

# NEED FOR, PURPOSE OF AND ALTERNATIVES TO THE PROJECT

## VOLUME 1, SECTION 5

The Environmental Impact Statement (EIS) details the environmental assessment undertaken for the Site C Clean Energy project. The EIS includes the project rationale, identifies potential effects and proposes measures to avoid or mitigate these effects. The EIS also describes the benefits Site C would provide for customers, Aboriginal groups, northern communities and the province as a whole.

### NEED FOR THE PROJECT

The Site C project is needed help meet future customer demand for energy and dependable capacity. Forecasts show that customer demand for electricity is expected to increase by about 40 per cent over the next 20 years. The need for the project is established using a load forecast that does not include any load associated with new LNG facilities because the requirements of the facilities have not yet been confirmed by proponents.

BC Hydro must plan well in advance to meet the electricity requirements of its residential, business and industrial customers to ensure that resources are available when required. BC Hydro evaluates the following factors in its planning process:

- **Current and forecast BC Hydro customer electricity load:** BC Hydro annually prepares 20-year load forecasts for both energy (GWh) and peak customer (MW) demand. BC Hydro's customers include the residential, commercial and industrial sectors, each of which consume approximately one-third of BC Hydro's total electricity sales.
- **Existing and committed resources:** Existing resources include BC Hydro's heritage hydroelectric and thermal resources as well as independent power producers (IPP) currently delivering electricity to BC Hydro. Committed resources are those projects that have received regulatory and/or BC Hydro Board approvals.
- **BC Hydro's Demand Side Management (DSM) Target:** BC Hydro plans to meet the majority of the load growth over the next 20 years through conservation and efficiency initiatives. The current DSM target includes a broad range of changes to codes and standards, rate structures, and programs that provide BC Hydro customers in all market segments with an opportunity to help BC Hydro achieve this target.

### PURPOSE OF THE PROJECT

Site C is being proposed to help meet BC Hydro's forecast need for energy and capacity, meet the provincial policy objectives of the Clean Energy Act and relevant B.C. government policy statements, and to cost-effectively maximize the development of the hydroelectric potential of the Site C Flood Reserve established in 1957.

## ALTERNATIVES TO THE PROJECT

To evaluate the project compared to other resource options, BC Hydro developed several portfolios of available resources that would provide comparable energy and capacity:

- Site C Portfolios: These portfolios include the Site C project, with the remaining energy and capacity gap being filled using clean or renewable generation resources.
- Clean Generation Portfolios: In these portfolios, the energy and capacity that would be provided by Site C is replaced by a combination of energy resources (such as wind, run-of-river, and biomass resources) and capacity resources (pumped storage).
- Clean + Thermal Generation Portfolios: For these portfolios, the energy that Site C would provide is replaced by clean or renewable generation resources, while the capacity of Site C is replaced by thermal generation resources in the form of simple-cycle gas turbines (SCGTs) and pumped storage.

The attributes between the portfolios with and without Site C were compared, including:

- Financial: life-cycle cost of portfolios to ratepayers
- Technical: reliability and flexibility of the energy and capacity delivered
- Environmental: land footprint, affected stream length, GHG emissions, local air emissions
- Economic Development: GDP, jobs

Based on the analysis, Site C provides the best combination of these attributes and is the preferred option to meet the need for energy and capacity within the planning horizon. The comparison of resource options concluded that:

- Site C provided ratepayer savings compared other portfolios
- Portfolios including the project would have lower GHG emissions and lower local air emissions during operations than both portfolios that don't include the project
- Portfolios including Site C deliver additional economic development, employment and GDP during construction as compared to portfolios without the project

Based on the load resource balance analysis, new resources are required to meet the energy and dependable capacity needs of BC Hydro customers within the next 10 to 15 years. The addition of auxiliary LNG load served by BC Hydro, lower than expected DSM results, or higher than expected attrition of IPP contracts would accelerate the need for new resources.

As hydroelectric projects require a long lead time to plan, design, complete the environmental assessment process and construct, BC Hydro believes Site C should proceed now to ensure the energy and dependable capacity from the project is available to meet forecast customer demand when required.

### ABOUT THE SITE C CLEAN ENERGY PROJECT

Site C is a proposed third dam and hydroelectric generating station on the Peace River in northeast B.C. Site C would provide 1,100 megawatts (MW) of capacity, and produce about 5,100 gigawatt hours (GWh) of electricity each year – enough energy to power the equivalent of about 450,000 homes per year in B.C.

Site C is undergoing a cooperative environmental assessment by the Canadian Environmental Assessment Agency (CEA Agency) and the British Columbia Environmental Assessment Office (EAO). The environmental assessment process commenced in August 2011 and is anticipated to take approximately three years to complete.

**FOR MORE INFORMATION** visit [bchydro.com/sitec](http://bchydro.com/sitec)

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