



**PEACE RIVER  
SITE C HYDRO PROJECT**

**AN OPTION TO HELP CLOSE  
B.C.'S GROWING ELECTRICITY GAP**

**SUMMARY: STAGE 1 REVIEW OF PROJECT FEASIBILITY  
DECEMBER 2007**

**BC**hydro 

FOR GENERATIONS

## **Peace River Site C Hydro Project**

**An option to help close B.C.'s growing electricity gap**

### **Stage 1 Summary**

This document provides an overview and summary of the Stage 1 review of the proposed Site C project.

This Stage 1 review of project feasibility was a review of existing studies and historical information about the Site C project, with a view to determining if there is enough potential to address key impacts to move to the next stage of project planning and development. This information was reviewed in the context of projected energy demand now and into the future, and an analysis of the expected supply to meet that demand.

## A growing province with growing electricity needs

### A heritage built for generations

Clean, abundant electricity has been the key to our province's economic prosperity and our quality of life. By planning ahead, we can ensure that future generations of British Columbians are able to enjoy the same benefits of low-cost, reliable power that we enjoy today.

Hydroelectricity and our province's economic development are inextricably linked. In the two decades that followed the creation of BC Hydro in 1961, our province undertook some of the most ambitious hydroelectric construction projects in the world. Large-scale projects, such as those on the Peace and Columbia rivers, played an essential role in providing our province with secure access to reliable, renewable, low-cost power. Known today as BC Hydro's heritage assets, these dams help provide an electricity supply to British Columbians that is 90 per cent clean – an achievement that few jurisdictions in the world can claim.

As our province and our economy continue to grow, so does our demand for electricity. And as impressive as our hydroelectric heritage is, it will not be enough to provide future generations of British Columbians with the energy security they will require. We are now consuming more electricity than we generate. In fact, for the past

six years, BC Hydro has been a net importer of electricity. We now depend on other jurisdictions to supply between 10 and 15 per cent of our electricity needs.

### A growing electricity gap

In 2006, BC Hydro produced its Integrated Electricity Plan, which forecasted our province's long-range electricity needs and examined existing and potential resources to meet those demands. This plan notes that electricity consumption in B.C. is expected to increase by as much as 45 per cent over the next two decades – creating a significant gap between supply and demand.

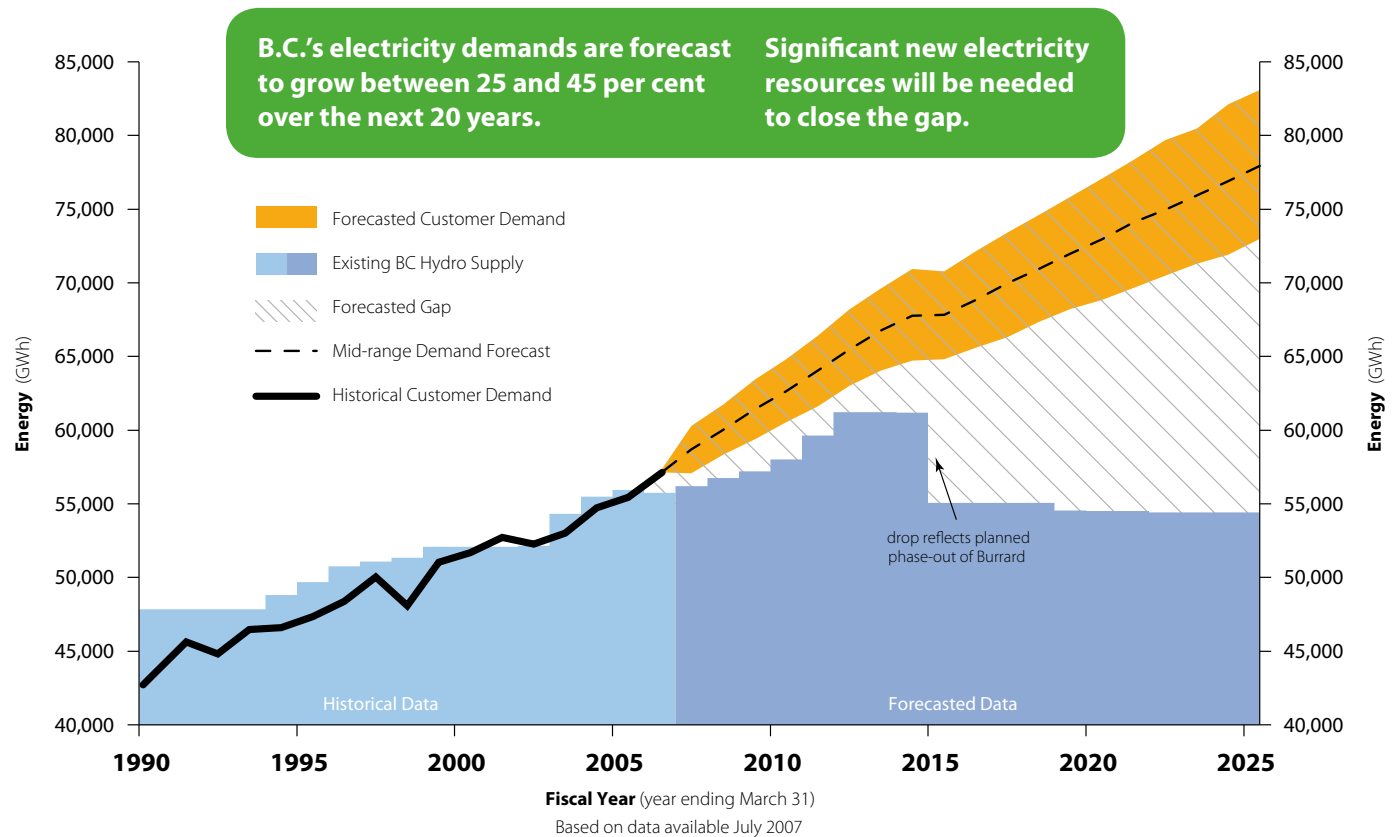
By planning now, BC Hydro is working to close this gap so that British Columbians will continue to enjoy the benefits of a secure, reliable and affordable electricity supply.

There are three ways this will be done – by conserving more electricity, by buying more electricity from independent power producers and by investing in our existing assets and new resource options.

