



Mr. Patrick Wruck
Commission Secretary
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC
V6Z 2N3

**Re: British Columbia Hydro and Power Authority ("BC Hydro")–
British Columbia Utilities Commission ("Commission")
Inquiry Respecting Site C
Preliminary Report Comments of Naikun Wind Energy Ltd. ("Naikun)**

Dear Mr. Wruck:

Please accept the attached submission in respect of the Site C Inquiry and, in particular, the Commission's Preliminary Report, which is marked as document A-13 and dated September 20, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike O'Connor", is written over a large, light-colored circular scribble.

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**Submission of Naikun Wind Energy Inc. (“Naikun”)
Regarding the
Preliminary Report of the British Columbia Utilities Commission
in Respect of its Inquiry into Site C**

Overview

On August 2, 2017, the Lieutenant Governor of British Columbia issued Order in Council No. 244 (the “OIC”). This OIC asked the British Columbia Utilities Commission (the “Commission”) to inquire into the Site C project (“Site C”) pursuant to Terms of Reference specified in section 3 of the OIC. This request was made under the provisions of section 5(1) of the *Utilities Commission Act* (the “UCA”).

Consistent with the requirements of the OIC¹, the Commission submitted its Preliminary Report on September 20, 2017, and is now seeking submissions on that report.

In requesting such submissions, the Commission states²:

Submissions will be considered if they are relevant to the [terms of reference](#) issued by the provincial government. The Commission has summarized the questions before it as:

- a. Whether the project is on time and within budget;
- b. The cost to ratepayers of suspending the project;
- c. The cost to ratepayers of terminating the project;
- d. The portfolio of generating projects and demand-side management initiatives that could provide similar benefits; and
- e. British Columbia’s expected peak capacity and energy demand.

Naikun respectfully submits that the Terms of Reference do not constrain the Commission to reviewing these questions alone. This is made clear in section 3(a).

Nor do the Terms of Reference seek to limit public input to these questions, as specifically set out in section 3(d). That section states that the Commission *must* consult interested parties “respecting the matters referred to in paragraphs [3](a) and [3](b)”. (emphasis added)

Specifically, Section 3(a) states that the Commission *must* advise government on the “implications” of completing, suspending, or terminating Site C. The broad review contemplated by section 3(a) is not narrowed by the questions contained in section 3(b), but instead provides the opportunity for a more complete discussion. In fact,

¹ Section 3(b)(g)(i)

² <http://www.sitecinquiry.com/making-submissions/>

section 3(d) makes clear that public comments are not intended to be limited to the defined questions either – but rather can encompass all “implications” (with the exceptions regarding prior environmental approvals and the direction on the method of determining a load forecast³).

As such, Naikun has not entirely limited its comments in this submission to the questions as summarized by the Commission.

Similarly, Naikun respectfully submits that the Commission should not feel such constraints when it submits its Final Report to government. Instead, the Commission should report to government that the overwhelming evidence in this proceeding shows that:

Ratepayers and taxpayers in British Columbia face unknown costs and risks because BC Hydro is unable or unwilling to:

- 1. Provide credible load forecasts to demonstrate that Site C is necessary.**
- 2. Demonstrate that the project is cost effective and environmentally beneficial relative to its alternatives.**
- 3. Demonstrate that it has the project management capability to ensure that the project will be delivered on time, at the budgeted cost.**

However, even within the limits of what can be known – and what has been made public – it is clear that pending cost over-runs will exceed the cost of terminating the project.

British Columbia has clean and affordable alternatives to Site C that could provide considerable economic, social, and environmental benefits.

BC Hydro’s load forecast is not reliable, and Deloitte’s suggested amendments to it are not robust.

Site C should be terminated, and BC Hydro should use more economically rational procurement mechanisms to replace it.

Government should integrate its industrial and energy policies, including its use of the Heritage Resources, to inform both a more rigorous load forecast and a more thoughtful use of BC’s wind and geothermal resources.

³ See sections 3(e) and 3(c), respectively.

The remainder of Naikun's submission is organized as follows:

- Part A provides general observations in response to section 3(a) of the Terms of Reference; and
- Part B responds to specific questions posed in section 3(b) of the Terms of Reference.

