



## Site C – Frequently Asked Questions November 14, 2017

### MINISTER MUNGALL NEEDS TO HEED INDEPENDENT ADVICE

**Overview:** Despite the just released final report of the British Columbia Utilities Commission (BCUC) following its 3 month independent inquiry—in which the BCUC made important adverse findings against the case for Site C advanced by the former Liberal government and BC Hydro—NDP Minister Mungall reverted to relying on pro-Site C advisors to answer questions on Site C during Budget Estimates.

1. Who provided advice to Energy Minister Mungall on answers to questions on Site C during Budget Estimates?

Answer - Chris O’Riley and Les McLaren.

2. Who is Chris O’Riley?

Answer – He is BC Hydro’s President and Chief Operating Officer who advised the previous liberal government on proceeding with Site C. He described himself to the BCUC as being passionate in his support of Site C<sup>1</sup>.

3. Who Is Les McLaren?

Answer - He is an Assistant Deputy Minister who advised the previous liberal government on proceeding with Site C.

4. Does BC Hydro have a strong interest in continuing Site C? Answer – Yes.

BC Hydro has been pushing for the construction of the Site C dam since the 1980s.<sup>2</sup> The project was initially rejected in 1983, but, after decades of pursuing approval of Site C, the project was finally approved in 2014. In that time, BC Hydro failed to investigate and pursue alternatives it had been directed by BCUC to research, instead pursuing only the Site C option. BC Hydro has said that it does not have the core competency to build smaller alternatives.<sup>3</sup> BC Hydro management has staked its reputation on this project, claiming that its completion is the only way to satisfy the massive load they forecast.<sup>4</sup>

5. Was the independent British Columbia Utilities Commission (BCUC) (which just completed a 298-page report on Site C) consulted on the answers Minister Mungall gave to questions on Site C during Budget Estimates? Answer - No.

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<sup>1</sup> BCUC Transcript Oct 14 2017 p. 1677 ll. 8-12

<sup>2</sup> BCUC. Decisions and Reports. May 3, 1983. <https://www.ordersdecisions.bcuc.com/bcuc/decisions/en/item/112107/index.do>. Accessed: November 9, 2017.

<sup>3</sup> BCUC Technical Presentation Sessions, C. O’Riley (BCUC Transcript Oct 14 2017 pp. 1647-8 ll. 17-2)

<sup>4</sup> BC Hydro. BC Hydro Submission to the British Columbia Utilities Commission Inquiry into the Site C Clean Energy Project. August 30, 2017. Page 3.

**6. What did the independent BCUC conclude about BC Hydro's Site C submissions?**

**Answer - the BCUC concluded that:**

1. Site C is over budget and behind schedule. The BCUC estimates costs are now at \$10 billion.<sup>5</sup>
2. BC Hydro's load forecast is highly doubtful and the BCUC has recommended the use of the low forecast.<sup>6</sup>
3. The export assumptions are unrealistic. Again, the BCUC has recommended a much lower forecast.<sup>7</sup>
4. Wind, solar, and geothermal are realistic alternatives. Prices have declined significantly and will continue to fall.<sup>8,9</sup>
5. The alternative resources cost less and are more deployable.<sup>10</sup>
6. BC Hydro's planning methodology is undocumented and inaccurate.<sup>11</sup>
7. There is an excellent source of hydro-electric storage in the non-treaty storage agreement -- 25 times the storage of Site C.<sup>12</sup>

**7. Why is Energy Minister Mungall at this time relying only on advisors who are steadfast in their support of Site C? Answer - Don't know.**

**RATE IMPACTS FROM COMPLETING OR TERMINATING SITE C**

**Note to reader:** the answers to these questions have been prepared in consultation with independent international energy expert Robert McCullough<sup>13</sup>.

**8. How much will electricity rates increase under Site C vs. a portfolio of wind power?**

**Answer – Electricity rates will increase by almost seven times as much if we build Site C compared to wind power.**

*\*It is important to note for the purposes of this analysis, that the BCUC adopted the low load forecast, submitted by BC Hydro, in their final report. Should they have been permitted to do so, they may have found an even lower load forecast was most likely.*

Using BCUC validated assumptions, energy expert Robert McCullough estimates that electricity rates will increase in 2024 by 5.7%, or \$267 annually per household, if Site C is completed.

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<sup>5</sup> BCUC Final Report. Page 121.

<sup>6</sup> Ibid. Page 43.

<sup>7</sup> Ibid. Page 94.

<sup>8</sup> Ibid. Appendix A. Page 19.

<sup>9</sup> Ibid. Appendix A. Page 32.

<sup>10</sup> Ibid. Page 153.

<sup>11</sup> Ibid. Page 130.

<sup>12</sup> Ibid. Appendix B. Page 7.

<sup>13</sup> Technical experts are invited to contact Robert McCullough for a detailed walk through of his analysis.