**B.C. is now  
consuming more  
electricity than we  
generate**



## BC Hydro's Electricity Gap



### Leadership for a secure electricity future

#### Conservation and energy efficiency

The first and best way to help close B.C.'s electricity gap is through conservation and energy efficiency. Through its Power Smart program, BC Hydro is a global leader in conservation, providing an ever-expanding range of programs and incentives to help its customers conserve, be more efficient, use power wisely, and ultimately use less. British Columbians are now saving enough electricity equivalent to meeting the annual needs of more than 440,000 homes.

The provincial government's *BC Energy Plan* recognizes the conservation leadership that BC Hydro has helped to foster, and challenges all of us to do even more. The plan sets an ambitious target for British Columbians to realize 50 per cent of our new energy needs through conservation and energy efficiency by 2020. BC Hydro is committed to meeting this challenge.

New Power Smart initiatives are encouraging people, businesses and communities throughout B.C. to make a difference by taking leadership in conservation and energy efficiency. These include: new energy efficient products and buildings, smart metering infrastructure, electricity audits, incentives, and programs for schools and local governments.

BC Hydro also continues to explore innovations in conservation through the Conservation Research Initiative. Nearly 2,000 residential customers have volunteered to conserve energy by using smart meters to track electricity consumption. The information gathered will allow consumers to better track their consumption patterns, and adjust their habits accordingly. It will also help inform decisions about how new residential rate structures can encourage energy efficiency and conservation.

While BC Hydro will continue to play a leadership role in conservation, it will take personal leadership in households across the province to achieve this conservation target. Households will not only have to curb the growth in electricity use, but also consume 10 per cent less electricity than they do today to achieve the residential conservation goal. Together, we can make a big difference.

## Innovative power projects

BC Hydro is also looking to innovative power projects, such as small hydro, wind power and biomass projects developed by independent power producers, to help meet future demand. BC Hydro has contracted for the purchase of approximately 15,000 GWh/year of electricity from independent power producers to date, of which 8,000 GWh/year is now online – enough energy to power approximately 800,000 homes. The majority of power acquired from independent power producers since 2002 has been clean, renewable energy.

BC Hydro also has three new competitive procurement processes underway to acquire additional power to close the electricity gap. These include:

- a standing offer for clean electricity projects of less than 10 megawatts;
- a Clean Power Call, targeting 5,000 GWh/year of energy; and,
- a call for bioenergy projects that generate electricity from under-utilized wood residues, including wood affected by the mountain pine beetle.

**The BC Energy Plan aims to make B.C. energy self-sufficient while charting a path for conservation, energy efficiency and clean energy**

## Reinvesting in our existing assets

With its ongoing Resource Smart initiatives, BC Hydro continues to make important investments to modernize, expand the capacity, and extend the life of its existing hydro assets. By modifying, updating and retrofitting our existing generation facilities, such as adding a fifth unit to the Revelstoke generating station, BC Hydro is increasing efficiency and electricity production with little or no environmental impact. Extending the capacity of these facilities will add enough electricity to power some 130,000 homes each year. These investments in our existing assets will continue in the years ahead to ensure that the backbone of our system remains strong and reliable.

**Even with conservation, purchases from independent power producers, and reinvestment in existing assets, we will still need to pursue additional sources of electricity in British Columbia if demand continues to grow as projected**



Conservation is our first and best option to close B.C.'s electricity gap.

## Closing the remaining electricity gap

### Investigating new resource options

With the help of all British Columbians, BC Hydro is undertaking aggressive conservation efforts to meet the *BC Energy Plan's* 50 per cent conservation target by 2020. But even with conservation, purchases from independent power producers and reinvestment in existing assets, we will still need to pursue additional sources of electricity in British Columbia if demand continues to grow as projected. BC Hydro's 2006 Integrated Electricity Plan notes this need will be particularly acute in the second decade of BC Hydro's 20-year planning horizon. That is why BC Hydro must begin investigating options for adding new projects that could provide a large, dependable supply of electricity in the longer term.

Large power projects, such as hydro with reservoirs, carbon-sequestered coal and gas-fired generation, have unique challenges. In addition to various social, environmental and financial costs and benefits, they typically require long lead times for substantial stakeholder and First Nations consultation, regulatory review, engineering, design and construction. At the same time, these types of projects have an advantage over most other resources because they supply a significant amount of dependable electricity, which is especially valuable to our province in times of peak use, such as during the coldest evenings of winter. As sources of firm power, they stand in contrast to intermittent resources (such as wind power or small hydro), whose capacity to produce electricity can vary depending on conditions such as weather. In fact, large power projects are required to support the development of renewable resources, to provide reliable back-up to intermittent resources.

### **BC Energy Plan: A future built on clean energy leadership**

BC Hydro's actions to ensure our province can meet its future electricity needs are guided by the Government of British Columbia's *BC Energy Plan: A Vision for Clean Energy Leadership*. The plan sets targets to make our province electricity self-sufficient while charting a path for conservation, energy efficiency and clean energy to "arrest the growth of greenhouse gases and reduce human impacts on the climate."

The plan builds on the 2002 Energy Policy framework of low electricity rates, public ownership of BC Hydro, reliable supply and more private sector opportunities.

The plan provides BC Hydro with policy direction in these four key areas:

#### Environmental leadership

- Zero greenhouse gas emissions (GHGs) from coal-fired electricity generation
- Zero net GHGs from all new electricity projects
- Zero net GHGs from existing thermal power plants by 2016
- Ensure 90 per cent of total electricity continues to be clean or renewable
- No nuclear power

#### Energy conservation and efficiency

- Meet 50 per cent of BC Hydro's new electricity needs through conservation by 2020
- Implement energy efficient building standards by 2010

#### Investing in innovation

- Establish a \$25 million innovative clean energy fund
- Implement the B.C. Bioenergy Strategy for renewable energy
- Generate electricity from mountain pine beetle wood and waste wood

#### Energy security

- Maintain public ownership of BC Hydro and BC Transmission Corporation
- Maintain our competitive electricity rate advantage
- Achieve electricity self-sufficiency by 2016
- Acquire additional "insurance power" by 2026
- Encourage small electricity generation projects

BC Hydro remains committed to investigating all large-scale options that can fulfil the *Energy Plan's* goal of providing clean energy to British Columbians. Our province is fortunate to have several potentially attractive resource options, including hydroelectric dams, biomass facilities, clean coal facilities (not yet available) and natural gas plants. Each option presents unique advantages and disadvantages.

