

Proposed Prices for Existing Power Under the MOU

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Initial Statement on Proposed Prices for Existing CF Power

- I understand Hydro-Québec's (HQ) need for increased supply, given expanding demand and climate change, and the reduction in hydroelectric generation. From Quebec's cost-minimizing perspective, setting annual prices over long-term contracts would be ideal. The proposed prices in the Memorandum of Understanding (MOU) are higher than the existing ones but appear not to be tied to specific details, such as replacement rates or prices in external competitive export markets. Any of HQ's domestic prices seem to be based on the cost-minimizing principles of a public utility monopolist, in which potential rents are dissipated to increase equalization payments to the government.
- The reference to a forecast baseline price of 5.9¢/kWh is based on a faulty present-value calculation. Given significant structural changes on the demand side, forecasting beyond 5 years is risky. Any forecast beyond 10 years, in my opinion, is unreasonable and inappropriate.

- The use of present-value analysis for the proposed forecasted prices, while ignoring potential changes in future costs, is misleading, in my opinion. One cost ignored is the almost non-existent water royalties under the current agreement. Given water scarcity and the need to turn to other energy sources such as wind power or gas, this oversight seems fatal to any proposed pricing scheme.
- According to the MOU, there appears to be no rationale for the proposed 5.822% discount rate for nominal prices.
- Presenting cumulative revenue projections over a 51-year period in nominal, real, or present-value dollars can be misleading to the public because it ignores the timing of cash receipts.
- My suggestion is to either ignore the prices or treat them with great caution. The assurance of an adjustment process which is so vague and lacking in detail that it can be ignored.

