

Blowing in the Wind

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There are few places on Earth where the forces of nature are on such violent, chaotic display as Hecate Strait, the narrow stretch of shallow ocean that separates the Queen Charlotte Islands from the B.C. coast. Winter low-pressure systems born over Alaska can push winds to 160 km/h, driving waves over 30 metres high; opposing northeasterly winds gather similar speeds as they funnel across the strait hemmed in by the Queen Charlottes and the jagged mainland. When two such weather systems collide, amid tides that can rise and fall seven metres, anything in their path is trapped between a hammer and anvil.

More than a mariner's worst nightmare, the malevolent weather is also a potential windfall source of clean and infinite electricity, capable of powering at least 120,000 homes in the near future, including those on the diesel-dependent Queen Charlottes. The NaiKun Offshore Wind Energy Project, in planning since 2001, could soon see up to 110 90-metre-high towers rammed into the seabed off the eastern shores of Graham Island, each supporting a 220-tonne turbine head fixed with rotors spanning 100 metres. The company envisions five phases in the next decade, with construction of the first 320-megawatt phase to commence in 2012.

Over the past six years, the project has emerged as a darling of environmentalists, First Nations and B.C. politicians. Parent company NaiKun Wind Energy Group Inc. has attracted a high-profile team of private- and public-sector talent to its executive and board. At the 2007 Pacific Economic Summit in Vancouver,

California Governor Arnold Schwarzenegger and B.C. Premier Gordon Campbell posed for a highly publicized photo op at NaiKun, one of only two B.C. businesses selected for a visit. Much more significantly, the project has progressed to the stage where a 40-year energy purchase agreement (EPA) from BC Hydro is now within view, pending a decision barely half a year away.

But despite the momentum, the gulf between NaiKun's blueprint and build-out is today as wide as the white-knuckle boat ride between Prince Rupert and Sandspit. The prices of steel and fuel,

as well as the scarcity of key components and specialty construction services, have dampened the fortunes of the wind industry globally. Capital costs have skyrocketed, and even in Europe, where wind power is a generation ahead of B.C., as much as \$120 billion of offshore projects based around England, Germany and Denmark have recently been thrown into limbo. “Wind energy is something that has really caught people’s imagination, the idea that you put up windmills and get energy for free,” says John Calvert, political scientist, author and former policy analyst for the B.C. government. “But it’s not that simple. Wind is much more costly than most realize and can only be utilized if government and B.C. ratepayers are willing to accept a very significant cost premium.”

Former BC Hydro executive Michael Margolick first met Michael Altman in the late 1970s, when Altman was running a tiny Vancouver-based oil and gas exploration company called Uniterre Resources Ltd. (the precursor to NaiKun). In 2001 they got to talking about wind power. Both saw the potential of the resource in the Hecate Strait, which had the three prerequisites for viable wind power: a powerful, unobstructed wind resource; a shallow, sandy seabed that would minimize the cost of construction; and a nearby grid connection on the B.C. mainland.

It was not until 2002, however, that the company formed a partnership with Swiss industrial conglomerate ABB to develop a wind farm on the site – a deal formalized when then-prime minister Jean Chrétien led a Team Canada delegation to Berlin for the signing of a “ceremonial contract” announcing a provincial/federal feasibility study on the project. At the time, Uniterre (which was trading for 19 cents on the Canadian Venture Exchange) claimed the project would break seabed by 2004, at a total cost of \$1.5 billion; company chair and Liberal senator Jack Austin cited Alberta, the U.S. Pacific northwest and even Alcan’s Kitimat smelter as potential customers. But many observers were skeptical, given the paucity of details about logistics and financing. “Unless this project draws in great amounts of government subsidies, it’s going to blow over,” Energy Probe’s Tom Adams told the National Post in the wake of the Berlin ceremony.

The projected 2004 build-out date came and passed, and by 2006 the company changed its corporate structure and name, from Uniterre Resources to NaiKun Wind Energy Group. Details of the project had changed too – construction of Phase 1 of a five-phase, 1,750-megawatt wind farm would now begin in 2010. Today the company is led by Paul Taylor, ex-CEO of ICBC, who joined NaiKun as president and CEO last spring; he is joined by former executives of BC Gas, BC Hydro, SNC-Lavalin and many other companies, and old guards as well, such as Margolick (vice-president, power and transmission planning) and Altman (director).