As the provincial government is firmly committed to keeping its electricity sector one of the cleanest in the world, each of these options needs to be considered within the provincial policy context and each must meet very stringent environmental standards. However, with advances in technology, some sources of energy that do not meet policy standards today could do so in the future.

The *BC Energy Plan* stipulates that coal will only be allowed as a resource for electricity generation when it can reach zero greenhouse gas emissions. As "clean-coal" technology with full carbon sequestration is still not yet commercially available, it remains out of the scope of BC Hydro's current planning horizon. The use of nuclear power as a large-scale option for generating electricity is also not an available option, as it was prohibited under the 2002 Energy Plan. This direction was reaffirmed in the *BC Energy Plan* released in 2007.

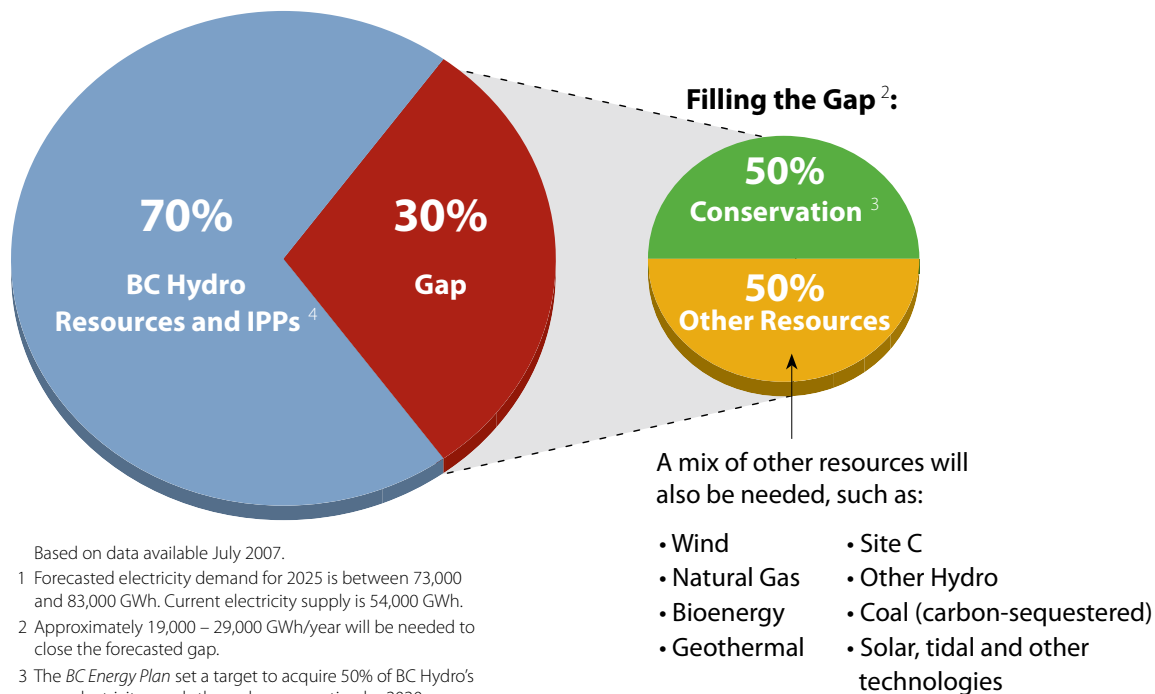
Natural gas facilities are another large-scale option that could provide firm reliable power to meet future demand. However, recent project proposals in the Pacific Northwest have attracted significant opposition because of air quality impacts and new projects will need to be considered in the context of new provincial climate change policies, including ensuring 90 per cent of new electricity continues to be clean or renewable.

The energy from the Burrard Thermal natural gas generating station, which is now old and inefficient, needs to be replaced. Consistent with the *BC Energy Plan*, BC Hydro is working to put in place firm electricity by 2014 to replace what would have been produced at the plant. However, if practicable, Burrard Thermal may be retained as a potential source of back-up power for the Lower Mainland in the future.

Finally, with respect to large hydro, the *BC Energy Plan* specifically calls for BC Hydro and the provincial government to "enter into initial discussions with First Nations, the province of Alberta and communities to discuss Site C to ensure that communications regarding the potential project and the processes being followed are well known." We are ready to begin that process now and hope to engage British Columbians in a meaningful discussion about meeting their electricity needs in the years ahead.

**We will still need to pursue additional sources of electricity in British Columbia**

### Looking ahead to 2025 <sup>1</sup>



Based on data available July 2007.

<sup>1</sup> Forecasted electricity demand for 2025 is between 73,000 and 83,000 GWh. Current electricity supply is 54,000 GWh.

<sup>2</sup> Approximately 19,000 – 29,000 GWh/year will be needed to close the forecasted gap.

<sup>3</sup> The *BC Energy Plan* set a target to acquire 50% of BC Hydro's new electricity needs through conservation by 2020.

<sup>4</sup> Includes BC Hydro heritage assets and contracted amounts with independent power producers (adjusted for attrition).

## What is Site C?

Site C is a potential third dam and hydroelectric generating station on the Peace River in the province's northeast region, and is one of many resource options that can help meet British Columbia's electricity needs.

Since June 2004, BC Hydro has conducted a high-level review of existing information about Site C. The purpose of this undertaking was to review project feasibility within BC Hydro's current operating context and to better understand the potential benefits and impacts of Site C compared with other resource options. As part of this review, BC Hydro looked at existing studies, reports and stakeholder engagement, as well as initiating some new environmental studies. This review is captured in a report entitled *Site C Feasibility Review, Stage 1 Completion Report*, available at [www.bchydro.com/sitec](http://www.bchydro.com/sitec).

In evaluating Site C as a potential resource option, BC Hydro has adopted a stage-by-stage process to help inform the provincial government's decision about whether to proceed to the next stage of project development at the end of each stage.

The balance of this document is a summary of the Stage 1 report and the next steps to be taken in Stage 2 (Consultation and Project Definition). It is important to underline, however, that a decision on whether to move the project forward to construction is still years away. Much more work and analysis is required before a final decision about the project can be made.

