

A Flawed MOU: A Better Path Forward

Letter of Submittal

February 15, 2026

Independent Review Committee on the Churchill Falls MOU

The attached submission titled, *A Flawed MOU: A Better Path Forward*, is in response to the January 22, 2026 public request for submissions by the Independent Review Committee on the Churchill Falls MOU (IRC).

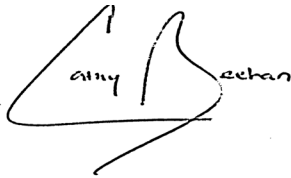
We believe that the task of reviewing the Churchill Falls MOU has profound implications for the people of our Province. It is an obligation given weight by the monumental size and economic value of the resource and by our collective responsibility to become better stewards of our land and waters. We make this submission in the knowledge that the time is now to apply lessons learned from our past and to seize this opportunity to achieve equity, fairness and the promise of a brighter economic future.

The IRC has been entrusted with an important mandate. We express the hope that this submission, and our analysis and recommendations herein, help inform your deliberations.

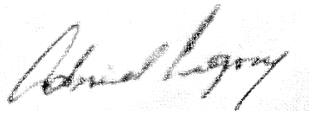
The submission attached was written and prepared entirely by its signatories as a joint initiative.

We the undersigned recommend, based on our findings, that the MOU in its entirety be rejected by the IRC because none of its components places our province as principal beneficiary.

Yours sincerely,

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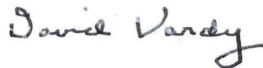
Cathy Beehan

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Gabriel Gregory

A handwritten signature in blue ink, appearing to read "Des Sullivan".

Des Sullivan

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David Vardy

A handwritten signature in black ink, appearing to read "William Wells".

William Wells

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EXECUTIVE SUMMARY

The purpose of this submission is to advise the Independent Review Committee (IRC) whether the MOU makes the Province of Newfoundland and Labrador the principal beneficiary of the undertakings proposed in the MOU, based on our 65.8% ownership of the equity in the Churchill Falls Labrador Corporation (CF(L)Co) and our ownership of the water rights which are essential to the existing plant.

The centerpiece of the MOU is a new 51-year power purchase agreement between Hydro Quebec (HQ) and Newfoundland and Labrador Hydro (NLH) for sale of power from the existing Churchill Falls (CF) power plant. Other projects include the upgrade of the eleven turbine generators at CF, the addition of two turbines (along with a new powerhouse, CF2), a new generation plant at Gull Island, and a transmission line to the border with Quebec. Another project, of vital importance to the MOU, and on which it is silent, is the upgrading of transmission lines within the Province of Quebec.

Even though it was an attractive site, Churchill Falls was in an isolated area with little infrastructure in place. It took considerable vision and leadership to create the existing major development. The site was extremely attractive as it combined a very large volume of water with a tremendous drop in elevation, known as “hydraulic head”, ideal for hydro development.

The Churchill Falls development was conceived around the development of the reservoir; the building of a water channel; and the construction of an underground complex. The total energy capacity of the 11 units is 5,428MW. On an annual basis the plant produces about 34 terawatt-hours (34 billion kWh) of electricity. At the time of construction, it was the largest power plant in the world and the largest project in North America.

CF(L)Co commenced construction of the Churchill Falls development in 1966, prior to having a final contract signed for the sale of the energy. The contract with HQ was not finalized until 1969, some three years after full construction had started. During the period up to the signing of the contract, Brinco, of which CF(L)Co was a subsidiary, had incurred substantial debts, making financing to complete the project a significant challenge. At that time HQ agreed to provide financing and increased its ownership in CF(L)Co from 20% to its current ownership of 34.2%.

In 1961, CF(L)Co secured from the Province of Newfoundland a 99-year renewable lease based on which the Company possessed the right to develop the hydraulic resources of the Upper Churchill River watershed subject to payment of defined water rentals and royalty payments.

