

Paul Carr

September 26, 2017

Mr. David Morton
Panel Chair and Commissioner
British Columbia Utilities Commission
Suite 410, 900 Howe Street,
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Dear Mr. Chairman:

I took the opportunity to attend the public hearing yesterday in Kelowna. I have never participated in such a process before and found it interesting on many fronts. I would like to share with you my observations regarding the B.C. Hydro Site C Project and why I think it prudent to allow this project to proceed. These views are my own personal views and I share them with you as a taxpayer and concerned citizen having recently retired and now living in beautiful Kelowna, B.C.

I spent 33 yrs. in the electrical wholesale distribution business in Canada, the last 20yrs. as a senior executive and I have lived some 27 yrs. in B.C. I have had the privilege to meet and work with many people at many levels advancing the economy and prosperity of B.C. and indeed Canada. My points are as follows:

1. One of the secrets of our Economy and one of our most important global competitive advantages is that approx. 60-70% of our Electrical Energy is Hydro Electrically generated which is generally accepted as clean energy. This has played a tremendous role in the evolution of our economy and standard of living having this low cost (relative for sure to many jurisdictions in the U.S. and other parts of the World) source of clean energy. My Grandfather, an electrical engineer back then in Ireland worked on the Shannon Electrification Scheme at that time one of the largest hydro projects in the world. The newly formed Irish Government at the time was spending something in excess of 20% of the GDP of Ireland on this project. In hindsight, what an incredibly courageous decision and no less controversial at the time. Well, Ireland never looked back, as we now know – thanks to the courage, foresight of our Government then. One could say the same with W.C. Bennett and his courage and foresight to proceed with the initial damn and how much British Columbians and Canadians have benefitted from that decision. Damns are big decisions and require tremendous foresight and courage for those having such responsibility. One has to think on the long-term impact not just on this generation but our Children and their Children's Children as per my examples mentioned.
2. Whilst some may be critical of in this instance B.C. Hydro, my experience in working with them on many projects is that they are very professional, competent, and thorough and provide an

invaluable service to the citizens of B.C. B.C. Hydro are considered leaders too when I think of their Power Smart Program at the time revolutionary and adopted by many other Utilities across the Country. Coming from Ireland with an engineering background and having lived in other Countries. Canada in general is blessed with the Electrical Utilities we have. The Site C project is one of 5-7 major hydro projects currently underway across Canada. It has been a difficult project from conception some 40 yrs. ago through pre-feasibility, feasibility, detailed engineering and all the various review processes to where it stands now. My overall sense is, it would be wrong at this juncture to suspend or terminate this project. It would be tragic if this were done heaven forbid out of political expediency. Yes we can put values on Sunk Costs, Cancellation Costs, Opportunity Costs, Litigation Costs, Economic Costs but what about Human Capital Costs and the impact on those Families and Communities directly and indirectly involved and benefitting from this major project now and in the future. What impact would cancelling this project have on future rate escalation and the socio-economic impact of such, especially on those in our Society that are more vulnerable to rate increases.

3. I don't believe we are going to see many more large scale Hydro Projects (Damns) for a number of reasons. Firstly once the 5-7 major projects underway are completed in Canada there is simply not that many more potential projects of this scale available. Secondly there does not seem to be the political will to endorse such projects given all of the special and self-interest groups and culture of litigation that prevail. I believe the additional capacity from these projects will allow the various Utilities in this instance B.C. Hydro greater flexibility of investing in and integrating other renewable sources some of which by definition are intermittent sources such as Wind, Solar, Tidal and of investing in the intelligent grid required to facilitate adoption and integration of these other technologies.

4. With respect to demand forecasting. That is a science in itself and much more challenging than asking 20 economists for their outlook in GDP growth to which one will receive 20 different responses. My only comments are that our population now at 36Mill. will most likely grow at an accelerated rate as there seems to be greater political will across Canada to accelerate our annual rate of immigration which for the last 15-20 yrs. has been approx. 250,000 new immigrants per year. Generally as a rule of thumb electrical energy consumption in B.C. is equally divided between Industry, Commercial/Institutional and Residential demand. Population growth drives Residential and Commercial/Institutional demand. My point is historical Population Growth Rates may no longer apply. Some leaders envision Canada's Population growing to 100Mill. by 2040, that to some may seem preposterous but is it? Further Canada is unique in that some 70% of the population lives in I believe 11 large metropolitan centers and this trend will continue. This poses many challenges for a utility such as B.C. Hydro, but having reliable clean energy sources like Site C becomes more critical. Global disasters and tragedies many due to irresponsible regimes and political instability may also drive our Population Growth and Canada has been a leader and shining light in that respect. We are also seeing the rise of the High Tech Industry in Canada as an example the City of Kelowna wisely invested in a fiber optic backbone to further attract High Tech and younger workers associated therein and now there are some 8,000 employed contributing \$1.5B to the

