

WILL BC HYDRO USE COLUMBIA RIVER TREATY POWER TO MEET SOME OF THE NEW DEMANDS FOR CLEAN ELECTRICITY?

BC Hydro, like many power utilities, is facing a growing demand for clean electricity resulting from various government initiatives to reduce or eliminate the production of carbon emissions. This discrepancy was again highlighted in recent commentary concerning a misplaced memo by energy minister Josie Osborne.¹ BC Hydro has access to a significant amount of clean hydroelectricity through the Columbia River Treaty, yet this supply does not factor into BC Hydro's future demand and supply forecasts.

Growing Demand for Clean Electricity

Many power utilities are increasing their demand forecasts for electricity generated from renewable sources, such as hydro, wind, solar and even nuclear power. The forecast demand for clean energy is increasing as more government regulations and incentives generate the need to replace existing fossil fuel based power (e.g., electric vehicles and space heating). Clean electricity is also required to power new forms of industry, such as liquifying natural gas for export, and the production of hydrogen.²

Hydro Quebec foresees the need for \$185 billion in expenditures over the next 25 years to increase existing hydro electricity generation and to triple wind production by 2035. Hydro Quebec forecasts that by 2050, it will need to produce about twice as much power for homes and the province's growing industrial sector.³

It's a similar story in Ontario, where the government expects the need for clean energy to double by 2050. It plans to expand the use of hydroelectric power, solar and wind generation, and is reviewing additional nuclear power.⁴

In this province, BC Hydro has been scrambling to adjust its long-term demand (load) and supply forecasts in an attempt to keep up with the political promises—real and implied—attached to the government's economic and environmental objectives. Its integrated resource plan (IRP) multi-year forecast is now being described as a “living

¹ <https://vancouversun.com/news/local-news/leaked-memo-shows-bc-energy-minister-looking-for-big-and-shiny-affordability-measure-linked-to-climate-plan/wcm/633524ad-9aa1-4dff-ae29-2563af92c753/amp/>

² Both the federal government and the BC government have ambitious plans to legislate a net zero emission target within a few years; see <https://nationalpost.com/news/politics/net-zero-electricity-regulations>

³ <https://www.cbc.ca/news/canada/montreal/hydro-quebec-action-plan-announcement-1.7016221#:~:text=Montreal-Hydro%2DQu%2C%A9bec%20to%20invest%20up%20to%20%24185B%20to%20increase,tripling%20wind%20production%20by%202035.>

⁴ <https://toronto.ctvnews.ca/ontario-to-see-new-wind-solar-power-to-help-ease-coming-electricity-supply-crunch-1.6473988> and <https://www.cbc.ca/news/canada/toronto/ontario-nuclear-power-electricity-1.6967927>

document.” BC Hydro’s 2023 forecast states that 3,000 GWh in new renewable electricity will be required by 2028/29, as well as 700 GWh in additional power from existing facilities. The more likely Accelerated scenario forecasts a shortfall of 5,900 GWh by 2029/30, and 14,000 GWh by 2034/35, including the new electricity from Site C.⁵

Meeting the Demand

BC Hydro is currently in a lengthy consultation with Indigenous groups and other stakeholders to formulate a new call for 3,000GWh of independent power proposals early in 2024. Intermittent wind power, and to a lesser extent solar power, are expected to provide most of the new supply.⁶

Yet the planned 3,000 GWh is relatively modest when viewed in light of the variety of new demands for clean energy. This is particularly true of the government’s desire for the province to develop new electricity intensive industries, such as LNG and hydrogen production. At a recent energy conference in Vancouver, energy minister Josie Osbourne spoke about the dilemma of meeting the growing demand for large amounts of clean electricity while keeping the price affordable.⁷

BC Hydro is also indicating that while the initial call for new clean power will be for only some 3,000 GWh, the public utility will remain flexible and adjust the purchases volumes to meet the evolving need. “This is what is going to be probably the first of many calls,” Al Leonard, BC Hydro’s executive vice-president for capital infrastructure, said at the same energy conference.⁸

The Columbia River Treaty Canadian Entitlement (CE)

The Columbia River originates in Canada and flows through the southeast of BC through a number of US states to the Pacific ocean. Following a costly flood in the 1950’s, and seeing the potential for expanded hydroelectric power generation, the American and Canadian governments signed the Columbia River Treaty in 1961 (ratified in 1964).