**BC Hydro  
recommends  
comprehensive  
consultation as  
part of the  
next stage of the  
Site C evaluation  
process**



Conceptual design of Site C hydroelectric facility (as previously conceived).



## Site C's history

The generation of hydroelectricity from the Peace River in northeastern British Columbia has a long history that has significantly shaped our province. The first steps towards developing hydroelectric potential in the Peace River area were taken in the 1950s, resulting in the construction of two dams. The W.A.C. Bennett Dam and the G.M. Shrum generating station began producing electricity in 1968, followed by the Peace Canyon Dam and generating station in 1980. During this period, further investigation continued in the Peace River area to identify the best location for a potential third dam around the Fort St. John area. In 1958, five additional potential sites were identified along the river: Sites A, B, C, D and E.

In 1967, after further testing, only sites C and E were considered viable options. In 1976, BC Hydro chose the present Site C location. However, since there was no indication at the time that there would be a need for a new resource option within the foreseeable future, the plans were put on hold.

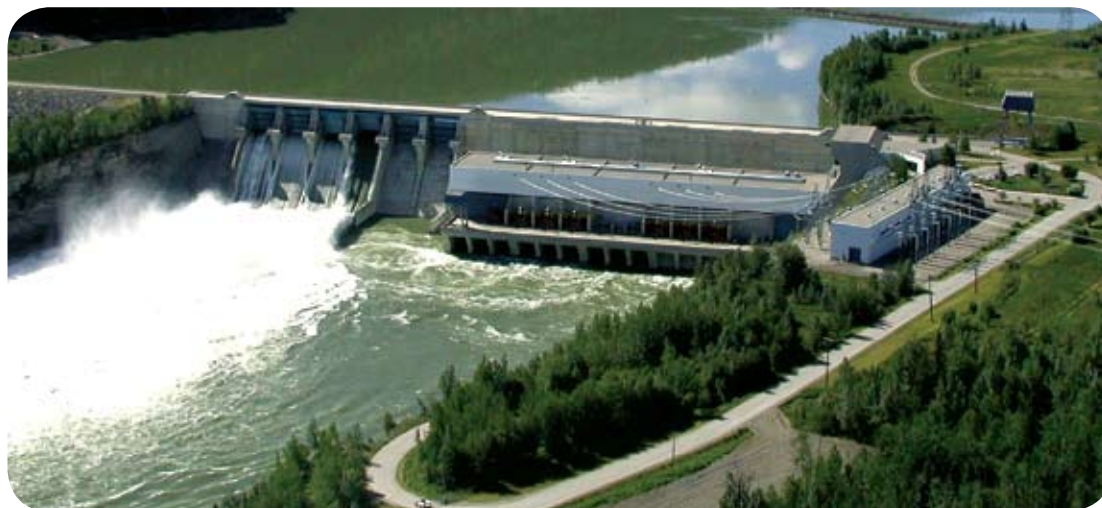
In 1982, BC Hydro submitted the Site C project to the British Columbia Utilities Commission (BCUC) for a comprehensive review and stakeholder consultation. Following in-depth study of Site C's design and impacts, the Commission

concluded that while the project would have significant impacts, it was indeed feasible. With appropriate conditions placed on BC Hydro and a government commitment to respond to "the needs created in the region," BCUC concluded that the impacts could be "successfully and acceptably managed." However, the BCUC recommended Site C not be approved because the electricity demand forecasts at the time did not warrant its development and more analysis was required on alternatives to Site C.

Over the years, the Site C project has been re-examined from time to time, but it was not until 1989 that the potential need for a new supply of electricity was identified and Site C was revisited as one of the potential solutions to closing the demand-supply gap. A public consultation committee was created, and local municipalities and key interest groups in the region were invited to discuss and review the project. In 1991, the Peace Site C Summary Status Report was completed, but work on the project was suspended as opportunities for demand-side management and gas-fired generation were chosen.

Since June 2004, BC Hydro has undertaken a feasibility review to better understand Site C and its advantages and disadvantages, and build on insights gathered about Site C since it was first identified as a potential resource option.

**Clean, renewable hydroelectricity from the Peace River region of northeastern B.C. has significantly shaped our province**



The Peace Canyon Dam, on the Peace River near Hudson's Hope.

## An overview of Site C

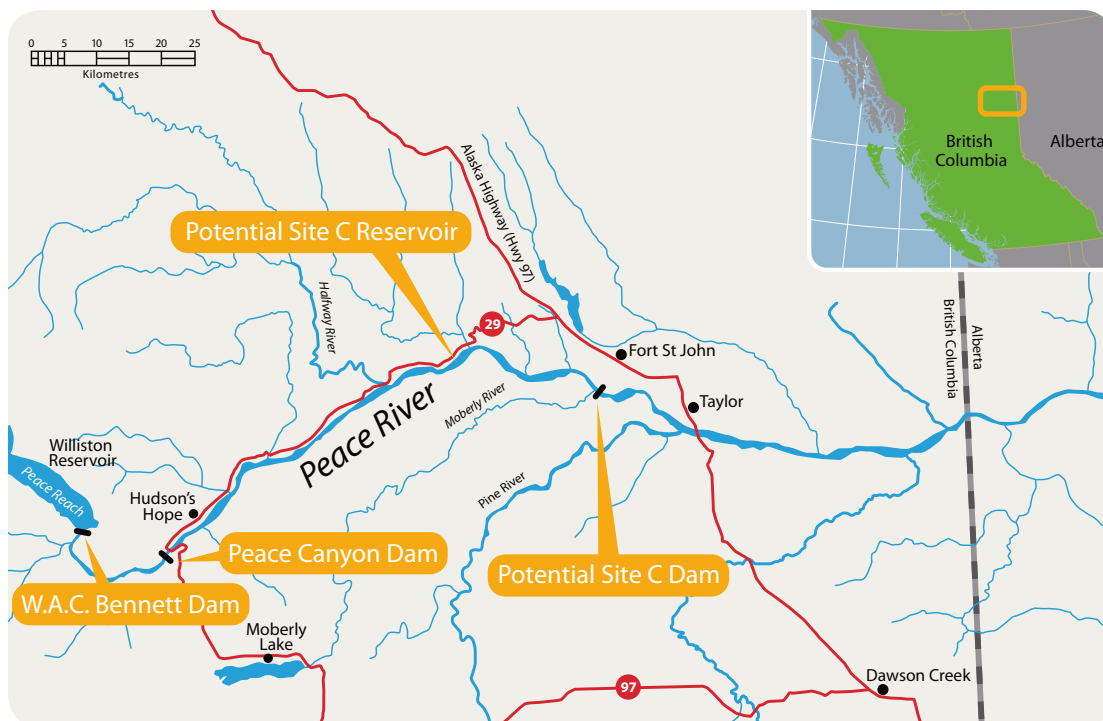
The Peace River system plays a key role in British Columbia's electricity supply, providing approximately one-third of BC Hydro's annual energy production from the G.M. Shrum and Peace Canyon generating stations alone. Site C would be the third hydroelectric facility in the region, forming an integral part of the Peace River system. By taking advantage of the water stored upstream at Williston Reservoir, Site C would be able to produce 30 per cent of the electricity produced at the W.A.C. Bennett Dam, with five per cent of the reservoir size. Further, Site C would have the benefit of being able to provide a large amount of energy during the winter months, when demand is at its highest.