One of the biggest weaknesses in the 1969 contract was its failure to consider price inflation. CF(L)Co's revenues were fixed by low contractual pricing based on the company's ability to retire CF(L)Co's debts over the contract term. The contract failed to consider the company's rising operating and maintenance costs, which threatened the solvency of the company. By the 1990s inflation had risen to the point where it was obvious that within a few years the payments to run the company and retire the debt would exceed the fixed but declining revenues from energy sales. This problem was resolved but efforts to rectify the fixed price contract were unsuccessful. Various attempts were made to renegotiate the contract between the parties, but they failed, as did actions in the Supreme Court of Canada.

The MOU is another attempt to renegotiate the project. It proposes higher revenues, beginning January 1, 2025. This submission conducts an analysis of the new pricing and other terms,

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including the recapture of additional power from the existing plant and the commissioning of new generation and transmission projects.

We conclude in our submission that the MOU does not make Newfoundland and Labrador the principal beneficiary and that the terms of the 1969 agreement remain substantially in place. We recommend that the MOU be rejected.

The MOU contains a projection of revenues from the existing plant. It does not include prices which, anyway, are only inferred. NLH has supplied a schedule of prices, but these forecast prices are not specific energy prices. Rather, they are merely a composite of pricing derived from a combination of blocks of energy with certain pricing over varying terms within the 51-year contract and, importantly, pricing that is tied to certain energy indices. The detailed assumptions on which the forecast nominal prices are based have not been disclosed.

The \$33.8 billion present value (2024\$) represents an average value for the energy over the 51-year term of 2.67 cents /kWh. This average value is determined by taking the \$33.8 billion present value of the total energy to be sold to HQ and dividing it by the total kWh of energy to be supplied to HQ (1267.6 billion kWh) as stated by NLH.

The agreed present value is a high estimate of present value because the discount rate (5.822% nominal) is very low compared, for example, with the 8% (in real terms) used by the Government of Canada for evaluating the benefits and costs of major projects.

The MOU and its discount rate assume an unrealistically low inflation rate of 2%. The average energy inflation rate was 4.9% as compared to general inflation of 3.9%, since 1969. Using more realistic values for the real discount rate and the rate of inflation substantially reduces the present value of the benefits to the NL Treasury.

There are many structural flaws in the MOU:

- The 51-year term is far too long for renewal of the contract on the existing plant. As outlined in this document, long term energy contracts range in length up to 25 years. Contracts of fifty years are non-existent, particularly when the generating assets are debt free;
- The contract relies on a single buyer to the detriment of the province;
- It makes no provision for wheeling rights through Quebec, which makes it difficult for CF(L)Co to market power to external customers and to diversify into other high value markets;
- The linkage of the renewal with other major projects, to upgrade turbines, to build CF2 and Gull Island, benefits only HQ. New projects should not be bundled with or subsidized by the more efficient and low-cost Upper Churchill plant;
- Any recaptured blocks of energy excess to NLH's domestic needs, must be sold exclusively to HQ, at the rates prescribed by the MOU and its definitive agreements. In other words, if prevailing market prices are higher than those in the MOU (which will always be the case given the low rates that the MOU contains by design) then NLH must sell any export power exclusively to HQ at those same low rates. HQ receives all the upside of the real market value as it does today under the 1969 contract; and
- It makes no provision for adjustments to the water rentals and royalties established in the 1961 statutory lease. Adjustments to these levies could supply more revenue to the

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province, without sharing them with HQ. We recommend that the fiscal regime be rebalanced by amendments to the 65-year old statutory lease to raise revenues with relatively less reliance on future dividends.

We also identified discrepancies in the revenue numbers. By one calculation, based on water rentals, net profits are measured as \$150 million; by another (the Financial Benefits Table) they are estimated at \$236 million. If the higher estimate is correct, it appears that the \$12 billion in water rentals and royalties should have been much higher.

The \$260 billion sales revenue for CF(L)Co also appears to be understated. When applying annual energy production of 33.5 TWh to the stated annual nominal prices the total nominal revenue value is \$278 billion, \$18 billion higher than the revenue stated in the forecast published on GNL's *Our Chapter.ca*.