Part A: The Implications of Completing, Suspending, or Terminating Site C

Naikun appreciates the opportunity to provide the Commission with its perspectives on BC Hydro's continued pursuit of the Site C project.

Like many parties with interests in British Columbia, its economy, and its environment, Naikun has been disappointed by: (a) BC Hydro's single-minded pursuit of this Site C; and (b) prior governments' shielding of Site C from normal regulatory scrutiny.

Naikun welcomes the window that this Site C Inquiry (the "Inquiry") has provided into the project. And while we are concerned by the compressed time frame in which the Inquiry is occurring – aggravated by the quality of BC Hydro's evidence and by the fundamental changes it has made to that evidence just a week before the deadline for public submissions – we are encouraged by the clarity that has ultimately resulted.

Inadequate and Opaque Project Management

Naikun respectfully submits that BC Hydro's evidence and responses, read in conjunction with, particularly, the Deloitte Reports⁴, must raise a serious apprehension about the company's grasp of the project, its respect for independent oversight, and its project management capabilities.

This last point, BC Hydro's project management capabilities, should be of particular concern. As noted in the Commission's Preliminary Report⁵, BC Hydro has claimed a history of delivering projects on budget, but has chosen not to support this statement with compelling evidence in this proceeding.

The Commission has attempted to fill out the record (at page 25 of its Preliminary Report), with a table taken from an earlier BC Hydro revenue requirements filing. In addition to showing a long list of projects that have gone over-budget since 2012, the list does not show a single project within BC Hydro's recent experience that is

⁴ That is, both the Site C Construction Review and the Site C Alternative Resource Options and Load Forecast Assessment.

⁵ Preliminary Report, Page 25

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anything like the size or complexity of Site C. Indeed, the largest project on the list cost less than \$1 billion, and most are below \$100 million.

Naikun cannot usefully speculate about why BC Hydro could not (or would not) provide compelling and objective evidence to demonstrate that it understands, and is control of, project timing and costs.

Such information should always, of course, be readily available to the management and board of a company undertaking a significant project such as Site C. Providing that information to the Commission should have been easy. BC Hydro should have welcomed the opportunity to demonstrate that it was proceeding responsibly toward the completion of a project that the province needs. All of this could have readily been accomplished without compromising the utility's commercial position with regards to its future contracting.

But BC Hydro chose a different path. It has not been either forthcoming or transparent. The result is a Preliminary Report that, through no fault of the Commission (which made admirable work with limited source material) is little more than a lengthy information request, rather than the intended foreshadowing of the Commission's ultimate conclusions.

When BC Hydro responded to the questions contained in the Commission's report it, remarkably, took a fundamental change of course. No longer would the project be completed in 2023. The result: a spike in costs of more than \$600 million with, BC Hydro concedes, "additional cost risk" in the future.

BC Hydro then glibly states:

"We [BC Hydro] recognize that these responses identify material project cost developments. However, ratepayers are still best off in a scenario were BC Hydro proceeds with Site C as planned. We will elaborate further on our conclusions in our submission to be filed on October 11, 2017."⁶

For those who believe that there is merit to public review, it should be plain that filing clarifying evidence on the date that public submissions are due is, at best, unhelpful.

In fact, as Naikun prepares its submission for October 11, it knows only that:

1. BC Hydro is amending on the fly both its schedule and its budget;
2. Deloitte and BC Hydro are arguing about load forecast techniques, which can leave little confidence in the evidence of either;

⁶ BC Hydro's Executive Summary Filing, October 4, 2017, page 5

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3. Deloitte and BC Hydro are arguing about BC's latent resource potential in so fundamental a way as to, again, necessitate further inquiry into the findings of both companies; and
4. BC Hydro has teased some future clarity, but this will be available only after public submissions have closed.

This disorder will undoubtedly impair the quality of participant submissions, including Naikun's. It is clear that the intent of the Preliminary Report was to offer the opportunity for participants to comment on the Commission's findings. Instead, we are left to comment on the Commission's questions and BC Hydro's partial answers and platitudinous conclusion that ratepayers are "best off" with Site C.

