CANADA'S GREEN ENERGY JOBS START HERE

Alternative Energy Vision for Vancouver Island North

Regional District of Mount Waddington
Port McNeill, B.C. Canada

www.rdmw.bc.ca

Background

The Regional District of Mount Waddington (RDMW) has a significant potential cluster of renewable energy production that is second to none on Vancouver Island.

Located on the west coast of the British Columbia mainland and the northern third of Vancouver Island, the RDMW is home to over 11,000 people with over one dozen First Nation traditional territories within its boundaries. The RDMW is a rural, resource-driven region of British Columbia with comparatively small secondary (processing) and tertiary (service) sectors. The RDMW has developed the Alternative Energy Vision to advocate and explain its position on the development of the renewable energy sector in its jurisdiction. The leadership of the region are focussed on making the alternative energy subsector a progressive development that will result in both secondary and tertiary economic multipliers in its rural communities, particularly if telecommunication infrastructure improvements are executed during key windows of opportunity.

Policy

"The RDMW will support independent proposals for alternative methods of power generation that propose responsible management practices that meet all relevant provincial, federal and local government policies and regulations, and that do not detract from adjacent land or water uses and related activities"

~ Bylaw 674, Section 8.6 Energy Policies (2004)

Vancouver Island currently produces approximately 500 Mega Watts (MW) of the 2300MW it consumes. Of the current proposed projects, totalling around 5000MW, with approximately 4200MW on Vancouver Island and 800MW on the Mainland, 1800MW worth of green energy production projects on the North Island were identified by the now reintegrated BC Transmission Corporation as both economically and environmentally feasible. Once the approved Cape Scott windfarm and Kokish hydroelectric projects are completed in the Mount Waddington region, an estimated additional 150MW of additional production will be added to the island's transmission grid.

Cape Scott Windfarm (International Power GDF Suez)	Kokish Hydroelectric Project (Brookfield Renewable Power Inc. and the 'Namgis First Nation)
Nearest Municipality: Port Hardy **Installed Capacity:** 99 MW* **Anticipated Average Annual Generation:** 300 GWh (sufficient to power 30, 000 homes) **Number of turbines** 55 Vestas V100 1.8 MW turbines **Footprint** 350 hectares (864 acres)** **Transmission Line Length** 40km **Transmission Voltage** 132kV **Could increase over time with additional transmission capacity in partnership with the Nahwitti Windfarm project by 50-100MW or more.* *** Non-forested land*	**Nearest Municipality:** Port McNeill **Installed Capacity:** 45 MW **Anticipated Average Annual Generation:** 160 to 200 GWh (sufficient to power 15, 000 homes) **Intake Elevation** 257.7 m above sea level **Powerhouse Elevation** 20.20 m above sea level **Penstock Length** 9.2 km **Penstock Diameter** 3 m **Transmission Line Length** 0.75 km **Transmission Voltage** 138 kV

Making the North Island's good news story a generational economic shift

These two projects represent an immediate infusion of well over $300 million to the British Columbia and North Island economy in 2012 and 2013. As good as this news is, there are challenges to further develop the sector and take full advantage of the RDMW's natural resources for alternative energy generation:

- The lack of adequate transmission capacity for full development of the area's potential as Vancouver Island's green energy generator.

- Modest increases to transmission line capacity could be achieved by altering the operating temperature of the transmission lines (see table). This would allow for incremental increases in the number and scale of projects and the signs are currently positive that this will happen to some degree.

Table: Operating temperature change potential			
Options	**Summer rating (MVA)**	**Winter rating (MVA)**	**Cost Estimate**
Upgrade to 75 °C operation at 138 kV	220	300	$450 k – $1.8 M
Upgrade to 90 °C operation at 138 kV	255	325	$800 k – $3.2 M
Upgrade to 75 °C operation at 230 kV	370	505	>$3.2 M
Upgrade to 90 °C operation at 230 kV	425	540	>$3.2M

Source: BC Hydro 2011

- Specific changes are required for "islanding" of the region's power supply to be possible through new projects. "Islanding" technology allows the local power grid to function independently of the utility provider in the case of a wider blackout.

- Alternative energy proponents are not clearly mandated to co-operate in building or using consolidated transmission lines wherever project clusters permit an environmentally efficient infrastructure.

- Stakeholders require a clear policy and application process that can permit access to private utility lines for rural economic development multipliers that may otherwise be unachievable. Local organisations and businesses are currently uncertain regarding the possibility of connection under current regulations; any potential application process appears highly complex and expensive.

It is the RDMW's wish to optimise the sector's development in a way that is sustainable, both economically and environmentally, in partnership with other land uses that continue to generate essential employment and value to the region.

The RDMW also finds it desirable to foster co-operation between it, local communities, BC Hydro and alternative energy producers regarding integrated power transmission and generation development.

Environmental concerns are raised by the existing regulatory review of proposed transmission lines and the need for the cumulative environmental assessment of multiple, adjacent proposals. The provincial Environmental Assessment Office (EAO) does not appear to explicitly do this.

Lack of an integrated strategy and regulation for interconnection facilities may result in what can be seen in the “Spider’s Web” figure; duplicate, underbuilt lines right next to one another. The negative environmental impacts of these projects should be minimised and their potential optimised through consolidation. An integrated approach also requires the flexibility to allow adjacent interests to connect directly to new private transmission lines, not requiring BC Hydro to run their own line out to them, again, duplicating infrastructure on the landscape and escalating the cost of development.