This 5.7% increase to complete Site C is on top of the rate increase of more than 24% in the last four years, and the increase of more than 70% since 2001. This also doesn't account for other unforeseen factors, which could push electricity rates even higher.

Accordingly, BC Hydro's rate increase estimate of 10% for cancelling Site C is inaccurate.

If the BC government intends to put BC Hydro on a sound financial footing and not fall prey to the sunk cost fallacy, the financially prudent course of action is for the provincial government to assume the sunk and termination costs of \$3.9 billion for Site C. To do otherwise is to punish ratepayers for existing poor Site C investments.

Adopting BCUC's alternative portfolio and excluding sunk and termination costs from the analysis (see question 10), Robert McCullough estimates that electricity rates will increase by 0.84% or \$39 per household in 2024.

**To put it another way, electricity rates will increase by almost seven times as much if we build Site C compared to wind power.**

Importantly, by increasing the focus on conservation programs (also known as demand side management, or DSM), BCUC finds there is no need for major new energy capital infrastructure until 2039. This compares to the current plan to bring Site C on stream in 2024.

**9. Are there steps the BC Government can take to minimize or eliminate the impact on electricity rates of terminating Site C? Answer – Yes.**

The best way to minimize or eliminate the impact on electricity rates of terminating Site C is to:

- a) build a portfolio of renewables which will be much lower cost and can be built when increased energy demand arises, and
- b) transfer the \$3.9 billion onto the books of BC's direct provincial debt<sup>14</sup>.

We should be making this decision based on the overall impact on present and future ratepayers. This should not be about minimizing the rate increase on current ratepayers, only to foist a big rate increase from a \$10-\$12 billion project on our kids.

It's important to remember that nobody is recommending that the BC government simply terminate the project without replacement. Terminating the project and replacing it with utility-scale wind and other alternatives will, overall, save ratepayers \$3 to \$4.5 billion over completing the project. To either pause or complete the project are the worst-case options for ratepayers.

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<sup>14</sup> Justine Hunter, Globe and Mail; BC Hydro feels revenue squeeze while NDP commits to rate freeze, November 8, 2017; <https://beta.theglobeandmail.com/news/british-columbia/bc-hydro-feels-revenue-squeeze-while-ndp-commits-to-rate-freeze/article36889306/>

## **OTHER KEY QUESTIONS REGARDING SITE C**

**Note to Reader:** The answers to these questions have been prepared in consultation with independent international energy expert Robert McCullough.

- 10. As reported by Vaughn Palmer on November 8<sup>15</sup>, Energy Minister Mungall acknowledges there are risks with a portfolio of alternative energy projects to replace the need for Site C. Are there more and greater risks associated with completing Site C?**

**Answer - Yes, please refer to BCUC Site C Inquiry Executive Summary, Page 9.**

- 11. Is there a clear justification for the independent BCUC to base energy cost comparisons between Site C and alternatives on the low end of the range of Hydro's load forecasts?**

**Answer - Yes.**

Please refer to BCUC Site C Inquiry Executive Summary, Page 11. Importantly BCUC noted that although it was outside their terms of reference, there is a risk that the level of actual demand for electricity may be even lower than the low load forecast.

- 12. As reported by Vaughn Palmer on November 3<sup>16</sup>, is it necessary to spend \$750 million to upgrade cross border transmission lines to use the BC entitlement to power under the Columbia River Treaty?**

**Answer – No, the necessary transmission grid is already in place.**

- 13. As reported by Vaughn Palmer on November 8<sup>17</sup>, are BC Hydro and Energy Minister Mungall correct that BC Hydro will not be able to access Mica Dam storage to meet BC energy needs because it is slated for major refurbishment that will reduce its output by 400 megawatts for six years starting in 2025?**

**Answer - No.**

Under the BCUC approved load forecast, BC does not need wind power until 2039 by which time the refurbishment will be complete.

Refurbishment of Mica is relatively insignificant since Mica stores the water, but the vast majority of generation takes place in the U.S. The Mica refurbishment affects only 1.6% of the downstream capacity.

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<sup>15</sup> Vaughn Palmer, Vancouver Sun; Energy Minister Reveals Plenty on Site C during estimates debate, November 8, 2017; <http://vancouver.sun.com/opinion/columnists/vaughn-palmer-energy-minister-reveals-plenty-on-site-c-during-question-period>

<sup>16</sup> Vaughn Palmer, Vancouver Sun; Columbia River Treaty interesting option as NDP ponders Site C; November 3, 2017; <http://vancouver.sun.com/opinion/columnists/vaughn-palmer-columbia-river-treaty-interesting-option-as-ndp-ponders-site-c>

<sup>17</sup> Vaughn Palmer, Vancouver Sun; Energy Minister Reveals Plenty on Site C during estimates debate, November 8, 2017; <http://vancouver.sun.com/opinion/columnists/vaughn-palmer-energy-minister-reveals-plenty-on-site-c-during-question-period>

**14. Will Site C be on budget? Answer - No.**

The BCUC now estimates that Site C will cost \$10 billion because of an estimated \$1 billion cost overrun largely to address geotechnical tension cracks in the slopes at the site (\$377 million as of the Deloitte Report and an additional \$610 million now).