But this is a case where a lack of information says volumes. BC Hydro's failure to provide complete and compelling evidence in this proceeding should cast a worrying light over any presumed bias in favour of its professional expertise, or in favour of letting the project proceed because so much public and ratepayer money has already been spent.

Naikun believes that despite its limitations, the evidence adduced in this inquiry is actually quite clear: BC Hydro is undertaking a project that is beyond its experience and capabilities. Serious signs of trouble – physical, financial, and managerial – are apparent, and the financial risks arising from those problems look set to run into the billions of dollars.

Site C is Obsolete

BC Hydro seems reluctant to accept that there have been profound (and obvious) structural changes to its marketplace since it began advancing the Site C project. In fact, there have been dramatic improvements in the cost and performance of BC's world-class wind resources, including especially off-shore wind resources such as Naikun's.

Moreover, in mature European markets, the cost per MWh of off-shore wind has fallen by 50 per cent over the past two years. In April 2017, DONG/Orsted Energy was awarded power-purchase agreements for two projects Germany without subsidy – that is, relying only on merchant power prices.

In fact, off-shore wind is now the leading utility-scale renewable energy source in terms of project scale and capacity factor.

In September 2017 DONG/Orsted Energy secured a power-purchase agreement for the 1.4GW Hornsea 2 project, which is larger than Site C and capable of powering more than 1.3m homes. A project with the outstanding wind resource and site characteristics of Naikun's Haida Energy Field, using the latest turbine and transmission technology, can expect to have a capacity factor in excess of 55 per

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cent, putting it far ahead of: (a) the value ascribed to off-shore wind by Deloitte; and (b) solar and onshore wind. Naikun's capacity factor is comparable with Site C's.

BC Hydro continues to ignore these important technological improvements that are fundamentally altering energy markets. Of most significance to this proceeding, BC Hydro seems hesitant to embrace evidence of:

- Dramatic improvements in the cost and performance of BC's world-class wind resources, including especially off-shore wind resources such as Naikun's;
- The environmental and economic potential of BC's geothermal resources; and
- Reasonable projections about the changing costs of capacity resources, including clean storage options such as batteries.

Naikun recognizes that BC Hydro – like this inquiry – is constrained by the renewable energy objectives and other provisions in BC's *Clean Energy Act* (the "CEA")⁷.

The CEA effectively limited to Site C the projects that BC Hydro could build. So BC Hydro set about that path, ignoring evidence that the project would not be ready when it might be needed (by proponents of liquefied natural gas ("LNG"), for example) and that it would be technologically obsolete by the time it could be completed.

That evidence has only strengthened since the CEA was enacted, as LNG proponents, for example, planned their projects to largely bypass electrical supply from BC in favour of direct consumption of natural gas for both station service and liquefaction. This occurred for technical reasons, of course, but it also occurred because BC Hydro was simply unable to assure supply.

From both an environmental and structural perspective, this is little different than if BC Hydro, unconstrained by the CEA, had built natural gas generation itself. This is disappointing enough.

However, from a policy, planning, and social-benefits perspective, the differences are more profound.

Specifically, instead of leading a rational and cohesive system plan (through the usual tool of developing a comprehensive and publically-vetted Integrated Resource Plan), BC Hydro acted in a manner divorced from the Province's pro-LNG industrial

⁷ The CEA constrained BC Hydro from developing a number of possible projects, while removing regulatory hurdles for others, including Site C.

strategy, and in so-doing outsourced an entire economic-cycle of energy policy to private industry.

Moreover, BC Hydro has persisted in telling this cohort of potential industry that only one product – Site C in 2024 – is available from the utility. And that is only if the energy is actually going to be available then, which the evidence in this proceeding makes clear is far from certain. Not surprisingly, this “solution” proved to be of little value to industrial proponents.

This experience shows a fundamental need for British Columbia to integrate its industrial and energy policies, which is reason enough to put a stop to Site C. Ample opportunity would then exist to work with LNG proponents (and other large industry that may emerge in the future) to help develop clean energy alternatives for a subsequent generation of energy demand.

Yet it is not just industry that has found BC Hydro’s big-dam solution wanting. California – BC’s largest potential market for Site C surplus – does not allow utilities to count large hydro within their renewable energy portfolios. This matters: BC Hydro could face a significant loss in value if long-term or other firm sales from Site C were ever required to compensate for lower-than-expected domestic demand.

