

British Columbia Utilities Commission

**Site C Inquiry
Order G-120-17
BCUC Project No. 1598922**

**Submission of
B.C. Sustainable Energy Association**

August 30, 2017

William J. Andrews, Barrister & Solicitor
1958 Parkside Lane
North Vancouver, BC, V7G 1X5
Phone: (604) 924-0921
Fax: (604) 924-0918
Email: wjandrews@shaw.ca

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Part I – INTRODUCTION

1. This is the submission of the B.C. Sustainable Energy Association (BCSEA) to the B.C. Utilities Commission in the first phase of the Site C Inquiry. These submissions are filed by August 30, 2017 in accordance with the regulatory timetable established by Order G-120-17 dated August 9, 2017.¹
2. BCSEA is a non-profit association of citizens, professionals and practitioners committed to promoting sustainable energy, energy efficiency and energy conservation in British Columbia. BCSEA has five chapters across B.C. and approximately 500 individual and corporate members. BCSEA works toward the province's transition to a lower-carbon economy. Many members of BCSEA are ratepayers and potential ratepayers of BC Hydro.
3. BCSEA's interests in this inquiry proceeding are as a non-profit public interest energy policy organization, and as a representative of its members' interests as ratepayers.
4. The Commission's Site C Inquiry was established pursuant to the Lieutenant Governor in Council's August 2, 2017 OIC 244/2017 under section 5 of the *Utilities Commission Act*.
5. August 30, 2017 is also the deadline established by Order G-121-17² for BC Hydro to file evidence on the inquiry topics. As a result, BCSEA's current submissions are made without an opportunity to know and respond to BC Hydro's evidence.
6. This submission is focused on the narrow scope of this inquiry, which is limited to the financial consequences of three mutually exclusive options: completion, suspension and termination of the Site C project.
7. It is understood that following its receipt of the Commission panel's report scheduled for November 1, 2017 the Government will determine which Site

¹ Exhibit A-2.

² Exhibit A-3.

C option (completion, suspension or termination) will be pursued. This submission does not address which of the completion, suspension or termination options should be selected by the Government. However, BCSEA takes this opportunity to emphasize that in making its decision about the future of the Site C project the Government should take into account not only the financial consequences of the three options but also other important factors that are beyond the scope of this inquiry.

8. For the record, BCSEA believe that the inquiry's three-month timeframe, mandated by Cabinet order, is unrealistically short given the complexity and importance of the financial consequences of the three Site C options. The aggressive time constraint will challenge the Commission's ability to produce an accurate and credible result. Nevertheless, BCSEA will do what it can to contribute to a successful outcome of the inquiry.
9. For context, Part II of this submission sets out BCSEA's position on the Site C project prior to its approval in December 2014. Part III identifies the inquiry questions and constraints mandated by OIC 244/2017. Part IV briefly addresses the Commission's inquiry process. Part V contains BCSEA's analysis of key issues, set out in the order of the inquiry questions. Following a short conclusion in Part VI, there is a list of BCSEA's comments and recommendations with links to the paragraphs in which they are discussed. Attached as Appendix A is a copy of an April 29, 2015 email message from Les MacLaren to Thomas Hackney.

Part II – BCSEA POSITION PRIOR TO APPROVAL OF SITE C PROJECT

10. Prior to the Site C project being approved by the B.C. government in December 2014, BCSEA took the position that Site C should not be approved prior to a full public review of the Site C project and BC Hydro's long-term plan by the Utilities Commission. The 2010 *Clean Energy Act*, s.7, had exempted BC Hydro from the requirement to obtain a Certificate of Public Convenience and Necessity from the Commission for the Site C project. And, s.3 of the *CEA* exempted BC Hydro's long-term resource plan

from review by the Commission under s.44.1 of the *Utilities Commission Act* and required BC Hydro to submit its integrated resource plan to the minister of energy for approval by the Lieutenant Governor in Council.

11. In a lengthy analysis dated December 10, 2014,³ BCSEA said that it would be financially imprudent for the government to approve Site C based only on BC Hydro's own in-house cost estimate. BCSEA said the estimated cost of such a large project as Site C should be given independent public scrutiny by the Utilities Commission.
12. BCSEA said the Province's then-impending final investment decision on the Site C project should be postponed and that the government should order BC Hydro to update its Integrated Resource Plan (IRP) and submit it to the BC Utilities Commission for a thorough public review. BCSEA said there should be a complete re-examination of BC Hydro's 20-year electricity needs and the best ways to meet those needs, taking into account enhanced energy efficiency measures, wind and solar power, the advantages of smaller generating projects throughout the province compared to a single mega-project, and the optimal timing of any new generating projects.
13. BCSEA acknowledged that, at the time of its December 2014 report, BC Hydro had demonstrated a need for more electrical power over the next twenty years. (Whether that remains the case is now a key issue in the inquiry.)
14. Further, BCSEA recognized that Site C would be able to meet the 20-year need for power effectively and without significantly increasing BC's greenhouse gas emissions. BCSEA also recognized that Site C offers a valuable power product, with dispatchable capacity to meet peak loads, to

³ "BCSEA Position on the Site C Hydro-Electric Project," November 2014, p.2. http://www.bcsea.org/sites/bcsea.org/files/bcsea_site_c_position_-_final_corrected-10dec14.pdf

firm up intermittent sources of generation, and to profit from trading opportunities.

