

Ref.: 88710

s.22

Email: s.22

pc: [steve.thomson.mla@leg.bc.ca](mailto:steve.thomson.mla@leg.bc.ca)

s.22

Thank you for a copy of your February 5, 2015 email to Vaughan Palmer regarding Site C and concerns related to economic viability of the project.

On December 16, 2014, Premier Christy Clark announced that Site C has been approved as part of the Province's Final Investment Decision. Site C will be the third dam and hydroelectric generating station on the Peace River in northeastern British Columbia and will generate affordable, reliable and clean electricity for more than 100 years and enough to power 450,000 homes. As part of this decision, the Government announced that the start of the Site C construction is delayed to summer 2015 to allow additional time for project permitting.

I refer you to the following briefing material posted on line that provides an overview, in summary form, of many of the details behind the Final Investment Decision, found at <http://www.newsroom.gov.bc.ca/downloads/SiteCTechbriefing.pdf>.

I appreciate the considerations you raise in your letter with respect to the decision regarding Site C, and the references you make to the report from the Joint Review Panel with regard to cost analysis, the demand forecast, geothermal as an alternative and the time by which additional supply would be needed. These considerations were included in the due diligence process that Government undertook before making the Site C Final Investment Decision (please refer to the link above, regarding these considerations including the fiscal impact of the project).

The due diligence process confirmed the need for additional electricity supply and concluded that supply from Site C is the best way to meet growing need for electricity, even with an ambitious conservation program and other investments in BC Hydro's existing system.

As part of the due diligence process, Government refined previous assumptions underlying the comparative costing of Site C and alternative portfolios. The refined assumptions reflected extensive consultation with industry and outside advisors and considered the 10-Year Rates Plan that Government announced on November 26, 2013.

Please refer to the following link regarding the 10-Year Rates Plan,  
<http://www.newsroom.gov.bc.ca/2013/11/10-year-plan.html>.

The comparison of Site C to alternative generation portfolios is sensitive to assumptions. As a result of refining the assumptions by undertaking due diligence, Government revised the long-term cost of Site C from \$83/ megawatt-hour (MWh) at the point of interconnection to an estimated range as low as \$58-\$61/MWh at the point of interconnection (see slide 19 in the online briefing material I referred to above).

With reference to further development of solar power, there is no question that it is a promising technology as you point out; however, cost comparisons must be made with care and consider the impact on the electric system. A number of jurisdictions are evaluating back-up systems such as pumped storage. In comparison, Site C provides both energy and capacity, as well as the flexibility to ramp its output up and down, to augment intermittent resources such as solar to provide reliable, low cost power.

The Government's decision to build Site C was not made lightly. Site C will ensure that all BC Hydro ratepayers continue to benefit from low cost electricity. The decision to build Site C puts ratepayers first – and will make sure British Columbia maintains its low cost power advantage for generations.

Thank you, again, for writing.

Sincerely,

Bill Bennett  
Minister of Energy and Mines

Technical Writer: Irene Wingfield, Team Writer  
Approved by: Chris Trumpy, A/ED.. EAED ✓  
Les MacLaren, ADM ✓  
Dave Nikolejsin, DM  
DMO-CI

Ref.: 90767

s.22

Thank you for your May 28, 2015 letter regarding the shutdown of BC Hydro's Burrard Thermal Generating Station (Burrard).

On March 6, 2014, as part of implementing the 10-Year Rate Plan for BC Hydro, government issued a direction to the British Columbia Utilities Commission that included a provision that allows BC Hydro to cease its generation related operations at Burrard.

The generating capability at Burrard will no longer be required after the addition of two hydroelectric generating units at Mica Dam, completion of the Interior to Lower Mainland transmission line, and installation of a new transformer at Meridian Substation in Coquitlam. BC Hydro expects to begin decommissioning of Burrard in 2016 following the completion of these projects. BC Hydro will however continue to operate transmission support services at the site. It is expected that shutting down Burrard will save BC Hydro customers \$14 million per year.

