

FEASIBILITY OF SITE C

SUBMISSION TO BC UTILITIES COMMISSION INQUIRY RESPECTING SITE C

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on behalf of the Galiano Solar Coop

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Key Findings

1. The carbon tax on greenhouse gas emissions produced by Site C, plus very conservative cost overruns, will result in an actual cost of approximately \$94/MWh - at least a 50% increase over BC Hydro's projected cost.
2. Alternate sources of electrical production, such as utility scale and community photovoltaic installations are cost-competitive when compared to Site C and provide significant economic, social, technological and environmental advantages.

Cost of Greenhouse Gas Emissions

BC Hydro has ignored, in its calculations, the cost of the carbon footprint of Site C. While it is true that electricity produced by large-scale hydro has fewer greenhouse gas emissions than gas, diesel or coal-generated electricity, Site C is anything but 'clean'. Recent research examined the carbon footprint of hydro reservoirs (Deemer et al. 2016; Harrison et al. 2017; DelSotro et al. 2015; Scherer & Pfister, 2016), and clearly demonstrated that reservoirs and turbines release large amounts of carbon dioxide and methane for an average of 273 kg CO₂e per MWh. This is between 7 and 55 times more than for renewables such as wind and solar (5-40 kg CO₂e per MWh). On top of that, Site C estimates do not include the carbon footprint of the dam itself and the substantial methane and carbon dioxide releases from the reservoir during the first few years following construction.

A carbon tax of \$ 50/ton, as projected for 2022 in the Pan-Canadian Framework on Clean Growth and Climate Change would add another \$ 13.70 / MWh to the cost of electricity production by Site C. Note that the actual carbon tax in 2024, when Site C is projected to be completed, will likely be higher.

Realistic Cost Over-Runs

Cost projections of electricity from Site C are based on the assumption that the project will be 'on budget' and 'on-time'. However, a recent analysis by a group at Oxford University (Ansar et al. 2014) demonstrated that all hydroelectric megaprojects examined had significant cost overruns, averaging twice the anticipated costs. Recent Canadian hydro megaprojects confirm this trend: Muskrat Falls, Newfoundland, is already \$4 billion - 52% - over budget and Keeyask dam in

Manitoba is already 34% over budget, and neither project is close to completion. Assuming an overly conservative 30% cost overrun for Site C, the cost overrun will add \$18.60 /MWh.

Consideration of Alternate Options for Energy Production

The cost of producing electricity using renewable energy has not been realistically compared to Site C. For example, utility scale photovoltaic installations currently cost (unsubsidized LCOE) between \$ 61/MWh and \$ 76/MWh and are declining rapidly. Community photovoltaic installations can be more expensive, because of their smaller scale, at \$83 - \$167/MWh (Lazard 2016; all values converted to Canadian \$), but can provide co-benefits such as heightened energy security due to their decentralized nature, virtual net metering to involve individuals in energy decision-making and reduced line losses. Solar scales easily and avoids the large potential overproduction inherent in mega-projects. Both types of photovoltaic installations also have the benefits of no-environmental risk, low cost, rapid speed from conception to completion, high quality jobs of the future, distributed generation and the ability to leverage private funds from modest government incentives. The cost of these photovoltaic installations is based on 40 % private equity and an interest rate on debt of 8%. By comparison, BC Hydro’s estimates for Site C are based on 0 equity, and an unrealistic long-term interest rate of 3% and 70 years of financing!

Summary of actual cost of electricity from Site C

	Cost per MWh
BC Hydro’s predicted cost	\$62.00
Carbon Tax	\$13.70
Modest cost overrun at 30%	\$18.60
REAL COST OF SITE C ELECTRICITY	\$ 94.30

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