15. However, BCSEA expressed significant reservations about the Site C project, four of which remain unresolved and are within the scope of the inquiry:
 - (a) Energy efficiency and conservation has great potential to reduce the need for additional generation.
 - (b) Existing technologies like wind and solar power are rapidly developing and becoming more cost-competitive.
 - (c) The potential benefits of major technological developments like battery storage should be considered for their potential to affect long term planning and grid operation.
 - (d) Once in service, Site C would create an immediate oversupply of electricity, in contrast to smaller projects, which could be brought into service to match the timing of the need.
16. In its December 2014 report, BCSEA also expressed two significant reservations about the Site C project that remain unresolved.
17. First, BCSEA noted that Site is a gigantic mega-project. All its economic and social impacts occur in a single area of the province. More overall economic and social benefits, including local partnership opportunities, would be achieved with smaller but more numerous energy developments located in different areas of the province and built when the need for the power materializes. Socio-economic impacts of the Site C project were considered in the environmental assessment conducted by the Joint Review Panel, so this topic is outside the scope of the inquiry per s.3(e).
18. Second, BCSEA said that Site C should not proceed unless and until the rights of Treaty 8 and other First Nations have been addressed and appropriately accommodated. BCSEA takes no position at this time on whether Aboriginal Rights and Title issues are within the scope of the

inquiry.

Part III – INQUIRY QUESTIONS AND CONSTRAINTS

19. OIC 244/2017 requires the Commission generally to advise Cabinet on the implications of completion, suspension or termination of the Site C project.⁴ Specifically, OIC 244/2017 requires the Commission to provide responses to four questions that can be abbreviated as follows:
- (a) Is the Site C project currently on time and within the proposed budget of \$8.335 billion?⁵
 - (b) What are the costs of suspending the Site C project, while maintaining the option to resume construction until 2024?⁶
 - (c) What are the costs of terminating the Site C project?⁷
 - (d) What Without-Site C portfolio of generating projects and demand-side management could provide benefits similar to the benefits of a Site C portfolio at a similar or lower cost?⁸
20. In addition, for the costs of suspension and the costs of termination, OIC 244/2017 requires the Commission to identify “the potential mechanisms to recover those costs.”
21. BCSEA sees the portfolio question as the one that directly addresses the financial consequences of the completion, suspension and termination options. The answers to the questions regarding the costs of completion of Site C, and the costs of suspending or terminating Site C, provide some of the key inputs to the portfolio analysis along with information regarding many other parameters.

⁴ OIC 244/2017, s. 3(a)

⁵ OIC 244/2017, s. 3b(i)

⁶ OIC 244/2017, s. 3b(ii)

⁷ OIC 244/2017, s. 3b(iii)

⁸ OIC 244/2017, s. 3b(iv)

22. OIC 244/2017 sets out significant constraints on the resource options that can be considered in the Commission's response to the portfolio question.

These constraints are discussed further, below. Key constraints are:

- (a) the energy objectives set out in the *Clean Energy Act*,
- (b) generating projects in the Without-Site C portfolio are "commercially feasible,"⁹ and
- (c) the benefits of the Without-Site C portfolio are to be similar to the benefits of the Site C portfolio in terms of:
 - (i) firming,
 - (ii) shaping,
 - (iii) storage,
 - (iv) grid reliability, and
 - (v) maintenance or reduction of 2016/17 greenhouse gas emission levels.

23. OIC 244/2017 also imposes constraints on the before-DSM energy and capacity load forecasts that together with the stack of committed resources define the system requirements for planning purposes:

- (a) The starting point is BC Hydro's July 2016 forecasts of peak capacity demand and energy demand.
- (b) The July 2016 forecasts will be adjusted for subsequent developments that will impact demand in the short, medium and longer terms.
- (c) Consideration will be given to other factors that could reasonably be expected to influence demand from the expected case toward the high-load or the low-load case.

⁹ It is grammatically ambiguous whether "commercially feasible" in s.3(b)(iv) of OIC 244/2017 also applies to demand-side management initiatives. In any event, DSM measures have to be considered "viable" to be included in a DSM portfolio for resource planning purposes.

24. OIC 244/2017 contains a general constraint that “the inquiry is not a reconsideration of decisions made in the environmental assessment process or by statutory decision makers.”¹⁰
25. In terms of the role of the public, OIC 244/2017 requires the Commission to consult interested parties respecting the matters referred to in paragraphs 3(a) and (b).
26. In terms of reporting, OIC 244/2017 requires the Commission to provide to the Minister responsible for BC Hydro (the Honourable Michelle Mungall, the Minister of Energy, Mines and Petroleum Resources):
- (a) a preliminary report outlining progress to date and preliminary findings by September 20, 2017, and
 - (b) a final report, including the results of the Commission's public consultations, by November 1, 2017.

Part IV – COMMISSION INQUIRY PROCESS

27. OIC 244/2017 was issued on August 2, 2017, as noted above. For reference, BCSEA made procedural suggestions to the Commission in letters of August 4¹¹ and August 8.¹² On August 9, 2017, the Commission issued orders appointing the inquiry panel,¹³ establishing the regulatory timetable,¹⁴ and directing BC Hydro to provide information and to cooperate with the Commission’s staff and external consultants.¹⁵ No applications for intervener status will be received. However, applications for a cost award under the *Participant Assistance/Cost Award Guidelines* will be considered

¹⁰ OIC 244/2017, s.3(b)(e)

¹¹ Exhibit F29-1,
http://www.bcuc.com/Documents/Proceedings/2017/DOC_90033_F29-1_BCSEA_Site-C-Submission.pdf

¹² Exhibit F29-2,
http://www.bcuc.com/Documents/Proceedings/2017/DOC_90034_F29-2_BCSEA_Site-C-Submission.pdf

¹³ Exhibit A-1

¹⁴ Exhibit A-2

¹⁵ Exhibit A-3

after the conclusion of the inquiry.¹⁶

28. It is not yet clear when BC Hydro's August 30 evidence will be made public. BCSEA asks that BC Hydro's evidence to the inquiry be made public as soon as practicable after it is received by the Commission.
29. The Commission's external consultants, Deloitte LLP, will provide the Commission with "independent reports" on the inquiry questions prior to the Commission panel's September 20 preliminary report. BCSEA asks that these reports be released publicly as early as possible, in view of the inquiry's very short timeframe.