While Burrard currently plays an emergency back-up role, it is not needed and would require significant investment to maintain this capability over the long-term. The cost of retaining Burrard's generating capacity is too great for the limited benefit it would provide. To upgrade Burrard to a fully operating generation facility for long-term use, BC Hydro estimates it would need to invest over \$400 million.

In BC Hydro's November 2013 government approved Integrated Resource Plan (IRP), BC Hydro demonstrated the value of Site C. Before approving Site C, the Province undertook a thorough review of alternatives to Site C, including natural gas-fired generation. Government also conducted extensive consultations with the independent power industry to ensure its analysis reflected recent advances in technology and efficiency. At \$58-62 per megawatt-hour, Site C was clearly the most cost-effective resource. You can find more information at [http://www.newsroom.gov.bc.ca/downloads/Comparing\\_the\\_Options.pdf](http://www.newsroom.gov.bc.ca/downloads/Comparing_the_Options.pdf)

The same ratepayer focus—ensuring safe, reliable, low cost power—was used in approving Site C as in ceasing operation of Burrard.

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In addition to this, the *Clean Energy Act* contains an energy objective for the province to generate at least 93 per cent of its electricity from clean or renewable resources. Clean or renewable resources include biomass, biogas, biogenic waste, geothermal heat, hydro, solar, ocean, waste heat, waste hydrogen and wind. In BC Hydro's IRP, it was estimated that BC Hydro's four other gas-fired facilities account for more than five of the seven per cent allowance for natural gas-fired generation under the 93 per cent clean or renewable energy objective. As a result of this, there is little space left for developing new natural gas-fired generation at Burrard.

Thank you, again, for writing.

Sincerely,

Bill Bennett  
Minister

Drafted by: Oswald Dias, TIB  
Approved by: Paul Wieringa, ED, EAED ✓  
Les MacLaren, ADM ✓  
DMO-CI —

Ref.: 90398

s.22

Dear <sup>s.22</sup>

Premier Christy Clark has asked me to respond on her behalf to your April 4, 2015 and April 17, 2015 letters regarding the British Columbia Utilities Commission (BCUC) oversight over smart meters, Site C and Burrard Thermal Plant.

Government has a vision to modernize our electricity system, just as jurisdictions around the world are doing. The replacement of obsolete mechanical meters with modern smart meters is a critical part of this transformation. To provide ratepayers with information on their usage and provide real time information for BC Hydro to manage the grid, the *Clean Energy Act* mandated the Smart Meter Initiative and exempted BC Hydro from the requirement to obtain approval to proceed with the program. Government expects smart meters to deliver significant savings which will be passed onto customers and will help keep rates affordable.

Smart meters will also support a more efficient and reliable electrical grid, with advantages such as:

- automated, real-time notification of power outages so repair crews can be dispatched straight to the problem and restore electricity service faster;
- lower operating costs by shifting power within the power grid to where it is needed most; and
- simplified requirements when a customer moves so that crews do not have to go to a customer's home to read the meter or turn the power on or off when opening or closing accounts.

In July 2012, FortisBC applied to the BCUC for a Certificate of Public Convenience and Necessity (CPCN) for their Advanced Metering Infrastructure (AMI) Program. After a public review, the BCUC issued a CPCN noting that the AMI Program was in the public interest. You can find more information on the decision and arguments put forward by registered intervenors at <http://www.bcuc.com/ApplicationView.aspx?ApplicationId=359>

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I note that you also have a concern with smart meters regarding privacy. All information collected by BC Hydro will be managed in accordance with the *Freedom of Information and Protection of Privacy Act*. BC Hydro will not have access to a customer's real time consumption information, and they cannot determine if a customer is home or what the customer is doing. Only customers who choose to have an in-home feedback device will have access to real-time consumption information within the privacy of their homes. On December 19, 2011, the Information and Privacy Commissioner issued a report on BC Hydro smart meters, and continues to work with BC Hydro on ensuring personal information is protected. This report, available at <http://www.oipc.bc.ca/report/investigation-reports.aspx>, "found that BC Hydro is taking reasonable steps to protect its customers' personal information."

