



Vancouver Island Generation Project

BC Hydro and Calpine Canada are proposing to develop a 265MW (295MW with duct firing) high efficiency, natural gas-fired electricity generation facility on Vancouver Island. The proposed Vancouver Island Generation Project (VIGP) -- formerly the [Port Alberni Generation Project](#) -- will use a state-of-the-art turbine and advanced emission control technology and will be one of the cleanest natural gas fired generation facilities in North America. Clean burning natural gas will be the only fuel used at the VIGP.

The VIGP is part of BC Hydro's committed resource base and must be in service by November 2004 to ensure that there is enough electricity to meet on-Island demand for the winter of 2004/05 and beyond. The facility will help to meet new demand as well as to replace electricity currently being delivered to the Island by aging submarine cables that will be decommissioned between now and 2007. If the VIGP is not developed electricity shortages leading to brownouts or even blackouts could result on Vancouver Island.

After reviewing a number of potential sites on the east coast of Vancouver Island we have identified potential project sites in Duke Point, the Nanaimo Regional District, and the District of North Cowichan with the sites in Duke Point being most favourable. Additional studies are underway with a view to confirming a site by April 2002.

The project will be submitted for review under the terms of the BC Environmental Assessment Act (BCEAA). BCEAA requires an integrated assessment of a project's environmental, social, economic, health, cultural and heritage effects. These studies are currently underway. A comprehensive consultation process is also being undertaken to ensure that all interested parties have an opportunity to learn about the project and to ensure that all potential issues are identified and addressed.

Contained below are the answers to frequently asked questions of both the project and of BC Hydro about our business operations and commitments to the province. If any of your questions are not answered here, please feel free to contact us to learn more about the project.

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What type of site is needed?

A minimum of 10 acres of reasonably flat land for the project site and an additional 10-15 acres of laydown area adjacent to or near the site for construction staging is needed. The site must have:

- a fresh water source and wastewater disposal location,
- reasonable proximity to a natural gas pipeline and electrical transmission,
- reasonable access,
- good sub-soil conditions for equipment foundations.

It must also:

- be owned by the proponent or be available for purchase with appropriate zoning;
- be acceptable from an environmental and archaeological perspective, and
- be a reasonable distance from residences.

Why are the sites at Duke Point favourable at this time?

The Duke Point area is already a heavy industrial area and offers a number of positive features including appropriate geo-tech conditions, appropriate zoning, availability of utility interconnections, lots of sufficient size for the project, and adequate distance from population areas.

Although sites in the Duke Point area are currently being assessed in more detail it has not yet been determined if the final site will be in the Duke Point area. There are many other sites on the Island that would also be appropriate for the project.

How will the final site be selected?

Now that a number of potentially viable sites have been identified, more detailed engineering, environmental and socio-economic studies will be undertaken to determine the potential effects of developing the project in each of the locations. The findings of these studies along with input from the communities in which the potential sites are located will be assessed and a preferred site selected and confirmed by April 2002.

There will be ongoing consultation with interested parties throughout the site selection process to ensure that all potential issues are identified and considered in the short-listing process. Open Houses will be held from February 6-8 in Nanaimo, Cedar and Gabriola Island to discuss the project.

What types of facilities will be built on the site?

A gas combustion turbine generator with selective catalytic reduction (SCR) to reduce Oxides of Nitrogen (NOx), a steam turbine generator (STG), a steam condenser, a heat recovery steam generator (HRSG) and auxiliary equipment that will be housed in a building on the site. A cooling tower will be located on the site in a separate area. An administration building and control room as well as tie-ins for electricity transmission, natural gas supply, water supply, and effluent systems will also be located on-site.

Why do we need more electricity when we are exporting electricity to California?

The VIGP is needed to meet peak demands in B.C. from the winter of 2004-05 onward. Electricity trade primarily involves Powerex (a wholly owned subsidiary of BC Hydro) purchasing resources from outside the BC Hydro system, which are then resold at a profit to its trade customers. One way that we do this is by storing water in our reservoirs and buying power at night when the prices on the grid are low and generating and selling power during the day when prices are higher.