Part V – BCSEA ANALYSIS

30. The following comments and recommendations are organized in order of the inquiry questions.

A. Is Site C on time and on budget?

31. The literal wording of the question in s.3(b)(i) is limited to the current status of the project in relation to timing and budget. While the inquiry panel will (obviously) provide an answer to that narrow question, BCSEA submits that in order to complete the portfolio analysis the panel will have to determine an estimate of the costs and timing of completion of the Site C project.
32. For the purpose of this submission, it is assumed that the 'on time and on budget' question is, in effect: What are the costs and timing of completion of the Site C project?

B. Assumed decision date for choice of Site C option

33. To enable a consistent analysis of the costs of the suspension option and the termination option for comparison with the costs of the completion option, it will be important for the Commission to establish an assumed date

¹⁶ Exhibit A-4,
http://www.bcuc.com/Documents/Proceedings/2017/DOC_90003_A-4_Site-C-Inquiry-PACA-Guidelines.pdf

for Cabinet's decision regarding which option will be implemented. For example, this would be date as of which sunk costs are estimated.

34. BCSEA takes no position at this time on exactly what the assumed decision-making date should be. Factors to be considered would include the following:
 - (a) Any date earlier than November 1, 2017, when the final report is required to be provided to the Minister, would leave the report somewhat out of date at the time it is delivered.
 - (b) The farther the assumed date is beyond November 1, 2017 the more the numbers will tend in the direction of favoring completion compared to suspension or termination, because of the ongoing accumulation of sunk costs.
 - (c) Setting the assumed date for the options decision may be affected by the dates embedded in BC Hydro's evidence.

C. Definition of a 'suspension' scenario

35. In order to estimate the costs of "suspending the Site C project, while maintaining the option to resume construction until 2024" it will be necessary for the Commission to define a suspension scenario in more detail than is provided in OIC 244/2017.
36. For example, the Commission will need to clarify whether the suspension scenario requires maintaining the option to resume construction (a) at any time (and upon how much notice) between the options decision date and 2024, or (b) in 2024. Presumably, it would be more expensive to maintain the project in a constant state of readiness to resume construction than to put the project into dormancy for a known period of time.
37. In addition, the inquiry panel will have to clearly separate the costs of the suspension from the costs of carrying out termination following the suspension, if and when a decision is made to terminate rather than to re-initiate construction.

38. A more important and challenging point is whether the costs of suspension should include an estimate of the costs of re-initiating and completing Site C following a period of dormancy. Presumably, the purpose would be to include a 'Suspended-Then-Completed-Site C portfolio'¹⁷ in the portfolio analysis along with the Site C portfolio and the Without-Site portfolio.
39. However, it isn't entirely clear whether OIC 244/2017 contemplates inclusion of a Suspended-Then-Completed-Site C portfolio in the portfolio analysis.
40. On the one hand, 'completion following suspension' has potential cost advantages (due to reducing or eliminating post-In-Service-Date surpluses) and so it should be considered against the completion and termination options.
41. On the other hand, s.3(b)(iv) does not explicitly require consideration of a Suspended-Then-Completed-Site C portfolio. In addition, obtaining a sufficiently accurate estimate of the cost of completing Site C following a suspension of up to seven years would seem to be more time consuming than could be reasonably contemplated within a three month inquiry. (In BCSEA's view, it would not be reasonable to assume that a suspended Site C project could be re-activated and completed at a cost equivalent to the original budget minus sunk costs. A new budget estimate would be required.)
42. One explanation of why OIC 244/2017 requires the Commission to provide an estimate of the costs of a suspension option is that suspension is seen as a potential alternative to termination. That is, the portfolio analysis will determine which of completion or termination is more cost-effective, and if termination is more cost-effective, then the responses to s.3(b)(ii) and (iii)

¹⁷ A Suspended-Then-Completed-Site C portfolio would require an estimate of the costs of completion upon re-initiation after suspension. It would also require an estimate of the number of years between re-initiation and the new in-service date, which would affect the duration of the energy surplus avoided by the suspension.

will provide information relevant to whether termination should be immediate or deferred.

43. To be clear, BCSEA supports inclusion of a Suspended-Site C portfolio in the portfolio analysis only if the estimated cost of completion following suspension can be sufficiently accurate to be useful.

D. Definition of the 'termination' scenario

44. In order to estimate the costs of terminating the Site C project, the Commission will need to define at least in broad terms the objective of the remediation and reclamation activities within the project footprint. Is the objective to restore the original condition to the extent possible? Is the objective to retain the value that may exist in structures, roads and infrastructure improvements that have already been constructed? Should the cost of a planning process and First Nations consultation and accommodation to determine the future of the site be included in the costs of termination?
45. BCSEA is not suggesting that the inquiry panel will have time to delve into these questions. However, the assumptions should be stated so that the estimate of the costs of terminating Site C is fully explained.

