

Overview

This report was prepared by a team of researchers led by UBC's Program on Water Governance, including Dr. Karen Bakker, Dr. Gordon Christie, and Richard Hendriks.

- The Site C Project is large, costly and complex, which necessitates that it be subject to the highest level of review available provincially and federally.
- This did not occur. In particular, the Project was entirely exempted from any review by the BC Utilities Commission.
- The regulatory review was limited to an environmental assessment Joint Review Panel conducted over a compressed nine-month period by a three-person panel.
- As acknowledged by the Panel, the review process was characterized by insufficient time, resources and information that compromised the potential for a well-informed, comprehensive decision-making process.
- The Joint Review Panel stated explicitly in their report that they did not have sufficient time or resources to properly assess certain key issues, including the costs of the Site C Project, and thus recommended that the Site C Project be referred to the BC Utilities Commission, which has not occurred.

Content

Our analysis is presented as follows:

- Historical context (3.1)
- Clean Energy Act (3.2)
- Environmental assessment of the Site C Project (3.3)
- Reconsidering existing regulation and policy (3.4)
- Regulatory opportunities (3.5)

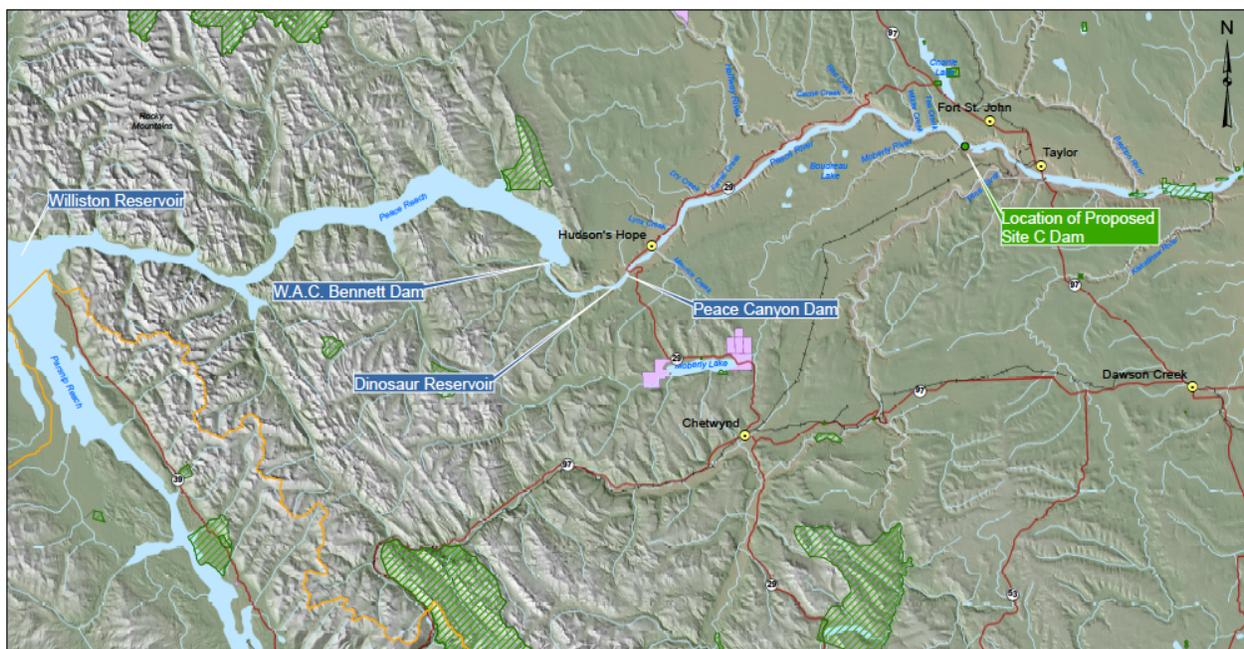
3.1 Historical context

3.1.1 Two Rivers Policy

The genesis for the Site C Project lies in a policy first formulated more than a half-century ago, in the 1950s. This policy, known as the Two Rivers Policy, was conceived by the then Premier of British Columbia, W.A.C. Bennett, and formed the centrepiece of his government’s electricity strategy. The policy called for large-scale hydroelectric development on both the Peace River and Columbia River systems.

The result of the Two Rivers Policy was the development on the Peace River of the GM Shrum Generating Station in 1968 (2730 MW) and the Peace Canyon Generating Station in 1980 (694 MW), and the creation of a large electricity surplus that powered industrial growth, served growing demand in the lower mainland, and provided revenues from exports.

Figure 3.1 Hydroelectric developments on the Peace River¹



The Two Rivers policy continues to guide electricity planning, including in the *Clean Energy Act*, despite the lack of growth in domestic electricity demand in British Columbia over the past

¹ BC Hydro. 2013. Site C Clean Energy Project Environmental Impact Statement. Figure 4.2. (CEAR #63919-411). [‘EIS’]

decade,² declines on the order of 60% in export market prices over that same period,³ and reductions on the order of 70% in the cost of alternative resources for meeting the electrical energy⁴ and capacity⁵ requirements of BC Hydro – all of which point to a need for policy reconsideration.

3.1.2 BC Utilities Commission

By the early 1980s, BC Hydro was planning to move forward with its third hydroelectric facility on the Peace River, the Site C Project. The BC Utilities Commission was tasked with reviewing the Project's justification, design, impacts and other relevant matters, and recommending whether and under what conditions an Energy Project Certificate should be issued.^{6,7} Below are key aspects of the BC Utilities Commission process:

- BC Hydro applied to the Province for an Energy Project Certificate in September 1980
- In April 1981, the Province referred the application to the BC Utilities Commission for review by a 5-person panel, pursuant to terms of reference for the review
- Informal meetings, information requests and a pre-hearing conference were held over the following 6 months
- Beginning in November 1981, formal hearings were held in Fort St. John and Vancouver for a total of 116 days over a one-year period concluding in November 1982
- Formal hearings were divided into six phases:
 - Demand
 - Supply
 - Project cost and adequacy of design
 - Environmental, land use, socio-economics, and economic cost-benefit evaluation
 - Financial impacts on hydro and on electricity users
 - Final arguments
- Community hearings were held for 6 days in local municipalities, and 5 days in local First Nation communities
- The Commission issued its final report in May 1983, concluding a 25-month process

² BC Hydro. December 2012. Electric Load Forecast Fiscal 2013 to Fiscal 2033, p.21.