By building three dams in BC, and the Libby dam in the US, the enlarged water flow in the spring and fall was smoothed. This allowed for flood control as well as an increase in

⁵ See Table 3 in

https://www.bcpolicyperspectives.com/media/attachments/view/doc/occasional_paper_no_89_bc_hydro_supply_and_demand_14_august_2023_2/pdf/occasional_paper_no_89_bc_hydro_supply_and_demand_14_august_2023_2.pdf

https://www.bcpolicyperspectives.com/media/attachments/view/doc/commentary_bch_windpower_12_november_2023/pdf/commentary_bch_windpower_12_november_2023.pdf and <https://biv.com/article/2023/11/calculating-cost-new-power-generation-bc>

⁷ <https://biv.com/article/2023/11/bc-poised-be-energy-powerhouse>

⁸ <https://biv.com/article/2023/11/new-power-call-likely-first-many-bc-hydro>

the generation of hydroelectric power. Canada’s share of the half share of the downstream benefits is called the Canadian Entitlement (CE) and is managed by the BC government through BC Hydro. The CE is calculated as energy; in 2022/23 approximately 1,400 MW of power (approximately 4,750 GWh) was notionally transferred to Powerex, the marketing subsidiary of BC Hydro. This power is generally sold back to the Americans, usually through the Bonneville Power Administration, at the spot price at the time of sale.⁹ The proceeds (after deducting the amount budgeted by the provincial government) are included in the Powerex revenue, reported in BC Hydro’s annual reports as “Trade Revenues.”¹⁰

In recent years, the value of the CE has increased in line with the average price of Powerex’s sales. Table 1 shows the increase in Trade revenue and profits during the last four years. The primary reason for the growth in the average sale price during the last two years has been the low water levels in the Pacific northwest region.¹¹

TABLE 1—BC HYDRO TRADE REVENUE AND COST (\$=million)

	2019/20	2020/21	2021/22	2022/23
Revenue	876	1,177	1,972	2,723
Cost	689	579	1,066	1,451
Profit	187	598	906	1,272
Revenue \$/MWh	43.55	42.52	68.71	119.56

Source: BC Hydro annual reports.

Each year BC Hydro budgets for a certain amount of net income from Powerex. Any year-end variance is transferred to one of BC Hydro’s many deferral accounts to be included in a future Domestic rate calculation. In this way the profit from the CE can result in lower future Domestic rates.

Using Some of the CE to Meet Some of BC Hydro’s Forecast Demand

Could the CE of approximately 1,400 MW of capacity, or approximately 4,750 GWh, be used to address the growing Domestic requirement for clean electricity? BC Hydro has been reluctant to commit to using the CE as a source of long-term supply because the Treaty can be cancelled with 10-years notice. Also, the Clean Energy Act requires that BC Hydro meet its Domestic needs from owned or contracted power resources within

⁹ <https://www.ordersdecisions.bcuc.com/bcuc/decisions/en/236681/1/document.do> Appendix B, pp. 1-2; the 1,400 MW is from communication with Kathy Eichenberger, Executive Director of the Columbia River Treaty Branch, November 14, 2023.

¹⁰ The government budgets for a return on the CE; for 2022/23 the amount was approximately \$400 million.

