BCUC Site C "Political Project" Inquiry Public Presentation – Sept 23,2017
THIS IS NOT A CLEAN ENERGY PROJECT and
MUST BE IMMEDIATELY TERMINATED, saving $200 Million by December 31st, 2017.

Roger Bryenton, P. Eng. (former), MBA

DELOITTE REPORTS ON SITE C Documents A-8, 116 pages, and A-9, 139 pages

1. **Cost to "Suspend**" = $1.4 Billion (Table 3, page 4), Cost to "Terminate" = 1.2 Billion, (Table 4, page 4). **This is not entirely accurate**. Given that there are "significant schedule and cost pressures", from Table 1, page 2, meeting the diversion schedule there is a risk of an additional 10% cost, or $900 million; missing the diversion by one year, a risk of a 20% increase, or $1.7 Billion. Including the "risk" costs, means that the cost to Terminate could actually be an additional benefit, costing $1.2 but saving between $900 million and $1.7 billion, thus **actually having a net "cost" between $300 million, and saving $500 million, in addition to savings of $4.5 Billion.**
2. **Cost to Terminate Error** – The cost to terminate is in error by 20%. It is not $2.1 Billion, as a 30% contingency was used, whereas BC Hydro used a 10% contingency for the entire project. **The corrected Termination Cost using a 10% contingency is actually $1.9 Billion**, saving $186 million.
3. **Additional "Cost to Terminate" error** – as per 25 and 26 above, with an additional $600 million identified by BC Hydro recently, approx Oct 6th, Termination will save that additional $600 million. **Thus the net cost will be $1.0 Billion - 600 million = $400 million** or less, if additional cost-overruns were to occur.
4. Report – A-9, Alternatives to Site C. Deloitte failed to identify "**existing trade power",** retaining power presently sold at market, an average of 3,700 GWh/year over the past 3 years. Deloitte failed to identify the **400MW of operational capacity savings**, which BC Hydro has not included in their calculations either.
5. A-9, Page 3 – "Additional Scenarios" (to the base case) were not provided, thus an "optimum mix" of DSM and new supplies could not be determined. Roger Bryenton's analysis and spreadsheets do include such options, including Columbia Treaty, Burrard Thermal (not required), "trade" power, operational load shedding and are important factors to inform BCUC of the benefits, of **no need for Site C**.

BCUC SITE C INQUIRY

In addition to comments on the excellent Deloitte Reports, I feel compelled to comment on F-1-1 the BC Hydro Submission, attempting to justify Site C, and still not seriously considering alternatives:

6. BCUC Inquiry BC Hydro Submission – F-1-1 This document is "Appalling"; 860 plus pages of drivel and justification for Site C. What was the cost of this?

NEED FOR ELECTRICITY AND SUPPLIES OF ELECTRICITY

7. The assessment of **NEED** for Site C MUST be based upon **RATIONAL** decision-making criteria, not political whim or decree. Government decrees, Order-in-Councils, and legislation such as exclusion of resources to ensure that Site C is needed, or "electricity self-sufficiency" must be reversed as there is no rational reason for such restrictions on the production and use of electricity. Thus the following factors need to be considered and accounted for:
   - "Trade" electricity, roughly 10% of BC's production used first for domestic use, rather than sold at $20 to $30/MWh.

-Columbia Treaty electricity, roughly equivalent to Site C, be re-patriated as "BC Power" and used instead of Site C.
-Burrard Thermal be included in option portfolio as it is an existing facility ideally located for rare use to meet exceptional demand, or emergency supplementation.
-400MW of "operational Load Shedding" is ignored, since BC Hydro states "it is not a reliable source".
-"Deep DSM" or DSM 5 be rigorously applied as an alternative to new supply. According to IRP 2013, RODAT, the DSM costs are in the order of $50/GWh vs Site C at over $100/MWh; double Site C's output

Updated cost information is IMPERATIVE for geothermal and solar resource options. Either BC Hydro is negligent in not updating cost data, or they are intentionally misrepresenting costs, as CanGEA have repeatedly provided accurate, timely data. Similarly, solar costs for recently contracted power have been in the order of $100/MWh equivalent, well below the delivered cost of Site C electricity.