As currently defined, the Site C dam would be 60 metres above river level. It would be located downstream from the existing W.A.C. Bennett and Peace Canyon dams, seven kilometres southwest of Fort St. John. The site location is downstream of where the Moberly River enters the Peace River, 62 kilometres upstream from the Alberta border.

A large hydroelectric project such as Site C could provide in the range of 900 MW of capacity, or about eight per cent of the existing peak demands on BC Hydro's system. It would produce approximately 4,600 GWh of electricity a year, enough to power about 460,000 homes. As illustrated in Figure 1, its capacity and energy production would make Site C a mid-size facility relative to BC Hydro's other hydroelectric generating facilities.

When Site C was examined as a resource option more than 25 years ago and again from 1989 to 1991, significant engineering design work was done. However, much of this information is now more than two decades old. Therefore, the project as originally conceived must be updated to reflect current information as well as to incorporate new ideas brought forward by communities, First Nations, regulatory agencies, and stakeholders. Stage 2, focusing on project definition and consultation, will include much more consultation, research and technical work to identify today's project options, and to study their potential costs and benefits. For example, updates to the project might include operating changes, design changes or compensation projects to minimize potential impacts to fish and wildlife, and opportunities to provide social benefits such as enhancing recreational uses of the proposed reservoir.

**Site C would be located downstream from the existing Williston Reservoir and two existing BC Hydro generating facilities**



The Peace River originates in the Rocky Mountain Trench and flows downstream into Alberta.



Hugh Keenleyside Dam, near Castlegar.

**Site C would produce enough electricity to power about 460,000 homes**

Site C would deliver firm electricity and dependable capacity with a high degree of flexibility. Firm electricity can be depended upon to deliver a certain amount of energy per year. Dependable capacity provides power during peak demand periods and is key to “keeping the lights on” in B.C. at critical times such as the coldest days of winter. Flexible energy can be dispatched at full output during peak load times (typically November to February) or at times when other resource options are unavailable or

in limited supply due to high market prices or other factors.

Site C would have a significant upfront capital cost, a long operating life, and low operating costs if built. Early interim project estimates indicate that Site C could cost between \$5 billion and \$6.6 billion. These estimates reflect a levelized unit cost range from \$46/MWh to \$97/MWh in 2008 dollars. As a decision on whether to proceed to build Site C is still a few years away, any project cost estimates right now are only interim.

As with any capital project, the final cost estimate will be fully known only after a competitive procurement process is complete and a final bid is accepted. This occurs just prior to construction. As an example, if a contractor were asked for an estimate to build a home today, it would be possible to receive a cost estimate within a certain margin of error. But if the contractor was asked for an estimate to build a house in 2012, it’s unlikely that a contractor would be willing to take the risk of providing a firm estimate because of potential future changes in interest rates, inflation and labour market conditions.

Interim cost estimates are useful, however, in comparing the project to alternatives. This estimate will be updated at each stage and will change as the project becomes more fully defined and nears construction.

### Putting Site C in perspective

Site C is considerably smaller than BC Hydro’s three largest generating facilities.