³ BC Hydro. November 2013. BC Hydro Integrated Resource Plan, Chapter 5 – Planning Environment, Table 5-5, p.5.37. ['IRP']

⁴ Lazard. 2015. Lazard's Levelized Cost of Energy Analysis – Version 9.0, p.10.

⁵ IRP, *supra* note 2, Chapter 5 – Planning Environment, Figure 5-5.

⁶ British Columbia Utilities Commission. 1983. Site C Report: Report & Recommendations to the Lieutenant Governor-in-Council, p.1.

⁷ Though BC Hydro applied for an Energy Project Certificate under the *Utilities Commission Act*, a Certificate of Public Convenience and Necessity was also deemed to have been issued with the issue of an Energy Project Certificate.

BC Hydro based its original and final submissions to the Commission on the need for the Site C Project identified in its load forecasts.⁸ At that time, BC Hydro's 1981 "probable" or "mid load" forecast was for BC Hydro system-wide energy demand of 59,700 GWh/year by 1992/93. Upon review, the Commission raised a number of "major issues" respecting the demand forecasts, as detailed in its report, including:

- forecast methodology
- the role and forecast of key underlying variables
- specific factors such as industrial sector growth, technological change, interfuel substitution, conservation and self-generation
- prospects and potential in the export market.

Though its report was written over 30 years ago, the major issues raised above by the Commission remain very relevant today. The Commission concluded that: "Hydro's 'probable' load forecast should be considered as optimistic"⁹ and recommended that the provincial Cabinet:

...defer issuing an Energy Project Certificate for Site C until an acceptable load forecast demonstrates that construction of Site C must begin immediately in order to avoid supply deficiencies, and a comparison of alternative system plans demonstrates that Site C is the best project to meet the anticipated shortfalls.¹⁰

The conclusions reached by the Commission would prove to be illustrative of the value for the public interest of thorough, evidence-based consideration of large energy developments. The acceptance of the Commission's recommendations by the Government of the day would also prove to be prudent: as of 2016/17, the system-wide energy demand forecasted in 1981 by BC Hydro for the year 1992/93 has only just materialized, nearly 25 years later than forecast.¹¹

3.2 *Clean Energy Act*

The British Columbia *Clean Energy Act (CEA)* has played a pivotal role in the planning and evaluation related to the Site C Project. The *CEA* is designed such that inclusion of the Site C Project within a preferred portfolio for meeting the potential future electricity needs of the Province is almost inevitable. Specifically, the *CEA* contains a number of requirements related to how electricity needs must be met, how planning is to be undertaken, and how the Site C Project

⁸ British Columbia Utilities Commission. *supra* note 6, p.50.

⁹ *Ibid.*, p.85.

¹⁰ *Ibid.*, p.23.

¹¹ BC Hydro. 2016. Rate Design Application. Evidentiary Update on Load Resource Balance and Long Run Marginal Cost, p.12.

is reviewed.

3.2.1 Self-sufficiency

Section 6 of the *Act* requires that BC Hydro “must achieve electricity self-sufficiency by holding, by the year 2016 and each year after that, the rights to an amount of electricity that meets the electricity supply obligations solely from electricity generating facilities within the Province.”

This requirement has the effect of preventing BC Hydro from relying on imports, even though the cost of these imports is acknowledged by BC Hydro to be very low, very likely to remain low, and currently on the order of \$25/MWh, which is much less than the unit energy cost of all of the available domestic supply-side resources, including the Site C Project.¹²

The self-sufficiency requirement also precludes BC Hydro from relying for any length of time on the Canadian Entitlement available under the Columbia River Treaty. The Canadian Entitlement is a firm source of energy and dependable capacity under the Treaty for 10-years, the period of advance notice for either Canada or the United States to opt out of the Treaty. The Canadian Entitlement is the Canadian portion of the additional electricity produced in the Columbia River downstream in the United States. The Province of British Columbia owns the Canadian Entitlement, which currently amounts to about 4,400 GWh/year of energy and 1,320 MW of capacity,¹³ comparable to the 5,100 GWh/year of energy and 1,100 MW of capacity available from the Site C Project. Powerex (BC Hydro’s marketing division) markets the Canadian Entitlement under an agreement with the Province. As pointed out in the Joint Review Panel (JRP) Report for the Site C Project, the “entitlement was bought and paid for many years ago, and there is no serious question about the reliability of its partner.”¹⁴ In lieu of exporting this power at very low wholesale prices in the United States, the Province could make the Canadian Entitlement available to BC Hydro to service the domestic market. However, because of the self-sufficiency requirement, this supply is not “solely from electricity facilities within the Province”, and therefore the Canadian Entitlement cannot be considered by BC Hydro as a source of dependable capacity in the long term.

The self-sufficiency requirement has the effect of making very low-cost, and in the case of the Canadian Entitlement very low emission, alternatives to Site C unavailable for use by BC Hydro,

¹² *IRP*, *supra* note 2, Chapter 5 – Planning Environment, Table 5-5, p.5.37.

¹³ BC Hydro. 2014. BC Hydro Annual Report 2013, p.17.

¹⁴ Site C Joint Review Panel. May 2014. Report of the Joint Review Panel: Site C Clean Energy Project BC Hydro, p.305. (CEAR #63919-2771). [‘JRP Report’]

other than as short-term contingency resources.