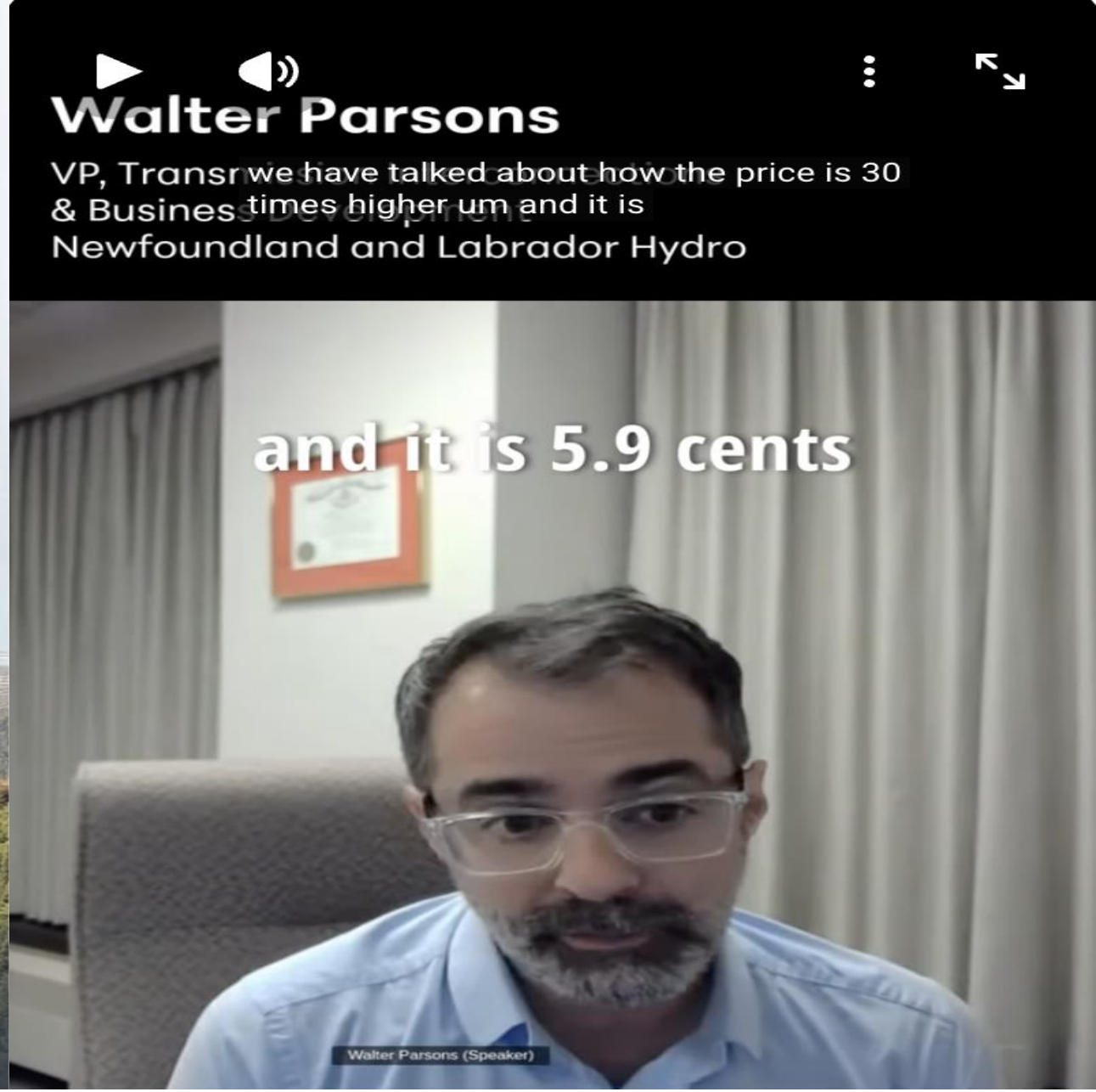
Wise Advice

"Recognizing that our level of analytical sophistication has increased within the province, we still need to be wary of being snookered by others with more sophistication but different long-term goals and interests."

Wade Locke, **An Assessment of the December 12, 2024, Churchill Falls MOU between Newfoundland and Labrador, and Quebec**, January 2025, p.21