On December 16, 2014, Premier Christy Clark announced that Site C has been approved as part of the Province's Final Investment Decision. Site C will be the third dam and hydroelectric generating station on the Peace River in northeastern British Columbia and will generate affordable, reliable and clean electricity for more than 100 years. Site C will provide 5,100 gigawatt hours of electricity each year and 1,100 megawatts capacity which is enough power for 450,000 homes. As part of this decision, the Government announced that the start of the Site C construction is delayed to summer 2015 to allow additional time for project permitting.

The decision to proceed with Site C is a major public policy decision, and this decision rests with Government, not the BCUC. The *Clean Energy Act* exempted BC Hydro from the requirement to obtain approval from the BCUC in order to proceed with Site C.

The *Independent Review of the British Columbia Utilities Commission* (Final Report dated November 14, 2014), stated that Government has the prerogative to set provincial energy policy, to define the Commission's mandate and to direct the Commission on specific matters. No other major hydroelectric dam project in the past was subject to BCUC oversight. In addition, the BCUC does not have the capacity to conduct the significant analysis required for a decision such as this. The costs of Site C have been independently reviewed by KPMG and subject to numerous engineering peer reviews. However, to provide additional transparency on the project's costs, BC Hydro will be required to provide regular reports to the BCUC during construction.

Regarding the Burrard Thermal Plant, since 2001, the Government has been clear on its intent to phase out Burrard Thermal. The 2007 Energy Plan confirmed government's intent, in 2009 a direction was issued to the BCUC that Burrard Thermal would not be used for planning purposes, the 2010 *Clean Energy Act* stated that Burrard Thermal

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would not be operated except in the case of emergency or to provide transmission support services. On March 6, 2014, as part of implementing the 10-Year Rate Plan for BC Hydro, Government issued a direction to the BCUC that includes a provision allowing BC Hydro to cease its generation related operations at Burrard.

The generating capability at Burrard is being replaced by the addition of two hydroelectric generating units at Mica Dam, completion of the Interior to Lower Mainland transmission line, and installation of a new transformer at Meridian Substation in Coquitlam. BC Hydro expects to begin decommissioning of Burrard in 2016 following the completion of these projects. BC Hydro will however continue to operate transmission support services at the site. It is expected that shutting down Burrard will save BC Hydro customers \$14 million per year.

While Burrard currently plays an emergency back-up role, it is not needed and would require significant investment to maintain this capability over the long-term. The cost of retaining Burrard's generating capacity is too great for the limited benefit it would provide. To upgrade Burrard to a fully operating generation facility for long-term use, BC Hydro estimates it would need to invest over \$400 million.

In addition to this, the *Clean Energy Act* contains an energy objective for the province to generate at least 93 per cent of its electricity from clean or renewable resources. Clean or renewable resources include biomass, biogas, biogenic waste, geothermal heat, hydro, solar, ocean, waste heat, waste hydrogen and wind. In BC Hydro's November 2013 government approved Integrated Resource Plan, it's estimated that BC Hydro's four other gas-fired facilities account for more than five of the seven per cent allowance for natural gas-fired generation under the 93 per cent clean or renewable energy objective. As a result of this, there is little space left for developing new natural gas-fired generation at Burrard.

Thank you for writing.

Sincerely,

Bill Bennett  
Minister

pc: Honourable Christy Clark  
Premier

Honourable Christy Clark  
Premier  
West Annex, Parliament Buildings  
Victoria, BC V8V 1X4



Drafted by: Irene Wingfield (team writer)  
Input: Warren Walsh, GRB ✓  
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Ref.: 89598

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Email: s.22

pc: [marvin.hunt.mla@leg.bc.ca](mailto:marvin.hunt.mla@leg.bc.ca)

Dear <sup>s.22</sup>

Thank you for your March 12, 2015 emails regarding Site C and Treaty Rights.