In terms of our generating facilities, BC Hydro is required to maintain a balanced system and cannot build projects for export. Our supply capabilities must be designed to meet provincial electricity demand on the coldest winter day. Therefore, some surplus electricity is available at certain times, mainly during the spring, summer and fall. This electricity can be freely traded on the North American market.

The success of our trading efforts has enabled us to keep rates frozen for the past eight years and ensure that BC residents pay one of the lowest rates for electricity in North America. However, if new generation capacity is not developed in British Columbia we will be forced to buy more electricity off of the grid - much of which will be produced using technologies less environmentally friendly than combined cycle natural gas generation.

Wouldn't it be cheaper to replace the underwater transmission lines?

No. Whether or not the cables are replaced, new generation is required on the Island and in the province. Given that the Island Cogeneration Project in Campbell River requires additional gas delivery capability to Vancouver Island, studies show that building the Georgia Strait Crossing and generating on-Island is approximately \$100 million less expensive than generating on the mainland and replacing the cables. This option will also result in fewer emissions as more of the electricity generated will be used rather than being lost during transmission to the Island and it will enhance the security and reliability of supply to the Island as delivery and generation mechanisms will be diversified.

Why is BC Hydro using natural gas to generate electricity instead of developing green resources?

BC Hydro must meet electricity demand in an environmentally and socially responsible and cost-effective manner. After an in-depth analysis of various resource options, including their cost, availability, and potential environmental and social impacts, natural gas was identified as the next major generation source in BC by a consultative committee comprised of representatives from around the province. However, BC Hydro has also committed to meeting 10 per cent of new load growth with cost competitive [green energy](#) and will be looking at opportunities to increase that percentage in the future.

In June, BC Hydro announced the first phase of a 20 MW [Green Energy Demonstration Project](#) for Vancouver Island. Wind

(10MW), micro hydro (6-8 MW) and wave energy (3-4 MW) were selected based on the findings of the Vancouver Island Green Energy Resources Study. This represents an important step in evaluating promising green resources on Vancouver Island.

Natural gas is an important resource at this time and, together with energy conservation and green energy, will help BC Hydro to continue providing British Columbians with competitively priced electricity at minimum environmental impact. Natural gas will provide a cost-effective "bridge" until greener alternatives are economically and technologically feasible. It is important to remember that the success of our PowerSmart program has allowed for the delay of projects such as this and, as a result, the plant will be much cleaner than if it had had to be developed a decade ago.

How will rising gas prices affect the project?

While recent trends in natural gas pricing have resulted in significant price fluctuations for the consumer, BC Hydro monitors these trends very carefully and does not feel this rise to be out of line with market trends. The increases experienced in late 2000 and early 2001 have leveled off. The reason for this is that the increased price in gas allowed for the development of significant new supply to fill market needs. Once supply and demand needs are met, prices moderate and we anticipate the cost of operating the gas plants will remain well within the margins factored into our forecasts.

Who will own and operate the facility?

BC Hydro and Calpine Canada will form a 50/50 joint venture entity to build, own, and operate the Vancouver Island Generation Project. Both partners will have an equal interest in, and equal say in, all management and control decisions.

Calpine Canada is a subsidiary of Calpine Corporation of San Jose, California, one of the leading independent power producers in the U.S. Calpine recently purchased the Island Cogeneration Project in Campbell River and is currently constructing the Calgary Energy Centre, a 250 MW combined-cycle, natural gas-fired facility near Calgary. Calpine is also active in oil and gas development in northeastern B.C. and is one of B.C.'s top three oil producers.

How will the project be reviewed?

The VIGP will be reviewed under the BC Environmental Assessment Act (BCEAA). BCEAA requires an integrated assessment of a project's environmental, social, economic, health, cultural and heritage effects. The Environmental Assessment Office (EAO) administers the review process. There are three possible stages in a BCEAA review and a project can be approved at any stage based on the studies undertaken and the project merits. Additional information on the EAO and BCEAA is available on the EAO web site at www.eao.gov.bc.ca or by contacting the EAO directly.