Forecasted Prices

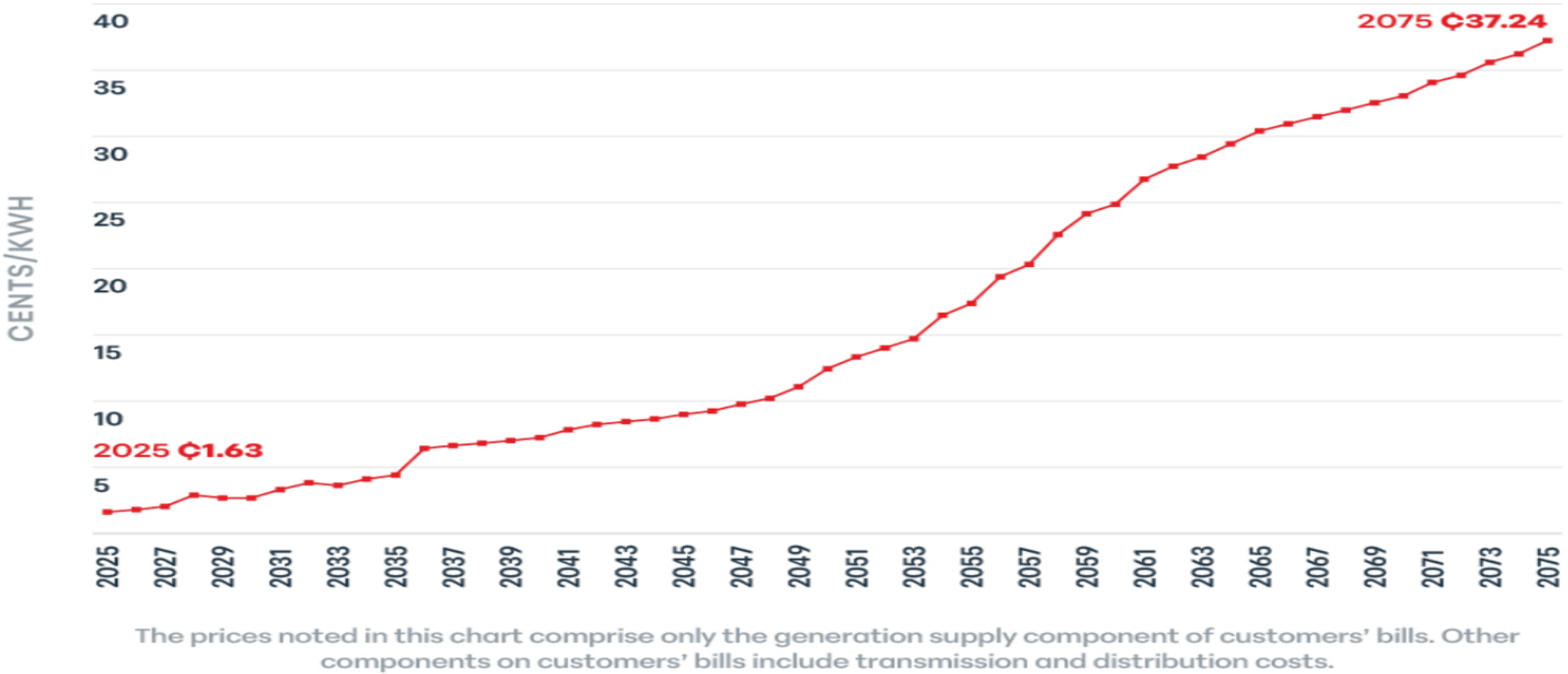




Source: https://www.youtube.com/shorts/9h5iuP2gRb8

Forecast Average Price cents/kWh

CF PPA Existing Generation (nominal dollars)



The prices noted in this chart comprise only the generation supply component of customers' bills. Other components on customers' bills include transmission and distribution costs.

Source: start

Forecasting Annual Prices for Existing CF Generation Under the MOU.

- Walter Parsons (Vice President, transmissions Interconnections and Business Development) produced the following chart of forecasted annual prices in nominal dollars under the MOU. He discusses these prices in the video referenced above.
- Note that the prices are in "nominal" terms. These prices assume an annual inflation rate of **2%.** If we convert these prices to "real/constant dollar" (inflation-adjusted) prices, then the constant dollar/inflation-adjusted price in 2041 is **5.62¢/kWh** and **13.60¢/kWh** in 2075
- Also note that the prices are paid to CF(L)Co by HQ, which owns 34.2% of CF. The **effective** price to HQ in 2041 would be **3.69¢/kWh**.

- Parsons notes that the new prices are 30x higher than the existing prices, but it should also be noted that current prices include the prices for electricity sold under GWAC (Guaranteed Winter Availability Contract) estimated to be about **5.9¢/kWh** for 2026.
- Parsons emphasizes that the prices are **forecasted** and that the inflation rate is assumed to be 2% annually.
- While Parsons does note that these are only forecasted prices. However, they are treated as **expected** prices, and many members of the public will treat them as “certainty” prices.
- Parsons acknowledges that other prices might occur, so why aren’t alternative scenarios presented?

- ChatGPT for the New England-ISO and New York wholesale markets provides detailed advice. Forecasting periods are broken into 1-3 years, 3-7 years, 10-20 years, and beyond 20. The result is that 1-3 years can be tricky because of winter demand. In the next period, structural changes begin to dominate. Beyond 20 years, use scenario bands and **not** point forecasts.

- **Summary:** Don't do what Parsons has done in terms of long-term price forecasts! Short-term forecasts should include a range and note the importance of winter and summer conditions on forecasts.

- A picky point: why does Parsons use "**average**" in his title? Is he referring to the present value estimate of the average prices, that is, his 5.9¢/kWh? We will deal with this in the discussion that follows.

The “Baseline” Price of 5.9¢/kWh

- It is not clear to me how these prices were arrived at. Exactly, what process was used to determine the baseline price of 5.9¢ per kWh?
- I believe that this baseline price was intended to be the **present value** of the average prices. Parsons converts nominal prices to **constant dollar**s and then calculates the average value of these constant dollars. The final step is to convert this final value to present values using a discount rate of 3.822%.
  - As an aside, it does not matter whether the present value was calculated using constant or current dollars, since changes in the discount rate yield the same present value.
- My question is: were the prices determined first, or was the baseline price set and the various annual prices determined from it?
- Why did Parsons calculate this **present value average price** of 5.9¢/kWh?

- Is the importance provided in the following slide from the GNL? Note that the same GNL presentation refers to the 5.9¢ as the "**effective**" price, implying that the price can be compared to the other prices on the slide.
- If so, should the starting price for 2025 be above 5.9¢, since the other prices relate to 2024?

