



November 15, 2017

BCUC INQUIRY RESPECTING SITE C A-25

Sent via eFile

The Honourable Michelle Mungall, M.L.A.
Minister of Energy, Mines and Petroleum Resources
Parliament Buildings
PO Box 9060 Stn Gov't
Victoria, BC V8W 9E2
EMPR.Minister@gov.bc.ca

**Re: British Columbia Hydro and Power Authority – British Columbia Utilities Commission Inquiry
Respecting Site C – Project No. 1598922 – Final Report**

Dear Minister:

In accordance with Order in Council No. 244 dated August 2, 2017, the British Columbia Utilities Commission (Commission) submitted its Final Report with respect to the Site C Inquiry (Final Report) on November 1, 2017.

The Commission hereby submits an errata to the Final Report. The Mid C price forecasts used in the Site C Calculator are in real terms and should have been inflated to nominal terms. Therefore, the Commission is issuing an errata correcting the tables and figures in the Final Report and the Executive Summary. A “copy and paste” error in Table 43 on page 170 of the Final Report is also corrected. As noted in the errata, the corrections do not change the Panel’s findings.

The Commission acknowledges it has received certain comments from participants regarding the Commission Illustrative Alternative Portfolio (Exhibit A-24-2-1) and confirms it is looking into those comments.

Sincerely,

Original signed by Ian Jarvis for:

Patrick Wruck
Commission Secretary

Report errata

1.1 Math Error regarding Mid-C price forecasts used in the Site C Calculator

Issue

The Mid C price forecasts used in the Site C unit energy cost (UEC) Calculator are in real terms and should have been inflated to nominal terms.

Commission comments

The Panel confirms that the graph upon which the Mid C price forecasts were derived are in real F\$2018 and therefore should be inflated to nominal. In the alternative portfolio spreadsheets, these same price forecasts were inflated to nominal.

By correcting the Mid-C price forecasts to nominal in the Site C UEC calculator, we find that the rate impact (NPV) from Site C under the **low load case** is \$336 million lower, at \$2,852 million instead of \$3,188. Under the **mid load case**, the rate impact from Site C is \$68 million, at \$3,901 million instead of \$3,969 million. There is no impact on the high load case as there is no surplus energy in that scenario.

The tables and figure in the Executive Summary would read correctly as follows:

Corrected Table on p. 7 of the Executive Summary:

Scenario	Rate Impact (\$ million)			Unit Energy Cost (\$/MWh)	
	A. Illustrative Alternative Portfolio	B. Site C	Difference (A - B)	Illustrative Alternative Portfolio	Site C
Commission Assumptions	\$3,234	\$2,852	\$382	\$32	\$44

Finding: The Panel confirms there is no change to its finding that “[a]s can be seen in the table below, the cost to ratepayers of Site C and the Illustrative Alternative Portfolio are virtually equivalent, within the uncertainty inherent in the assumptions.”

Corrected Site C Rate Impact Sensitivity Analysis on p. 16 of the Executive Summary



Finding: The Panel confirms there is no change to its finding that “For Site C, as seen in the graph above, the base case is completion costs of \$10 billion, BC Hydro’s mid load forecast and the Panel’s Mid C forecast assumptions. The inputs and assumptions that have the greatest impact on rates are the Site C total costs and the load forecast. The market price of surplus energy has much less impact on the costs to ratepayers.”

Corrected Sensitivity Analysis on page 17 of the Executive Summary

Scenarios	Rate Impact (\$'m)			Unit energy cost (\$/MWh)	
	A. Revised Illustrative Alternative Portfolio	B. Site C	Difference (A - B)	Revised Illustrative Alternative Portfolio	Site C
Commission Assumptions	\$3,234	\$2,852	\$382	\$32	\$44
Scenarios					
Medium load forecast	\$4,618	\$3,901	\$717	\$34	\$44
Medium load forecast + \$12 billion Site C cost	\$4,618	\$4,842	(\$224)	\$34	\$54
Low load forecast, \$12 billion Site C cost	\$3,234	\$3,793	(\$559)	\$32	\$54
Low load forecast + higher wind-geothermal financing	\$3,360	\$2,852	\$508	\$33	\$44
High load forecast	\$5,121	\$4,325	\$796	\$31	\$44
High load forecast, \$12 billion Site C cost	\$5,121	\$5,266	(\$145)	\$31	\$54