NLH has included \$65 billion in nominal revenues in the gross revenue forecast as benefits to flow to the NL treasury. No schedule comparable to Schedule G has been supplied. The figure represents the increased price for existing energy that NLH has to pay CF(L)Co (the price it has to pay to match what HQ is committed to pay). From CF(L)Co's perspective this will be additional revenue, but it will not be a financial benefit to NLH or to GNL unless NLH passes on the entire cost increase of the energy to the ratepayers and energy users in Labrador. These customers have been told that the MOU will not increase their rates. If CF(L)Co's cost increase is not borne by the ratepayers, any benefit of the revenues to the NL Treasury will not exist.

Claims are made that the MOU will supply \$1 billion annually between 2025 and 2041. This claim depends upon higher rates to ratepayers in Labrador which have been disavowed. Or else they depend upon payments from Quebec which are conditional upon decisions by Hydro Quebec on the Gull Island project. Therefore, the claim of \$17 billion benefit to GNL is unsupported.

Officials of HQ have made it clear that they will pay only 4 cents/kWh over the term of the MOU. They tell us that the replacement cost is 16 cents/kWh and rising. These statements by senior officials in Quebec confirm that the MOU makes Quebec the principal beneficiary, and we have come to the same conclusion.

NL is clearly not the primary beneficiary of existing CF energy. The economic analysis has to compare the present value of the existing CF energy with the alternative which is 16 cents. This comparison demonstrates that the large majority of the economic benefit is to HQ.

With its combination of favourable attributes, its dispatchability, its capacity and its reliability, Churchill Falls power is extraordinary in the world today. And, while the volume of energy can be replaced, CF's firm energy, given its many attributes, is irreplaceable.

In practical terms, the cost to replace CF energy would be in the range of \$85-100 billion. Mr. Sabia's comparison of 16 cents replacement cost is the equivalent of \$92 billion based on the MOU discount rate of 5.822%.

The MOU provides HQ with a "remarkable", to quote M. Sabia, price for CF energy; energy that has attributes that are so much more valuable than any of the alternatives. Why is this valuable energy selling at such a highly discounted price? This is a central question for the IRC.

We have shown in this submission that the funds advanced by HQ in the period prior to expiry of the 1969 contract (August 2041) are repaid in full through lower rates provided to HQ in the

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twenty-year period post 2041 expiry. The funds paid before 2041 are an advance on future payments transferring wealth and revenues from future generations. The quid pro quo for these advance funds was enormous. We urge you to measure the benefits ceded to HQ by NLH in order to obtain cash over the next 17 years and how much it will cost future generations. HQ has achieved the maintenance of the egregious 1969 contract price structure. In addition, it has won renewal of existing CF energy at rates that are not reflective of current price trends; that do not link with the dynamics of real market change; and that create a scheme in which HQ achieves significant price advantages over intervals in the 51-year term.

We have shown in this submission that the funds advanced by HQ in the period prior to expiry of the 1969 contract (August 2041) are repaid in full through lower rates provided to HQ in the twenty-year period post 2041 expiry. The funds paid before 2041 are an advance on future payments transferring wealth and revenues from future generations. The quid pro quo for these advance funds was enormous. We urge IRC to measure the benefits ceded to HQ by NLH in order to obtain cash over the next 17 years and how much it will cost future generations depriving them of a heritage which is rightfully theirs.

The MOU fails to supply an escalation formula. Instead, it offers a concept based on three different factors for which no weights have been assigned. Without real market pricing, the MOU is a failure. It fails to respond to the single biggest problem that has haunted the 1969 contract for decades. The MOU pricing mechanism rests principally on wholesale market prices in Quebec which have remained remarkably impervious to market changes.