E. Recovery of costs of suspension or termination

46. It is not entirely clear to BCSEA why OIC 244/2017 asks the inquiry panel to identify the potential mechanisms to recover the costs of suspension, or of termination, of the Site C project.
47. Generically, the costs of suspension and/or termination (and sunk costs) could be to the account of the BC Hydro ratepayers or to the account of B.C. taxpayers, or some combination. The default expectation is that if the Site C project is suspended or terminated, unless the matter was settled first by a government order, the Commission would conduct a prudency review to determine how much (if any) of the Site C costs BC Hydro would recover from ratepayers (and if so, when) and the balance of the Site C

costs not recovered from ratepayers would be to the account of B.C. taxpayers.

48. BCSEA's point on the cost recovery mechanism topic at this point is that given the size and significance of the Site C project to both BC Hydro ratepayers and B.C. taxpayers, the interests of ratepayers and B.C. taxpayers are closely aligned and the panel's responses to the inquiry questions should be the same regardless of the mechanism for recovering the costs of suspension or termination.
49. Put another way, where OIC 244/2017 asks for the "costs to ratepayers" of the suspension option and the termination option, BCSEA submits that the intention is to include the costs that could be borne by the ratepayers if that was the outcome, and to exclude "external" costs that would not be borne by ratepayers in rates in any event even though such external costs may be very real to those who would bear them.

F. Portfolio analysis – creation of portfolios

50. As indicated above, in BCSEA's view, the response to s.3(b)(iv) requires a portfolio analysis. At a high level, this involves:
 - (a) identifying and estimating the attributes¹⁸ of potentially available, qualifying supply-side and demand-side energy and capacity resources that are not already committed (other than Site C),
 - (b) determining the forecasts of before-DSM energy and peak capacity requirements,
 - (c) determining the "stack" of committed supply-side and demand-side resources that will contribute to providing energy and capacity,
 - (d) defining the planning requirements a portfolio must meet, such as meeting after-DSM energy and peak capacity needs in each year over a

¹⁸ The attributes of potential resource options include technical attributes, financial attributes, environmental attributes, economic attributes, and data confidence.

defined period of years,

- (e) determining assumed values for parameters, such as forward interest rates, exchange rates, gas prices, electricity prices, and more, not already implicitly defined by the attributes of the resource options, such as the cost of capital, or by the load forecast, such as population and GDP growth,
- (f) creating at least two portfolios, one with and one (or more) without the Site C project, that contain available supply-side and demand-side resources that meet the planning requirements,
- (g) optimizing each portfolio to minimize its net present value (NPV) while still meeting the planning requirements,
- (h) comparing the NPV of the Site C portfolio with the NPV of the Without-Site C portfolio (and with a Suspended-Then-Completed-Site C portfolio if one is examined),
- (i) identifying and quantifying the sensitivity of the results of the portfolio analysis to changes in input values within reasonable ranges, and
- (j) discussing and providing qualitative interpretation of the portfolio analysis results in the context of model limitations and input sensitivities.

51. BCSEA makes the following points.

52. First, a full response to s.3(b)(iv) requires a portfolio analysis and not merely a compilation of the unit energy (or capacity) costs of various supply-side and demand-side resource options, despite the reference to “unit energy cost” in s.3(b)(iv). The fundamental output of the portfolio analysis is the NPV of the subject portfolios. For presentation purposes, this can be expressed as a unit energy cost and a unit capacity cost of each portfolio.

53. Second, for a valid comparison of the Site C and Without-Site C portfolio there must be valid treatment of the sunk costs and the costs of termination (assuming termination costs are not included in “sunk costs”). That is,

actual and projected sunk costs up to the deemed decision date are excluded from both the Site C portfolio and the Without-Site C portfolio, and the costs of termination are added to the Without-Site C portfolio.

54. Third, the value to Cabinet of the simple output of the portfolio analysis in terms of the NPV of a Site C portfolio and the NPV of a Without-Site C portfolio will be greatly enhanced by the sensitivity analysis. The sensitivity analysis provides an indication of the robustness of the simple financial conclusion. How likely is it that the financial comparison could be reversed if the future unfolds somewhat differently than assumed in the analysis? Having insight into the strength and reliability of the financial information will allow the Government to give the financial information appropriate weight in comparison with the other important factors it will have to consider when it decides which Site C option (completion, suspension or termination) to pursue.
55. Fourth, creating a Without-Site C portfolio with benefits similar to those of the Site C portfolio in terms of firming, shaping, storage, grid reliability and GHG emissions will require some judgment and flexibility. While no new GHG emissions and probably grid reliability can be treated as constraints, the ways in which the two portfolios will meet the energy and capacity planning requirements are different by definition and this will necessitate differences in terms of firming, shaping and storage.

G. Supply-side resources excluded from the portfolio analysis

56. OIC 244/2017 puts significant constraints on the types of supply-side resources that are eligible for inclusion in the portfolios to be analyzed in the panel's response to s.3(b)(iv).
57. Most of these constraints are continuations of constraints arising explicitly or implicitly from the 2010 *Clean Energy Act*. Significant examples that are sometimes suggested as alternatives to Site C include:
- (a) market purchases beyond the amount allowed for the contingency

reserve, which is an excluded resource because (i) the Mid-C market is outside B.C. and reliance on it for planning purposes would be inconsistent with the CEA s.2(a) energy objective of electricity self-sufficiency, and (ii) market purchases are not firm,

- (b) long-term contracts for electricity imports from outside of B.C., which would be inconsistent with electricity self-sufficiency,
- (c) the Canadian Entitlement, which would be inconsistent with electricity self-sufficiency, and
- (d) re-activation of the Burrard Thermal Generating Plant, which would be contrary to CEA s.3(3).