On December 16, 2014, Premier Christy Clark announced that Site C has been approved as part of the Province's Final Investment Decision. Site C will be the third dam and hydroelectric generating station on the Peace River in northeastern British Columbia and will generate affordable, reliable and clean electricity for more than 100 years. Site C will provide 5,100 gigawatt-hours (GWh) of electricity each year and 1,100 megawatts (MW) capacity which is enough to power 450,000 homes. As part of this decision, the Government announced that the start of the Site C construction is delayed to summer 2015 to allow additional time for project permitting and additional consultation.

The capital-cost estimate for the project has been updated to \$8.335 billion, and Government has also 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, for a total of up to \$8.775 billion. The reserve is subject to provincial Treasury Board approval.

Electricity demand is expected to increase by 40 percent over the next 20 years. The supply from Site C is required even with BC Hydro's ambitious conservation programs that are targeted to meet 78 percent of future electricity growth. Importantly, Site C will enable BC Hydro to meet this future need while keeping rates low. 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.

The firm energy Site C provides will support the development of more independent power projects (IPPs) by backing-up intermittent supply resources, such as wind generation. IPPs currently provide 25 percent of British Columbia's electricity and will continue to play a vital role in meeting the Province's energy needs.

Government undertook a due diligence process that confirmed BC Hydro's forecast methodology through a third-party review. It concluded that Site C was the best way to

meet our growing need for electricity while keeping rates low, thereby ensuring BC Hydro's ratepayers continue to benefit from low-cost electricity.

The clean energy sector, including opportunities for First Nations' participation, will continue to play a critical role in British Columbia's electricity system going forward. Should the need for energy increase more than BC Hydro expects, for example due to expanded industrial activity, BC Hydro will purchase more power from the clean energy sector.

In addition, BC Hydro's Integrated Resource Plan, approved in November 2013, calls for the renewal of cost-effective electricity purchase agreements with existing IPPs and expanding the Standing Offer Program (SOP) for smaller projects under 15 MW. The SOP will be increased from 50 GWh per year to 150 GWh per year to enable more small-scale projects with First Nations and community partnerships without unduly impacting electricity rates.

BC Hydro will continue to work with First Nations and communities to ensure it delivers on its commitments and realize the many benefits of Site C. The decision to build Site C puts ratepayers first and will maintain British Columbia's low-cost power advantage for generations.

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

You have suggested that geothermal resources may provide a more cost-effective resource to generate electricity. Since 2001, the Ministry of Energy and Mines has issued 12 geothermal exploration permits. However, identifying geothermal resources is a high risk undertaking, often requiring extensive drilling with a substantial chance of failure as the resource can be very difficult to pinpoint. As a result, while eligible, no geothermal projects have been bid into BC Hydro procurement processes to date.

For example, a proposal for Mount Meager, 70 km northwest of Pemberton and within the Upper Lillooet Provincial Park at the headwaters of the Lillooet River, has been extensively explored. BC Hydro drilled 18 test holes and three deep exploratory wells between 1975 and 1982 at Meager Mountain. Additional drilling was completed most recently by Western GeoPower Inc in 2004. Although Mount Meager has potential to generate electricity, the exploratory wells have unfortunately not discovered commercially producible geothermal fluids to date.

Thank you, again, for writing.

Sincerely,

Bill Bennett  
Minister of Energy and Mines

Drafted by: Irene Wingfield (team writer)  
Input: Warren Walsh, GRB (Ref#89598)  
Approved by: Paul Wieringa, A/ADM, EAED ✓  
DMO-CI \_\_\_\_

Ref: 91095

s.22

Email: s.22

Dear s.22

Thank you for your July 20, 2015 email regarding the BC Hydro Site C project (Site C).