NaiKun’s power generation subsidiary NaiKun Wind Generating Inc. has also formed a 50-50 partnership for the first phase of the project with Calgary’s Enmax Corp., which brings wind project construction experience and sharing of risk. (This subsidiary is currently seeking a third partner.) Under this new regime, NaiKun is now focused on its most important milestone: the signing of a 40-year EPA with BC Hydro. Simply put, a successfully signed EPA guarantees that BC Hydro will buy the power generated by the project. “In B.C. today, the EPAs are the market,” says Calvert. “If you don’t have an EPA backed by Hydro, the banks would see the credit on these projects as being junk-bond level.”

NaiKun is currently preparing a bid for BC Hydro's latest Clean Power Call request for proposal (RFP) process, which came in August – the sixth such call by BC Hydro since 2001. In that time, 60 EPAs have been signed, but just 19 have advanced from the development stage to operation. This dismal attrition rate has spurred BC Hydro to change the way it evaluates bids in its latest power call, offering NaiKun a “negotiated RFP” as opposed to a tender. A negotiated RFP “allows BC Hydro to say, ‘You might not be the cheapest producer, but we want to be in wind power so we are willing to pay more for it,’ ” explains Salman Partners’ David Brill, a veteran green-energy analyst. “They are in effect saying, ‘We want to subsidize this industry so that we can get into wind.’ ”

Exactly how much of a premium BC Hydro might have to pay for wind power is not certain. What is clear is that offshore wind is more expensive than other “green” options. A report commissioned by BC Hydro in February 2008 put the potential cost of offshore wind power at between \$135 and \$250 per megawatt hour, as much as double the estimates for onshore wind power, and even further above the cost of power generated by well-situated run-of-river projects. Calvert says that the failure of initiatives such as the Holberg onshore wind project near Port Hardy (see “Wasted Energy,” p. 114) has moved BC Hydro to offer negotiated RFPs because, based on price alone, these projects would stand little chance of getting purchase agreements and thus financing. “They’re selling their energy exclusively to BC Hydro because nobody else is prepared to pay the kind of money Hydro is paying,” says Calvert. “So we’re not only guaranteeing the loans indirectly through these contracts; we’re paying a premium on top of that for the fact that the private sector is the one borrowing the money, and that’s built straight into the price.”

In his 2007 book *Liquid Gold: Energy Privatization in British Columbia*, Calvert writes that “generous” EPAs are just one way the provincial government is softening the uneconomic cost of wind. Others include virtually free access to the best wind sites, help in obtaining environmental and land-use approvals, PST and local property tax exemptions, and access to publicly funded research by BC Hydro dating back to 1981. And because wind is intermittent – wind speed is usually not adequate to fully utilize the generators, so even the best wind farms can only operate at between 30 and 40 per cent of installed capacity – the quality and supply of the power BC Hydro is buying from wind farms is inconsistent and vastly inferior to that of our large heritage dams.

B.C.’s energy minister Rich Neufeld bristles at the suggestion that BC Hydro will pay a huge premium for wind when B.C. already generates power from cheaper clean sources. “If we were to go out and buy the most expensive energy, when we already generate over 90 per cent clean, and could buy cheaper stuff, what would the public say? How much hell do you think I get every time the rates go up?” Moving forward, Neufeld says, B.C. is going to need at least 30,000 gigawatt hours of additional capacity over the next 25 years, of which at least 50 per cent will have to get built. “We’re getting independent power producers bidding into energy calls so that we can keep the lights on,” says Neufeld. “But let me be clear: we want competition.”

In early 2007, representatives of the Haida Nation approached NaiKun with some tough questions about the wind farm. With the turbines sited in their territorial waters, sending all of their power to Vancouver, what was in it for them? NaiKun replied with HaidaLink, a plan to

connect the Queen Charlottes to the mainland grid via the wind farm, replacing a diesel power system that spews about 26,000 tonnes of greenhouse gases each year. As envisioned, the NaiKun wind project would power the Queen Charlottes 90 per cent of the time, and when required the islands could access the mainland grid.

If it moves forward, the HaidaLink project will be financed and majority-owned by the Haida Nation itself and built and operated jointly by the Haida Power Authority and NaiKun. “This is Haida territory, so it is essential that they are part of this,” acknowledges Paul Taylor. “Without their support, this simply is not going to happen.”

The Haida have also been included directly in the harmonized federal and provincial environmental assessment of the project. NaiKun is currently engaged in numerous studies gauging the project’s impact on everything from large marine mammals to crabs on the ocean floor. By early 2009, the results of those studies will be submitted for review to three governments, including the Haida. With environmental approvals and a potential EPA in hand as early as next year, the company would be in a position to put down deposits and start ordering equipment – the next step toward generating both electricity and revenue. (Haida Nation leader Guujaw and the Haida Power Authority did not respond to interview requests for this story.)