58. OIC 244/2017 s.3(b)(iv) also confirms a constraint that a resource option must be “commercially feasible” to be included in a portfolio. This does not arise from the CEA. However, it echoes the “commercial readiness” attribute that BC Hydro ascribes to potential resources in the resource options report. A resource that is not “commercially ready” would not be selected for inclusion in a portfolio for planning purposes. As an example, the innovative battery technology for storage and dispatchability, suggested by BCSEA in its December 2014 report on Site C, did not meet the “commercial readiness” criterion in the November 2013 Resource Option Report. Presumably it would not meet the “commercially feasible” requirement in OIC 244/2017 s.3(b)(iv).

59. The constraint in OIC 244/2017 s.3(b)(iv) that materially changes the *status quo* is the requirement that the Without-Site C portfolio must not increase GHG emissions from 2016-2017 levels. In BCSEA’s submission, this precludes inclusion of new gas-fired generation in the Without-Site C portfolio.

60. This new constraint is significant because new gas-fired generation played an important role as a potential resource for planning purposes in the 2013 IRP. In particular, new gas-fired generation was a resource option used to

provide a dispatchable capacity resource in the “Without Site C, Clean + Thermal Generation Portfolios.” A limited amount of new gas-fired generation (which is not a clean or renewable resource) would not be inconsistent with the *CEA* s.2(c) B.C. energy objective to generate at least 93% of the electricity in British Columbia from clean or renewable resources, because BC Hydro had (and continues to have) non-clean headroom.

H. Supply-side resources eligible for the portfolio analysis

61. In BCSEA’s view, the panel should be indifferent to the selection of eligible supply-side resource options for inclusion in the portfolio analysis. That is, the supply-side resource options should be selected for how their respective attributes (e.g., capital cost, operating cost, firmness, shape, effective load-carrying capacity, dispatchability, location, etc.) contribute to the portfolio’s ability to meet the planning requirements. It is not necessary or desirable for the inquiry to address the pros and cons of, say, wind power versus run of river power, or pumped storage versus biomass.
62. It should be noted that the supply-side and demand-side resources in a given portfolio represent hypothetical possibilities for the purpose of the portfolio analysis. A decision to implement a particular resource would be made in the future based on the circumstances at the time.
63. The starting point for identifying the supply-side resources eligible for inclusion in the portfolio analysis is presumably BC Hydro’s 2015 Electricity Supply Options Update.¹⁹ The Commission should require BC Hydro to make suitable adjustments to the unit cost estimates and other attributes of the resources that are candidates for inclusion in the portfolios.
64. BCSEA understands that BC Hydro’s practice is to base its long-term planning on current costs of resource options and to avoid relying on

¹⁹ <https://www.bchydro.com/energy-in-bc/planning-for-our-future/electricity-supply-options/updates.html>

predictions of future price drops. However, in BCSEA's view the purposes of the inquiry require more flexibility in terms of the assumed future costs of certain resource options that are widely expected to fall in price. In addition, it will be important to quantify the sensitivity of the portfolio analysis results to the assumed future costs of resources in the portfolio.

I. Demand-side energy and capacity resource options

65. The Without-Site C portfolio should include all DSM energy savings that are (a) cost-effective in modified total resource cost terms and (b) less expensive than the least-expensive supply-side resource.
66. In the Commission's recent review of BC Hydro's F2017-F2019 Revenue Requirements Application, BC Hydro argued against increasing the amount of cost-effective DSM that it would seek to acquire in the test period, on the grounds that higher DSM investments, at the level contemplated in the 2013 IRP, would tend to drive up electricity rates, contrary to the intention of the "Ten-Year Rates Plan."²⁰ OIC 244/2017 is silent regarding the Ten-Year Rates Plan. Accordingly, BCSEA submits that the Ten-Year Rates Plan should not be treated as a constraint imposed by OIC 244/2017 on the amounts of cost effective DSM that can be included in the resource portfolios required by s.3(b)(iv). BCSEA expects that BC Hydro will clarify in its August 30, 2017 evidence whether the Ten-Year Rates Plan continues to guide BC Hydro.
67. In addition, the Without-Site C portfolio should include capacity-focused DSM in amounts and at costs that BC Hydro said in the F2017-F2019

²⁰ BC Hydro Final Argument, F2017-F2019 Revenue Requirements Application, at http://www.bcuc.com/Documents/Arguments/2017/DOC_49332_05-23-2017_BCHydro-Final-Argument.pdf; BC Hydro Reply Argument, at http://www.bcuc.com/Documents/Arguments/2017/DOC_49571_07-04-2017_BCHydro-Reply-Argument.pdf

Revenue Requirements Application²¹ would likely be available. This is important for a valid comparison with the Site C portfolio, because the dispatchability of Site C is one of its significant advantages and, as BC Hydro said in the RRA proceeding, “BC Hydro’s next supply-side capacity resource beyond Revelstoke Unit 6 [which is a committed resource] will come in increments of hundreds of MW, cost hundreds of millions of dollars and take eight to 10 years to build.”²²

68. Sources of information on available DSM energy and capacity savings include: BC Hydro’s F2017-F2019 RRA, cited above, and the January 18, 2017 “British Columbia Conservation Potential Review” by Navigant prepared for BC Hydro, Reference No. 180336.