BC Hydro's President and Chief Operating Officer, Chris O'Riley, says there is a real risk that costs will go even higher.

Deloitte LLP, the independent advisor to the BCUC, says that the final cost may be as high as \$12 billion, or 45% over budget.

**15. Do we need the power from Site C? Answer – No.**

Contrary to BC Hydro's submissions, extensive testimony before the BCUC clearly demonstrates that:

- a) demand for electricity will not increase by the up to 40% claimed by BC Hydro;
- b) surplus power from Site C cannot be sold at a profit on the US export market, as claimed by BC Hydro;
- c) energy conservation programs are being scaled back by BC Hydro;
- d) the BCUC has determined that the Canadian Entitlement power from the Columbia River Treaty (equal to Site C's) is a dependable resource.

Deloitte LLP concluded that BC Hydro has historically overstated forecast vs. actual electricity load growth by 30% on average.

Other key points:

- Site C is not needed for electric vehicles because charging will occur primarily in off-peak hours.
- Demand from the pulp and paper sector is dropping rapidly as the move to digital media continues.
- LNG energy demand will be limited because it is much less costly to burn natural gas to power LNG operations and still meet the climate change targets set for BC LNG.
- If potential LNG projects require electricity from Site C, the price of Site C electricity will need to be deeply discounted with BC ratepayers picking up the difference.
- Alberta has access to much less costly electricity than Site C and so any export of energy or capacity to Alberta will need to be heavily subsidized by BC ratepayers.

**16. Is there a less costly alternative to Site C? Answer – Yes.**

We will likely need power at some point in the years after 2024 when Site C is projected to come on stream. When we do, a portfolio of wind power is a much less costly alternative to Site C.

Based on BCUC findings and proposed treatment of the \$1.8 billion in reclamation costs, Energy Expert Robert McCullough estimates that the replacement of Site C with DSM and wind power will save BC ratepayers between \$3.0 and \$4.5 billion.

**This is close to a CAN \$1,000 savings for every adult in British Columbia.**

<b>Comparison of Alternatives:</b>				
	<b>Site C</b>	<b>Commission Scenarios</b>		
		<b>Low LF</b>	<b>Medium LF</b>	<b>High LF</b>
<b>Original Cost</b>	<b>\$ 8,775</b>			
<b>Plus, Cost Overrun</b>	<b>\$ 1,225</b>			
<b>Minus, Sunk Costs</b>	<b>\$ (2,100)</b>			
<b>Cost of Continuation</b>	<b>\$ 7,900</b>	<b>\$ 1,995</b>	<b>\$ 3,253</b>	<b>\$ 3,522</b>
<b>Termination Cost</b>		<b>\$ 1,395</b>	<b>\$ 1,395</b>	<b>\$ 1,395</b>
<b>Actual Cost</b>	<b>\$ 7,900</b>	<b>\$ 3,350</b>	<b>\$ 4,648</b>	<b>\$ 4,917</b>
<b>Termination Dividend</b>		<b>\$ 4,550</b>	<b>\$ 3,252</b>	<b>\$ 2,983</b>

**17. Does the BCUC report find that the alternative energy portfolio cost is too high?**

**Answer – No.**

Not only is the alternative energy portfolio cost lower than that of Site C, Robert McCullough predicts an even lower estimate by using the less expensive option to firm and shape wind – the non-treaty storage available at the Mica Dam.

**18. Does the BCUC find that there are significant risks with the alternative energy portfolio so we may never see the savings Robert McCullough predicts?**

**Answer – No.**

The risks are manageable. Unlike Site C, which is at a high risk of going over budget, the risk that the alternative energy portfolio will come in over budget or under capacity is small.

**19. Could we benefit from combining Site C with an alternative energy portfolio?**

**Answer – No.**

Appendix B to the BCUC final report determines that the Canadian Entitlement power from the Columbia River Treaty is sufficient to eliminate any need for Site C.

The BCUC and Deloitte LLP have also identified alternatives that are the same or lower cost than Site C.

Most importantly, the BCUC has identified the low load forecast as the most likely scenario. The report also points out that the risks are much higher that Site C will not come in on budget than the risk of wind energy benefits not being fully realized.

For example, while the BCUC says there is a risk that wind costs will not be as low as they forecast, the evidence from actual transactions across North America incorporated into the Lazard estimates indicate otherwise.