Prior to submitting an Application to the EAO a project is in the pre-Application stage which is not part of the formal review process. During this stage, the proponent conducts environmental, socio-economic, cultural and heritage studies and engages in consultation with interested parties to assess the potential effects of the project on the area in which it is proposed to be located.

What types of studies will be undertaken?

Specific studies will include:

- Air quality
- Health
- Hydrology and surface water
- Vegetation
- Wildlife and habitat
- Aquatic habitat
- Terrain and soils
- Noise
- Visual effects
- Archeology
- Waste management
- Green house gases
- Transportation and traffic
- Community services (education, health care, social service, infrastructure, recreation)
- Housing
- Employment and income
- Population and demographics
- Government costs and revenues
- First Nations issues
- Culture and Heritage

Will the VIGP affect health?

No. The VIGP will be designed and sited in such a manner as to ensure that health effects are avoided. Three areas of interest from a health perspective are air quality, water, and noise.

The VIGP will use state-of-the-art generation and emission control technology and will be one of the cleanest natural gas generation facilities in North America. Oxides of Nitrogen (NOx) emissions from the plant will be controlled to 60 per cent below (better than) the provincial criteria and carbon monoxide (CO) emissions will be controlled to 82 percent below the provincial

criteria to minimize air quality effects.

Wastewater will be reduced to the extent possible by reusing water and will be treated prior to being released to the environment. At this time it is estimated that between 186 and 411 US Gallons per Minute (USGPM) of wastewater will be created; however, studies are currently underway to determine means through which to reduce this amount. The wastewater will include cooling water blowdown, boiler blowdown (reused in cooling tower), neutralized raw water demineralization wastes, floor drainage from process and building areas and sanitary wastes.

Depending on the distance from residences, enclosures will be used to mitigate noise from turbines. These enclosures will be housed in a building to further reduce noise levels. Advanced noise reduction engineering methods will be used to ensure that during normal operations plant noise will not be heard above typical existing noise levels in the communities closest to the project site and that low frequency noise levels will be below levels that generate concern.

What types of economic benefits will the VIGP create?

During construction, VIGP will create:

- about 235 person years (PY) of direct employment
- 364-473 PY of indirect employment
- about \$36-40 million in income and;
- \$12-13 million in personal income taxes.

During operations, VIGP will create:

- 20 direct permanent high paying jobs,
- \$2.3 million/year in household income and benefits,
- personal income taxes of about \$667,000/year,
- provincial excise and sales taxes of \$4 million/year,
- property taxes specific to community levies,
- Federal Large Corporation Tax of \$3.5 million present value (PV) over the life of the project,
- corporate income tax of \$16.5 million (PV) over the life of the project
- GE Industrial benefits
- Ongoing opportunities for local service companies

First preference for employment and economic opportunities will be provided to qualified local residents and businesses.

Will the emissions from the facility smell?

No. There will be no odour associated with the emissions from the plant.

How will BC Hydro deal with greenhouse gas (GHG) emissions from the VIGP?

BC Hydro has committed to offset 50 per cent of the [greenhouse gas](#) emissions generated by the VIGP through the year 2010. BC Hydro has also committed to offset 50 per cent of the GHG generated by the Island Cogeneration Project in Campbell River over the same timeframe.

A GHG offset is a reduction in greenhouse gas emissions at one source that compensates for GHG emissions from another source. BC Hydro plans to source offsets within BC and elsewhere. Since Climate Change is a global phenomenon, an offset anywhere in the world can effectively offset GHG emissions here in B.C.

How can I learn more about the project?

A comprehensive consultation program will be undertaken to ensure that all people and groups interested in learning about the project and providing input have the opportunity to do so. This will include open houses, information sheets and newsletters, presentations, a project website, e-mail and telephone access, as well as direct contact with interested parties. Requests for information on the project will be answered in a timely fashion via the medium requested.