The MOU proposes three new generation projects, the upgrades to 11 turbine generators, the creation of a new powerhouse at CF, and the building of Gull Island. The upgrades are financed by CF(L)Co with debt so our province is financially exposed. But the project pricing is cost based which means that pricing is well below replacement cost or market value over a 50-year period. HQ will receive 75% of the power. There is no benefit to our province.

The new powerhouse will be financed with 25% equity and 75% debt. As with the upgrades, the power will be sold at cost which will benefit HQ which will buy most of the power. Risks associated with CF2 include greater variation in water flow which could damage the environment. No environmental assessment has been conducted for the upgrades or for CF2. The risks also include geotechnical issues at the CF site and the need for a water management agreement that protects our interests. There is no business case for the CF2 project, whose return on equity will not nearly compensate for the risks. Power rates will not be adjusted to match market value.

The largest project is the Gull Island project, estimated to cost \$24.9 billion plus unknown transmission costs. A new joint venture company will be established in which NLH will own 60% while HQ will own 40%. The power contract with Quebec will run for 50 years but substantial capital costs, including any overruns, will remain to be amortized beyond 50 years.

HQ will manage construction. The power will be sold at cost which means that our province will get no benefit if market prices rise. There will be increased financial exposure to the province, with no upside. HQ will have an option agreement for up to 20 years and some of the revenues from the MOU are conditional upon their decision to go forward with Gull Island. HQ's equity participation will continue beyond the 50-year power purchase agreement.

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The existing environmental assessment which is to be used for the Gull Island project is 15 years out of date and little is known about design changes which may have been made since the joint Government of Canada and GNL panel reported in August of 2011. The water management issues raised by Gull Island are enormous.

GNL/NLH have relinquished decision-making and management of the construction roles to HQ. This is a serious flaw in the MOU. Decision-making should rest with the joint venture company, not HQ. As the majority shareholder, NLH is obligated to maintain control of the Board of Directors of the joint company and have an oversight role in any development at Gull Island. GNL and NLH will have no role in the decisions of the development or the running of the project as proposed in the MOU.

Conclusions and Recommendations

Our conclusions and recommendations to the IRC, based on our analysis, are outlined below:

Conclusions

1. The MOU should be rejected in its entirety. It does not make our Province the principal beneficiary. It does expose our Province to unnecessary risks.
2. It purports to be a departure from the 1969 contract, but it is simply a continuation of cost-of-service pricing, effectively placing the existing plant and the new developments within the HQ network.
3. The MOU undervalues the product offered by the existing CF plant.
4. The risks to our Province are much higher than those to Quebec because the price increases are back-end loaded late in the 51-year term.
5. The benefits arising from the MOU are overstated.
6. The revenue projections assume that Labrador power rates will rise significantly, contrary to stated policy.
7. The MOU offers no access to transmission rights through Quebec.
8. The MOU enshrines the monopoly position of HQ.
9. The benefits stated in the MOU should be measured on a net present value basis.
10. The present value of benefits from the existing CF plant should be compared to the alternative replacement market value, based on energy of the same attributes as CF.

Recommendations

It is recommended that the IRC undertake to:

1. Explain the highly complex pricing terms used to calculate the revenues included in Schedule G involving unknown and varying blocks of power;
2. Conduct the necessary research into the questions we have raised and clearly explain the findings to the public;
3. Disclose what the negotiating team has done to measure the value of the electric power product we have to offer from the Churchill River, with particular value to its capacity, energy, dispatchability and reliability; and
4. Define what are the factors which should be used to measure the value we should be obtaining for our power.

Churchill Falls

1 - Background

On Monday December 6, 1971, at 6:47 PM NST, electricity from the Churchill Falls plant began flowing into the Hydro Quebec network, five months and three weeks ahead of the scheduled contract date. Five years earlier, Churchill Falls remained virtually an untouched wilderness, known only to the indigenous people and coastal peoples who travelled the interior of Labrador [1].

Over sixty months, the remote site in central Labrador, previously accessible only by air, would become the scene of the largest construction ever undertaken in Canada – the Churchill Falls hydro- electric development.

