

Site C on the Peace River

"Green" Energy or Greenwash?

The Peace River where the upper reservoir of the Site C dam would flood

Photo by Wayne Sawchuk

by Maggie Paquet

Site C and the Spin

Google the phrase, "Site C" and whaddya get? 1,270,000 hits! The first two are from BC Hydro claiming that another dam on the Peace River is a good source of "green energy." Green energy?

What does the term "green energy" mean? That it's completely "sustainable"? It has no negative environmental effects? Does "green" mean "clean"? Or is it a case of "clean" compared to... What? Coal-fired generation? Nuclear power? Incinerating garbage? The purpose of this article is to get us thinking beyond the words and into a closer approximation of reality – in the context of energy production.

What is Site C?

Site C is a proposed third dam on the Peace River about 7 km southwest of Fort St. John in BC's northeast. The other two dams are the WAC Bennett Dam and the Peace Canyon Dam. Considered one of the largest dams in the world (in 1999), the Bennett is capable of generating 2,730 megawatts at peak capacity and an average of 1,310 gigawatt hours. Downstream is the Peace Canyon Dam (1980), which created the Dinosaur Reservoir. This generates an additional 694 megawatts.

BC Hydro says Site C would provide about 900 megawatts of capacity, and produce approximately 4,600 gigawatt hours of electricity each year – enough to power about 460,000 homes. "As currently designed, the earthfill Site C dam would be 1,100 m long, with 300 m of concrete structures located on the right bank for the spillway and power intakes.... The reservoir would be 83 km long, on average two to three times the width of the current river, and would flood approximately 5,340 ha."

The Geography

The Peace River runs for 1,923 kms from the head of the Finlay and Parsnip rivers (now drowned in Williston Reservoir when the WAC Bennett Dam was built) to its delta at Lake Athabasca in Wood Buffalo National Park. Here, it connects with the Slave River, which runs into Great Slave Lake, then the Mackenzie River, which empties into the Arctic Ocean.

The headwater rivers of the Peace rise in the Omineca Mountains on the east side of the Northern Rockies and Rocky Mountain Trench. It is the only river on the continent that flows completely west to east through the Rocky Mountains. Part of the enormous Mackenzie River watershed, the Peace drains a watershed of 302,500 km², of which a third is in BC and the rest is in Alberta.

The History

(from the 2007 BC Legislative Library backgrounder)

“The Site C project...was first suggested by BC Hydro in the 1970s. ...It would flood several thousand hectares of land near Fort St. John...and take over 10 years to complete...Feasibility studies and public consultations were first conducted in the mid-1970s. In 1980, BC Hydro applied for an Energy Project Certificate to build the dam. The BC Utilities Commission (BCUC) held numerous hearings, listening to over 70 witness panels and 100-plus representatives at local and special First Nations meetings. The commission ruled in 1983 that Cabinet should defer issuing a certificate,” which it eventually did, in that round. Hydro revisited the question repeatedly over the next two decades.

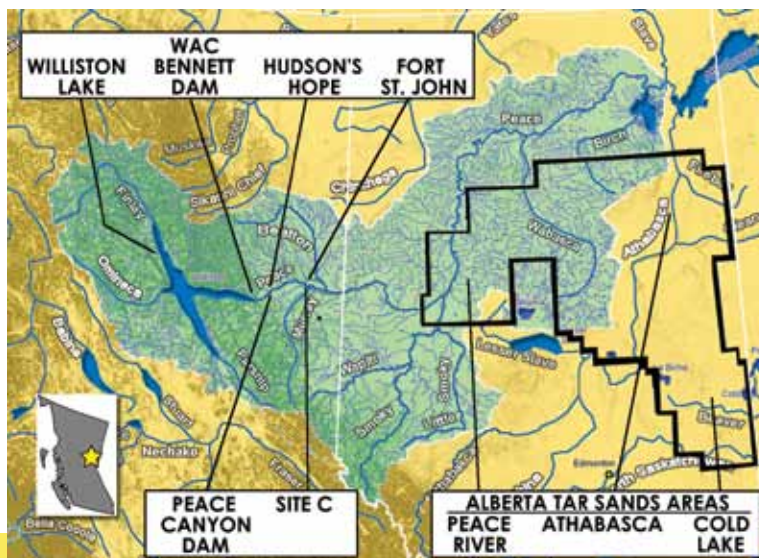
In 2001, Hydro updated information on the dam’s environmental impact, generating capacity, and economic viability and included Site C in its 2004 and 2006 submissions to the BC Utilities Commission. Most recently, the BC government’s 2007 energy plan stated it would “enter into initial discussions” with key stakeholders to “ensure that communications regarding the potential project and the processes being followed are well known.”