3.2.2 Greenhouse gas emissions

In 2007, the BC Government enacted the *Greenhouse Gas Reductions Targets Act* setting out the targets for reducing greenhouse gas emissions in the Province. Several pieces of legislation followed, including the *Carbon Tax Act* and the *Greenhouse Gas Reduction (Cap and Trade) Act*, since superseded by the *Greenhouse Gas Industrial Reporting and Control Act*. The *CEA*, which came into force on April 28, 2010, contains several requirements respecting the reduction of greenhouse gas emissions in the electricity generation sector, including:

- 2(c) to generate at least 93% of the electricity in British Columbia from clean or renewable resources and to build the infrastructure necessary to transmit that electricity;
- 2(g) to reduce greenhouse gas emissions in accordance with the targets set out in the *Act* or as determined in the *Greenhouse Gas Reduction Targets Act*.
- 2(h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia; and
- 6(2) (b) rely on Burrard Thermal for no energy and no capacity, except as authorized by regulation.

Several amendments have been made to the *CEA* since its initial enactment, among the most consequential of which was Order-in-Council 572, which modified the *Act* as follows:

- 2(c) to generate at least 93% of the electricity in British Columbia, other than electricity to serve demand from facilities that liquefy natural gas for export by ship, from clean or renewable resources and to build the infrastructure necessary to transmit that electricity

Briefing Note #2 *Assessing Alternatives – Environmental Effects* explores the potential greenhouse gas emission reduction benefits of the Site C Project in the context of the alternatives, and of the potential emissions from “facilities that liquefy natural gas for export by ship”. As pointed out in that document, the total annual emissions from only a single large-scale LNG export facility, Pacific Northwest LNG, would represent 95% of the 2050 emissions reductions target set out in part 2(g) of the *Act*.

In other words, while the *CEA* on the one hand places severe restrictions on greenhouse gas emissions associated with electricity for domestic purposes in British Columbia, it also allows for emissions from LNG exports many times larger than possible greenhouse gas reductions from the Site C Project compared to the available alternatives.

3.2.3 Energy planning

In addition to matters related to electricity self-sufficiency and greenhouse gas emission

reductions, the *CEA* also requires BC Hydro to submit integrated resource plans to the Minister for approval by Cabinet. Among other items, these plans are to include:

- a description of BC Hydro's forecasts, over a defined period, of its energy and capacity requirements to achieve electricity self-sufficiency; and
- a description of what the authority plans to do to achieve electricity self-sufficiency and to respond to British Columbia's other energy objectives.

Integrated resource planning is intended to inform the selection of the lowest cost demand-side and/or supply-side resources that provide the best overall outcome for ratepayers, with consideration given to a broad range of benefits, costs and risks.

Prior to the *CEA*, BC Hydro's long-term acquisition plans (the precursor to its integrated resource plans) were reviewed and approved by the BC Utilities Commission. This provided the opportunity for evidence-based, rigorous and independent analysis of the monopoly utility's long-term planning and acquisitions. That the Provincial government considers it prudent to regulate monopoly utilities is evidenced by the fact that all other utilities continue to be required to submit their integrated resource plans to the Commission for review.

3.2.4 Certificate of Public Convenience and Necessity

The British Columbia *CEA* exempts several projects, including the Site C Project, from sections 45 to 47 of the *Utilities Commission Act (UCA)*, removing the requirement for a Certificate of Public Convenience and Necessity (CPCN) and preventing the Commission from issuing an order to cease work in the absence of having received a CPCN where required under the *UCA*. By exempting the Project from the need to obtain a CPCN, the *CEA* eliminated the process through which the economic and technical justification of a project is normally reviewed in detail at the BC Utilities Commission, and also removed certain procedural requirements related to First Nation consultation that would allow the Commission to make an independent determination as to whether consultation of First Nations has been adequate.

The Certificates of Public Convenience and Necessity Application Guidelines ("CPCN Guidelines") and the First Nations Information Filing Guidelines ("FN Guidelines") for Crown Utilities detail the usual requirements of a Commission process that did not occur as a result of the exemption of the Site C Project. The CPCN Guidelines are discussed below, with the FN Guidelines discussed in Briefing Note #1 *First Nations – Consultation, Accommodation and Reconciliation*.

Financial and technical capacity of BC Hydro

Section 1(ii) of the CPCN Guidelines requires applicants to provide: "Evidence of the financial

and technical capacity of the applicant and other persons involved, if any, to undertake and operate the project.” In its recent applications for a CPCN for the Ruskin Dam and Powerhouse Upgrade Project,¹⁵ and the John Hart Generating Station Replacement Project,¹⁶ BC Hydro filed the following as the entirety of the evidence of its financial capacity:

BC Hydro is an agent of Her Majesty the Queen in right of the Province of B.C. BC Hydro has the financial capacity to undertake the Project and other large projects by means of: borrowing guaranteed by the Province, borrowing directly from the Province and by funds generated internally from the operation of its business. Moody’s Investors Service and Standard & Poor’s Corporation rated BC Hydro bonds as Aaa and AAA respectively. Dominion Bond Rating Service rates BC Hydro as AA High.¹⁷

The total expected cost of the John Hart Replacement Project is \$1,014.3 million,¹⁸ while that for the Ruskin Dam Upgrade Project was \$718.1 million.¹⁹ These costs compare to total construction and development costs for the Site C Project of \$7,900 million at the time of filing of the Environmental Impact Statement in August 2013,²⁰ and \$8,335 million at the time of the Provincial Government’s final investment decision in December 2014.²¹

The cost of the Site C Project is considerably higher than the cost of BC Hydro’s most recent hydroelectric upgrade projects. Whether the financial capacity of BC Hydro to carry out the Project, including any implications for BC Hydro’s credit rating, would have been a public interest issue during a CPCN proceeding before the Commission cannot be known with certainty. By exempting the Site C Project from the need for a review under sections 45 to 47 of the *UCA*, this issue cannot be addressed. The concern in this context is whether it is in the public interest not to provide an opportunity to address that issue, considering that the Site C Project is the most expensive public sector project in the Province’s history, and many times more costly than any

¹⁵ BC Hydro. 2011. Ruskin Dam and Powerhouse Upgrade Project Application for a Certificate of Public Convenience and Necessity (CPCN).