Findings: The Panel confirms there is no change to the paragraph introducing the sensitivity analysis: “The sensitivity analysis illustrates the effect of changing one input assumption at a time. To see the effect of changing more than one variable at a time, we provide a few sample scenario results below.”

The Panel also confirms there is no change to the paragraph immediately below the sensitivity analysis: “The Illustrative Alternative Portfolio indicates that it is possible to design an alternative portfolio of commercially feasible generating projects and demand-side management initiatives that could provide similar benefits to ratepayers as Site C.”

1.2 “Copy & Paste Error” in Table 43 (\$4.9 billion, -\$293 million)

Issue

In Table 43 in the Final Report, in the scenario “Medium load forecast + \$12 billion Site C cost”, Site C NPV should read \$4,911 million and the difference (-\$293 million).

Table 43: Summary of Sample Scenarios

Scenarios	Rate Impact (\$'m)			Unit energy cost (\$/MWh)	
	A. Revised Illustrative Alternative Portfolio ¹	B. Site C ²	Difference (A - B)	Revised Illustrative Alternative Portfolio	Site C
Commission Assumptions ³	\$3,234	\$3,188	\$46	\$32	\$44
Scenarios⁴					
Medium load forecast	\$4,618	\$3,969	\$649	\$34	\$44
Medium load forecast + \$12 billion Site C cost	\$4,618	\$4,129 \$4,911	\$489 (\$293)	\$34	\$54
Low load forecast, \$12 billion Site C cost	\$3,234	\$4,129	(\$895)	\$32	\$54
Low load forecast + higher wind-geothermal financing	\$3,360	\$3,188	\$172	\$33	\$44
High load forecast	\$5,121	\$4,325	\$796	\$31	\$44
High load forecast, \$12 billion Site C cost	\$5,121	\$5,266	(\$145)	\$31	\$54

Commission comments

The Panel confirms there was a copy and paste error in Table 43. The numbers should have been \$4,911 and (-\$293), therefore adding an additional scenario where the Alternative Portfolio is less expensive than Site C.

Finding: The Panel notes that these numbers are now outdated due to the need to correct the Mid C price forecast. The Panel also notes that the correction to Mid C price forecasts results in changes to a number of scenarios.

¹ Revised Illustrative Alternative Portfolio cost plus Site C termination costs minus exports revenues.

² Site C cost to complete less flexibility credit and export revenues.

³ Low Load Forecast, Panel Mid C market electricity price forecast, Site C total costs of \$10 billion, \$1.8 billion in termination costs amortized over 30 years, and BC Hydro financing for all resources in the Revised Illustrative Alternative Portfolio.

⁴ The five scenarios presented in this table start with using the “Commission Assumptions” and modifying one or two variables as described therein.

1.3 Other Corrected Tables and Figures in the Final Report

The following tables and figure in the Final Report would read correctly as follows:

Corrected Table 40: Cost to ratepayers and UEC of Site C (p. 167)

Output: Low LF - Site C		
A	Sunk Costs (F\$18)	\$ 2,100 million
B	Site C Cost to Complete (F\$18)	\$ 4,391 million
C	Flexibility Credit (F\$18)	\$ (66) million
D	Surplus Energy Sales (F\$18)	\$ (1,473) million
E	Total Rate Impact (B+C+D)	\$ 2,852 million
F	Volume (F18)	98,993
G	UEC (F\$18) (B/F)	\$ 44.35 per MWh

Finding: The Panel confirms that the paragraph below Table 40 should read: “The comparison in the tables above show that the cost to ratepayers Illustrative Alternative Portfolio has a lower UEC than Site C (\$31.64/MWh compared to \$44.35/MWh) but a cost to ratepayers slightly higher (\$3.234 billion compared to ~~\$3.188~~ \$2.852 billion for Site C).”