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https://www.bcpolicyperspectives.com/media/attachments/view/doc/commentary_bc_hydro_and_climate_change_24_october_2023/pdf/commentary_bc_hydro_and_climate_change_24_october_2023.pdf

BC. These objections were most recently canvased in the BCUC 2017 report on the Site C dam project.¹²

Depending on the business case, it might be more financially advantageous to convert the CE to Domestic needs if the foregone revenue is less than the cost of acquiring new clean power. Using the recent actual results, one could argue that if the new power costs more than \$70/MWh (the Powerex average sale price for 2021/22 rounded up) the CE should be used. The \$70/MWh may be too high because it reflects temporary low water conditions in the Pacific northwest. However, as BC Hydro withdraws its surplus Domestic power from the export market to meet the need for more clean Domestic electricity, the price of the spot market power will increase due to relative scarcity.

If a decision was made to commit say 50% (700 MW or 2,400 GWh) of the CE to Domestic needs, it would be relatively simple to amend legislation or regulations to allow this to occur. Committing half of the existing energy in future to the American customers should provide a comfortable margin of dependable power for BC Hydro to commit to Domestic needs. Some of the 50% commitment to the Americans might be bargained away regardless to achieve a revised treaty.

American Dependence

The largest impediment to re-directing half of the CE to Domestic requirements would come from the current American users of the power. Many state government's are attempting to use clean hydroelectric power to attract industry, while keeping rates affordable.

A number of distributors are already complaining about the high cost of the electricity they purchase (including the Powerex sales) for local distribution. Recently, Gary Ivory, general manager at the Douglas County public utility, said that "each of the approximately 17,000 customers pay an average of more than \$1,100 per year. 'That's a large obligation for customers to be burdened with,' he said... It's in excess of our distribution system,' he added. Ivory said Microsoft is building large data centers in sparsely populated Douglas County, but even though it has Wells Dam, a major hydroelectric facility on the Columbia River, the [utility] doesn't have enough power to sell to Microsoft."¹³

Rick Dunn, general manager at Benton County Public Utility District, said affordable and reliable energy is extremely important to central Washington's agriculture industry.

¹² Appendix B in <https://www.ordersdecisions.bcuc.com/bcuc/decisions/en/236681/1/document.do>

¹³ https://www.newsdata.com/clearing_up/environment/columbia-river-treaty-impacts-discussed-in-webinar-op-ed/article_b5633e70-5967-11ee-89f3-173af295ea21.html

“Dunn said the region has tapped out its hydropower system. He said clean-energy mandates are deepening the dependence on the capacity and flexibility of hydropower, while the potential for droughts and extreme weather events are increasing. ‘We really risk deindustrializing Washington and Oregon if we don't have more affordable, reliable electricity,’ he said, adding, ‘We need every drop of hydropower we can get.’”¹⁴

The negotiations for a revised Treaty have been underway for some time. The Americans are pressing for a reduction in the CE power transfer, and to ensure that the flood control provisions are maintained. The BC negotiators, now backed by three Indigenous governments who have been promised 15% of the CE by the NDP government,¹⁵ appear to be attempting to retain the current CE power level.

If the Americans were promised 100% of the CE initially, but with an eight-year decline to 50% (approximately 700 MW and 2,400 GWh) by 2032, this would provide the US authorities with time to develop other sources of clean power. It would also relieve BC Hydro of some of the time constraints of contracting with independent producers to generate more clean power in this province.

If the NDP government is serious about meeting its highly ambitious net zero carbon emission targets, and still meeting the goal of affordable electricity rates, it must become more realistic about its energy plans. Redirecting half of the downstream benefits from the Columbia River Treaty would be a good start.

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The writer is a retired senior BC government public servant whose paper describing the BC government's manipulation of the finances of BC Hydro from 2008 to 2014 was published by BC Studies in November 2016. BC Studies published his paper on the 40-year financial history of ICBC in 2013. He is an intervener in the BC Utilities Commission's reviews of ICBC's and BC Hydro's rate requests.

¹⁴ Ibid.

¹⁵ <https://www.myeastkootenaynow.com/29470/news/first-nations-to-receive-15-of-columbia-river-treaty-revenue/>