¹⁶ BC Hydro. 2012. John Hart Generating Station Replacement Project Application for a Certificate of Public Convenience and Necessity (CPCN).

¹⁷ *Ibid.*, p.1-19.

¹⁸ *Ibid.*, p.4.7.

¹⁹ BC Hydro, *supra* note 15, p.2-30.

²⁰ BC Hydro. 2013. Site C Clean Energy Project Environmental Impact Statement (Amended). Response to Working Group and Public Comments on the Site C Clean Energy Project Environmental Impact Statement, Technical Memo Project Costs, p.4. (CEAR #63919-1519).

²¹ Government of British Columbia and BC Hydro. Site C to provide more than 100 years of affordable, reliable clean power. Backgrounder: Site C Capital Cost Estimate. Available at: https://www.sitecproject.com/sites/default/files/backgrounder-site-c-cost-estimate_0.pdf.

BC Hydro project recently reviewed by the Commission.

With respect to BC Hydro's technical capacity, in its recent filings for the John Hart Replacement Project, BC Hydro noted the following:

Between 2007 and 2012, BC Hydro placed six generation facility upgrades into service, each of which had a capital cost of over \$50 million. These projects are: Revelstoke Unit 5; Mica Generator Stator Replacement (Units 1-4) (Mica G1-G4 Stator); Peace Canyon Generator Stator Replacement and Rotor Modification (Peace Canyon G1-G4 Stator); Aberfeldie Redevelopment; Coquitlam Dam Seismic Improvement; and Fort Nelson Generating Station Upgrade.

The expected costs of the facilities referenced by BC Hydro ranged from \$58.0 million to \$280.0 million. This compares to a cost of \$8,335 million for the Site C Project. The projects referenced by BC Hydro are of a different order of magnitude and complexity, and the John Hart Replacement Project and Ruskin Dam Upgrade Project are both "brownfield" redevelopments at existing facilities. BC Hydro has not constructed a "greenfield" large-scale hydroelectric facility since the Revelstoke Generating Station in 1984, over 30 years ago.

Similar to questions respecting financial capacity, by exempting the Site C Project from the need for a review under sections 45 to 47 of the *UCA*, issues respecting the utility's technical capacity have gone unaddressed.

Revenue requirements and rate impacts

Section 2 of the CPCN Guidelines requires the filing of information related to Project need, alternatives and justification. Part (iii) deals with revenue requirements and rate impacts:

A schedule calculating the revenue requirements of the project and feasible alternatives, and the resulting impacts on customer rates

No such schedule was provided at any time during the environmental assessment of the Site C Project. During that process, BC Hydro typically responded to information requests respecting revenue requirements by noting that "the requested information is outside the scope of the environmental assessment".²²

Indeed, the environmental impact statement (EIS) guidelines for the Site C Project, which were prepared by the government agencies and authorized by the respective federal and provincial

²² BC Hydro. 2013. Response to Comments on the Site C Clean Energy Project Environmental Impact Statement, January 25, 2013. Submitted by BC Hydro on May 8th, 2013, (see e.g. ab_0001_149, ab_0001_173). (CEAR #63919-1423).

Ministers, make it very clear that the environmental assessment process must not to undo the effect of the exemption in the *CEA*:

The EIS is not intended to constitute a Certificate of Public Convenience and Necessity for the Site C Project. The Site C Project is exempt from the requirement for a Certificate of Public Convenience and Necessity as per Section 7 of the B.C. *Clean Energy Act*.²³

In response to a direct request from the JRP for “the revenue requirements of Site C”, BC Hydro provided a single slide in a Powerpoint presentation indicating its estimated revenue requirements for F2024 through F2027, the first four years of Project operations.²⁴ Detailed information respecting determination of these revenue requirements, and information respecting the comparable revenue requirements of the alternatives to the Site C Project was not provided.

Project cost

The CPCN Guidelines require considerable information related to Project costs, including the following:

- (ii) The project cost estimate should include the basis of estimate, the preparation effort (level of effort used to develop the cost estimate), as defined in the latest revision of the AACE International Recommended Practices, along with a description of the method of estimating used, the percentage of project definition and design complete at the time of the estimate based on the judgment of the utility’s management, identification and justification of all assumptions, exclusions, inflation and discount factors, and sources of benchmarks and other data including lessons learned from relevant past projects.
- (iv) The cost estimate should provide:
 - (a) Any funds spent in prior years attributable to the project.
 - (b) A list of all project direct and indirect costs using an appropriate level of work breakdown structure, based on the nature, size and complexity of the project, by year until completion.
 - (c) Escalation (including inflation) amount and justification.
 - (d) Contingency amount and justification.
 - (e) Interest during construction or allowance for funds used during

²³ BC Environmental Assessment Office – Canadian Environmental Assessment Agency. 2012. Site C Clean Energy Project Environmental Impact Statement Guidelines, p.2. (CEAR #63919-404).

²⁴ BC Hydro. 2014. Joint Review Panel Public Hearing Responses to questions posed on January 7, 2014, p.7. (CEAR #63919-2699).

construction and corporate overhead.

(f) Identification and explanation of any management or other reserves.

(g) Any legal, regulatory and other project costs, including costs associated with First Nations and public consultation and accommodation.

(h) The amounts and sources of any contributions in aid of construction, grants or other funding or credits related to the project.

The information provided during the environmental assessment in relation to the costs of the Site C Project was contained in a 5-page appendix to the environmental impact statement,²⁵ and a 3-page technical memo.²⁶ As discussed in section 3.3.3 below, this lack of project cost information posed limitations on the ability of the JRP to draw conclusions about the cost of the Site C Project.

3.3 The environmental assessment of the Site C Project

3.3.1 Regulatory context

In May 2011, BC Hydro submitted a project description for the Site C Project to the Canadian Environmental Assessment Agency and the BC Environmental Assessment Office, initiating federal and provincial environmental assessments.