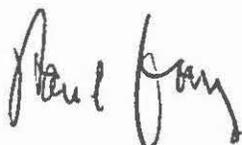
local GDP and the City generated over \$100,000 in revenues from that backbone last year . That is very enlightened leadership indeed. Ironically the high tech is a big consumer of energy. Having low cost clean hydro energy has allowed many Provincial Governments to further attract high tech and we have seen and continue to see the growth and proliferation of Data Centers which require lots of Reliable Low Cost Clean Green Energy 24hrs a day. The growth of High Tech in Canada drives demand too and this growth is just beginning . Further when you look at the U.S. and realize the vulnerability they face with their aging and poorly maintained electrical infrastructure (just as one example , recent spillway erosion in California) this presents a huge opportunity for Canada to become an even greater supplier of clean green electrical energy to the U.S. and give us greater leverage in our dealings with them . So even if B.C. Hydro's projections are skewed the decaying U.S. electrical infrastructure and their lack of water represents a huge economic opportunity for Canada and Canadian Taxpayers including Citizens of B.C. should not be denied that revenue opportunity .

5. Climate Change is having a profound impact on the global economy and thus Society . Canada is not immune to that as we have seen this year alone with the devastation caused by the flooding and fires across the Country . All the more critical that we continue to have a strong, reliable , energy grid and reliable source of supply generation and strong well managed and financed Utility Companies like B.C. Hydro and others . I think it is fair to say that our Damns in this context are the most secure source of our electrical energy as other sources be they Renewable (Wind, Solar, Tidal, Bio)or more conventional plants (Oil; Gas, Clean Coal fired) can be subject to destruction by these catastrophes. Cyber Security is a growing threat and Electrical Utilities are not immune and I believe Damns compared to Physical Generation Plants are inherently more secure. Whilst we deliberate on U.S. Free Trade we do not have Free Trade in Canada and there is much work to be done in terms of interoperability of Electrical Utilities across Canada , that day will come and B.C. Hydro wants to be positioned well in that regard . Alberta our neighbor whilst having suffered a setback in the global Oil and Gas crisis is coming back and they too will need our energy . So there are many disruptors and opportunities when we think of Forecasting Future Demand.
6. On the subject of renewables and other technologies . These are all wonderful and yes we need to be investing in them . Let's be honest if it were not for the subsidies and programs from our Electrical Utilities (not all have such programs) and Provincial and Federal Governments many of the commercial scale wind and solar projects would never have gotten of the ground. Taxpayers are paying for that too but most are oblivious of that. Yes costs are dropping but these technologies bring a different set of problems too . Including shorter life cycles , obsolescence ; hazardous waste and recycling costs , grid integration costs , carbon footprint when one factors in their transportation from point of raw material source and point of manufacturing, reliability failure and performance costs which ultimately increase the life cycle cost of such projects though most simply look at initial capital costs of such projects. I have worked with many senior leaders in the lighting industry in Canada and the U.S and yes LED Lighting is wonderful but we are already on Generation 3-4 and whilst adoption rate has been faster than anticipated , the biggest opportunity is not on new scale Commercial, Institutional

or Industrial Construction but on retrofitting the installed base of such legacy lighting systems. Ironically whilst the energy savings potential through LED adoption is huge, the reality is more lighting is being used across all segments as engineers, designers, architects understand the psychological and physiological impact of good lighting on human productivity and well being. As a small example, just look within our homes how many down lights, architectural/security outdoor and landscaping lights there are compared to let's say even five years ago. Relatively speaking renewable sources represent still only single digit percentage of electrical generation in Canada to day and even the largest scale commercial project installed in Canada to day is dwarfed by the output of a hydro electrical dam project such as Site C. On a Life Cycle Cost basis these renewable projects are extremely expensive. But I agree the technologies and costs are and will continue to evolve.

Thank you for the courtesy of your consideration of my viewpoints expressed above. I believe it is in the immediate and longer term interest of all British Columbians that the Site C project proceeds and I really hope that the BCUC and this Panel will recommend that the Site C project be allowed to continue to proceed and that the incumbent Government under Mr. Horgan will endorse your recommendation.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul Carr", written in a cursive style.

Paul M. Carr