Moreover, the likelihood of BC experiencing this surplus is greater with large, discrete projects like Site C than it would be with more scalable projects like wind. Naikun, for example, has the potential (when fully built-out) to be larger than Site C, but it could still be built economically in several smaller phases. This flexibility, combined with wind power’s acceptance as renewable in BC’s largest export market, greatly reduces the likelihood of BC ever needing to sell excess power at a loss.

BC Hydro Needs To Think Differently About IPPs

Part of improving the policy basis for future energy development starts with fixing how BC Hydro interacts with independent power producers (“IPPs”). In considering the cost and potential for IPP alternatives, BC Hydro has relied on its past procurement experience, which has been a failure largely of its own making.

While the problems with BC Hydro’s relationship with IPPs are manifold, one basic difficulty stands out: the way in which BC Hydro allocates costs and risks between its ratepayers and its suppliers.

In designing its procurement approach, BC Hydro has made two consistent mistakes. First, it has forced IPPs to commit to delivery prices far too early in the bidding process. This has driven IPPs into one of two bidding strategies – both of which are socially harmful.

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The first has been to bid low without fully developed project costs. This helps the IPP to get a energy supply contract, but leads to high attrition rates as true project costs are discovered in the normal course of project engineering.

Many IPPs could not, or would not, pursue this strategy. These projects, including Naikun, properly constructed their capital structure and equity costs to reflect the full burden of costs and risks facing it, including risks arising from BC Hydro's procurement approach. These projects, unsurprisingly, were then deemed cost uncompetitive.

The second mistake BC Hydro makes is to structure its contracts and procurement methodologies so as to push all development and production risks to the IPPs. This has the (somewhat counter-intuitive) effect of immediately monetizing a significant proportion of project risks for ratepayers, by making manifest those costs within the contract price, regardless of whether the risks ever actually materialize into tangible costs.

This contrasts sharply with projects BC Hydro builds itself, where ratepayers self-insure risks (since the full cost is ultimately rolled into rates), so negative outcomes are not monetized (or shown in the forecast price) unless they occur. The effect of this is shown starkly in this proceeding: early pricing from Site C looked attractive, but ratepayers held latent risk for cost over-runs that have now materialized, and would already have been manifest in the IPP prices to which BC Hydro has compared Site C.

While reasonable parties can clearly debate how risk allocation should be effected in any particular case (although a there is certainly a decent *prima facie* case that risks are best borne by a large and diversified pool of ratepayers, rather than a relatively small and lightly capitalized single-purpose entity), what cannot be debated is that BC Hydro's approach skews its comparison of IPP projects versus self-built projects.

This failure to properly align risk with the party most able to bear it, and to compare without adjustment the costs of projects where risks are monetized with those that are self-insured, has direct relevance to this proceeding. Specifically, it is apparent that the Site C costs advanced by BC Hydro take no account of the inherent risks to ratepayers (from cost over-runs or less-than-expected production) that are express in each and every IPP cost enumerated in BC Hydro's evidence.

That BC Hydro fails to apprehend this aspect of risk – that is, that risk is inherent to the enterprise, and cannot be allocated away – is further evident in its assertion that the cost of Site C is reduced because no equity return is being sought by government on the capital it supplies.

This is simply a failure to appreciate the role of equity in project finance. The risk of a project does not change because of how equity is treated, and any fairly efficient market will, ultimately, impose the cost of appropriate capitalization on project

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beneficiaries – in this case, British Columbians, whether in the form of ratepayers and taxpayers. Pushing uncompensated risk onto taxpayers doesn't make Site C less risky or less expensive.

BC Hydro places another burden on IPPs, as well, which serves to increase their apparent costs and, by extension, artificially improves the apparent cost of Site C. That is, BC Hydro imposes a project-by-project firming obligation on every IPP project individually.

This approach results in an overstatement of capacity costs for most renewable energy projects, compared even with the more appropriate, but still punitive, approach of considering all renewables together as a portfolio of diversified projects.

But even the portfolio approach does not ensure the best value for British Columbians, since even that methodology would prevent ratepayers from considering whether surplus capacity in the Heritage Assets might not be more valuable as a resource to backstop renewables rather than exclusively as an instrument for trade.