The Site C Project triggered an environmental assessment under the former *Canadian Environmental Assessment Act*, 1992, which was superseded by the *Canadian Environmental Assessment Act*, 2012 (*CEAA 2012*), which came into force on July 6, 2012.

The Site C Project was also reviewable under the British Columbia *Environmental Assessment Act*, and the *Reviewable Projects Regulation*, as a new hydroelectric power plant with a rated nameplate capacity greater than 50 MW.²⁷

3.3.2 Joint Review Panel process

In February 2012, the federal Minister of Environment and the provincial Minister of Environment finalized an agreement to conduct a cooperative environmental assessment, including the establishment of a review panel (“Panel Agreement”).²⁸ The purpose of the Panel

²⁵ *EIS*, *supra* note 5, Volume 1 Appendix F Project Benefits Supporting Documentation Part 1 – Project Cost Estimate.

²⁶ BC Hydro, *supra* note 20.

²⁷ *Environmental Assessment Act Reviewable Projects Regulation* (B.C. Reg. 370/2002), Table 7.

²⁸ The Minister of the Environment, Canada – The Minister of Environment, British Columbia. February 2012. Agreement to Conduct a Cooperative Environmental Assessment, including the Establishment of a Joint Review Panel, of the Site C Clean

Agreement was to establish the stages in the environmental assessment, determine the conduct of the assessment, and finalize EIS Guidelines for the JRP.

Time and resources

The Panel Agreement imposed several time and resource constraints on the work of the three-person JRP, including the following:

- submit a final report within 225 days following submission of the EIS by BC Hydro, allowing additional time for BC Hydro to respond to information requests (4.5)
- complete the entire review process within a total of eight calendar months (4.6)
- start panel hearings not earlier than 30 days after announcing the hearings (terms s.3.5)
- complete the panel hearings within 30 days (terms 3.8)
- submit the final report no later than 90 calendar days from the date that the JRP closes the panel hearings (terms 3.17)

These constraints indicate that the Panel Agreement intended to provide the Panel with a total of 76 days to perform the following tasks:

- reviewed the EIS Guidelines, the amended EIS, the Evidentiary Update, and all related materials, including consultation records from the Pre-Panel Stage;
- issue Information Requests (IRs) to BC Hydro and other interested parties;
- review and evaluate responses to IRs;
- request clarification on responses to IRs and on some comments submitted by interested parties; and
- determine that the EIS contained sufficient information to proceed to public hearings.

As it turned out, the Panel required 107 days, including for time in the process during which BC Hydro was responding to information requests from the Panel. The Panel Chairman spoke to the compressed timeframe for review of voluminous materials in his opening statement on the first day of the hearings:

The Chairman: I'd like to highlight some key features of our instructions.

Our first task was to review the 20,500 pages of the Environmental Impact Statement and its supplements, together with a written record of the pre-panel stage of this procedure, and decide whether the record was sufficient for the purposes of holding public hearings. After three rounds of Information Requests, and responses by Hydro, we found the information, now some 27,000 pages, not

Energy Project. (CEAR #63919-130). ['Panel Agreement'].

perfect, but sufficient for the purposes of holding these hearings.²⁹ [emphasis added]

This theme was repeated throughout the hearings by many participants and again by the Chairman:

THE CHAIRMAN: Now, that's a complicated series of questions and I really hope that Hydro does not give us a thousand page response. I can't stand it. I've read more material here than you could believe. The EIS and its supporting documents are many times longer than the Bible. And the plot is not as good, nor is the language.³⁰

While it is not unusual for environmental assessments to include large volumes of material, it *is* unusual for a review of a large-scale hydroelectric project by an independent panel to occur over a nine-month period.

As an example of a recent process for a similar project, Manitoba Hydro's proposal for additional hydroelectric development at Keeyask (695 MW) and Conawapa (1485 MW) on the Nelson River was reviewed during the same time period as the Site C Project. This review consisted of an environmental assessment of the Keeyask Hydroelectric Project through the Manitoba Clean Environment Commission and *CEAA 2012*, and a need for and alternatives to (NFAT) review before the Manitoba Public Utilities Board. Key milestones in these processes were as follows:

- Clean Environment Commission³¹
 - Environmental Impact Statement submitted in July 2012
 - Terms of reference issued in November 2012 to a four-person panel
 - Pre-hearing meetings, information requests and motion hearings
 - Hearings held for 38 days between September 2013 and January 2014
 - Commission report filed within 90 days of the close of hearings
 - Final report issued by the Commission in May 2014
- Manitoba Public Utilities Board³²

²⁹ Canadian Environmental Assessment Agency – British Columbia Environmental Assessment Office. 2014. In the Matter of the Joint Review Panel Established to Review the Site C Clean Energy Project Proposed by British Columbia Hydro and Power Authority, Proceedings at Hearing, December 9, 2013, Volume 1, pp.9-10. (CEAR #63919-2059).

³⁰ Canadian Environmental Assessment Agency – British Columbia Environmental Assessment Office. 2014. In the Matter of the Joint Review Panel Established to Review the Site C Clean Energy Project Proposed by British Columbia Hydro and Power Authority, Proceedings at Hearing, December 9, 2013, Volume 13, p.21. (CEAR #63919-2317).

³¹ Manitoba Clean Environment Commission. 2014. Report on Public Hearing Keeyask Generation Project, Chapter Three: The Public Hearing Process.

- o Terms of reference issued in April 2013 to a five-person panel
- o NFAT business case filed in August 2013
- o Pre-hearing meetings, information requests and motion hearings
- o Hearings held for 43 days from March 3, 2014 through May 26, 2014
- o Final report of the Board issued on schedule in June 2014

For the review of the Manitoba proposal, the four-person Clean Environment Commission was provided a total of 18 months to complete its review with the five-member Utilities Board provided 14 months, for a total of 32 months of review, much of it concurrent.

