

HDC Consulting

August 30, 2017

B.C. Utilities Commission

410, 900 Howe St. Vancouver B. C.

Re: Site C Dam Review

Dear Commissioners,

Thank you for considering the following submission.

My name is Hank Jasper. I am a retired real estate development executive with some 40 plus years of experience in the real estate development and construction industry here in B.C. The last major project I managed and directed was the development and construction of the 2010 Winter Olympics Athletes Village. As the Vice President and General Manager I was responsible for designing, constructing and delivering the \$1.7, Billion , 1,650,000 SF Village to the IOC within a very limited 4 year time frame.

In spite of this tight schedule and a world financial crisis 2 years into the development we were able to deliver the Olympic Village on schedule and on budget. The IOC acknowledged that the Village was one of the finest Athlete's Villages in its history and a major contributor to the success of the Vancouver 2010 Winter Olympics.

The Village also received numerous accolades and awards for all the sustainability innovations that were incorporated into its design and construction that reduced energy consumption by 50 % and water consumption by 50 % These awards included Canada's first "Net Zero" residential building, being named the " World's Most Sustainable Community" by the United Nations Committee on the Environment , being designated one of the first "LEED Platinum Communities" in the World and finally being named the " Power Smart Residential Project of the Year " by BC Hydro.

Through my involvement in creating this landmark sustainable project I became aware of other individuals and companies who were designing and creating new and innovative products in the field of renewable and sustainable energy.

One of these companies was Natural Power Concepts of Hawaii whose founder John Pitre, a world class visual artist, decided to use his many creative talents and ideas to help solve the world's energy and climate change crisis being caused by the continued use of carbon based fossil fuels. (See NPC's website [Natural Power Concepts.com](http://NaturalPowerConcepts.com))

I came on board with John and NPC to act as an advisor and to help introduce some of NPC's innovative technologies to potential users here in B.C. and in Canada. We began working with BC Hydro to test one of NPC's patented technologies, the instream auger turbine, below the Duncan Dam in the Kootenys. The plan was to test the prototype's performance to see if it would have an application in remote locations where BCHydro is spending huge sums to deliver diesel fuel for the diesel generators they use to provide power to these remote communities under their "same rate Province wide" mandate. Unfortunately the BC Government did not proceed with the "Feed in Tariff" Bill that was to provide a reasonable tariff for smaller renewable energy projects like the auger turbine project we had begun working on with BC Hydro, so it did not proceed.

Since then NPC has continued to refine and test its auger turbine technology and is currently engaged in a major test of a modified version of the auger boat with the Indian government on a 25 mile long canal that parallels the Ganges River. Like all large developing countries India is attempting to wean itself off fossil fuels and find renewable solutions that utilize the water, wind and solar resources it has available within its borders.

We agree with Mark Jaccard's August 4, 2017 Vancouver Sun opinion Letter to the Editor making the case for the "dispatchability" of the Site C generated power and the importance of integrating this power with other electrical supply sources including renewable energy technologies like NPC's auger turbine. We have analyzed the width, depth and hydraulics of the Peace River between the Bennet Dam and the proposed Site C reservoir (approximately 80 miles) and believe it would be the perfect location to install a series of fully submerged NPC auger turbines.

- Each of these custom designed turbines would generate approximately 400 plus KW's of electricity.
- We estimate approximately 600 of these units could be installed 3 wide (each of units spaced 25 Ft apart) in approximately 3 to 4 miles of the river.
- We estimate that the total power produced by the auger turbines would be approximately 240 megawatts or 22 % of the 1,100 megawatts of power forecasted for the Site C Dam.
- The auger turbines would be set at a safe depth on the river bottom (estimated to be 20 ft. or more in the proposed locations) well below the surface and would not be visible or conflict with fish or wildlife in the river.
- The area above the augers turbines would have warning marker buoys along its entire length to protect recreational users and boaters in the river
- The augers turbines would be connected through power cables and on shore energy managing equipment directly to the power line to be constructed adjacent to the river between Site C and the existing Bennett Dam, eliminating the need for any additional powerline construction.
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- The auger turbines would be constructed in Canada and utilize utility grade equipment including generators, cabling and energy management systems that have proven performance and reliability records (an estimated performance life of 30 years or more) in installations around the world over many decades.
- It is estimated the auger turbine would operate at close to 100 % efficiency as the river will remain deep enough throughout the year to keep the auger turbine fully submerged. The only time the auger turbine would be taken out of service would be for regularly scheduled maintenance.
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We believe the NPC's auger turbine technology would be the perfect renewable energy component to the compliment the proposed Site C Dam.

- It would add over 20 % to Site C's power output without requiring the construction of any additional infrastructure, power lines and substations or the acquisition and flooding of any additional lands.
- It would allow BC Hydro to conserve the water in its Peace River reservoir system and shut down some of its generating capacity during off peak hours to save operating costs.
- It would eliminate the need to acquire power from other less environmentally friendly sources that are currently being utilized during off peak hours to conserve reservoir capacity and reduce operating costs. .
- It would be a reliable, low cost and environmentally sustainable way to add a significant amount of green energy to BC Hydro's energy supply chain to help meet the forecasted growth from residential and industrial users and the new energy demand that is being created as more of the public and the transportation industry transition to electric vehicles over the coming decades.

We would welcome the opportunity to meet the Commission and show you a short video that we have prepared showing the NPC auger turbine technology we have proposed and how it could be easily incorporated into the planning and construction of the Site C Dam. Thank you for your consideration and we look forward to hearing from you, hopefully we can work together with you and BC Hydro to make Site C a truly sustainable and cost effective project to help meet BC's future energy needs.

Best regards, Hank Jasper

President, HDC Consulting