Put another way, BC Hydro has shown no evidence in this proceeding – or elsewhere that Naikun is aware of – to demonstrate that the Heritage Asset capacity would not deliver more value to ratepayers (let alone to British Columbians' broader interests, including environmental and First Nations interests) were that capacity allocated differently, including to firming the renewables that could replace Site C.

Finally, beyond its procurement methods, BC Hydro tilts the field against IPPs by proposing to depreciate Site C over 70 years, while offering IPPs contracts that, for practical purposes, require depreciation over a period no longer than 40 years. Markets and tax rules can require IPPs to depreciate their assets even more quickly.

BC Hydro attempted to explain its rationale for these different depreciation periods in a letter to the editors of Business in Vancouver ("BIV") magazine, dated November 2, 2016. In that letter, BC Hydro states:

"Contrary to what is suggested in the BIV article, the difference in the economic life applied to Site C and independent power projects reflects their true costs to ratepayers. That is, for independent power projects, electricity purchase agreement (EPA) costs are recovered over a shorter period of time (e.g., 40 years, although this can vary based on negotiations with the producer) because the private contractor requires cost recovery within the term of the EPA."

Which is true, of course, as far as it goes. What BC Hydro ignores is the very sound reasons that IPPs require their money back in, say, 40 years. First, they (and their bankers) see exactly the "disruptors" and risks that the Commission cites in raising

its concerns about a 70-year modelling period for Site C⁸, and other risks, besides, including climate-induced risks such as reduced snow falls and exhausted glaciers.

That is, they have no confidence that the project will still be “used and useful” beyond that time, so no expectation that ratepayers will still be made to pay for the asset.

There is no responsible reason that BC Hydro should have a different expectation for Site C. But if Hydro does hold the contrary view – that assets built now will face the same world of competitors and customers in 2093 – then there can be little reason for it not to apply that same rosy picture to its IPP suppliers in the form of 70-year contracts. If it did, then the “true cost to ratepayers” argument in its letter would disappear at the stroke of its own pen.

Some rationale for this imbalanced treatment is alluded to by BC Hydro’s, with claims about the very long-life of dams. But even if this physical argument, rather than the economic (market) risk argument raised by the Commission, were determinative, a 70-year amortization would still seem unreasonable.

As we have seen in BC and around North America, dams are experiencing ever-shorter lives – at least without the need for costly repair. Jordan River in BC and the Oroville Dam in California show us that dams do not last forever, and that safety concerns can arise quickly. The Snake River projects on the Bonneville Power Authority system demonstrate that their social license can expire quite suddenly.

These are the reasons that, properly, IPPs must depreciate their projects over 30 to 40 year time periods. The Commission should evaluate Site C through the same lens.

Time to Take Stock

Naikun suggests that the Commission should consider the matters discussed above as it responds to section 3(a) of the Terms of Reference.

Revisiting alternatives to Site C would provide British Columbians with the opportunity to properly evaluate projects on an “apples-to-apples” basis. It would allow resource choices that reflect technological alternatives that, otherwise, BC Hydro has been unwilling to consider in the face of its focussed pursuit of Site C. And it would allow government to take the steps necessary to link industrial policy and energy policy in a way that uses industry’s immediate need for natural gas consumption as a positive bridge to better alternatives for future demand.

Importantly, stepping back from the hastily-considered, and poorly implemented, pursuit of Site C would allow British Columbia to properly develop the best suite of

⁸ Preliminary Report, Page vii of viii

projects from its abundant resource potential – not simply the only project alternative that BC Hydro had left to it under the provisions of the CEA.

And it is not speculation that there is much to be learned about BC’s clean alternatives to Site C. In its response to a Commission’s question in the Preliminary Report⁹, BC Hydro states that:

“BC Hydro does not have a mandate to conduct exploration for geothermal energy resources. BC Hydro has not invested in exploratory geothermal drilling in the last (sic) 15 years, although investment was made prior to this timeframe based on Commission recommendations from the 1982 Site C review.”

In other words, although the prior time Site C went before the Commission, geothermal was identified as an alternative requiring exploration, BC Hydro took no steps to explore geothermal this time – despite significant progress in the technology over the intervening years.