The logistical challenges of building an offshore wind farm are many. In September 2007, a barge ship at work installing an offshore wind farm in the Irish Sea was rocked by a freak storm; the crew had to be plucked by rescue helicopters, the barge was severely damaged and the project was delayed seven months because no other ships could be found. Potential disasters aside, there is also the challenge of finding and installing turbines, transformers, submarine transmission cable and securing a whole host of specialized engineering and construction services, all within a tight time frame watched nervously by investors. “It’s been more difficult to build offshore projects than everyone thought,” Goeran Lundgren, head of Nordic power generation at Stockholm-based Vattenfall AB told Bloomberg News in May. “I don’t think we’ll see any large-scale offshore parks until we’ve taken a few big development steps.”

Lundgren’s comments came after the May announcement by Royal Dutch Shell PLC that it was selling its 33 per cent stake in the 1,000-megawatt, 341-turbine London Array project off the southeast coast of England. Shell cited concerns over the rising costs of materials, including steel and turbines. Closer to home, the Dokie Wind Farm near Fort St. John – planned to be completed in early 2009 – confirmed this past August that cost overruns and “revised wind energy estimates” would necessitate the company raising \$50 million in order to complete construction. NaiKun is facing many of the same cost and supply-chain pressures and must also battle for scarce components and services from established European companies with proven experience building offshore projects. “It’s one thing to bid a project; it’s another thing to get the turbines,” says Sean Whittaker, vice-president of policy at the Canadian Wind Energy Association. “Just try to get a turbine today from General Electric. . . . They can’t put you on the order books until 2011 at the earliest.” To NaiKun’s credit, the company has signed a memorandum of understanding with Siemens Canada Ltd. to study transmission lines, and the company is currently in negotiation with at least four turbine manufacturers. To ensure that it can get the required jack-up barge for installation, NaiKun is exploring refitting ships used for offshore oil

and gas and surveying global ship manufacturers to ensure they are top of queue when new ships appear.

Paul Taylor says that NaiKun's advantage over most wind projects, when it comes to competing for scarce equipment and components, is its size. "We can say to a company, 'You will be our turbine and transmission partner for the whole 10-year, five-phase build-out at 200 megawatts a year.'" He notes that Europe is the hotbed for the offshore wind business, but the companies active there aspire to expand globally. "Our pitch to them has been that we are a perfect anchor point for their North American strategy."

Siemens Canada is a prime example. NaiKun is working with the German giant's Canadian subsidiary and is looking to it as a potential source for transmission expertise, turbines and possibly more. Bill Smith, senior vice-president of Siemens Energy, explains from his Ontario office that his company can provide "integrated" services to a company such as NaiKun, including turbine manufacture, transport and erection, and the establishment of submarine transmission lines. Siemens even has a Canadian-based squad of 15 specialists who will access the interiors of the 90-metre-high towers to provide the necessary weekly maintenance – although Smith is adamant they would never put work ahead of safety, especially in a malevolent weather factory such as Hecate Strait.

But at this point in the conversation, Smith pauses, as if he feels he is getting ahead of himself. "We'll have to wait and see. NaiKun is preparing an offer [to BC Hydro], and when that starts to firm up, then our deal could follow track. At this point, the ball is in the hands of NaiKun and the provincial government." With NaiKun's stock dropping to just 25 cents at press time, from a 2007 high of nearly \$4, it appears the investing public has little confidence of seeing a wind farm on the Queen Charlottes anytime soon.

Wasted Energy

As the demise of the \$125-million Holberg onshore wind project demonstrates, an EPA from BC Hydro is not enough to guarantee a project will ever be built.

Planned for a site 45 kilometres west of Port Hardy, the 45-turbine, 56-megawatt wind farm project was successful in attaining a 20-year EPA with BC Hydro after the 2003 Green Power Call. When the wind farm, proposed by Vancouver's Stothert Power Corp. and a Danish company, earned its environmental approvals in 2004, it was poised to be B.C.'s first. But by 2006, the year originally earmarked for operation, the project was dead – an apparent victim of the high cost of wind energy. "They bid in at a certain price, which they thought they could deliver the electricity at," recalls Rich Neufeld, B.C.'s Minister of Energy, Mines and Petroleum Resources. "I guess when they got down to the basics of doing all the homework, they couldn't deliver at that rate."