

October 18, 2017

Dear Panel members,

My comments responding to your proposed portfolios are not technical. I am heartened to see BCUC consider for itself what a possible alternative portfolio might look like to meet a defined output over a defined period of time and to attempt to cost this compared to Site C.

BC Hydro's singular perspective found that out of 60 alternative scenarios reviewed none showed any potential except the one they had already supported. Their assessment of scenarios conveniently omitted the chief value of alternatives - the saving from harm of the environment, farmland, FN treaty rights, biodiversity/natural capital etc. I am concerned that the assumptions in the BCUC proposed portfolio are missing this and other key values that are harder to capture in monetary terms inside the constraints of the portfolio presented. I am concerned that the sample portfolio BCUC presented may become the de facto definition of alternative portfolios compared to Site C.

My comments attempt to address the risks associated with trying to identify a portfolio right now to address a need which does not exist inside a timeframe that is consistent with building a dam even though a chief characteristic of alternatives is a short time frame from identified need to implementation.

The alternative portfolios BCUC presented may well represent the best and brightest option of the many potential portfolio options. I would also propose that utility grade solar, plus much deeper and more broadly implemented DSM would offer competitive advantages as well.

The Wind + DSM portfolio misses the principle of diversity and the importance of having a diversified portfolio. The real value of alternatives lies in having a diversity of alternative options to suit the need not just one size fits all. Diversity means flexible and adaptive capacities of size, location, suitability, timeframe, including cost advantages of technological improvements and cost reductions over the years. Diversity also means

that negative impacts are dispersed and thereby less likely to fall so heavily on any one FN, or one wetland, one farming area and can be situated so as to avoid the worst harms. For this reason I would urge caution in drawing hard conclusions regarding relative costs of Site C and alternative portfolios.

A number of risks and values are not accounted for in the assumptions:

- If SiteC is built opportunities for innovation and alternative technology and associated economic and employment benefits are dead for the foreseeable future. This is one of the biggest and most poorly explored risks. Technological innovation is still developing and the opportunities for cheaper better alternatives has yet to become mainstream. Assumption 16 is a case in point. Developments in battery technology are just beginning to lower cost and increase capacity such that this assumption is very likely an over-estimate already.
- Even though BCUC's portfolio specifically excludes the question of selling excess electricity there remain significant risks associated with the increased likelihood of having to sell large amounts of excess expensive SiteC electricity. The comparative benefits of developing capacity to more accurately meet demand, are not accounted for in the assumptions as a credit in the alternative portfolios with the result that cost comparisons in the spreadsheet are unrealistic.
- SiteC has been characterized as a long lived "asset". This view doesn't account for predictable impacts of technological innovation driving down cost and improving efficiency and the huge risk of SiteC becoming an expensive stranded asset and the public burdened with the debt. Assumptions 10 and 13 do not reflect this understanding and thereby risk overestimating future costs of alternatives. A review of Tony Seba's June 2017 video alarmingly explains how this risk applies. If even half of his modelled projections are realized in BC we will not be thankful to have Site C dam.

Finally, I would challenge Assumption 21 re GHG emissions. Recent research has identified gaps in knowledge about GHG emissions from large dams with new assessment tools discovering significantly higher levels than previously reported. Researchers continue developing more

thorough and accurate measurement techniques and technologies. New understandings indicate concern not just with methane from decaying vegetation which has been seen as shorter term but now identify larger emissions from soil erosion and the loss of biodiversity created by the killing effects of unnatural water level fluctuations. These latter emissions occur over a much longer timeframe. This is particularly troubling given the unstable geology of the Peace Valley and makes assumption 21 invalid in my view.

In addition, there is a lack of understanding about climate change and carbon storage in landscapes. for example: The Mikisew Cree have identified the acute danger of the Peace Athabasca Delta drying out in terms of climate change. (Nobody has done the carbon math for the PAD that I know of but to get an idea of the magnitude one could extrapolate from methane emissions from other wetlands being lost.) Again, I challenge assumption 21 that Site C is clean energy and that alternatives would be comparable.

Thank you for your attention to my submission. References regarding GHG emissions and Tony Seba are below.

Sincerely,
Lynn

D Lynn Chapman



re GHG emissions

[https://academic.oup.com/bioscience/article/66/11/949/2754271/
Greenhouse-Gas-Emissions-from-Reservoir-Water](https://academic.oup.com/bioscience/article/66/11/949/2754271/Greenhouse-Gas-Emissions-from-Reservoir-Water)

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re Tony Seba

<https://www.youtube.com/watch?v=BYimTOuj3GY>