Similarly, the Lower Churchill Hydroelectric Generation Project, consisting of the Gull Island (2250 MW) and Muskrat Falls (824 MW) hydroelectric projects, was reviewed by a five-person environmental assessment JRP provided 32 months to complete its review and reporting.³³ This was followed by a four-person Newfoundland and Labrador Utilities Board review of the Muskrat Falls Project over a 9-month period.³⁴

1.3.3 Consequences of limited Joint Review Panel process

Cost estimates for the Site C Project

The implications of the time and resources available to the three-person JRP to assess the proposed Site C Project are evident in the Panel's findings related to the cost of the Site C Project, a central consideration in evaluating the Site C Project relative to the available alternatives, a key mandate and responsibility of the JRP in the EIS Guidelines.

The Panel cannot conclude on the likely accuracy of Project cost estimates because it does not have the information, time, or resources. This affects all further calculations of unit costs, revenue requirements, and rates.

RECOMMENDATION 46 If it is decided that the Project should proceed, a first step should be the referral of Project costs and hence unit energy costs and revenue requirements to the BC Utilities Commission for detailed examination.³⁵ [emphasis added]

³² Manitoba Public Utilities Board. 2014. Report on the Needs for and Alternatives to (NFAT) Review of Manitoba Hydro's Preferred Development Plan, p.19.

³³ Joint Review Panel established by Canada's Minister of the Environment, the Minister of Environment and Conservation for Newfoundland and Labrador, and the Minister for Intergovernmental Affairs for Newfoundland and Labrador. 2011. Report of the Joint Review Panel: Lower Churchill Hydroelectric Generation Project Nalcor Energy Newfoundland and Labrador, p.3.

³⁴ Newfoundland & Labrador Board of Commissioners of Public Utilities. March 30, 2012. Reference to the Board. Review of Two Generation Expansion Options for the Least-cost Supply of Power to Island Interconnected Customers for the Period 2011-2067. Report to Government, p.i.

³⁵ *JRP Report*, *supra* note 14, p.280.

In addition to the observations of the Panel Chairman regarding timeframes, the longer periods of time provided to other panels reviewing similar projects, and the acknowledgement by the Panel that it lacked the “information, time, or resources” to draw conclusions regarding the costs of the Site C Project, the possibility also arises that the constrained timeframe lead to unsupported conclusions by the Panel. That is to say, that sufficient time was not available to evaluate the evidence.

Greenhouse gas emissions

A second example concerns the findings of the JRP regarding the relative greenhouse gas emissions of the Site C Project compared to the alternatives. The Joint Panel noted in its report that the Site C Project:

... would produce a vastly smaller burden of greenhouse gases than any alternative save nuclear power, which B.C. has prohibited.³⁶ [emphasis added]

In reality, the portfolios developed and assessed by BC Hydro in its Integrated Resource Plan (IRP) and presented in the EIS all comply with the requirements of the *CEA*. As a result, *all* of the alternative portfolios produce low levels of greenhouse gas emissions.

As shown in the figure below, the Clean + Thermal #2 portfolio (569 kt CO₂e/year) differs from the Site C portfolio (34.4 to 78.3 kt CO₂e/year) by on the order of 500 kt CO₂e/year. To place this difference in context, it represents less than 1% of BC’s current emissions, 1.25% of BC’s 2030 target emissions and 3.7% of the BC’s 2050 target emissions under BC Hydro’s assumptions. It is difficult to see a “vastly smaller burden” where the burden imposed by any of the alternatives is small.

Moreover, additional opportunities are available to lower the greenhouse gas emissions of this alternative portfolio without increasing costs. As one of several opportunities, the Clean + Thermal #2 portfolio includes municipal solid waste generation, a “clean” resource in the *CEA* that produces very high greenhouse gas emissions (694 t/GWh CO₂e),³⁷ on par with diesel powered electricity generation (717 t/GWh CO₂e).³⁸ Removing this resource from the alternative portfolio and replacing it with additional natural gas and wind resources lowers the emissions by

³⁶ *Ibid.*, p. iv.

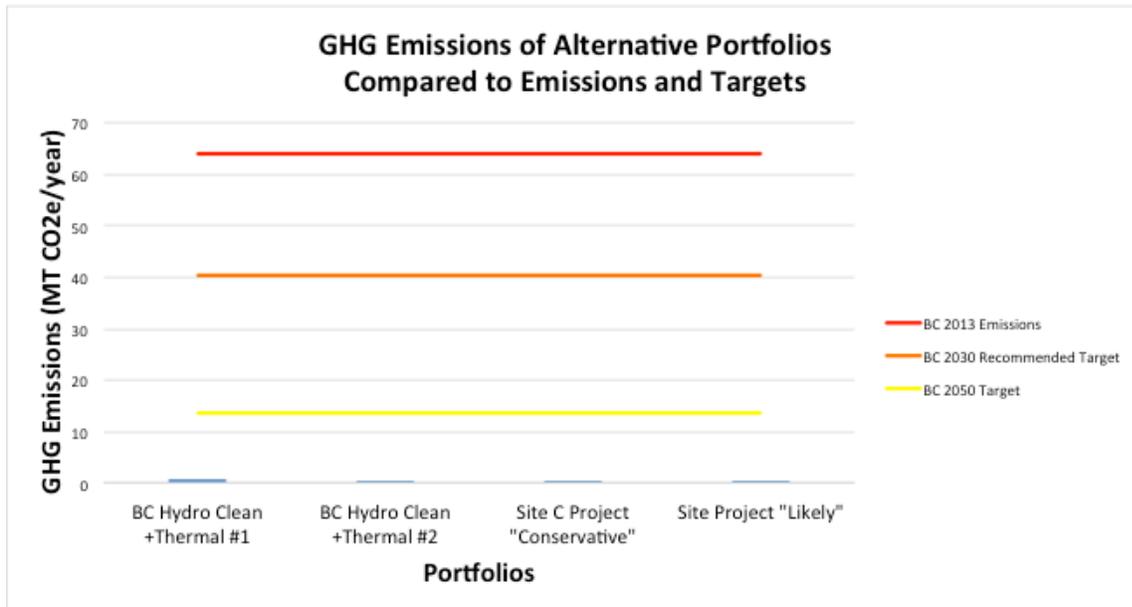
³⁷ *IRP*, *supra* note 2, Appendix 3A-4 2013 Resource Options Report Update, Resources Options Database (RODAT) Summary Sheets, p.68.