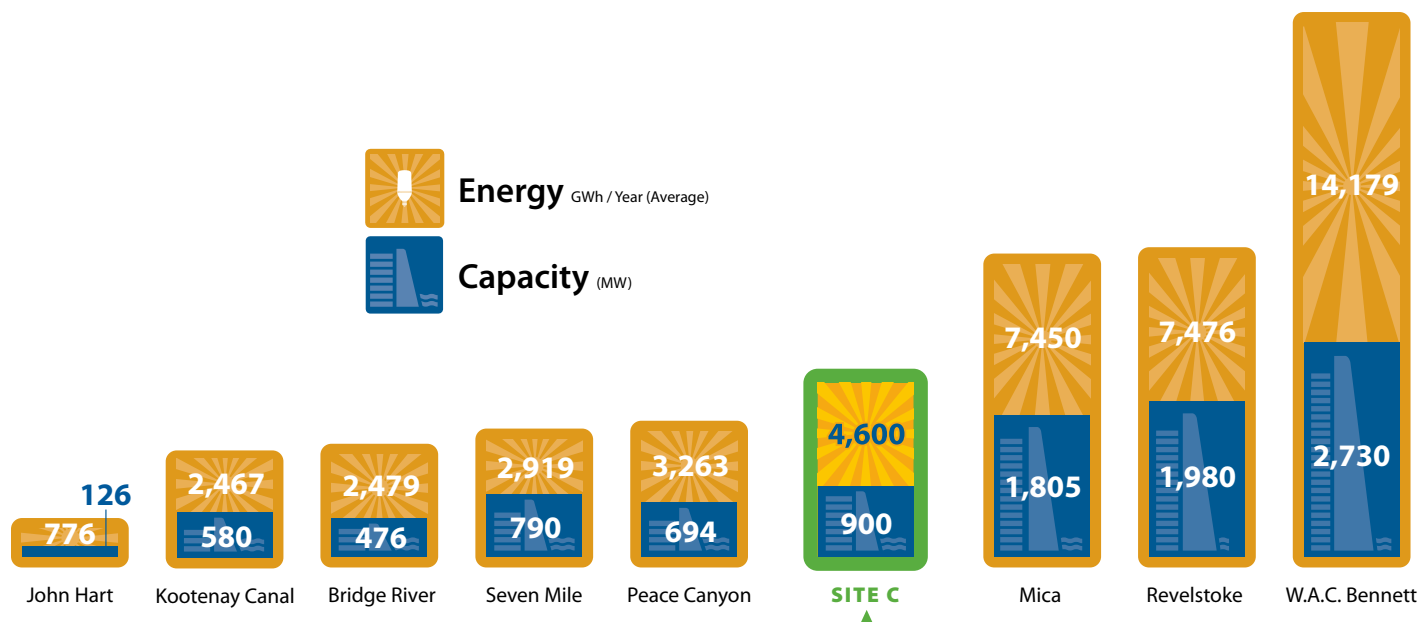


Figure 1

## Potential benefits

Site C could deliver a number of significant benefits to British Columbians.

As noted earlier, Site C would support the provincial government's commitment to clean electricity generation and make a valuable contribution towards electricity self-sufficiency. As the *BC Energy Plan* notes in its commentary on large hydroelectric dams, "the chief advantage of a hydro system is that it provides a reliable supply with both dependable capacity and energy, and a renewable and clean source of energy. Hydropower produces essentially no carbon dioxide."

While Site C would have significant upfront capital costs, and take more than 10 years to come online, it would have a lifespan of more than 100 years, and low operating costs once built. This long lifespan and low operating cost could ultimately make it a cost-effective option compared with other potential resource options, providing a secure supply of electricity for generations to come.

Adjacent regional districts and municipalities would benefit from grants-in-lieu of property taxes generated by Site C. As well, BC Hydro

and the provincial government are committed to identifying further opportunities to benefit local and First Nations communities. These opportunities will be reviewed and discussed as part of the consultation process.

As a potential resource option, Site C has these additional advantages:










- as the third project on one river system, it would gain significant efficiencies by taking advantage of water already stored in the Williston Reservoir and used to generate electricity upstream at the W.A.C. Bennett and Peace Canyon dams;
- by increasing BC Hydro's dependable energy capability, Site C would indirectly support the development of intermittent energy sources such as wind power; and,
- Site C would not be affected by fluctuating gas fuel costs that could impact other energy resource options.

Based on the project analysis in Stage 1, it was determined that Site C should be preserved as an option to meet B.C.'s growing electricity gap and that the project should be taken into the next stage of evaluation, which is consultation and project definition.

**If built,  
Site C would  
be a publicly  
owned asset**

Energy quality and capability of B.C.'s potential electricity resources		
Resource	Energy Quality	Capability
<b>Small hydro (run-of-river)</b>	Intermittent – seasonal	Low dependable capacity
<b>Large hydro (such as Site C)</b>	Flexible, firm energy	Dependable capacity
<b>Conservation</b>	Reliable reduction in firm energy requirements	Reliable reduction in dependable capacity requirements
<b>Natural gas</b>	Flexible, firm energy	Dependable capacity
<b>Coal</b>	Firm, base-load energy	Dependable capacity
<b>Wind</b>	Intermittent	Low dependable capacity
<b>Biomass</b>	Firm, base-load energy	Dependable capacity
<b>Solar</b>	Intermittent	Low dependable capacity
<b>Tidal</b>	Intermittent	Low dependable capacity

## Comparing Site C

The economic and environmental impacts of B.C.'s potential electricity resources				
Resource	Financial cost	Environmental impact		
		Air *	Land	Water
 <b>Small hydro (run-of-river)</b>	Low operating cost No fuel cost Large initial capital investment	None	Affects wildlife habitat, traditional and recreational uses	Diverts a portion of stream flow; may impact recreational uses
 <b>Large hydro (such as Site C)</b>	Low operating cost No fuel cost Large initial capital investment	Minimal	Affects wildlife habitat, traditional and recreational uses, agriculture	Changes portion of river flooded; affects flows downstream and fish habitat
 <b>Conservation</b>	Low operating cost No fuel cost Can require initial capital investment	None	None	None
 <b>Natural Gas</b>	Significant fuel cost Low operating cost Moderate capital investment	Nitrous Oxides largely controllable, Carbon Dioxide emissions must be offset**	Limited to plant site	Consumptive water use
 <b>Coal</b>	Even split between fuel cost (coal) and service on capital	Some sulphur oxide or mercury emissions; carbon dioxide emissions must be captured**	Footprint would include mine and transportation infrastructure	Consumptive water use
 <b>Wind</b>	Low operating cost No fuel cost Large initial capital investment	None	Visual impact of towers; typically located on ridges or on coast	Potential impacts on ocean floor, mammals and fisheries at some offshore sites
 <b>Biomass</b>	Low operating cost Low fuel cost Large initial capital investment	Dependent upon fuel burned; possible local air impacts	Limited to plant site	Consumptive water use
 <b>Solar</b>	Low operating cost No fuel cost Large initial capital investment	None	Utilizes buildings; no change to existing footprint	None
 <b>Tidal</b>	Moderate operating cost No fuel cost Large initial capital investment	None	Limited to powerhouse footprint	May affect fish, marine mammals and fishing operations

\* Based on emissions during operation. However, all resources except conservation have a GHG impact during construction and filling of reservoirs (for hydro with storage).

\*\* In addition, the *BC Energy Plan* mandated that 90% of total electricity continues to be clean or renewable, which means no more than 10% may be generated through options such as coal or natural gas.

## Potential impacts

The project, if built, would provide significant benefits. However, it would also create impacts that must be thoroughly reviewed. Many environmental studies have been conducted on Site C in previous years. Further studies, and stakeholder, community and First Nations consultation are vital next steps in helping all parties better understand the social and economic significance of these impacts and how they may be avoided, mitigated or compensated. This work will be the primary focus of Stage 2 and will continue through all stages of the project, should it proceed.

Throughout the project evaluation process it will be important that Site C impacts are viewed within the wider context of alternative resource options and their potential impacts as well as the *BC Energy Plan*.