Knob Hill, Site of the Cape Scott windfarm

Source: RDMW, 2011

Power Infrastructure Goals

- An upgrade in current transmission line capacity, whether through an increase in line operating temperature or in new infrastructure. This will ensure continued investment in the green energy sector on the North Island and wider area, including projects in neighbouring jurisdictions.
- A consolidated transmission network, avoiding a “spider’s web” of transmission lines, duplicate lines, that respect the environment and other resource industries.
- That BC Hydro asks purchase agreement holders to investigate “islanding” for the RDMW in the event of a power outage resulting from failure outside of the region. Recent events

in Japan have underlined the need for islanding throughout the Pacific Rim that facilitates rural, remote areas to continue functioning in isolation.

- A serious examination of Direct Current (DC) undersea cables as an approach to reducing land use problems that delay alternative energy projects, generate project overhead and impact other commercial interests.
- That BC Hydro, the private sector producers and telecommunications companies work together to ensure that the latest high speed broadband and cellular infrastructure are installed and shared whenever major upgrades are made to IL120, IL125, IL137 and IL130 (and all substations from Port Hardy to Dunsmuir) to boost regional competitiveness, reduce installation costs and improve community connectivity which lags behind southern and central Vancouver Island.

Economic Goals for Alternative Energy

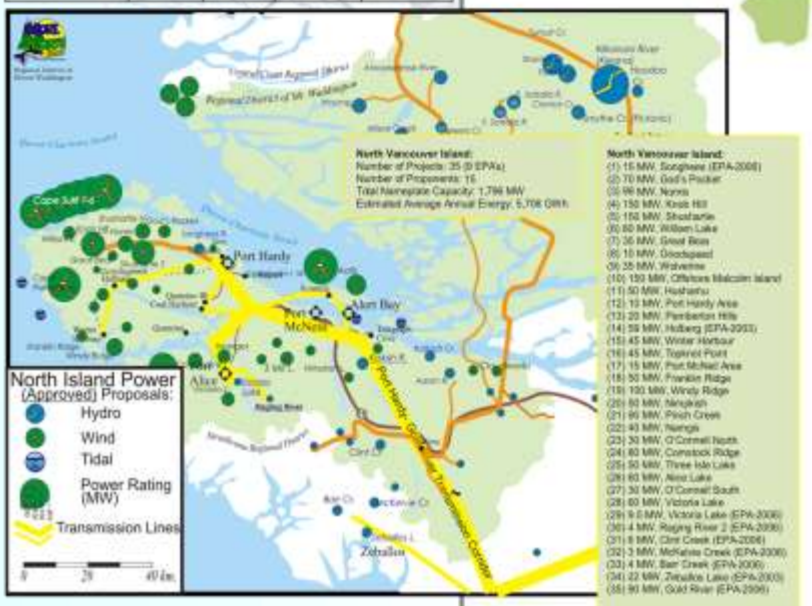
- To provide sustainable solutions in regards to power production.
- To ensure continued employment of individuals from the region through the sustained interest of the sector and possible expansion into the future.
- Offers local skilled employment, training and contractual opportunities.
- Fair property tax regimes for local government services. Currently BC Hydro transmission lines are non-taxable whereas private transmission lines are. It is the RDMW's desire that the private sector and BC Hydro be on a more level playing field with all transmission lines being taxable. This is not only fair, but it also brings additional revenue into the region for improved local services or reduced residential tax burden
- Optimise economic multipliers through regulatory change and integrated transmission planning and investment. **New power transmission infrastructure could make increased resource industry activity such as mining viable in rural backcountry areas once more.**
- Establishing the North Island as a power exporter to the rest of Vancouver Island, helping to make the island and coast self-sufficient in power production.
- An easy, effective, and efficient way for businesses to connect to the grid if a private line connection better facilitates development or is more environmentally considerate than the public infrastructure. **This is particularly important for any proposed resource or mining activity on the North Island.**

For more information, contact Neil Smith, Manager of Economic Development (info@rdmw.bc.ca).

Vancouver Island North Transmission Challenges

North Vancouver Island Cluster

Cluster Concept	Estimated Cluster WAUEC ($/MWh)	Cost of Firm Incremental Transmission ($/MWh)	Bulk Transmission System Losses ($/MWh)	Estimated Cluster Cost of Energy Supply for Ranking Purposes ($/MWh)
Upper Bridge-Lillooet	$68	$0	$0	$68
Toba-Bute-Knight	$64	$0	$0	$64
Bechell-Jervis-Powell	$84	$0	$0	$84
Harrison Lake	$64	$0	$0	$64
North Vancouver Island	$107	-$8	-$1	$98
Mica-Goldstream-Golden	$91	$3	$5	$99
South Peace River	$82	$6	$12	$100
McBride	$96	$3	$6	$105
Kelly Lake	$121	$5	$6	$132
Nicola	$121	$7	$7	$135
North Coast	$130	$5	$12	$147



Note: Most of the project specific information included herein was submitted to BCTC in 2007.
Some project specifics may have changed since last reported to BCTC

Source: Adapted from BCTC 2007 State of the Transmission System Report 21 December 2007

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