³⁸ *EIS*, *supra* note 5, Volume 2 Appendix S: Site C Clean Energy Project: Greenhouse Gases Technical Report. Prepared for BC Hydro by Stantec Consulting Ltd., p.106.

about 200 kt CO₂e/year.

It is unclear why the Panel did not undertake the analysis to confirm this “vastly smaller burden”, as the data necessary to do so were provided in BC Hydro’s submissions. It is quite conceivable that the timeframe available for the hearings, a maximum of 30 days, and for preparing the report, no more than 90 days following the hearings, played a role in this decision. During the hearings, the Panel dedicated one afternoon session to atmospheric issues, of which greenhouse house gases was one of five sub-topics in a four-hour hearing. No evidence concerning greenhouse gas emissions was presented to the Panel during the hearing, other than by BC Hydro. The Panel solicited no additional evidence through undertakings by BC Hydro or other interveners related to the comparison of greenhouse gas emissions from the various alternative portfolios.

Figure 3.2 GHG emissions of alternative portfolios compared to emissions and targets



3.4 *Reconsidering existing regulation and policy*

3.4.1 **Greenhouse gas emissions**

In the recent Industrial Electricity Policy Review (IEPR), completed by an independent expert panel for the Minister of Energy in October 2013, the following observations were made concerning clean (low greenhouse gas emission) objectives in the *CEA*:

Government’s policy intent for the 93% clean objective is to maintain British

Columbia's low-carbon electricity generation sector in order to support British Columbia's legislated GHG reduction targets. It applies generally to British Columbia's electricity generation sector rather than specifically to BC Hydro. This objective allocates risk to the ratepayer rather than government. The policy was implemented with minimal public scrutiny of costs and does not consider alternatives.³⁹ [emphasis added]

To address this issue, the IEPR panel recommended as follows:

A long-term carbon price should be used in evaluating all electricity supply proposals and the price should be determined by Government after a public process. This would eliminate the need for the objective to generate at least 93 per cent of the electricity in British Columbia from clean or renewable resources.⁴⁰

The observations of the IEPR panel speak to the potential to lower greenhouse gas emissions in other sectors of the economy at potentially much lower cost per unit of emission reductions compared to further emission reductions in the electricity sector. In 2013, the most recent year for which data are available, the electricity sector accounted for only 1.3% of British Columbia's greenhouse gas emissions, while other stationary combustion (30%), transportation (39%) and even fugitive emissions (8%) account for far greater shares of greenhouse gas emissions.⁴¹

In its response to the IEPR final report, issued with the Province's approval of BC Hydro's Integrated Resource Plan (IRP) in November 2013, the government responded to the recommendation as follows:

This recommendation would require legislative changes to the *CEA*. This recommendation will be considered at a future date.⁴²

No action has yet been taken on this recommendation of the IEPR. In the meantime, ratepayers may be paying far more for 93% clean energy than they would be paying for greenhouse gas emission reductions in other economic sectors. Maintaining very low electricity prices through the use of small amounts of low-cost (though somewhat higher emission) imported electricity to meet peak capacity requirements may be preferable to developing higher-cost domestic dependable capacity resources, even where those resources have lower emissions.

³⁹ IEPR Task Force. 2013. Industrial Electricity Policy Review Task Force Final Report, p.19.

⁴⁰ *Ibid.*

⁴¹ British Columbia. 2014. Summary of Greenhouse Gas Emissions: 1990-2013 (kilotonnes CO₂e). Emissions by Year. Available at: <http://www2.gov.bc.ca/gov/content/environment/climate-change/reports-data/provincial-ghg-inventory-report-bc-s-pir>.

⁴² Government of British Columbia. November 26, 2013. 10 Year Plan for BC Hydro. Backgrounder: Industrial Electricity Policy Review Report, p.2.

On the basis of cost per unit of emissions reduction, is it preferable to squeeze the last remaining emissions from the electricity sector or to focus on potentially more cost-effective emission reductions in other sectors? Would a focus on other sectors allow the costs of the alternative renewable electricity resources, such as wind and solar,⁴³ and electricity storage technologies⁴⁴ to continue to decline in price in the interim? As the IEPR report notes, without adequate scrutiny of the existing 93% clean energy objective, these kinds of questions cannot be answered.

3.4.2 Energy Planning

The IEPR expert panel also considered energy planning and commented as follows:

However, BC Hydro is the only utility required to submit its IRP to Government for review and approval rather than the Commission. The process for BC Hydro does not meet our test for risk allocation because the CEA directs BC Hydro to base its IRP on the Provincial Energy Objectives which limit BC Hydro's planning options. Neither government nor Commission review of the IRP would be market-based. BC Hydro has made great efforts to engage stakeholders in the IRP development process. However, the engagement process is not a proxy for a Commission review.⁴⁵

The limits that the IEPR is referring to include those that prevent BC Hydro from making use of more cost-effective resources for meeting needs, including market imports and the Canadian Entitlement under the Columbia River Treaty. The IEPR panel notes that risks to taxpayers, as owners of BC Hydro, are shifted to ratepayers, who must bear the costs and risks associated with government policy. As a result, the IEPR panel made the following recommendation:

BC Hydro's future Integrated Resource Plans should be reviewed and accepted by the Commission after a public process. As the owner of BC Hydro, Government may wish to review the Integrated Resource Plan before it is submitted to the Commission.⁴⁶

The Provincial Government responded as follows:

While not under consideration at this time, this recommendation could be considered during this review [of the BC Utilities Commission]. This

⁴³ Lazard. 2015. Lazard's Levelized Cost of Energy Analysis – Version 9.0, p.10.

⁴⁴ Bloomberg New Energy Finance. April 14, 2015. Bloomberg New Energy Finance Summit. Presentation by Michael Liebreich. Lithium-Ion Battery Experience Curve, p.12.