This is explained away on the basis that BC Hydro has no “mandate” for such exploration. Naikun does not understand where (or from whom) BC Hydro would expect to receive a mandate to explore alternatives before opting to spend more than \$8 billion of ratepayer money. Surely that mandate should come from its own board and management.

BC Hydro then, weakly, says that in 2015 (after its commitment to Site C), it spent \$100,000 to co-fund a site study for geothermal. That investment is roughly one day’s interest on just the \$600 million cost over-run confirmed by BC Hydro on October 4.

Wind resources appear to have been given no more serious consideration by the utility. BC Hydro has used wind integration as an “adder” to inflate the cost of wind alternatives to Site C. However, BC Hydro concedes that its last wind integration study was done in 2010, and since that time a number of factors – including reduced natural gas prices and the somewhat vague “market conditions” – would “impact” the wind integration cost (presumably downward).¹⁰

As with geothermal, this is just not good enough. Whatever it may believe, BC Hydro’s “mandate” is not simply to pursue Site C; it is to make the best resource choices for British Columbians. It cannot do that with out-dated information. And having been found to have only inadequate information about (at least) two key resource classes, it should be more careful than to confidently claim that it knows, on information it will share later, that Site C is best for ratepayers.

⁹ BC Hydro Submission, October 3, 2017, Question 2.61, Page 3 of 8

¹⁰ BC Hydro Submission, October 3, 2017, Question 2.37, Page 1 of 1

Part B: Responses to Specific Questions in the Terms of Reference

1. *Is Site C on time?*

Naikun agrees with the Commission that Site C is *currently* on schedule to be completed in November, 2024¹¹. However, Naikun also agrees with the Commission that BC Hydro, has not provided evidence that this on-time performance will continue through project completion¹².

Standing seven full years from its proposed in-service date, Naikun respectfully submits that little comfort should be taken from the project's current timetable. This is true for three main reasons:

- Deloitte's reports must raise serious concerns about the rigour, experience, and capability of BC Hydro's ability to control project schedule;
- The evidence (broadly, and notably from both Deloitte and Mr. Ansar in this proceeding) show that projects like Site C are notoriously difficult to manage; and
- The evidence in this proceeding suggests that BC Hydro is using contingency funds at an alarming rate – indicative of an unsustainable strategy to over-spend to maintain schedule.

BC Hydro's mid-inquiry adjustment to its timetable should also raise alarm. Only under the light of this review has BC Hydro acknowledged what seemed apparent to Deloitte: that the 2019 river diversion date would not be met. This leaves one to wonder about the level of confidence that can be had in other critical deadlines along the next seven-year path.

2. *Is Site C on budget?*

Naikun agrees with the Commission that this proceeding has not elicited adequate evidence to determine if the project is on budget as it stands¹³.

In addition, Naikun agrees that the evidence offered so far provides no basis to determine the extent of possible budget over-runs to the point of completion¹⁴.

Equally, however, the evidence leaves little doubt that over-runs are coming.

Some of this evidence pertains to the BC Hydro's disproportionate use of contingencies on its major civil contract. With supplier bankruptcies, significant

¹¹ Preliminary Report, Page 14

¹² Preliminary Report, Page 19

¹³ Preliminary Report, Page 22

¹⁴ Preliminary Report, Page 33

structural failures, and on-going concerns about under-budgeting of other contracts still looming as future problems, BC Hydro has already consumed more than three quarters of its available contingency, with less than one-quarter of the total project completed. This is, simply, evidence of a project that is in serious trouble, and spending furiously to catch up.

BC Hydro has now conceded that it cannot catch up – it will miss its target for a 2023 in service at a cost it estimates to be \$610 million. With that concession, BC Hydro states: “We’ve retained the contingency and it remains available to prudently manage risks on the project.”¹⁵ While not entirely clear, this appears to be saying that BC Hydro now considers the contingency-use problem averted, by simply topping it up through a revision of the under-lying budget. With respect, taking a mulligan on the first go at the contingency does not “retain” it in any conventional use of the word.

Despite all this uncertainty, the Deloitte Report estimates that cost over-runs will range from \$800 million to more to \$4.3 billion¹⁶. There is little suggestion that the project will meet its budget, and zero-probability is assigned to coming in cheaper than forecast.

