

BCUC Log # 55829  
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2017/08/14

AUG 14 2017

Routing 55604

BC Utilities Commission  
900 Howe St.  
Vancouver, BC  
V6Z 2S9

Re: Your study of the economic viability of the site-C dam.

I am writing to contribute to your study since you have solicited input from the public. The economic viability of any project today should take into account the fact that most countries in the world including Canada signed the Paris 2015 accord which committed each country to participate in the transformation from a high- to a low- fossil fuel economy. This means that renewable energy sources will replace those using fossil fuels. The major sources of renewable continuous electrical energy supply globally are hydro dams and atomic energy.

The Canadian contribution will depend on those of the provinces. BC is fortunate to obtain about 97% of its electricity from hydro. This is one reason why the construction of the site-C dam should continue as it is essential to provide for future increasing electricity demand. Energy efficiency will slow this increase in demand but not stop it. The contribution of wind power will increase in the future but it is intermittent and on average provides energy for about 33% of the time at suitable sites. The energy storage problem for wind power have yet to be solved in a way that is satisfactory for continuous power distribution.

Energy from solar cells is also intermittent and, unfortunately, they are not very efficient. The net energy out over energy input (EROEI) particularly on a lifetime basis is only slightly positive for silicon cells and negative for gallium compound cells. While there are specific uses for these cells, it is hoped that new ways will be developed to harness solar energy.

Energy efficiency calculations for nuclear, hydro, wind and solar (silicon) are controversial but the continuous sources are always the most efficient particularly when account is taken of their estimated lifetimes. Other continuous sources are unlikely to play a significant role globally over the next few decades. Some power engineers believe

that every unit of power generated by wind and solar should be matched by the same quantity of hydro to provide "spinning reserve" for these sources. The demand for electricity will increase as electric vehicles replace fossil fuel powered units which is another reason why the site-C dam should be constructed as it will come online when a significant number of vehicles are likely to be fueled by electricity. "Spinning reserve" estimates are an important tool to use in ensuring that the BC power distribution system is extremely reliable and in determining the sale of "excess" power.

If it turns out that the site-C dam is capable of producing more power than there is demand for in BC over and beyond its role in providing "spinning reserve", then there will be an market for this electrical power in Canada.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "H.A. Buckmaster". The signature is fluid and cursive, with a long horizontal stroke at the end.

Dr. Harvey A. Buckmaster, P. Phys.  
Adjunct Professor of Physics  
University of Victoria