J. Load forecasts

69. OIC 244/2017 is quite prescriptive regarding the load forecasts that are to be used in setting the planning requirements. This starkly distinguishes the inquiry from a long-term resources planning process, in which typically the load forecasts are heavily scrutinized.
70. In electricity long-term planning, there are four different load forecasts: the before-DSM energy forecast, the before-DSM peak capacity forecast, the after-DSM energy forecast, and the after-DSM peak capacity forecast. BC Hydro’s practice is to present each forecast with a low-load case and a high-load case as well as the mid-point.
71. For the inquiry, it is the constraints on the before-DSM energy forecast and the before-DSM peak capacity forecast that matter. This is because energy DSM and capacity-focused DSM are resource options that are open to be included in the portfolios according to their attributes (such as cost and

²¹ Exhibit B-14, BCUC IR 2.317.3, pdf pp.979-983 (at http://www.bcuc.com/Documents/Proceedings/2017/DOC_48630_B-14_BCH-Response-BCUC-IR2.pdf)

²² *Ibid.*, pdf p.980; and see Exhibit B-9, BCUC IR 1.81.3, pdf pp.1434-1436 (at http://www.bcuc.com/Documents/Proceedings/2016/DOC_48161_B-9_BCH-Responses-to-BCUC-IRs.pdf)

availability).

72. BCSEA has several comments at the present time on the OIC 244/2017 constraints on the before-DSM energy and before DSM peak capacity forecasts.
73. First, while s.3(c) requires the Commission to require BC Hydro to report on the adjustments to the July 2016 forecasts and the factors that may push demand toward the high-load or low-load cases, BCSEA submits that this does not preclude the Commission from receiving and taking into account information from interested parties on these topics.
74. Second, BCSEA sees a significant difference between the adjustments to the July 2016 load forecasts required by s.3(c)(i), and the identification of factors that may tend to push up, or down, the actual load within the forecast range required by s.3(c)(ii).
 - (a) Section s.3(c)(i) requires revised numbers in the pre-DSM energy forecast and the pre-DSM capacity forecast. Presumably, the purpose is to plug the revised load forecast numbers into the planning requirements for the portfolio analysis.
 - (b) Section 3(c)(ii) does not require numbers, it requires the identification of factors that may cause the load to deviate from the mid-point of the forecasts. Presumably, the purpose is to identify factors for sensitivity analysis.
75. Third, some examples of factors that BCSEA expects will be considered under s.3(c)(ii) include:
 - (a) downward pressure due to the effect of BC Hydro rates rising over the planning period on consumption levels independent of DSM energy and capacity savings,
 - (b) downward pressure due to (potential) disappearance of the LNG export load in the later years of the forecast, and
 - (c) upward pressure due to low-carbon electrification initiatives not already

included in the load forecast.

76. BCSEA expects that BC Hydro's August 30, 2017 evidence will include up-to-date information on low-carbon electrification in B.C. that is likely with a rapid reduction of provincial (and national) GHG emissions.

K. Effect of the Ten-Year Rates Plan on the costs of energy and capacity from Site C

77. When the Site C project is included in the Site C portfolio the costs of Site C's energy and capacity contributions will reflect both the capital costs of building the facility and the ongoing costs of operating it. While many of the operating costs are straightforward, the cost of water rentals and the cost of dividends are more complex.
78. BC Hydro pays water rentals to the Province for the storage and use of water owned by the Province for hydroelectric generation. And, BC Hydro pays dividends to the Province in the Province's capacity as the sole shareholder of BC Hydro. Complications arise, not least because the Province controls the method of calculation and the size of both the dividends and the water rentals paid by BC Hydro.
79. When the government announced approval of the Site C project on December 16, 2014 it also announced a Ten-Year Rates Plan for BC Hydro. The Ten-Year Rates Plan included substantial changes to dividend payments and minor changes to BC Hydro's water rentals that the government said would reduce the cost of Site C to ratepayers. The government also announced an increase in the Site C capital budget.
80. According to the government's background report at the time,²³ Site C's previous unit energy cost to ratepayers of \$83/MWh was reduced by \$26/MWh due to the dividend changes, by \$1/MWh due to the water rental

²³ http://docs.openinfo.gov.bc.ca/d7670015a_response_package_gcp-2014-00168.pdf

change, and increased by up to \$2.50/MWh due to the budget increase, for an updated Site C unit energy cost to ratepayers of \$58 to \$61/MWh.

81. For convenience, the government’s December 2014 table²⁴ showing the asserted reduction in Site C’s unit energy cost to ratepayers is reproduced here:

Site C Cost to Ratepayers (before changes)	\$83 / MWh
Under the 10 Year Plan, the amount of net income that BC Hydro is required to earn each year will now be tied to inflation and will no longer increase when new assets like Site C are added to the system.	- \$26 / MWh
The 10 Year Plan also reduced water rental charges for BC Hydro.	- \$1 / MWh
The capital cost estimate for Site C has been updated from \$7.9 billion to \$8.335 billion.	+ \$2.25 / MWh
Government has established a project reserve of an additional \$440 million to account for events outside of BC Hydro’s control that could occur over an eight-year construction period, such as higher than forecast inflation or interest rates. The reserve will be managed by the provincial Treasury Board.	+ \$2.50 / MWh (if fully utilized)
Updated Site C Cost to Ratepayers	\$58 - \$61 / MWh

82. BCSEA asked for an explanation and received an April 29, 2015 response from Mr. Les MacLaren, Assistant Deputy Minister. A copy is attached as an appendix to this submission. BCSEA is not in a position to assess the validity of the \$26/MWh reduction in Site C’s unit energy cost. Nor does BCSEA know whether this reduction will be reflected in the portfolio analysis to be done by BC Hydro for the inquiry. However, BCSEA respectfully submits that it will be important for the Commission to ensure that this topic is fully addressed. Needless to say, a \$26/MWh reduction in the unit energy cost to ratepayers of the Site C project will have a substantial impact on the outcome of the portfolio analysis in response to OIC 244/2017 s.3(b)(iv).