The Relative Importance of the Baseline Price

Reference	Price
New York ISO YTD	4.3¢ per kWh
ISO New England YTD	5.3¢ per kWh
New CF PPA	5.9¢ per kWh
HQ Long-Term Contracts (NECEC and CHPE)	6.5¢ per kWh

SOURCE: GNL, ANew Chapter for Hydroelectric Generation in Labrador, Slide 20.

Wade Locke's Analysis of MOU Forecasted Prices from the MOU for Existing CF Power

- I referenced Wade's estimates in his Assessment paper on forecasted prices from the MOU, as they verify Parsons' forecasted nominal prices.
- We discovered that Wade, in his assessment of the MOU, produces estimates very similar to those shown in his Figure 10. Readers who are interested in learning the details and process to arrive at these estimates can ask AI to fetch the details from Locke's paper.

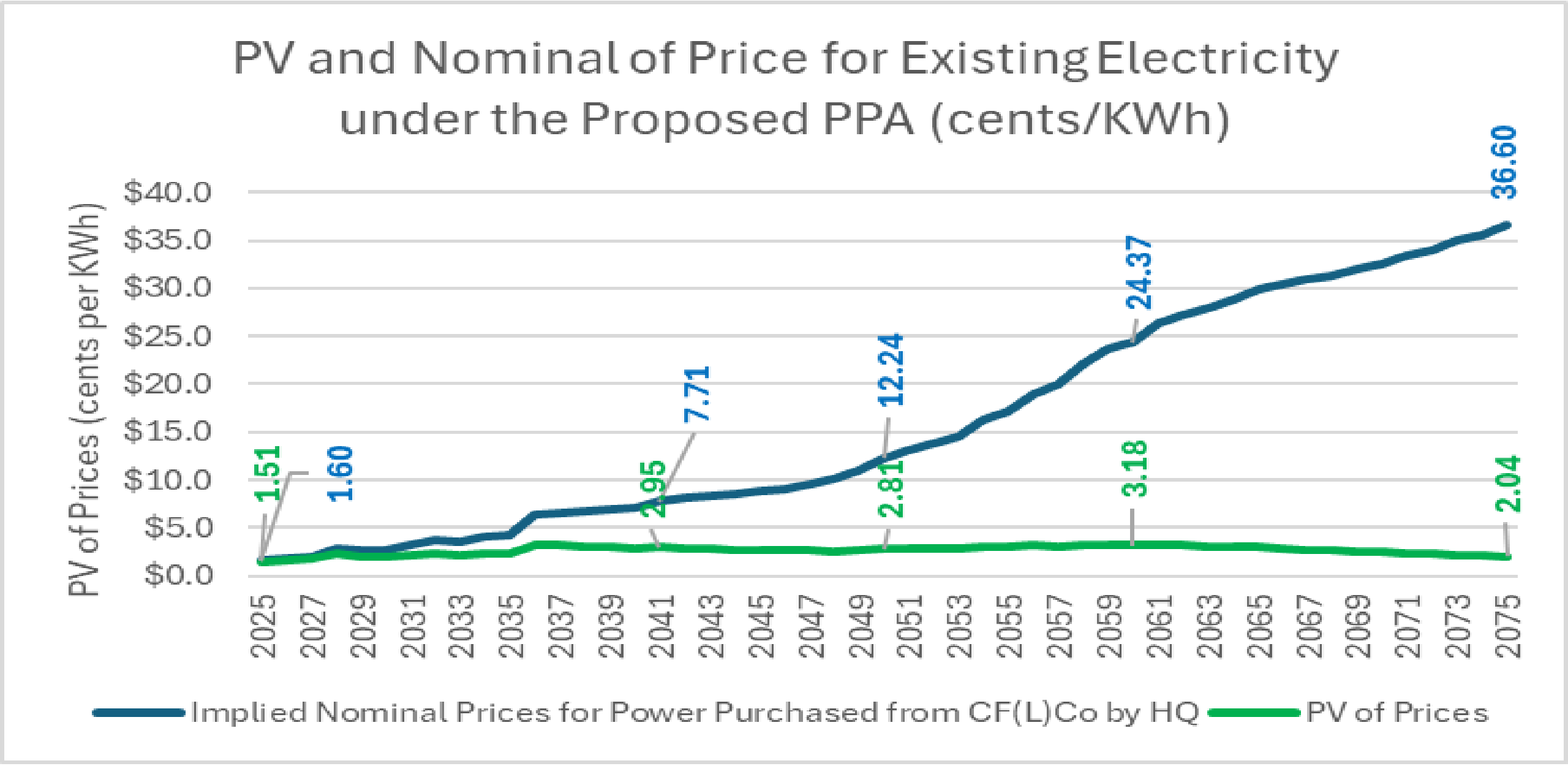
The Use of Present Values and Net Present Values in Financial Analysis