Corrected Table 42: Sensitivity Analysis of Site C (p. 169)

Site C
Base Case Rate Impact \$ 3,901 million

Input Variable	Low Value	Difference from Base Case	High Value	Difference from Base Case	Low Value	Base Case	High Value
Total Site C costs	\$ 3,383	\$ (518)	\$ 4,842	\$ 941	\$8,900 M	\$10,000 M	\$12,000 M
Load	\$ 2,852	\$ (1,049)	\$ 4,325	\$ 424	Low LF	Med LF	High LF
Market price of surplus	\$ 3,835	\$ (66)	\$ 3,962	\$ 61	BC Hydro RRA	Panel Mid C	Panel Mid C ABBLow

Corrected Figure 29: Site C Cost to ratepayers Sensitivity (p. 169)



Finding: The Panel confirms there is no change to its finding that: “For Site C, the inputs and assumptions that have the greatest impact on rates are the Site C total costs and the magnitude of the load. As with the Illustrative Alternative Portfolio, the market price of surplus energy has much less impact on the costs to ratepayers.”

Corrected Table 43: Summary of Sample Scenarios (p. 170)

Scenarios	Rate Impact (\$'m)			Unit energy cost (\$/MWh)	
	A. Revised Illustrative Alternative Portfolio ⁵	B. Site C ⁶	Difference (A - B)	Revised Illustrative Alternative Portfolio	Site C
Commission Assumptions ⁷	\$3,234	\$2,852	\$382	\$32	\$44
Scenarios⁸					
Medium load forecast	\$4,618	\$3,901	\$717	\$34	\$44
Medium load forecast + \$12 billion Site C cost	\$4,618	\$4,842	(\$224)	\$34	\$54
Low load forecast, \$12 billion Site C cost	\$3,234	\$3,793	(\$559)	\$32	\$54
Low load forecast + higher wind-geothermal financing	\$3,360	\$2,852	\$508	\$33	\$44
High load forecast	\$5,121	\$4,325	\$796	\$31	\$44
High load forecast, \$12 billion Site C cost	\$5,121	\$5,266	(\$145)	\$31	\$54

Finding: The Panel confirms that there is no change to the paragraph introducing the sensitivity analysis: “A summary of some sample scenarios is shown below.”

⁵ Revised Illustrative Alternative Portfolio cost plus Site C termination costs minus exports revenues.

⁶ Site C cost to complete less flexibility credit and export revenues.

⁷ Low Load Forecast, Panel Mid C market electricity price forecast, Site C total costs of \$10 billion, \$1.8 billion in termination costs amortized over 30 years, and BC Hydro financing for all resources in the Revised Illustrative Alternative Portfolio.

⁸ The ~~five~~-six scenarios presented in this table start with using the “Commission Assumptions” and modifying one or two variables as described therein.

Corrected Figure 32: Cost of Site C to Ratepayers of a Zero-Load Growth (p. 172)

Output		
A	Sunk Costs (F\$18)	\$ 2,100 million
B	Site C Cost to Complete (F\$18)	\$ 4,391 million
C	Flexibility Credit (F\$18)	\$ (66) million
D	Surplus Energy Sales (F\$18)	\$ (3,861) million
E	Total Rate Impact (B+C+D)	\$ 464 million
F	Volume (F18)	98,993
G	UEC (F\$18) (B/F)	\$ 44.35 per MWh

Finding: The Panel confirms that there is no change to the finding that “This illustrates that under current market value assumptions, not all of the costs of Site C would be recovered and that the surplus energy is therefore being sold “below cost.” However, if ratepayers need Site C energy, but don’t need it immediately, as with the low load forecast scenario and higher, surplus sales actually lower the cost to ratepayers of Site C.”