L. Presentation of portfolio analysis results

83. While s. 3(b)(iv) of OIC 244/2017 speaks in terms of comparing the unit energy cost of the Without-Site C portfolio with the unit energy cost of the Site C portfolio, BCSEA submits that it would be helpful for the panel also to

²⁴ *Ibid.*, pdf p.14

provide the results of the portfolio analysis on an NPV basis. This is important because the NPV of each portfolio is the primary output of the portfolio analysis, and arriving at an 'apples to apples' portfolio unit energy cost for each portfolio will require adjustments, for example because the Without-Site C portfolio will have more DSM and deliver less energy than the Site C portfolio.

Part V – CONCLUSION

84. This submission addresses how the Commission will carry out this narrowly focused inquiry into the financial consequences of three mutually exclusive options: completion, suspension and termination of the Site C project. A summary list of BCSCEA's comments and recommendations is attached.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

August 30, 2017



William J. Andrews
Counsel for B.C. Sustainable Energy Association

List of Comments and Recommendations

Comments and Recommendations	Paragraph reference
The inquiry's three-month timeframe mandated by OIC 244/2017 is unrealistically short and will challenge the Commission's ability to produce an accurate and credible result. Nevertheless, BCSEA will do what it can to contribute to a successful outcome of the inquiry.	8
BCSEA asks that BC Hydro's evidence to the inquiry be made public as soon as practicable after it is received by the Commission.	28
BCSEA asks that the Deloitte LLP reports be released publicly as early as possible, in view of the inquiry's very short timeframe.	29
It is assumed that the 'on time and on budget' question is, in effect: What are the costs and timing of completion of the Site C project?	32
The Commission should set an assumed date for Cabinet's decision regarding which option will be implemented	33
The Commission will need to clarify whether the suspension scenario requires maintaining the option to resume construction at any time up to 2024, or in 2024.	36
The Commission will have to separate the costs of the suspension from the costs of carrying out termination following the suspension.	37
The Commission will need to determine if it will estimate a cost of completing Site C following a suspension, and whether to include in the portfolio analysis a portfolio in which Site is suspended and later completed.	38 to 42
BCSEA supports inclusion of a Suspended-Then-Completed-Site C portfolio in the portfolio analysis only if the estimated cost of completion following suspension can be sufficiently accurate to be useful.	43
The Commission will need to define in broad terms the objective of the remediation and reclamation activities within the project footprint. The assumptions should be stated so that the estimate of the costs of terminating Site C is fully explained.	44
Given the size and significance of the Site C project to both BC Hydro ratepayers and B.C. taxpayers, the interests of	48

ratepayers and B.C. taxpayers are closely aligned and the panel's responses to the inquiry questions should be the same regardless of the mechanism for recovering the costs of suspension or termination.	
The response to s.3(b)(iv) requires a portfolio analysis and not merely a compilation of the unit energy (or capacity) costs of various supply-side and demand-side resource options.	52
There must be valid treatment of the sunk costs and the costs of termination or suspension in both the Site C portfolio and the Without-Site C portfolio.	53
The value to Cabinet of the simple output of the portfolio analysis in terms of the NPV of a Site C portfolio and the NPV of a Without-Site C portfolio will be greatly enhanced by the sensitivity analysis.	54
Creating a Without-Site C portfolio with benefits similar to those of the Site C portfolio will require some judgment and flexibility, particular in terms of firming, shaping and storage.	55
Resource options excluded by OIC 244/2017 include market purchases, long-term import contracts, the Canadian Entitlement, and re-activating Burrard Thermal Generating Plant.	57
The "commercially feasible" criterion may exclude inclusion of innovative battery technology for storage and dispatchability.	58
The constraint in OIC 244/2017 s.3(b)(iv) that actually changes the <i>status quo</i> is the requirement that the Without-Site C portfolio must not increase GHG emissions from 2016-2017 levels. In BCSEA's submission, this precludes inclusion of new gas-fired generation in the Without-Site C portfolio.	59
The supply-side resource options should be selected for how their respective attributes contribute to the portfolio's ability to meet the planning requirements. The selection of resources is hypothetical. A decision to implement a particular resource would be made in the future based on the circumstances at the time.	61-62
The starting point for identifying the supply-side resources eligible for inclusion in the portfolio analysis is presumably BC Hydro's 2015 Electricity Supply Options Update.	63
The Commission should require BC Hydro to make suitable adjustments to the unit cost estimates and other attributes of the resources that are candidates for inclusion in the portfolios.	63
The purposes of the inquiry require flexibility in terms of the	64

