalent and acceptable for comparison purposes, without requiring a further budget adjustment. With any statistical modelling tool, there will always be some degree of statistical variability in the outcomes, due to the stochastic nature of Monte Carlo Simulation.

While Hydro believes that it is preferred to use the same tool, Hydro did not have access to the exact tool and was concerned about the potential risk of engaging Hatch during an active procurement process. Hydro believes that utilizing a demonstration, cloud-based version of the same tool, with benchmarking to confirm the accuracy in comparison with the original form of the tool, was prudent,[10] recognizing and weighing the risks between tool selection and the potential commercial conflict.

[8] "2025 Build Application," Newfoundland and Labrador Hydro, March 21, 2025, sch. 5, att. 1, app. A.
[9] "Application for the Purchase and Installation of Bay d'Espoir Unit 8 and Avalon Combustion Turbine – Revision 1 and Evidentiary Update," Newfoundland and Labrador Hydro, April 16, 2026, att. 1, att. 2, p. 41 of 45.
[10] Hydro is currently in the later stages of evaluating a toolset that will provide the ability to perform Parametric, Expected Value, or Hybrid QRAs.

Project Memo

H373979

May 14, 2026

To: Ryan Cooper From: Loïc Reny

cc: Tony Scott

Newfoundland & Labrador Hydro
150 MW Combustion Turbine Plant FEED Study

FEED Study QRA Update

1. Introduction

In May 2026, NL Hydro requested an update to the Quantitative Risk Analysis (QRA) performed at the end of the FEED Study in order to incorporate recent information from evolutions to the project costs.

2. Description of Work Performed

To conclude the FEED Study, a QRA was performed, applying a hybrid methodology (parametric and expected value methodology, in line with AACE Recommended Practice 113R-20) in order to assess an adequate contingency for the development of the project. This analysis provided results based on the conditions and the context of project execution known to the project team at the time of analysis.

The same model developed was now re-used as is with two modifications:

- Updates to the breakdown of values of the base estimate;
- Addition of a risk covering costs uncertainties related to variations in exchange rates, tariffs, freight and indirect expenses for the CT package.

The work performed did not include other modifications to the model, as any other potential evolution of parameters were not discussed at this time.

3. Simulation Results

The updated modeled was simulated in order to provide the results shown in Table 3-1, with highlights on the Mean and P85 levels of confidence:

Table 3-1: Project Cost Profile Results

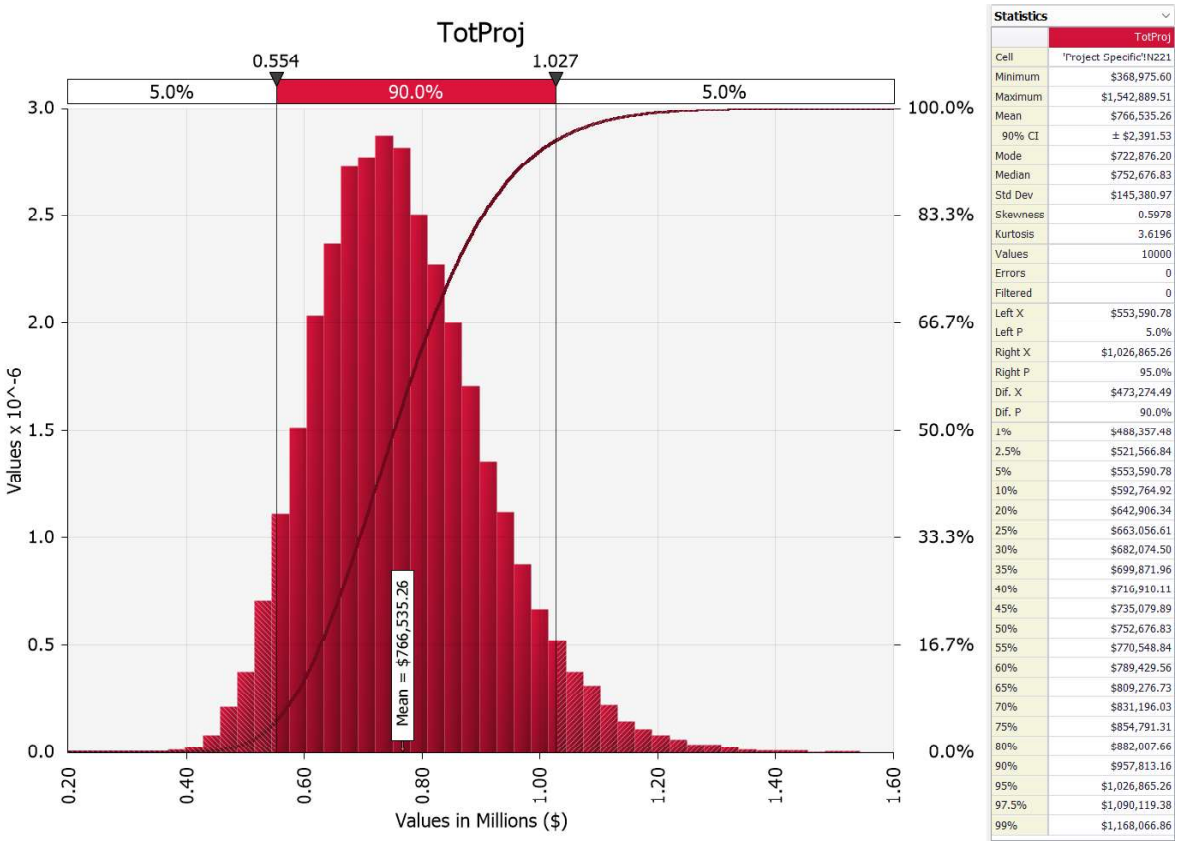
Base Estimate:	$688,971	Currency:	CAN$
Probability of Underrun	Indicated Funding Amount	Contingency Costs (thousands)	Contingency Percent of Base Est.
Mean	**767,000**	**78,000**	**11%**
5%	554,000	(135,000)	-20%
10%	593,000	(96,000)	-14%
15%	620,000	(69,000)	-10%
20%	643,000	(46,000)	-7%
25%	663,000	(26,000)	-4%
30%	682,000	(7,000)	-1%
35%	700,000	11,000	2%
40%	717,000	28,000	4%
45%	735,000	46,000	7%
50%	753,000	64,000	9%
55%	771,000	82,000	12%
60%	789,000	100,000	15%
65%	809,000	120,000	17%
70%	831,000	142,000	21%
75%	855,000	166,000	24%
80%	882,000	193,000	28%
85%	**915,000**	**226,000**	**33%**
90%	958,000	269,000	39%
95%	1,027,000	338,000	49%

At the PMean level of confidence, a contingency of $78 M would be required, or 11.3% on top of the base estimate. In order to provide 85% confidence of underrunning, a contingency of $226 M would be required, or an addition of 33% on top of the base estimate. The base estimate of $689 M offers 31% chance of underrunning. The 80% confidence interval ranges from: -22.7% to +24.9%. That information is extracted from the simulation's output provided in Table 3-2.

Table 3-2: Estimate Summary

ESTIMATE SUMMARY (EXCLUDES RESERVES) (Based on probabilities selected above)			
	Cost (thousands)	%	Confidence of underrun
Base Estimate	$688,971		31.9%
Contingency	$78,000	11.3%	
Ref. Estimate	**$766,971**		**Mean**
Range:	$593,000	-22.7%	10%
	$958,000	24.9%	90%

The distribution of results from the simulation is displayed in Figure 3-1.



Statistics

	TotProj
Cell	'Project Specific'!N221
Minimum	$368,975.60
Maximum	$1,542,889.51
Mean	$766,535.26
90% CI	± $2,391.53
Mode	$722,876.20
Median	$752,676.83
Std Dev	$145,380.97
Skewness	0.5978
Kurtosis	3.6196
Values	10000
Errors	0
Filtered	0
Left X	$553,590.78
Left P	5.0%
Right X	$1,026,865.26
Right P	95.0%
Dif. X	$473,274.49
Dif. P	90.0%
1%	$488,357.48
2.5%	$521,566.84
5%	$553,590.78
10%	$592,764.92
20%	$642,906.34
25%	$663,056.61
30%	$682,074.50
35%	$699,871.96
40%	$716,910.11
45%	$735,079.89
50%	$752,676.83
55%	$770,548.84
60%	$789,429.56
65%	$809,276.73
70%	$831,196.03
75%	$854,791.31
80%	$882,007.66
90%	$957,813.16
95%	$1,026,865.26
97.5%	$1,090,119.38
99%	$1,168,066.86

Figure 3-1: Cost Profile Distribution

These results can be used by NL Hydro to adjust the amounts provisioned in contingency and management reserve for the project. As new information on the context of execution of the project becomes available, adjustments to the model may become relevant to hone it on the appropriate project contingency.

Loïc Reny

LR:lr

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