Viewed another way, there is little doubt that the cost over-runs will exceed the cost of termination (ignoring, as we should, sunk costs). This alone should direct the Commission and government to a relatively simple (and correct) analytical perspective: the choice of whether to proceed or halt Site C must ignore sunk costs, and approach the question of BC Hydro’s energy needs and alternatives on a purely on a forward looking basis.

From that vantage point, there is simply no evidence that Site C is the right project for British Columbia. Or, as BC Hydro would put it, that ratepayers are “best off” to proceed because they have already spent \$2.1 billion and would be left “without to show for it”¹⁷ if the project were halted. That, bluntly, has nothing to do with it, and to argue otherwise invites throwing good money after bad.

3. What is the cost to ratepayers of terminating Site C?

Naikun has no reason to dispute that the cost of terminating Site C will be in the region of \$1.1 billion¹⁸. The fact that the cost of suspension is estimated to be higher than that should take that option of the table without further consideration.

¹⁵ Cover Letter to BC Hydro’s October 4, 2017 submission.

¹⁶ Site C Construction Review, Deloitte, September 7, 2016, Page 16

¹⁷ BC Hydro’s Executive Summary Filing, October 4, 2017, page 2

¹⁸ Preliminary Report, Page 44

4. What portfolio of generating projects and demand-side management initiatives could provide similar benefits as Site C?

Deloitte has attempted to answer this question in its report titled “Site C – Alternative Resource Options and Load Forecast Assessment” (the “Portfolio and Load Report”).

Naikun is sensitive to the complexity of the question that faced Deloitte, and the timeframe in which it was asked to do its work. Within those constraints, Naikun believes that Deloitte has provided some useful findings.

Specifically, the Portfolio and Load Report (in the portfolio described at page 39, for example), makes clear that Site C can be replaced with a portfolio of resources that is both cost effective and consistent with BC’s energy objectives.

However, as noted above, Naikun believes that (at least in respect of off-shore wind), Deloitte’s estimates are too pessimistic. In other words, while the Deloitte portfolio looks positive as written, there is reason to believe that the prospects will be even better when more careful analysis is undertaken.

While much work on a portfolio to replace Site C still needs to be done – there should be no question that an abbreviated process such as this could fully identify the best alternatives to Site C – two critical points are crystal clear:

- Site C will be more expensive than BC Hydro is claiming; and
- Other resources (including technologies like wind and geothermal which BC Hydro has typically undervalued) can stand in place of Site C, and will likely be even cheaper and more beneficial than Deloitte suggests.

5. What are the forecast energy and capacity needs of British Columbia?

BC Hydro’s submissions put a great deal of weight on the quality of its load forecasts. Deloitte’s Portfolio and Load Report suggests that such confidence is misplaced.

Specifically, while BC Hydro does fairly well in predicting the relatively easy parts of its load forecast – residential and commercial, which can generally be explained by population, income, and GDP estimates that tend to be quite accurate – its forecasts are simply inadequate in respect of the more complex industrial sector.

Using forecast models between 2008 and 2016, BC Hydro’s errors are massive¹⁹:

- 9 per cent of energy in the first year;

¹⁹ Portfolio and Load Report, Deloitte, Page 67

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- 19 per cent of energy in the fifth year; and
- 21 per cent of energy in the eight year.

Errors of this magnitude matter a lot in BC, where the industrial sector accounts for nearly a third of total BC Hydro sales. Based on this level of forecasting error, the Commission should worry whether BC Hydro has a clear appreciation of the market that would be waiting were Site C to eventually come on line.

The Commission should be equally concerned with Deloitte's claim that "an alternative set of assumptions could result in a reduction of load forecast in the range of 6,000 to 6,150 GWh, and a reduction in peak capacity in the range of 1,140 and 1,160²⁰."

As Deloitte makes clear, its assertion about possible load reductions do not arise from direct modelling, but rather follow from discrete and static adjustments, including removing certain LNG projects, adding electric cars, and intensifying DSM activities. In short, all Deloitte has done is to take BC Hydro's mid-estimate model run, and added and subtracted a few things.