- References to Present Values and Net Present Values are used frequently in the documents, which explain the benefits of the MOU arising from changes to the MOU's forecasted prices for existing power from Churchill Falls.
- These terms are unknown to most people but are commonly used in investment projects with revenues and costs spread over a number of years. The MOU deals with several such projects.
- The problem is basically the following. People are not indifferent as to when they spend or receive money. This is true even when prices are in constant dollars. A separate video provides details.

- The basic idea is to convert revenues and costs that are received and spent over a number of years due to timing differences to a common point in time. We convert everything back in each year to the time we are making the decision, **the present**.
- The value of the revenues over the life of a project is to convert the revenues in each year to present value and then add up all these revenue streams.
- We can do the same thing for costs that occur over the years.
- We can subtract the total costs from the total revenues to see whether we would make a profit. The result is called the Net Present Value (NPV).

Wade Locke's present Value Analysis of Forecasted Prices for Existing CF Electricity

- Wade's motivation for doing present value analysis was presumably to verify the analysis done by NLH from the MOU.
- Wade's analysis is shown below. Note that his estimate of the forecasted prices in current dollars is very close to Parsons' forecast.
- Wade produces the present value data for the green line by converting each price in the blue line back to the present using a 5.822% discount rate.
- If you multiplied the present value in the blue, say 2.04¢/kWh times the amount of power generated in that year, then you would have the present value of the revenue for that year.
- The final step would be to repeat the process for each year, then add up the present values of these revenues to determine the total revenue CF(L)Co will receive over the 51 years.



Source: Dr. Wade Locke, **An Assessment of the December 12, 2024, Churchill Falls MOU between Newfoundland and Labrador, and Quebec**, Figure 12, page 13.

We Have a Problem with Parsons' Effective Average Present Value Price

- In the chart below, Wade estimates the average present value price over the period from 2025 to 2075 to be 2.64¢/kWh. Parsons calculates the average price to be 5.9¢/kWh.
- Wade employs the correct methodology for calculating the PV for each of the 51 years. Parsons calculates the present value of the average price, effectively assuming that only 2050 is relevant. Parsons makes a serious error.
- Most people will find this discussion torturous. Why did we do it? The answer is that the NLH's analysis of the MOU, endorsed by the GNL, stresses the importance of 5.9¢.
- The question I have is: what do NLH and HQ believe the importance of the 5.9¢ is?

Locke's correct estimation of the "base" price using NLH's forecasted prices in MOU

Table 8: Implied Nominal and Present Value of Prices to HQ for Existing Electricity Generation from CF

	2025-2075	2025-2041	2042-2075
	Sum	Sum	Sum
Implied Nominal Prices for Power Purchased from CF(L)Co by HQ (cents per KWh)	15.98	4.34	21.80
PV Implied Nominal Prices for Power Purchased from CF(L)Co by HQ (cents per KWh)	2.64	2.38	2.77

Locke's correct PV estimation of base price of 2.64¢/kWh and not Parson's 5.9¢/kWh

MOU's Expected Prices and GNL Revenue

- Wade Locke notes in footnote 4 of his paper that while "CF(L)Co will receive $19.8 B or $1.17 B on average to 2041, that is not money to treasury. It is money to CF(L)Co of which NLH owns **65.8%.** As such, the amount that could flow to the provincial treasury is $13.1 B or an annual average of $768 M to 2041." The amounts are not important, but the reference to CF(L)Co receipts seems to take our attention away that to some degree **HQ is paying itself**.

Misleading Price Comparisons?