ERRONEOUS AND MISLEADING INFORMATION IN THE DOCUMENT

Specific Examples of the **misleading and erroneous information** provided by BC Hydro, F-1-1:

8. **This is an outright lie** - "There are no other portfolios of alternative resources that could provide similar benefits to ratepayers at similar or lower cost to Site C. A resource portfolio that includes Site C is the lowest cost." – Executive Summary, 1.3, page 4.
9. Section 5 – Page 40 – "Meeting dependable capacity needs will continue to be one of our most pressing concerns for years to come;". **Misleading**, this is not true, reference Roger Bryenton Analysis.
10. Item 6 – page 41 ," These are the "firming; shaping; storage; grid reliability" benefits referenced in the Terms of Reference, and Site C is unmatched in this regard by any alternative resource". Again, **misleading** as the existing dams and reservoirs are suited to this.
11. **Misleading or incorrect manipulation of cost data**…. Remove $26 for "debt finance"?? – p.62
12. Numerous **misleading** references to "Clean"," lowest cost" throughout Sections 6,7 and 8.
13. Appendix K, Tables K-1 to K-4 - **Nonsense and misleading** … no listing of "Trade", no "Planning" aspects or elements evident in the document, merely a listing of the same "deficit of resources" to try to justify Site C.
14. Appendix L – Resource Options – Appalling - **Where is "Trade" electricity**, Columbia Treaty, Burrard Thermal. Geothermal – especially after serious input from CanGEA!
15. DSM – Supported to $50/MWh! Yet Site C is over $100/MWh. Appendix L, page 9
16. **Extensive, expensive transmission** projects, Appendix L – 58 can be **deferred** with DSM reducing loads on transmission network.
17. **No mention of operational 400 MW of load shedding**.
18. Appendix Q-page 5. No mention of **"Trade"** electricity… This is **entirely misleading.**
19. **Appendix Q-page 7, 9, 15, 21, 28. Clearly shows there are alternatives, with Site C terminated.**
20. **De-Commissioning Costs** – there is no mention of the cost of eventual decommissioning of the Site C dam, which must be included to compare various options "costs".
21. **Dam Safety, Geophysical and Geological unknowns**. Various technical studies as well as experience on site indicate "geological unknowns" with the sedimentary rocks and valley formation, which may contribute to substantial cost increases.
22. **"Lost Value" costs** – these have been **totally ignored**. The forgone loss of forest and agriculture income potential due to flooding of the Peace valley. The agricultural value has been estimated to be from $160 million to $250 million per year, based upon Dr. Wendy Holms

and Mr. Randal Hadland's calculations, (included in my written submission). This would indicate a present value in the order of $2.6 to $4 Billion, about 1/3 to ½ of Site C.
Forestry values can be estimated from the overall BC forests value of $7.9 Billion from 200,000 ha of harvesting area, or $39,500/ha. For the flooded area of 2641 ha, the lost value of the timber and forestry products would be $ 101 million.
Sales of electricity at $30/MWh, mid-C Market, would be only $153 million/year. **Site C is clearly a financial disaster by comparison to intensive agriculture and forestry.**

23. "**Ecological Services**" of the Peace River Valley – "Carbon sequestration" at $6.7 to &.9 Billion per year, with "water supply, flood and erosion control, air filtration, habitat for wildlife and pollinators, and other benefits" worth another $1.2 Billion/year as identified by the David Suzuki Foundation , far exceeding the "value" of electricity from Site C.
24. Ratepayer Impact – Appendix R-pages 1, 3 and 6. Again **misleading calculations**. Ten year recovery, yet if Site C were built, it would take 70 years. **Not comparable. Why not 20, 50 or 70 years? All Site C costs are 70 years, yet terminate is only 1,5 or 10 years, and DSM is 15 years. How long does re-insulating an electrically heated home last? Absurd comparisons!**
25. **Appendix p, page 3. This is backwards:** The "total projected revenue requirement over the fiscal 2018 to fiscal 2094 period is estimated by escalating current customer average rates (by customer class) by <u>assumed future rate increases</u>, and then applying these rates to forecast sales (by customer class) volumes subject to rate increases. <u>The result is an estimate of the total revenue requirements subject to rate increases over time</u>".
26. No, this is not correct. The future rate increase needs to be calculated by taking the least-costly mix of DSM, new supply and reduced operating expenses and determining how much that needs to be reduced in order to not increase rates faster than the overall rate of inflation. **We are no longer in a "build it bigger" mentality and culture.**
27. Appendix R, Attachment 1,page 1. "The escalating-rates line into the heavens" – roughly equal to the rate of inflation … **misleading**, is this to scare us? Why is inflation not charted for comparison?
28. How does the "escalating rates of Site C" compare to recovery of deferral and regulatory accounts to date? What is the cumulative result? What amortization period will be used?
29. Appendix S – page 1, more **misleading or lying**: "there is the potential that a new generation addition, such as Site C, may not be needed to serve domestic load at the time it comes online." It is well established that all the output of Site C will not be needed for domestic load! **BC Hydro cannot be trusted to provide accurate, unbiased calculations or written material.**
It is very disappointing with a new President and CEO that such material is still being issued which is misleading and with lies involved!
30. Appendix T- page 1. More **misleading** information. "BC Hydro's successful track record at estimating project costs". This is misleading because there have been recent projects which have gone way over budget! **This "Inquiry" document sounds like a "sales and promo pitch", not a technical objective evaluation!**
31. Appendix T – pages 1 and 8 **– Misleading Cost Escalation** – "**BC Hydro's Successful Track Record at Estimating Project Costs". Is this an objective technical analysis or a "sales and promo opportunity"?**
In 1981 the cost was estimated to be $1 Billion. Escalated for inflation, that would be $3 Billion presently. In 2007 – BC Hydro's estimate increased to $ 6.6 Billion. Allowing for inflation, based on the original estimate, it should have been $2.1Billion (in 2007). A "Successful Track Record"? What about major cost overruns on Transmission lines which they continuously build?