**20. We know that the wind will not always be blowing when we need the power. What will back-up the wind power?**

**Answer – There are numerous options other than Site C.**

Here are three of the options:

1. BC already has some of the largest reservoirs in North America which can be used to back-up wind. Importantly, BC Hydro's own submissions have made clear that Site C's storage – only 4/10ths of 1% of Williston - is incapable of supporting seasonal operations.
2. We could build geothermal power to back-up wind. The Canadian Geothermal Energy Association (CanGEA) presented convincing evidence to the BCUC that geothermal is a viable low-cost solution.
3. BC will have access to an extra 2.5 million-acre feet (MAF) of backup storage at the Mica dam in 2024 when BC Hydro says we will need more power (this is due to the Columbia River Non-Treaty Storage Agreement ending, putting this storage capability back into the BC Hydro reserve). This is 25 times the backup storage provided by Site C. The opportunity cost of this new energy backup is estimated to cost only \$125 million, a small fraction of the cost of Site C.

Other options include re-activating Burrard Thermal gas generated power for peak power needs, instead of exporting natural gas to other jurisdictions. Amendments to the Clean Energy Act could open up still further options.

**21. Do estimated savings from wind power compared to Site C take into account indirect costs, such as getting power to the grid and the cost of maintenance and replacement of wind turbines after 25 years?**

**Answer – Yes.**

The \$3.0 to \$4.5 billion savings estimate prepared by energy expert Robert McCullough based on BCUC findings takes indirect costs into account. This is an “apples to apples” comparison.

**22. Should the BC government still terminate Site C when it means we will have nothing to show for the \$3.9 billion we have spent so far?**

**Answer – Yes.**

Spending another \$8+ billion over the next 7 years is a case of “throwing good money after bad.” It is settled economics that such costs should not be taken into account when making spending decisions. The technical term for this is the “sunk costs fallacy”.

Importantly, even if the \$2.1 billion in sunk costs and \$1.8 billion in termination costs are taken into account, BC ratepayers will still save billions by terminating Site C. This savings could be used for other pressing capital infrastructure needs.

We cannot give the termination dividend (CAN \$1,000 savings for every adult) to British Columbians otherwise.

**23. Is the economic case for terminating Site C overwhelming?**

**Answer - Yes.** There are savings in the billions for BC ratepayers from termination of Site C even if:

- The BC Hydro unsupported high load forecast is used
- Sunk costs are included
- Existing storage is reserved for export markets

**24. Are there sources of energy other than Site C in British Columbia that could be significantly expanded at lower cost, that are in response to rather than in advance of actual needs, and are less environmentally destructive?**

**Answer - Yes.** There are numerous viable low-cost options, including but not limited to:

- Wind
- Geothermal
- Solar
- Demand Side Management (DSM) – also known as energy conservation

**25. Are there other non-economic reasons to terminate Site C?**

**Answer – Yes, numerous reasons.**

- Upholding the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) - Site C does not have the consent of First Nations who are most impacted.
- Preserving agricultural land in the Peace Valley that was exempted from a review by the Agricultural Land Commission, and enabling these lands to realize their full agricultural potential.
- Avoiding permanent adverse impacts on the Treaty Rights of First Nations including West Moberly First Nation and Prophet River First Nation.
- Transitioning current Site C workers to other quality job opportunities in growing sectors including renewable energy and to address other priority infrastructure building for BC.
- Avoiding adverse environmental impacts as detailed in the Joint Provincial/Federal Review Panel Report on Site C.
- Avoiding downstream impacts on the sensitive ecosystems and traditional lands of the Mikisew Cree.
- Like other jurisdictions in North America, BC needs to move away from outdated hydroelectric technology and pursue 21<sup>st</sup> century low cost alternatives, which are deployed when needed such as climate friendly wind, solar, and geothermal.



**26. Does terminating Site C put in jeopardy the ability of British Columbia to meet its climate targets or deal with electrification?**

**Answer - No.**

The BCUC found that Site C is not needed under the most likely load forecast which included consideration of climate change targets and electrification. If it turns out the BCUC is wrong, then the lowest cost solution is to build wind power and other renewables to meet new demand as it arises. As noted in question #20, BC has numerous options to back up intermittent resources.

**27. Will British Columbia lose its Triple-A rating by terminating Site C?**

**Answer – No.**

- British Columbia has the highest available credit rating because of its strong financial management, its strong economy, and its record of balanced budgets. These economic fundamentals are not expected to change.
- British Columbia will be able to readily demonstrate to rating agencies that repayment over time of the \$3.9 billion cost of cancelling Site C will not unduly impact financial ratios such as debt to GDP which guide the rating decision.
- By cancelling Site C, British Columbia avoids a much bigger risk to its Triple-A rating – the debt that comes with a project that will be well over budget.
- **Most importantly, borrowing under the alternative power generation scenarios will be far less.**