If you would like more information on the project or upcoming consultation activities, please contact us through one of the following means:

Phone: 1-800-663-1377

Fax: 1-250-755-7120

E-mail: vigp@bchydro.com

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Port Alberni Generation project

***A special message from Shawn Thomas,
BC Hydro Senior Vice-President:***

October 23, 2001

Tebo Avenue Remains an Appropriate Site

In December 2000, BC Hydro announced plans to develop the Port Alberni Generation Project in partnership with Calpine Canada Holdings Limited. This joint venture endeavour evolved subsequent to the original 1998 Atco/Pan Canadian cogeneration project that was planned for the former Pacifica Mill site. Despite the best efforts of the parties involved, the players were unsuccessful in reaching a commercial arrangement satisfactory to both sides. Since agreeing to develop a project with Calpine in Port Alberni, we have been working hard to provide your community with one of the cleanest natural gas fired generation facilities in North America. Unfortunately, we will not be proceeding with this state-of-the-art project at the Tebo Avenue site or elsewhere in the Alberni Valley. We realize that the process has been challenging for the community and we recognize the emotions that were involved. However, it remains our belief that the Tebo Avenue site is the best location for the project and that the benefits provided to the community would have greatly outweighed any of the risks.

We examined fifteen potential sites in and around Port Alberni including the four locations at the former Pacifica Mill site. Of the four sites considered, the equipment storage yard held the most potential but was eliminated for the following reasons:

- Risk of flooding
- Risk of soil liquefaction
- Site not available for purchase
- Soils could pose severe construction challenges

Once this work was completed it was our conclusion that the Tebo Avenue site was the best site because it offered the following:

- Less environmental impact at that site than at other sites
- Emission effects would be equivalent or lower than at other sites
- Less new infrastructure would be needed
- Less engineering/foundation (tsunami/liquefaction) risk
- Site was in an Industrial Park with existing heavy and medium industry zoning
- Noise and other issues could be mitigated at this site

Detailed project studies confirmed that the Tebo site was a good location for the facility. Local residents, First Nations, special interest groups, and all levels of government actively participated in discussions regarding the project. BC Hydro and Calpine considered all input received and the evolving project design reflected that input.

Subsequent project studies were undertaken to address the concerns of vocal opponents. These studies confirmed our original conclusion that the PAGP would be a good neighbour at the Tebo Avenue site, as it would:

- have emission rates more that 60 per cent better than provincial guidelines
- result in no increase to the predicted existing maximum nitrogen dioxide (NO₂) concentrations within Port Alberni
- only increase the existing maximum PM_{2.5} concentration by less than 1 per cent of Canada's stringent PM_{2.5} air quality standards
- not result in adverse impacts to human health

- not add to the number of foggy days in Port Alberni
- use land already zoned for medium and heavy industry

Follow up to questions by independent experts and individuals led the project team to reconfirm Tebo as the preferred site. Study after study proved that the potential risks associated with the generation facility would be small but acceptable. The ongoing economic benefits of this facility would have been an excellent addition to Port Alberni's changing economy. During construction, it would have provided 235 person years of direct employment; 364-473 person years of indirect and induced employment, \$35.5-39.5 million in household income to the Alberni Valley, personal income taxes of \$667,000 and property taxes of \$1.0 million per year, capital taxes of more than \$8.2 million and corporate income taxes of \$16.5 over the life of the project.

In addition, we made a commitment to offset 50 percent of Greenhouse gases (GHGs) produced as a result of operating the plant by lowering, capturing or avoiding and storing emissions at other sources. It was our aim to source as many GHG offsets as is commercially possible from within the community in order to create new job opportunities and other economic advantages.

The referral of the project to Stage 2 by the Environmental Assessment Office was not a rejection of the project, rather an advisement that they require more information in order to determine any impacts; however, in the absence of rezoning it appears to be a moot point.

Ironically, the proposed aluminum smelter will probably have a much greater impact than PAGP and require a facility with twice the capacity of that which was proposed at the Tebo Avenue site.

Again, we sympathize with the difficult decision that Port Alberni had to make but in order to meet basic current and future demand on Vancouver Island, new generation must be acquired. This cannot be put on hold.

On behalf of the Port Alberni Generation Project Team, I would like to thank all of the residents of the Alberni Valley who provided meaningful input into the process. You have made your voices heard and a decision has been made. BC Hydro must, however, move forward with other options.

*Shawn Thomas
Senior Vice-President
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BC Hydro*

Read about our [green energy initiatives](#).