Should the project be approved, BC Hydro would work to avoid, minimize or mitigate impacts from the construction and operation of Site C. Most of the direct impacts would be due to inundation or flooding in the Peace River valley between Peace Canyon and Fort St. John, and of portions of the Moberly and Halfway rivers. Previous studies indicate that the reservoir created by the Site C dam is expected to flood approximately 5,340 hectares of land, resulting in a reservoir approximately 1/20 the size of the Williston Reservoir. There would also be impacts due to the proposed realignment of Highway 29 away from the flooded area. Given that these studies were completed many years ago, these impacts will need to be thoroughly reviewed and updated during Stage 2 of the project.

**Community** – A safeline would be determined that is a conservatively located setback around the periphery of the reservoir. Beyond the safeline, the security of residents and their possessions can be considered safe from landslide activity or bank erosion. Some residents, farms and communities within the safeline area or along the proposed route of the realigned Highway 29 would be affected by Site C development. Should Site C proceed, some families, farms and businesses will need to be relocated away from the flooded area.

During the construction period, which would take about seven years, there would inevitably be increased demands on the local infrastructure of the community and the region.

Some heritage and cultural sites would also be affected by the flooding. BC Hydro has conducted heritage impact assessments in the past to better understand these impacts; these reviews would continue during Stage 2.

**Agriculture** – Agriculture is an important economic activity in the region, focused on grain and forage crop production and cattle ranching. A number of farms adjacent to the reservoir would be affected by the creation of the reservoir through flooding or being within the safeline area. BC Hydro will conduct studies in Stage 2 to determine potential impacts on property owners and will consult with potentially affected property owners.

**Forestry** – About half of the area flooded by the creation of the reservoir would be forest land. Further study would be required to determine the exact area of productive forest land, to conduct a forest inventory and a timber supply analysis, as well as review how the area would be prepared before flooding.

**Tourism and recreation** – Although a net loss of attractive shoreline is expected as a result of reservoir creation, there would continue to be substantial shoreline suitable for existing activities, such as boating, camping and picnicking. Areas of exception would be along the Moberly and Halfway arms of the reservoir, where shoreline suitable for recreation is expected to decrease as a result of flooding. Overall, creation of the reservoir would result in a change from river-based activities to new opportunities for recreation in a stable reservoir.

### Environmental Assessment

Should the provincial government decide to continue pursuing Site C, it will be subject to provincial and federal regulatory review, including comprehensive environmental assessment and permitting processes.

**Opportunities to avoid or mitigate impacts will be thoroughly reviewed and assessed during Stage 2**

**Highway realignment** – As a result of the creation of the reservoir, sections of Highway 29 would need to be relocated. A comprehensive review of alternative highway realignments would be undertaken in Stage 2, Project Definition and Consultation, to update right-of-way requirements to new Ministry of Transportation standards, to develop detailed maps and to engage in community consultation.

**Wildlife** – A variety of wildlife species live in the Peace River valley. BC Hydro will continue to study ways to minimize wildlife impacts. An updated inventory of species, survey work and habitat analysis will need to be conducted. Further studies are planned in Stage 2 to better understand the potential impacts, as well as avoidance and mitigation options.

**Fish** – Creation of the reservoir would change the existing river habitat to reservoir habitat in the inundated area. Changes to the habitat would result in the loss of some spawning habitat in the main stem and part of the lower tributaries. The change in habitat may also benefit some fish, by improving overwintering conditions for rainbow trout, bull trout, mountain whitefish, and Arctic grayling. Extensive studies are planned in Stage 2 to understand the aquatic impacts and options for avoidance and mitigation

**First Nations and Stakeholders** – The most extensive feedback to date from stakeholders and First Nations on the Site C project was received during the 1982 BCUC hearing, and most recently as part of the 2006 Integrated Electricity Plan engagement process.

In 1982, although the BCUC recommended the project not move forward on the basis of a lack of need and insufficient review of project alternatives, it stated in its report:

*"[While] the commission recognizes that major impacts will result from the Site C project, the commission concludes that they are not so large as to make them unacceptable. Provided that appropriate conditions are placed on Hydro and the government responds to the special needs created in the region, the impacts can be successfully and acceptably managed."*

BC Hydro understands from consultative programs on Site C from 1982, 1991 and 2006 that communities and stakeholders want:

- a fair and transparent consultation and environmental review process; and
- a comprehensive review of the project impacts and benefits.

The rights of the different First Nations groups in the region may be affected by the Site C project. First Nations issues are a central component for consideration in any review of Site C. BC Hydro has had some recent successes in building respectful relationships and reaching agreements with First Nations on other initiatives. In entering Stage 2, initial discussions will take place with First Nations to gain input into the consultation and engagement process, with the aim of establishing protocol agreements to build a framework for negotiations.

### **Opportunities for Community Benefits**

As part of BC Hydro's consultation with communities, First Nations, and stakeholders in the region, discussion will also focus on creating long-term benefits for the region. Proposed projects such as a Site C are much more than an addition to B.C.'s stock of heritage assets that deliver reliable power to British Columbians. They are also an opportunity to provide a legacy of benefits for the communities that are directly affected by such large projects. BC Hydro will be seeking feedback to identify opportunities to benefit First Nations, residents and communities directly affected by the Site C project.

## Summary & Conclusions of Stage 1 Review

Much of the information currently known about Site C is almost 25 years old. This information needs to be significantly updated to fully understand the project within today's context and resource options.

The Stage 1 feasibility review was predominantly a review of existing studies and information about the project, with a view to determining if there is enough potential to address key impacts to move to the next stage of project planning and development. This information was reviewed in the context of projected energy demand now and into the future, and an analysis of the expected supply to meet that demand.

The conclusion of this review is that it is prudent to continue to investigate Site C as a potential option to address the growing energy gap. Further review of the project, including significantly updating some previous studies, will provide important information about benefits, impact, costs and potential mitigation.

The report recommended that local, regional and provincial stakeholders, and First Nations have an opportunity to participate in determining which studies and key impacts should be addressed.

Key areas for further study include, but are not limited to, the following:

- opportunities for community benefits;
- environmental issues;
- geotechnical studies;
- community issues, including impact on families living within the reservoir or safeline area, re-alignment of Highway 29, demands on infrastructure and other land impacts;
- agriculture, forestry, mining, tourism and recreation issues; and,
- fish and wildlife issues.