On December 16, 2014, Premier Christy Clark announced that Site C has been approved as part of the Province's Final Investment Decision. Site C will be the third dam and hydroelectric generating station on the Peace River in northeastern British Columbia and will generate affordable, reliable and clean electricity for more than 100 years. Site C will provide 5,100 gigawatt-hours (GWh) of electricity each year and 1,100 megawatts (MW) capacity which is enough to power 450,000 homes. As part of this decision, the Government announced that the start of the Site C construction is delayed to summer 2015 to allow additional time for project permitting and additional consultation.

The capital-cost estimate for the project has been updated to \$8.335 billion, and Government has also 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, for a total of up to \$8.775 billion. The reserve is subject to provincial Treasury Board approval.

Electricity demand is expected to increase by 40 percent over the next 20 years. The supply from Site C is required even with BC Hydro's ambitious conservation programs that are targeted to meet 78 percent of future electricity growth. Importantly, Site C will enable BC Hydro to meet this future need while keeping rates low. 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.

The firm energy Site C provides will support the development of more independent power projects (IPPs) by backing-up intermittent supply resources, such as wind generation. IPPs currently provide 25 percent of British Columbia's electricity and will continue to play a vital role in meeting the Province's energy needs.

Government undertook a due diligence process that confirmed BC Hydro's forecast methodology through a third-party review. It concluded that Site C was the best way to meet our growing need for electricity while keeping rates low; thereby ensuring BC Hydro's ratepayers continue to benefit from low-cost electricity.

As part of the due diligence process, Government refined previous assumptions underlying the comparative costing of Site C and alternative portfolios. The refined assumptions reflected extensive consultation with industry, Clean Energy BC and outside advisors, and considered the 10-Year Rates Plan that Government announced on November 26, 2013. This work confirmed the comparative advantage of Site C, in particular reducing the previously estimated long-term cost of Site C from \$83/megawatt-hour (MW.h) at the point of interconnection to a range as low as \$58-\$61/MW.h at the point of interconnection.

The clean energy sector, including opportunities for First Nations' participation, will continue to play a critical role in British Columbia's electricity system going forward. Should the need for energy increase more than BC Hydro expects, for example due to expanded industrial activity, BC Hydro will purchase more power from the clean energy sector.

In addition, BC Hydro's Integrated Resource Plan, approved in November 2013, calls for the renewal of cost-effective electricity purchase agreements with existing IPPs and expanding the Standing Offer Program (SOP) for smaller projects under 15 MW. The SOP was increased from 50 GWh per year to 150 GWh per year, starting in November 2013, to enable more small-scale projects with First Nations and community partnerships without unduly impacting electricity rates.

BC Hydro has achieved its targeted DSM saving since 2009. BC Hydro has conducted rigorous measurement, verification and impact evaluation of its DSM portfolio using industry standard methodologies to ensure the effectiveness of its programs.

BC Hydro will continue to work with First Nations and communities to ensure it delivers on its commitments and realize the many benefits of Site C. The decision to build Site C puts ratepayers first and will maintain British Columbia's low-cost power advantage for generations.

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

You have suggested that geothermal resources may provide a more cost-effective resource to generate electricity. Since 2001, the Ministry of Energy and Mines has issued 12 geothermal exploration permits. However, identifying geothermal resources is a high risk undertaking, often requiring extensive drilling with a substantial chance of failure as the resource can be very difficult to pinpoint. As a result, while eligible, no geothermal projects have been bid into BC Hydro procurement processes to date.

For example, a proposal for Mount Meager, 70 km northwest of Pemberton and within the Upper Lillooet Provincial Park at the headwaters of the Lillooet River, has been extensively explored. BC Hydro drilled 18 test holes and three deep exploratory wells between 1975 and 1982 at Meager Mountain. Additional drilling was completed most recently by Western GeoPower Inc. in 2004. Although Mount Meager has potential to

generate electricity, the exploratory wells have unfortunately not discovered commercially producible geothermal fluids to date.