Deloitte admits that its conclusions should be read as only "indicative". Bluntly, that is not right either, since suspect load forecasting methodologies may well not get right even the direction of change.

For example, Deloitte takes away some LNG industry, but does not investigate what else might arrive to replace it. Deloitte adds electric cars, but does not investigate other structural change that might accompany it. Deloitte adds DSM, but does not address real (and long-standing) concerns that BC Hydro's existing DSM penetration is already overstated.

In concluding its assessment of BC Hydro's load forecasting, Deloitte makes the following statement: "While this assessment has not included direct testing of the model, it does find that with some exceptions, BC Hydro's methodology is consistent with the practices of other North American utilities."

This statement is somewhat baffling. Deloitte identifies that BC Hydro's load forecasts are substantially wrong. It identifies that a handful changes to the underlying assumption can move the results by more than the size of Site C itself. And then it seems to offer comfort by saying that other utilities do things just the same way. That is simply not a satisfying answer.

The Commission's Preliminary Report finds that it does not have the information to assess BC Hydro's load forecast.²¹ It finds that it does not know what is happening

²⁰ Portfolio and Load Report, Deloitte, Page 6

²¹ Preliminary Report, Page 59

in the industrial sector, where load increases tend to be large and discrete²². It finds it does not know how load will react to the higher rates in the future²³. It finds that it does not know how so-called disruptive trends will affect future demand²⁴. And it finds it does not know what GDP forecast to use²⁵.

In short, the Commission does not know enough to judge either BC Hydro's forecast, or to evaluate the vastly different result that Deloitte says will arise from its alternative assumptions. With that breadth and level of uncertainty, proceeding with Site C would be nothing short of reckless.

Summary of the Questions

Section 3(b) of the Terms of Reference has asked five specific questions.

The answers to those questions are:

1. The project is on time for 2024, but BC Hydro now concedes that it will not make the river diversion in 2019 that would allow for a 2023 in-service date. Without a 2019 river diversion, Deloitte assigns a zero percent probability to on budget performance.
2. The project can claim to on a stable budget footing now, but weak project management, and a history of disproportionate use of contingencies means there should be little expectation that it will remain so. At this point, the total scope of the budget overages are simply not known, and Deloitte states that it knows little about the contracts that are yet to be awarded. Deloitte has estimated that a budget overrun of up to 50 per cent remains possible, but it lacks the information from BC Hydro to assess the likelihood of that outcome.²⁶
3. The cost to terminate the project and the cost to suspend it are moderate in the context of future spending uncertain need. In fact, with the 2019 river diversion date now gone, Deloitte is predicting that that level of slippage will result in a 10 to 20 per cent rise in costs. As such, it is reasonable to believe that the cost of terminating Site C today will be less than projected cost overruns.²⁷
4. A portfolio of replacement generation can be found in British Columbia that is both cost effective and consistent with British Columbia's environmental

²² Preliminary Report, Page 56

²³ Preliminary Report, Page 64

²⁴ Preliminary Report, Page 66

²⁵ Preliminary Report, Page 61

²⁶ Construction Report, Page 16

²⁷ Construction Report, Page 16

objectives. With the time afforded by stepping back from Site C, BC can investigate how best to develop those resources to meet its energy policy goals and its economic and social objectives.

5. BC Hydro's load forecast is not reliable, and Deloitte's estimate of its possible overstatement is not a robust substitute. BC simply needs to get a better handle on how much energy and capacity it will need, and when.

When the responses to these questions are considered in their totality, it becomes clear that the Commission cannot have:

- 1. Confidence about when Site C will be completed;**
- 2. Confidence about what Site C will cost; or**
- 3. Confidence that Site C will be the right mix of capacity and energy to meet future demand.**

No project – let alone one still facing possible expenditures of more than \$8 billion – should be allowed to proceed under those conditions.

In light of this, Naikun respectfully submits that The Commission should speak decisively in its report to government:

- 1. Site C should be terminated, and BC Hydro should use more economically rational procurement mechanisms to replace it; and**
- 2. Government should integrate its industrial and energy policies, including the use of the Heritage Resources, to inform both a more rigorous load forecast and a more thoughtful use of BC's wind and geothermal resources.**