In May, 1894 geologist A.P. Low climbed Lockout Mountain, near the falls, in search of a vantage point. He found what he described as a bleak sight – “over half the surrounding country has been stripped bare by frequent fires. In the swamps and around the shores of the lakes, where the trees are unburnt, black spruce and larch of small size grow thick together. On the sides of the hills these trees are more stunted and are separated by open glades. Where the hillsides have been burnt years ago, they are covered with a tangled mass of willows and alders, while the tops are coated with white moss and semi-arctic shrubs and berries. Only on the banks of the river about the falls were trees large enough for commercial purposes seen.” [1]

Low was describing a scene typical of the central interior of Labrador – a generally flat plateau 1500-1900 feet above sea level with no particular landmarks. The land was covered with muskeg, bogs and endless connected lakes. The unique characteristic was that this vast plateau area drained into one single river, the Grand, as known by the indigenous people. The river plunged into a deep gorge off the edge of the plateau, dropping over 1000 feet on a distance of several miles. To the indigenous travellers and coastal Labrador peoples it meant a back-breaking trek over several miles. but to engineers it meant a unique site to build an enormous power generating plant.

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The site was extremely attractive as it combined a very large volume of water with a tremendous drop in elevation, ideal for hydro development. However, there were enormous practical problems to overcome, distance to market and accessibility to the site for labour and equipment, to name just a few. The completion of the railway to the vast iron mines of Labrador west in the decade earlier allowed for the expansion of the road east to the Churchill Falls generation site. The development of the hydro site at Twin Falls, on a tributary of the Churchill River, in the 1960s, to supply the western Labrador iron mines, assisted in gaining much needed insight and experience that enabled the project to gain traction. In addition, the growth in electricity demand and the development of high voltage transmission, particularly by Hydro Quebec (HQ), brought the enormous project to a potential reality. There remained the challenge of financing and selling such a large block of energy to viable markets 700-1000 miles distant.

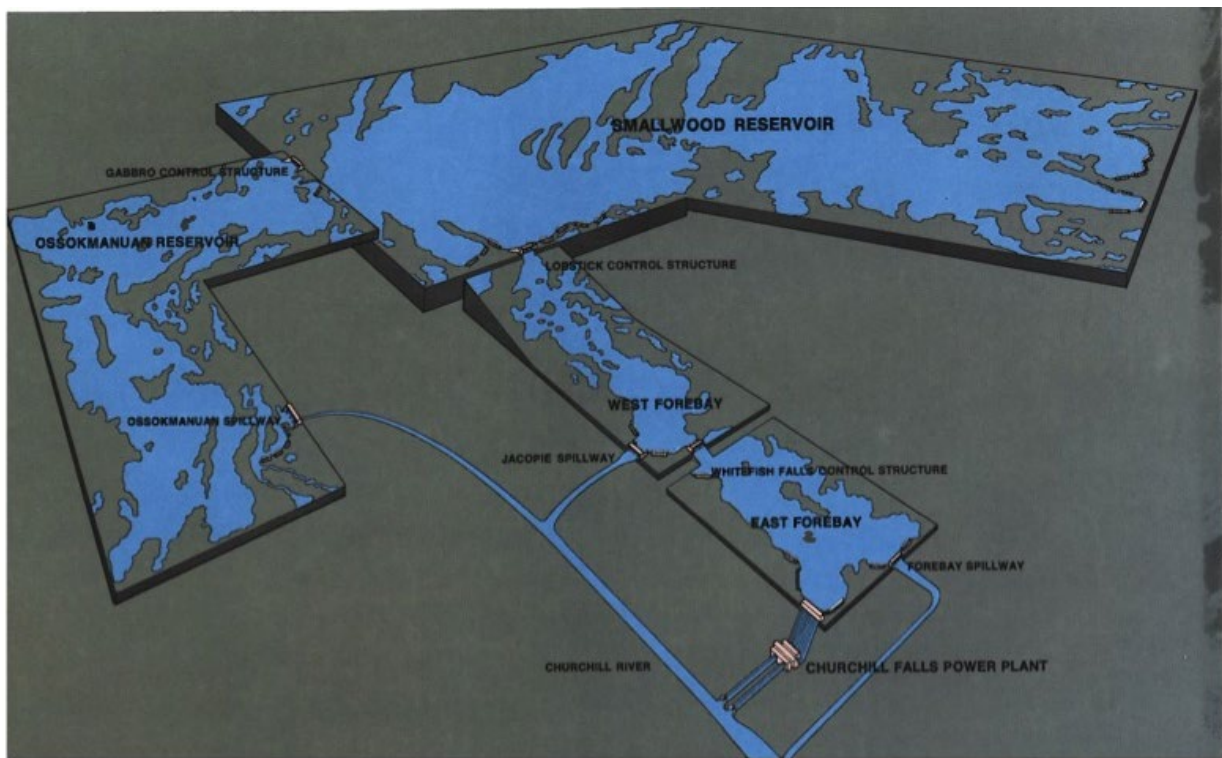
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Description of the Churchill Development