The Impacts

The original Site C plan called for removal of approximately 2,600 hectares of land from the Agricultural Land Reserve in the Lower Peace River. The 1983 BCUC report noted there could be some impact on climate in the immediate area of the reservoir “from increased fog and humidity which might adversely affect farming in the region.”

The BCUC report also found flooding would result in the loss of productive forest land, a “significant loss of both game and non-game wildlife in the region”...and that “while the project will create new reservoir recreational opportunities, these will not offset the quality and value of lost river based recreation...” and estimated a net recreation resource loss of \$6.9 million.

Map by Arthur Caldicott



Peace River dams can affect water levels in Alberta. The WAC Bennett dam has been blamed for lowered water levels in Alberta’s Athabasca and Peace deltas and for altered critical wetland habitats.

In 2004, members of the Athabasca Chipewyan First Nation – whose culture is closely tied to these habitats – were awarded \$4 million by BC Hydro as compensation for the effects of the dam, built during the 1960s.

Agriculture is the third largest resource industry in BC after logging and mining. Only 3% of BC’s land is considered suitable for farming – the smallest amount of any province except Newfoundland/Labrador. Peace River farmland produces 86% of BC’s grain.

An article in the *Vancouver Sun* in April 2004 said BC Hydro estimates that the project would leave a footprint of 5,125 ha. Of this, 3,940 ha is judged to be farmland of agricultural significance, much of it class 1 agricultural land. Any nearby high quality agricultural land would be downgraded because of the localised climate change – such as increased fog – caused by a large reservoir.

The relocation of the highway, secondary access roads, dam construction materials, and the clearing and widening of the transmission lines are not included in the calculated losses of agricultural lands.

In addition to the loss of important farmland, there would also be significant loss of unique wildlife values, such as the crucial wintering and calving habitat for ungulates and nesting areas for warblers, as well as the area being an important flyway for 70 species of birds and waterfowl (including red and blue-listed species).

The Science in Today’s Terms

In the journal *Energy & Environmental Science*, Mark Jacobson, director of the Atmosphere/Energy Program at Stanford University, reviews and ranks major energy-related solutions to global warming, air pollution deaths, and energy security. The report and extensive supplementary materials are available online.

The report assumes that all US gasoline-powered vehicles

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↔ Site C continued

will shift entirely to electric power or ethanol fuel, and compares 10 ways of generating the necessary electricity (and two ways of making ethanol) from solar photovoltaics to coal-fired generation and nuclear power.

The criteria used in ranking included global warming, air pollution mortality, impacts on water supply, and wildlife and land use impacts. Overall, the technologies ranked, from highest (safest and most sustainable) to lowest in this order: wind and wind-storing hydrogen, concentrated solar power, geothermal, tidal, solar photovoltaics, wave, hydro-electricity, coal, nuclear, ethanol (corn), and ethanol (cellulose). Note that hydro dams ranked 8 out of 12.

Jacobson said, “The US could theoretically replace all 2007 on-road vehicles with battery-electric vehicles powered by 73,000 to 144,000 five megawatt wind turbines... reducing US CO₂ by 32.5-32.7% and nearly eliminating 15,000 vehicle-related air pollution deaths per year in 2020.” The manufacturing is possible: the US produced 300,000 airplanes during World War 2.

What The People Are Saying

Based on BC Hydro’s consultation report, some key results of public consultations are:

- Environmental impacts were judged to be more important than both dependable energy and low-cost energy.
- Protection of the environment for fish and wildlife were of greatest importance to participants, with over four in five rating fish and fish habitat and wildlife and wildlife habitat as “extremely” or “very” important.

In Fort St. John, participants questioned the lack of technical information, suggesting the consultation is flawed without full technical information available. It was further suggested that consultation is being done to fulfil a requirement only and would not have an effect on whether to proceed with Site C. Participants expressed concern that there was not enough public information about the negative impacts of Site C. They were interested in energy alternatives outside of Site C and whether as much effort has gone into exploring alternatives. Many questioned the government’s mandate that restricts BC Hydro to hydroelectricity, as opposed to producing energy from other sources.

Hudson’s Hope participants expressed concern about how Highway 29 improvements might increase wildlife/vehicle collision rates, and said that the discussion guide looked like it had been written as if the project was proceeding.

Participants from Mackenzie said they wanted to ensure that BC Hydro learn from mistakes made on Williston

BC Energy Forecast and Supplies

by Delores Broten

BC Hydro forecasts BC electricity requirements to go up to between 68,000 and 82,000 gigawatt hours (gwh) by 2025. This is up 35% from 51,000 gwh in 2006 – an increase of at least 17,000 gwh.

Sounds like we are going to need a lot more power in BC, but BC Hydro’s Powersmart people say that BC can easily conserve 8,660 gwh by 2026, and could conserve up to 15,070 – for a net increase of only 2,000 gwh.