### Answering four key questions about Site C

BC Hydro's initial analysis of Site C provided answers to four key questions:

1. Is the anticipated magnitude of the electricity gap significant enough, particularly in the second decade of the 20-year planning horizon, that Site C should continue to be examined as a potential resource option? **YES**
2. Have any project characteristics been identified to date that suggest Site C should not be considered further as a resource option? **NO**
3. Does Site C appear to offer sufficient overall benefits relative to the alternatives to justify further investigation? **YES**
4. Will further work on Site C provide information to guide decisions regarding Site C compared with other future resource alternatives? **YES**

### Next steps

#### A stage-by-stage approach

BC Hydro is pursuing energy conservation, development of energy projects by independent power producers, and reinvestment in existing generating facilities to help close the electricity gap. As we investigate all possible alternatives, BC Hydro is also taking a stage-by-stage approach to the evaluation of Site C. Large projects like Site C have a long lead time and require early evaluation of feasibility, consultation with the public and First Nations, and regulatory certification prior to construction and operation.

At the end of each stage of the process, the provincial government will make a decision about whether to proceed to the next stage of project planning and development.

Stage 2 will involve further project definition, including environmental, engineering and socio-economic studies, as well as comprehensive engagement with communities, stakeholders, regulators, First Nations and discussion with the province of Alberta to better understand the benefits, costs, impacts and risks of the project. At the end of Stage 2, the provincial government will be in a better position to decide if Site C should continue to be pursued as an option.



## Involving local communities, stakeholders and First Nations

BC Hydro is committed to comprehensive consultation with communities, First Nations, customers, regulators and stakeholders about the potential Site C project. Over the coming months, we will be moving ahead with a comprehensive consultation process. We want you to help us look at the scope and features of the Site C project and the associated benefits and impacts, locally, regionally and provincially.

### Consultation plans

BC Hydro is seeking a solid understanding of how local, regional and provincial stakeholders want to be involved in the consultation process for Stage 2. We will be asking for feedback on the design of the consultation program, as well as what topics should be discussed during Stage 2, Project Definition and Consultation.

Your feedback will help us develop opportunities for British Columbians to play an important role in reviewing Site C as an option to fill our emerging energy needs.

As with most projects, there are economic, environmental and social trade-offs that will require careful consideration. Part of the evaluation process includes assessing the project's feasibility and the economic, social and environmental benefits and impacts. Information obtained from new studies and analysis will help inform public discussions and consultation.

There are significant opportunities for local communities, customers, stakeholders, First Nations and the public to be involved as BC Hydro explores how best to meet our energy needs.

BC Hydro is guided by the *BC Energy Plan* and is committed to providing opportunities for consultation through all stages of the project. Part of the consultation process for communities directly affected by the potential development of a third dam on the Peace River will be a discussion of mitigating potential impacts, and opportunities for community benefits.

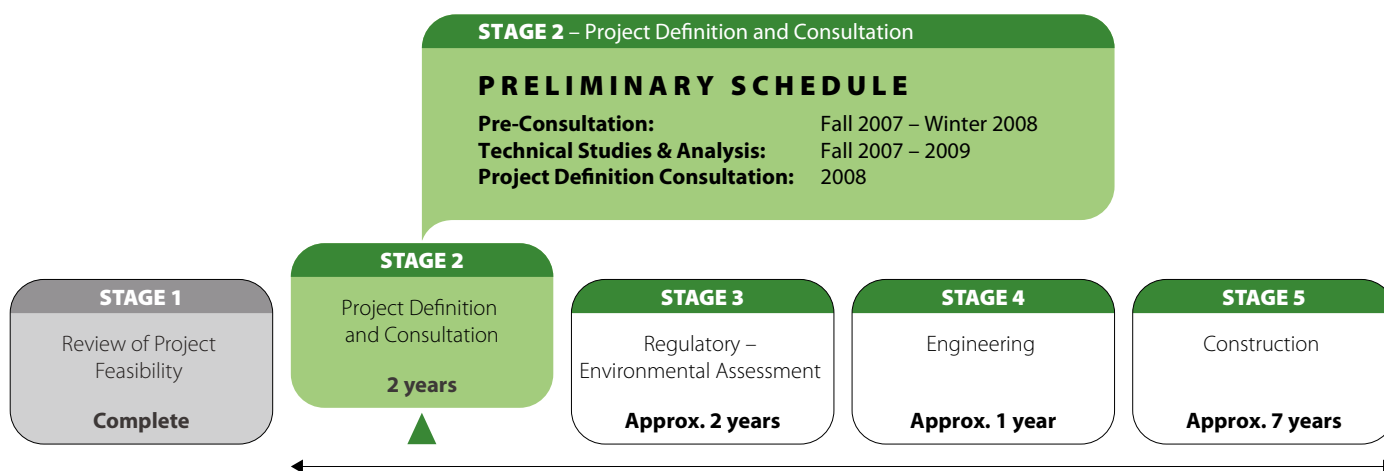
### First Nations

At BC Hydro, we are committed to effective communications and consultation with First Nations, with the goal of building positive relationships. We are committed to working fairly and equitably with First Nations as decisions about how best to meet our energy needs are made.

As part of the evaluation and development of Site C, we will consult with First Nations about the project and how, moving forward, First Nations would like to be involved and consulted.

**BC Hydro is committed to providing opportunities for consultation through all stages of the project**

## A stage-by-stage approach <sup>1</sup>



Consultation will occur in each stage of the project

<sup>1</sup> Timelines are preliminary and may vary.

## How your input can help us

BC Hydro values input and feedback from communities, customers, First Nations, regional and provincial stakeholders and the public about the Site C project. Your input in the Pre-Consultation process will be documented and shared with British Columbians and used to shape and refine key features of the Site C project. Your input will assist BC Hydro to:

- design the *Project Definition* consultation program for the Site C project;
- generate options for providing long-term benefits to local communities and First Nations;
- identify issues and impacts for comprehensive environmental assessment;
- identify how to avoid and minimize impacts; and,
- assist BC Hydro in refining the scope and key features of Site C during the *Project Definition* consultation.



### For further information:

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*(Opening early 2008)*





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