The Churchill Falls development was conceived around the development of the reservoir; the building of a water channel; the construction of an underground complex – comprised of penstocks, machine hall, powerhouse, surge chamber, tailrace and access tunnels, cable shafts and switchyard. Transmission towers and cables crossed the river on to the market. In addition, an entire town development was envisioned to support the long-term operation and maintenance of the huge capital project.

Reservoirs

The water storage for the Churchill Falls power generating plant is comprised of two large reservoirs. The Ossokmanuan reservoir (named from a large lake of the same Innu name) which largely comprised the collection area for the Twin Falls hydro-electric development of the 1960s is the smaller of the two. It is at a higher elevation than the larger Smallwood reservoir and can store 100 billion cubic feet of usable water to generate energy. A control structure built as part of the Churchill Falls development controls the flow of water into the Smallwood reservoir.



The Smallwood reservoir contains countless lakes and hundreds of square kilometers of bog and muskeg lands within central Labrador. The reservoir covers some 5700 square kms and has a capacity of one trillion cubic feet of water. The combined catchment area for the reservoirs is approximately 72,000 square kms, an area about the size of the Province of New Brunswick. At full capacity, the Churchill Falls plant is designed to utilize over 98% of the water stored in the reservoirs. This equates to a water flow averaging 49,000 cubic feet per second; given natural

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variations the flow can vary from a winter low of 5-10,000 cubic feet per second to a high of 300,000 cubic feet per second at spring flood condition.[1]

Visitors to the Churchill Falls site are surprised to find no great concrete dam structures. A unique feature of the Churchill Falls development is that the reservoir is built of 88 earthen dykes, all of differing composition. The combined length of the dykes is 64 kms, the largest being over 6 kms in length and the highest at 117 feet. The dykes contain the entire water storage area and allow the flow of water to be controlled through a series of gated control structures. Each dyke was specifically engineered to the particular terrain conditions present. They are all made of earthen materials- the cores are comprised of glacial till, while the slopes are built of sand, gravel, rock and riprap. Combined they form a barrier and many of the dykes contain pressure gauges for monitoring any changes. If a weakness is identified then corrective action can be taken to avoid damage.[1]