For comments and/or inquiries, email pagp@bchydro.com.

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Green & Alternative Energy

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Read our [Frequently Asked Questions](#).

GREEN ENERGY QUIZ

NEW



True
False

Can you imagine a future where your energy needs are met by [wind](#), [small and micro hydro plants](#), [hydrogen technology](#), [wave energy](#) or [biomass energy](#)? BC Hydro has been thinking about such a future for quite some time.

Currently, most of the electricity needs of British Columbia are met through clean, renewable hydroelectricity. However, B.C.'s population is growing steadily.

In our homes and businesses, we are using more electricity to fuel our computers, appliances, entertainment equipment and other devices than ever before. In fact, our electricity consumption is currently predicted to grow by close to 2% a year for the next decade.

Our present resources allow us to meet increased electricity demands until 2007. By then, we will need to have new sources of energy in place.

BC Hydro's goal is to provide energy solutions to our customers in an environmentally and socially responsible way. That's why we are investigating green energy resources for British Columbia.

WHAT'S NEW

BC Hydro announces [second ocean wave energy agreement](#)

New developments on [ocean wave energy project](#)

Update on [green IPP projects](#)

Wind monitoring equipment installed near [Merritt](#) and [Ashcroft](#)

[Inventory of potential micro hydro sites](#) now online

Quebec's [Axor selected](#) for wind energy demonstration project.

[Green demonstration project](#) announced for Vancouver Island.

Read the summary of BC Hydro's Green Energy Study for British Columbia [Phase 1: Vancouver Island](#)

View our [Wind Energy Resource Map](#).





Green & Alternative Energy

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- [Vancouver Island Green Energy Demonstration Project](#)**
- [BC Green Energy Study](#)
- [Green Technologies](#)

Vancouver Island Green Energy Demonstration Project

- [Project Update](#)

Green energy projects on Vancouver Island are not too far down the road. An important first step is the 20 megawatt (MW) green energy demonstration project for Vancouver Island, announced in June 2001.

The 20 MW project is a good size to test the technologies and their application in B.C.'s diverse terrain. It will also provide valuable opportunities for BC Hydro to partner with private sector developers with expertise in green energy projects.

Vancouver Island was selected for the demonstration project because new energy resources are required to meet the growing energy demand on the island. Currently, only about 20 per cent of the electricity used on the island is actually produced on the island. Other factors support the project, including increased customer demand for green energy products and services, changes in the cost and maturity of green technologies, and recent volatility in energy market prices.

BC Hydro looked at a number of green energy options in the [Vancouver Island phase of the Green Energy Study for B.C.](#) From those results, [wind](#), [micro hydro](#) and [ocean wave](#) energies look the most promising. The demonstration project will be made up of approximately 10 MW of wind energy, 6 to 8 MW of micro hydro energy and 3 to 4 MW of ocean wave energy.

The first phase of the demonstration involved issuing requests for proposals, selecting potential partners, and developing the project scope and business cases for the three green energy resources being explored.

The project's second phase will cover the technical and approvals side, including data analysis and design contracts. The final phase will cover the engineering procurement, contracting and construction. BC Hydro plans to start operating the wind, micro hydro and ocean wave projects between 2003 and 2004.





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Greenhouse Gas

BC Hydro believes that climate change is one of the most important environmental issues facing the world today. Addressing this issue requires both global cooperation and local action. BC Hydro is committed to limiting our net contribution to climate change while continuing to provide British Columbians with reliable, competitively priced electricity.



Features

BC Hydro has just released its fifth annual [Greenhouse Gas Report](#) for 2001 outlining progress made towards reducing greenhouse gas emissions

BC Hydro earned "Gold Champion Level Reporter" status for our [Climate Change Progress Report 2000](#) and was the only Canadian electric utility to receive a [Leadership Award](#) for our voluntary reduction of greenhouse gas emissions for the year 2000.

We are [inviting proposals](#) for GHG offset projects that will help reduce our global GHG contribution.

BC Hydro is committed to offsetting 50 percent of the increased GHG emissions from two new gas-fired generating plants on Vancouver Island through 2010. [more>>](#)