Thank you, again, for writing.

Sincerely,

Bill Bennett  
Minister of Energy and Mines  
and Minister Responsible for  
Core Review

Drafted by: Jennifer Davison  
Approved by: Julie Chace, Director ✓  
Paul Wieringa, ED ✓  
Les MacLaren, ADM, EAED ✓  
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Premier Christy Clark has asked me to respond on her behalf to your May 26, 2015 letter regarding BC Hydro's Site C Clean Energy Project (Site C).

Our number one concern at the end of the day is the ratepayer. During Government's due diligence process for a Final Investment Decision, Site C was compared to alternatives on the basis of what each option would actually cost ratepayers. The comparison has undergone a number of independent reviews, all of which are available online (<https://www.sitecproject.com/document-library/information-materials>). The conclusion of these reviews was that Site C can deliver power to ratepayers at a considerably lower cost than other options.

In its May 2014 report, the independent Joint Review Panel concluded that Site C would be the least expensive of the alternatives and that after an initial burst of expenditure, would lock in low rates for BC ratepayers for many decades.

There are a number of key points I would like to offer with respect to the findings of Mr. McCullough that you have brought forward.

The cost of capital, sometimes referred to as a discount rate, used in the Site C analysis was the rate recommended by the Ministry of Finance and reflects the actual borrowing cost to ratepayers. BC Hydro, as a crown corporation, can borrow at a lower cost than the private sector and this produces benefits for ratepayers.

Mr. McCullough is suggesting that a different discount rate should have been used that does not reflect the actual borrowing costs of the project to account for risks and uncertainties. For the Site C Final Investment Decision, government retained a significant contingency budget for the Project, and decided to establish 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 use of U.S. Energy Information Administration costs for projects is inappropriate as it does not account for BC-specific costs, including higher costs of construction for more difficult terrain and higher expectations around community and First Nations benefits.

While natural gas generation facilities have lower upfront capital costs, this is followed by higher and less predictable operating costs due to changes in fuel and carbon costs. Fuel prices are currently near historical lows, but have varied significantly over the past decade. Importantly, filling our future power needs with natural gas generation would increase greenhouse gas emissions by 1.6 million tonnes per year, and ignores the *Clean Energy Act* targets whereby at least 93 percent of generation is from clean or renewable resources.

The cost of selling surplus Site C power was incorporated into government's analysis. This cost is more than offset by the fact that, if Site C were delayed, BC Hydro would have to fill the gap until Site C came into service with more expensive power from other sources. This power would remain on the books for years after Site C came into service and would need to be recovered from ratepayers. In addition, a delay to the project creates costs such as:

- Ongoing carrying costs for the additional time period;
- Inflation costs due to moving construction spending further into the future;
- Higher interest during construction due to pushing spending into higher rate periods; and
- Disruption costs from stopping work and starting again at a later date.

Clearly, Site C provides low cost, reliable electricity. While geothermal energy will have a role to play in British Columbia in the future, it is expensive and risky to develop a project in British Columbia. A number of unsuccessful attempts have been made to develop geothermal resources in BC.

Finally, all major infrastructure projects have environmental impacts and Site C is no different. As with any project, the proponent (BC Hydro) must meet targets as legislated by the *Clean Energy Act* for clean or renewable energy, as well as targets set under both provincial and federal greenhouse gas reduction legislation. Site C would qualify as a clean or renewable resource as defined by the *Clean Energy Act*.

We are committed to ensuring that BC Hydro is able to meet our electricity needs in an economically, socially and environmentally responsible way. We recognize that Site C will impact a number of landowners. Those impacts were considered in making the decision to proceed with Site C as being in the best long-term interest of all British Columbians.

Thank you for writing.

Sincerely,

**Bill Bennett**  
Minister of Energy and Mines  
and Minister Responsible  
for Core Review