To put that in perspective, BC Hydro has accepted 4 projects to generate power from beetle kill wood for 579 gwh. The 2003 Green power proposals came to 1762 gwh so 2,000 gwh will not require much capacity-building.

Hydro is in the process of adding two 500 megawatt generators to the Mica (Columbia River) dam. They are also adding another 500 mw generator to the Revelstoke dam.

Permanent closures in the pulp industry, not included in these forecasts, should free up 2,000 gwh. Then there is the Kitimat aluminium plant, which is not now going to be expanded according to the new owners. It has power surplus to its needs.

For “Clean Power,” in the current round, BC Hydro received 68 proposals from 43 companies, representing a total firm energy output of approximately 17,000 gwh per year. The proposals were for 45 hydro projects, 19 wind projects, 2 waste heat projects, 1 biogas project, and 1 biomass project.”

Site C would create 4600 gwh.

—BC Hydro 2005 Electric Load Forecast,
BC Hydro Conservation Potential Report, 2007

Lake, particularly concerning the need to clear organic materials in the reservoir area prior to flooding.

The Peace River Regional District concerns included socio-economic aspects and the need to see commitments in writing due to previously broken promises.

The North Central Municipal Association expressed concern with effects on fish. The North Peace Economic Development Commission expressed concern about impacts to agricultural land. Participants from Dawson Creek expressed concerns over whether additional energy is really needed and the issue of exporting energy.

Why does BC Hydro Want This Dam?

BC Hydro says, “The chief advantage of a [large hydroelectric dam] 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...”

The goal of BC's energy plan is to achieve most of "...BC's electricity requirements over the next 10 years through increased conservation and energy efficiency by all British Columbians, coupled with generation by independent power producers. However, new projects take time to plan and implement. Many provide limited amounts of firm supply. BC will also need to consider options for new, large scale sources to meet forecasted demand growth in the next 10-to-20 years. Large scale options could include Site C...."

"Site C would be publicly owned. Early interim project estimates indicate that Site C could cost between \$5 billion and \$6.6 billion."

Back to the Spin: Green Energy or Green Wash?

There are a number of considerations we need to make in order to decide if an energy source is "green." How much water does a project use and take out of the fresh water resources (of a nation, a region, etc.)? How much land, especially agricultural land, is compromised or destroyed in this project? How much fish and wildlife habitat is destroyed? Are traditional uses of local indigenous peoples affected? What is the footprint of the generating plant? What is the footprint of the distribution/transmission method?

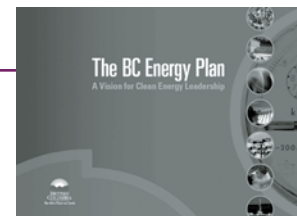
What about the effects caused by diverting resources at the expense of developing technologies that can unarguably be called green? Are the billions of dollars for construction, maintenance, and decommissioning a dam – plus the costs for compensating people and businesses that are displaced by the project – better spent on investing in technologies that do far less environmental and social damage than hydroelectricity?

Look beyond the easy, familiar words that are used to sell you something. If we want to turn around the status quo, we have no choice.

I cut my teeth on environmental issues in British Columbia nearly 30 years ago over Site C. After hundreds of hours of consultations around the province, the BC Utilities Commission ultimately couldn't justify Site C in part because of environmental impacts. Since then, given the loss of species and habitats around the province, the excessive habitat disruption that already exists in the northeast, the threat to fresh water, and especially the uncertainty of climate change, what on Earth could make this a good idea today? We have the technologies to develop truly "green" energy. Let's quit living in the past and get on with it.



Maggie Paquet is a consultant biologist who has been involved in environmental issues in BC and elsewhere for at least three decades. She lives in Port Alberni.



For More Information

The BC Energy Plan: A Vision for Clean Energy Leadership, BC Hydro 2007. www.energyplan.gov.bc.ca

The Site C Dam: Historic Overview and Key Issues, Background Brief, Legislative Library of British Columbia, May 2007. www.llbc.leg.bc.ca/Public/Background/200702BB_Site_C_Dam.pdf

"Down the River" column and links, weblog, Northeast News, www.down-the-river.blogspot.com

Extensive collection of current and historical reports on Site C, consultation documents, and news updates, BC Hydro, www.bchydro.com/planning_regulatory/site_c.html

"Review of solutions to global warming, air pollution, and energy security," Mark Z. Jacobson, Energy Environ. Sci., 2009

Peace Valley Environment Association, www.peacevalley.ca

Keepers of the Water, www.keepersofthewater.ca

To Comment on the Proposal

Peace River Site C Hydro Project, P.O. Box 2218, Vancouver, B.C. V6B 3W2. Fax: 604 623-4332, Toll-free: 1 877 217-0777 sitec@bchydro.com

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