- NLH's statement that the proposed price under the MOU is XX times the existing price is misleading. The existing winter prices are covered by the Guaranteed Winter Availability Contract (GWAC), as Locke points out. Under the Contract conditions as reported by Locke, the price in 2026 should be $56.77/MWh or 5.7¢/kWh.
- Data from NLH for CF(L)Co could tell us the prices actually paid under the GWAC, but such data are available only quarterly.
- Q1 2025, GWAC **$22.27**M to HQ; Q1 2025, HQ energy sales **$16.4M.**
- Note that price formulas under the GWAC **disappear** under the MOU.

Price Adjustments for Existing Power Under the MOU

- Wade Locke wrote in his Assessments:
- While Schedule F of the MOU does indicate that the forecast payments will be "reflective of wholesale electricity market value in Québec; replacement costs in Québec; and wholesale electricity market value in northeast export markets", there is no indication of the **weights attached** to either in the pricing mechanism. My response: **This is an important fact**.
- Moreover:
  - The wholesale electricity market in Quebec is not competitive, but is set by HQ, which acts as a cost-minimizing monopolist when selling power in Quebec. Moreover, it acted as a monopsonist when transferring power from CF(L)Co, in which it is a substantial shareholder (34.2%).

- The replacement costs in Quebec would be a facility that could meet similar loads and power during peak winter months. Even if we had such information, the optimal strategy for CF(L)Co might be to sell its power in the more competitive northeast export markets, which reflect daily and seasonal price changes. Disclosure: Last spring, I asked NLH about replacement costs, but I have not received a reply.

- Electricity markets are undergoing major structural changes due to both demand and supply forces. Specific, not vague, adjustment procedures are needed to deal with these realities.

An Assessment of the Proposed Pricing Structure for Existing Power

- Wade Locke wrote: “The MOU document lacks sufficient detail needed to demonstrate that the deal or the contract that is expected to ensue from this MOU is better than the 1969 contract.” Page 1 My assessment: Correct
- Moreover:
  - The baseline price of 5.9¢/kWh is calculated using an inappropriate concept and faulty procedures based on expected future prices that are too distant to be reasonable.
  - The suggested price adjustment process is vague in the extreme, depending on the distribution of electricity to individuals, businesses, and public organizations in Quebec, and on cost-minimizing strategies. Is there a “market” as generally understood by the concept? What are the replacement costs?

- Reporting revenue flows to CF(L)Co may be correct in one sense, but it is misleading because it does not point out that HQ is a substantial shareholder and the principal buyer.
- Reporting that the proposed power price under the MOU is X times the existing rate is misleading, as it ignores the revenue generated and the prices charged under the Guaranteed Winter Availability Contract (GWAC). Also note that the GWAC ends under the proposed MOU.
- The length of the proposed contract, to my knowledge, is much longer than any other external (outside Quebec) contract that HQ has signed.
- I believe that the use of set prices as outlined in the MOU is also inconsistent with other contracts HQ has with parties outside Quebec. Seasonal pricing promotes the efficient use of electricity.

- How was a real discount rate of 3.822% chosen?
- Coming back to Wade Locke's first point, that there is a lot of missing information in the MOU to basically evaluate the desirability, seems to often apply. The information which is provided is at times not reasonable or misleading.
- Pricing is an issue!
- One last point. It is well known that Quebec's electricity prices are the lowest in Canada and the United States. The reason is that electricity is generated by hydraulic turbines. The productivity of these turbines depends on the volume of water in the river and the drop in water level as it hits the turbines. Regarding Churchill Falls, the Churchill River is unique. The cost of the water as an energy source is virtually nothing. It is probably this factor, coupled with HQ's strategy of minimizing costs to provide low-cost electricity and perhaps increasing the size of equalization payments, that accounts for the very low water rents.

Thanks

We would encourage you to discuss with others and share your opinions and insights.

Don’t understand? Ask me 😊 !

Acronyms

- MOU : Memorandum of Understanding (Dec. 12, 2024 between Quebec, and Newfoundland and Labrador
- CF: Churchill Falls Generating Station
- NLH: Newfoundland and Labrador Hydro
- GNL: Government of Newfoundland and Labrador
- HQ: Hydro Québec
- NPV: Net Present Value
- PV: Present Value.