assumed future costs of certain resource options that are widely expected to fall in price. Sensitivity results should be presented.	
The Without-Site C portfolio should include all DSM energy savings that are (a) cost-effective in modified total resource cost terms and (b) less expensive than the least-expensive supply-side resource.	65
OIC 244/2017 is silent regarding the Ten-Year Rates Plan, which should not be treated as an OIC constraint on the amounts of cost effective DSM that can be included in the resource portfolios. BCSEA expects that BC Hydro will in its evidence whether the Ten-Year Rates Plan continues to guide BC Hydro.	66
The Without-Site C portfolio should include capacity-focused DSM in amounts and at costs that BC Hydro said in the F17-F19 RRA would likely be available.	67
OIC 244/2017 s.3(c) does not preclude the Commission from receiving and taking into account information from interested parties on these topics.	73
OIC 244/2017 s.3(c)(i) requires numerical adjustments to the July 2016 load forecast. Section s.3(c)(ii) requires the identification of <u>factors</u> that may cause the load to deviate from the mid-point of the forecasts, presumably for sensitivity analysis.	74
Key examples of s.3(c)(ii) factors are: downward pressure due to the effect of rate increase, downward pressure due to disappearance of the LNG export load in the later years of the forecast, and upward pressure due to low-carbon electrification initiatives not already included in the load forecast. BCSEA expects BC Hydro to provide up-to-date information on low-carbon electrification in its August 30 evidence.	75
It will be important for the Commission to address the validity and impact on the portfolio results of the \$26/MWh reduction in Site C's unit energy cost in December 2014 due to the Ten-Year Rates Plan.	77-82
The Commission should provide the results of the portfolio analysis on an NPV basis, as well as on a portfolio unit energy cost basis.	83

**Appendix A:
April 29, 2015 email message from Les MacLaren to Thomas Hackney**

From: "MEM EAED Correspondence MEM:EX"
<MEM.EAED.Correspondence@gov.bc.ca>
Subject: Response to your March 12, 2015 email regarding Site C -
Ref.: 89537
Date: April 29, 2015 at 9:23:17 AM PDT
To: "thackney@bcsea.org" <thackney@bcsea.org>
Cc: "MacLaren, Les MEM:EX" <Les.MacLaren@gov.bc.ca>

Dear Mr. Hackney:

Honourable Bill Bennett, Minister of Energy and Mines, has asked me to respond to your March 12, 2015 follow up email that included four questions relating to the Site C Clean Energy Project (Site C).

Question 1

The Ministry's 16 December 2014 Site C backgrounder says the cost of Site C energy to ratepayers is reduced by \$26/MWh (from \$83/MWh) because "Under the 10 Year Plan, the amount of net income that BC Hydro is required to earn each year will now be tied to inflation and will no longer increase when new assets like Site C are added to the system." Please provide a breakdown of the \$26/MWh reduction in the Site C unit energy cost. Please explain if the reduction in Site C's unit energy cost is due to reduced revenue to the Government from BC Hydro.

Answer

There is no further breakdown available for the \$26 per megawatt hour (MWh) reduction in Site C Unit Energy Cost (UEC). The \$26 per MWh is the reduction in the Site C UEC at the point of interconnection based on a reduced cost of financing the project, as a result of the Government's 10 Year Rate Plan (Plan) for BC Hydro that was announced in 2013.

This reduced cost of financing is due to an important aspect of the Plan which ties the amount of BC Hydro's net income from 2017 going forward solely to the projected rate of inflation instead of being tied to the value of BC Hydro assets that come into service. This means there would be no increase in net income requirements due to the construction of Site C or any other of BC Hydro's assets that come into service after 2017. In other words, Site C would not affect the revenue to the Government from BC Hydro.

Question 2

Is the entire reduction in the Government's income from BC Hydro under the 10 Year Plan being allocated against Site C? If so, why?

Answer

No. As stated in the response to Question 1, the Government's income (or rather revenue) from BC Hydro would not be affected by the construction of Site C as a result of the Plan.

Question 3

The backgrounder compares the revised unit energy cost of Site C to the estimated average unit energy cost of the IPP power. Is this an apples to apples comparison? Or does the IPP unit energy cost figure include revenue to Government via BC Hydro that is no longer included in the reduced Site C unit cost figure?

Answer

The comparison of options reflects the expected cost to ratepayers of Site C

compared to a portfolio of independent power producer resources.

Question 4

Finally, please provide the calculation to support the statement that, “Over the first 50 years of Site C’s project life, ratepayers will save an average of \$650 million to \$900 million each year, compared to alternatives” [underline added]; please provide a net present value number for the savings; and please quantify any associated increased costs to BC taxpayers.

Answer

Please refer to the attached chart for the comparison of the Site C cost of service and the cost of service of a representative portfolio of alternative resources excluding Site C.

BC Hydro’s Present Value (PV) analysis is generally done on a 30 year time period. The 30 year PV cost savings resulting from the Site C portfolio, using the reduced cost of financing, updated capital costs (not including the Treasury Board reserve), fiscal 2025 in service date, and expected LNG load is \$1.5 billion at a 5 percent real dollar discount rate. Lastly, it is BC Hydro ratepayers that will bear the costs of building Site C.

Further information about Site C can be found at <https://www.sitecproject.com/>.

Thank you for writing.

Sincerely,

Les MacLaren
Assistant Deputy Minister
Electricity and Alternative Energy Division
Ministry of Energy and Mines

Attachment: Indicative Cost of Service – Expected LNG Scenario

Attachment:

Indicative Cost of Service – Expected LNG Scenario (Nominal Dollars)