ACTIONS NEEDED

1. Revise the "Clean Energy Act" which artificially supports Site C, by excluding Columbia River Treaty, Burrard Thermal, Self-sufficiency requirement.
2. Houseclean BC Hydro. Establish new mission and culture, to go from "builder" to "facilitator"; working with customers for mutual benefit. Change senior through mid-management to facilitate cultural shift and corporate focus.
   BCH Management must be replaced, as **this misleading information is professional misconduct**!
3. Defer capital projects to reduce costs: 40% annual capital expenditures with no sales increase?
4. Focus on DSM to defer additional supply resources. Investigate what the practical limits to DSM actually are. How can the smart meters be used to increase DSM – water heater loads, clothes dryers, fridges, hot tubs/spas, floor heat, etc?
5. Require rate increases to be equal or less than the rate of inflation.
6. Address geothermal knowledge deficiency. Institute pilot program in NE BC.
7. Review BCUC role, competencies and ability to over-rule BC Hydro, and direct BCH to change cultural attitude to "facilitator". With BC Hydro "building less", rate increases can be moderated.
8. Establish a "minimalization" mentality (vs. growth mentality) in BC Hydro, to better manage existing and future resources, and influence demand. "How much can we reduce the load and costs", rather than "how can we increase supply and revenue"? Right now, BC Hydro spend 40% of the revenue on "new projects" – transmission, etc. "Builders" and "Spenders".

SUMMARY – this is "Our " utility and we want change! Stop Site C NOW. Don't wait another 3 months, or 100 days to decide, and waste another $200 million!

Submissions F-6 by Roger Bryenton, Relevant "Cost" information.

In the Submissions to BCUC F-6 by Roger Bryenton, the section on "Jobs" as related to "Costs" was included, as employment concerns for existing workers at Site C is certainly a "cost" factor. Details of the solution to continuing employment for existing workers were provided, to clearly demonstrate that "loss of jobs" need not occur, as there are ample opportunities for employment as detailed.

Similarly, the "cost" to First Nations must be addressed, and has not. What is the "cost" of a lost culture? Can it be relegated to a strictly "financial" base, or is it much broader, and if so, how can it be dealt with in terms of "cost-benefit" analyses, particularly when there are no financial benefits to the Site C project.

The "cost" of flooding a potentially intensive agricultural area has not been identified adequately, and must also be determined. Initial estimates indicate hundreds of millions per year.

The "cost" of restoring the valley has been projected to be over $1 billion. However, this may be a "hypothetically high number", so that continuing with Site C would be easier to justify. It is suggested that the Peace River area community be involved in developing a lower and more realistic number, identifying local contractors and organizations that would be prepared to participate in restoration activities to minimize the cost.

Experience – Roger Bryenton was a Professional Engineer, with a Masters of Business Administration, and extensive knowledge and experience of over 40 years, specializing in domestic and international energy systems analyses and consulting, conservation and renewable energy applications, energy use

audits and analyses, water resources and uses, hydrology, environmental impacts, a submitter to energy related planning and hearings and as an IPP partner.

Respectfully Submitted to BCUC Site C Inquiry, Community Input Session, Sept 23, 2017
Roger Bryenton, P. Eng. (former), MBA [redacted]