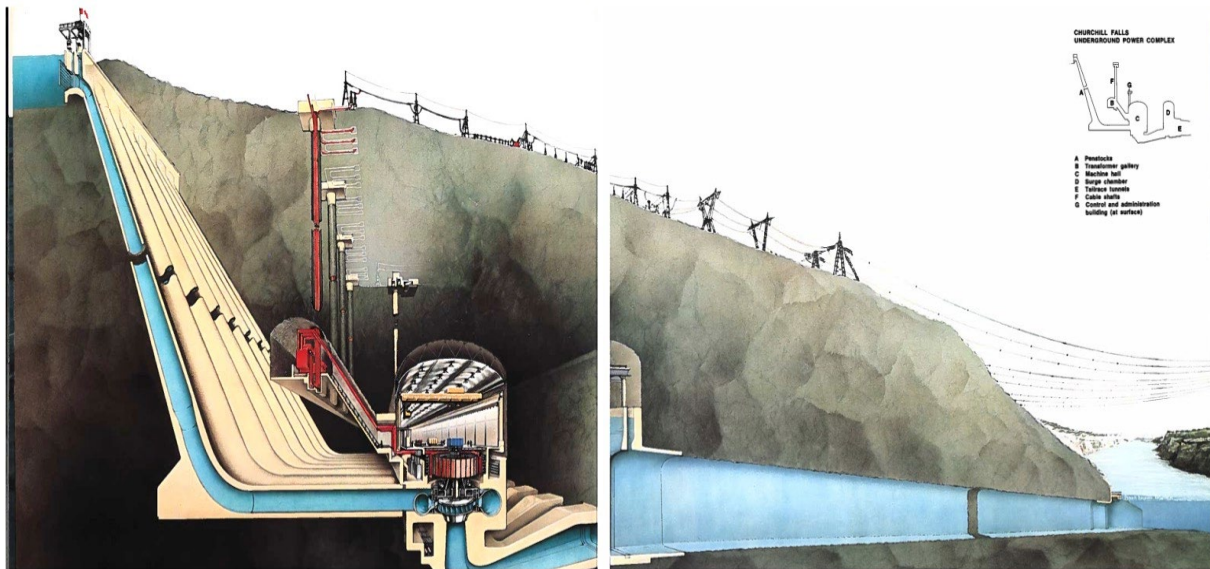
The Smallwood reservoir water is released through a gated control structure at Lobstick Lake. From there, the water flows east through the natural river channel for some 56 kms until it arrives at the edge of the plateau. There a control structure prevents the flow through to the falls; the water is redirected into a man-made channel eastward parallel to the river. A control structure in the forebay controls the final step in the flow of water before it reaches the intake structure. From this location the water drops 1025 feet through the penstocks (drilled and blasted down through solid granite rock) feeding the turbine generators in the plant. From there the water flows through underground tailrace tunnels back out to the original river gorge.



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Underground Complex

The nucleus of the Churchill Falls hydro development is the underground powerhouse. It is a cavern excavated out of solid granite, 972 feet long, 80 feet wide and 154 feet high. It houses 11 huge generating units, each comprised of a 648,000-horsepower turbine driving a 475,000-kilowatt generator. The height from the bottom of the turbine to the top of the generators is the equivalent of a nine-story building. The rotating components of each unit weighs in excess of 725 tonnes. The total energy capacity of the 11 units is 5,428MW. On an annual basis the plant produces over 34 terawatt-hours (34 billion kWh) of electricity. At the time of construction, it was the largest power plant in the world and the largest project in North America.[1]



In addition to the powerhouse, the underground complex includes:

- a transformer gallery where the energy produced from the 11 generators is stepped up from 15,000 volts to 230,000 volts;
- a series of vertical cable shafts which convey energy to the switchyard above the underground complex. Here the electricity is further transformed and stepped up to a voltage of 735, 000 volts before being transmitted on the conductors to HQ;
- a surge chamber – where the water discharged from the turbines is collected and pooled;
- the tailrace tunnels – channels carved from the granite rock to allow the water to return to the river; and
- an access tunnel – a mile long road that provides access from the riverbank to the underground complex for heavy equipment, etc.

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The diagram below depicts each of the major components of the underground complex. From the perspective of size, the Churchill Falls facilities are massive and difficult to imagine. In the 1960s when the complex was built nothing comparable on this scale had been undertaken anywhere in the world. The complex was an engineering marvel.