⁴⁵ IEPR Task Force, *supra* note 39, p.18.

⁴⁶ *Ibid.*, p.19.

recommendation would require a legislative change.⁴⁷

While the subsequent review of the BC Utilities Commission⁴⁸ completed in November 2014 addressed some matters of relevance to an improved regulatory approach for the Site C Project, as discussed below, it did not address the IEPR recommendation to have the BC Hydro IRP reviewed by the Commission and not by Cabinet. No apparent action has yet been taken in response to this IEPR recommendation.

3.5 Regulatory opportunities

3.5.1 Referral to the BC Utilities Commission

As detailed above, British Columbia's *CEA* exempts the Site C Project from sections 45 to 47 of the *UCA*, removing the requirement for a Certificate of Public Convenience and Necessity. Energy Minister Bill Bennett clarified the government's position on this matter in October 2015 in response to a request by the Union of B.C. Municipalities to refer the Site C Project to the BC Utilities Commission:

...the reason why we didn't send it to the BCUC is back when the *Clean Energy Act* was passed (2010), there was a decision made that if government was to build Site C, it would be a monumental decision in terms of energy policy that only duly elected officials have a right to make, as opposed to organization like the BCUC that is made up of bureaucrats and lawyers.⁴⁹

Indeed, the Site C Project is the largest public expenditure in the history of the Province, and is therefore an important matter of public interest for elected officials. However, the statement by the Minister is a false dilemma: refer the Site C Project to the BC Utilities Commission for a final decision, or entirely exempt the Site C Project from review by the Commission. A third option is, and has always been, available.

Despite the exemption from the CPCN set out in the *CEA*, the Provincial Cabinet does have further discretion under the *UCA* to refer the proposed Project to the Commission in order to address the recommendations of the JRP and other matters that Cabinet considers appropriate. This discretion is in the form of a review under section 5 of the *UCA*:

(1) On the request of the Lieutenant Governor in Council, it is the duty of the

⁴⁷ Government of British Columbia, *supra* note 42, p.2.

⁴⁸ BCUC Review Task Force. 2014. Independent Review of the British Columbia Utilities Commission Final Report.

⁴⁹ Alaska Highway News. October 5, 2015. "Site C Dam will not be diverted to B.C. Utilities Commission". Available at: <http://www.alaskahighwaynews.ca/regional-news/site-c/site-c-dam-will-not-be-diverted-to-b-c-utilities-commission-1.2076979>.

commission to advise the Lieutenant Governor in Council on any matter, whether or not it is a matter in respect of which the commission otherwise has jurisdiction.

(2) If, under subsection (1), the Lieutenant Governor in Council refers a matter to the commission, the Lieutenant Governor in Council may specify terms of reference requiring and empowering the commission to inquire into the matter.

The notion of referring the Site C Project to the Commission for advice or recommendations, as opposed to binding decisions, would not be news to the Minister of Energy, as this idea formed a key conclusion of the independent review of the BC Utilities Commission initiated by the Minister in November 2013 and concluded a year later in advance of the decision to proceed with the Site C Project. The independent panel reviewing the Commission made several observations concerning the benefits of greater use of section 5 of the *UCA*.

If government wishes to reserve final decision on certain projects and plans it can choose to exempt them from oversight (as done with the *CEA*, or make broader use of section 5 under the *UCA* whereby the Commission could make recommendations to government on specific matters referred to it by government.⁵⁰

...

A hybrid approach that allows a review and recommendations by the Commission, while giving government the authority to make the final decision, is available pursuant to *UCA* section 5. Section 5 requires the BCUC, on Cabinet's request, to provide advice on any matter regardless of whether it is in the Commission's jurisdiction. Section 5 also allows Cabinet to issue Terms of Reference for the inquiry. Government, rather than exempting projects and/or plans through direction and legislation, could direct these projects be subject to a section 5 review and recommendation to Cabinet. This provides the benefit of a public process and independent verification of projects and plans but reserves the final decision on plans and projects that have broader public interest criteria to be decided by elected officials.⁵¹ [emphasis added]

A referral of the Site C Project to the Commission under section 5 of the *UCA* could address several issues, including the following:

- Need, including:
 - Recommendation 49 of the JRP concerning the load forecast and demand-side management potential

⁵⁰ BCUC Review Task Force, *supra* note 48, p.12.

⁵¹ *Ibid.*, p.39.

- Costs, including:
 - Recommendation 46 of the JRP dealing with public scrutiny of the construction costs, unit energy costs and revenue requirements of the Site C Project
 - Updated costs and expected evolution in costs for alternatives to the Site C Project
- Revenues, including:
 - Recommendation 47 concerning long-term long-term price forecasts, which would include export price forecasts
- Policy, including:
 - Investigation of the self-sufficiency objective, including whether adjustments to this policy, such as inclusion of the Canadian Entitlement as a domestic resource, are in the public interest
 - Investigation of the 93% clean energy objective, including whether it is preferable to abandon the objective and instead place an appropriate price on carbon in the electricity sector
 - Investigation of whether it is preferable to import higher-emission electricity to meet dependable capacity requirements in order to keep prices as low as possible to encourage greater electrification of higher emission activities in other sectors of the economy
- Aboriginal consultation, including:
 - A determination by the Commission as to whether consultation of potentially-affected Aboriginal groups has been adequate in relation to the Site C Project to the point of the date of the Commission's recommendations
 - requiring information to be filed in the public domain respecting where the scope of the duty to consult falls on the *Haida* spectrum, including whether "the right and potential infringement is of high significance to the Aboriginal peoples, and the risk of non-compensable damage is high;"
 - requiring the filing of a determination by the First Nations as to whether they are satisfied with the consultation and accommodation; and
 - requiring, where there are immitigable potential effects on Aboriginal or treaty rights, which is the case for the Site C Project, the filing of the Crown proponent's perspective on the broader societal value of the project in light of those immitigable effects.

These matters concerning Aboriginal consultation are explored further in Report #1 *First Nation Consultation, Accommodation and Reconciliation*.