Switchyard and Transmission

The above ground switchyard contains six banks of transformers that convert the energy produced by the plant to 735,000 volts. The transformers are so large (weighing some 224 tons), they had to be transported from the western Labrador rail siding at Esker by a specially built and designed transport vehicle solely for the purpose. The transporter was 196 feet long and was powered at both ends by 700-horsepower drive tractors, one forward to pull, the other aft to push and brake the transporter. It would take the transporter a few days to travel the 180kms from the rail siding to the site. [1]

The challenging 6000-foot transmission span across the Churchill River was through the construction of three large V-shaped towers on each side. The guyed towers rest on a single base. At the time these were the largest in the world, reaching a height of up to 170 feet tall. Each tower carries three bundles of four conductors.

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Town Site

The town of Churchill Falls was built along an ancient trail where trappers hauled their canoes and supplies up to the plateau as they travelled inland, round the falls. The town is compact built round a central complex that houses a school, stores, hotel, theatre and sports facilities including an ice curling rink and swimming pool, all under one roof.

The housing in the town is built semi-circular around the town center with houses only on one side of the street which allows for privacy and enables more space for snow clearing as winter is long in central Labrador. The town site served as a base camp during development with many temporary buildings that provided housing for the thousands of construction workers who built the entire hydro complex.

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Churchill Falls offers all the facilities of a modern community - a church, fire department and small police centre. The airport has the capacity to service jet aircraft and flights that originate from St. John's and Montreal. Today the town is connected eastward to Happy Valley-Goose Bay and westward to Labrador City via the Trans Labrador Highway, a paved year-round access for road transportation.

Ownership and Financing

The construction of Churchill Falls was undertaken by British Newfoundland Corporation Limited (Brinco). Brinco was a private company incorporated in 1953 with an objective to develop industrial opportunities in Newfoundland. The company was owned by Rio Tinto and N M Rothschild & Sons. Its subsidiary, Hamilton Falls Power Company, was formed to develop the hydro resources at the Upper Churchill River. The Churchill River is traditionally known as Mishtashipu or Mishta-shipu by the indigenous Innu. The word translates as "Grand River", the name used by the settler population. In 1821, the River was renamed Hamilton River to honor Sir Charles Hamilton, the British Commodore-Governor of Newfoundland and Labrador from 1818 to 1823. It was again renamed in 1965 to honor wartime British Prime Minister, Sir Winston Churchill and the name change reflects the origin of Churchill Falls (Labrador) Corporation's (CF(L)Co) nomenclature.

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When initially incorporated the company was owned 80% by Brinco and 20% by the Montreal engineering firm Shawinigan Engineering. In 1963, the government of Quebec nationalized all private electricity firms in the province including Shawinigan Engineering's interests in CF(L)Co. Following this decision concerns over predatory behaviour towards Brinco arose in consequence of the serious conflict of interest created. HQ's new status on CF(L)Co's Board of Directors was thought to have facilitated "insider" knowledge of the Company's dire financial position.

CF(L)Co commenced construction of the Churchill Falls development in 1966 prior to having a final contract signed for the sale of the energy. The contract with HQ was not finalized until 1969 some three years after full construction had started. During the period up to the signing of the contract, Brinco had incurred substantial debts, making financing to complete the project a significant challenge to obtain. At that time HQ agreed to provide financing and increased its ownership in CF(L)Co from 20% to its current ownership of 34.2%.

In 1961, CF(L)Co secured from the Province of Newfoundland a 99-year renewable lease based on which the Company possessed the right to develop the hydraulic resources of the Upper Churchill River watershed. The main contractor for the construction of the Churchill Falls development was Acres Canadian Bechtel, a joint venture of H.G Acres & Company Limited, a Canadian company with expertise in hydroelectricity and Bechtel Corporation of San Francisco, a world-renowned construction company.

A detailed budget and schedule were completed for the development, which reported \$665 million in direct construction costs, including a contingency of \$41 million. Interest charges during construction, along with administration, overhead and other costs brought the total budget to \$946 million. This included the tens of millions spent on studies and work by CF(L)Co prior to the commissioning of the project. The contract had an established deadline for delivery of first power to Hydro Quebec (HQ) on or before May 31, 1971. Despite the huge challenges presented by the development in the remoteness of central Labrador, the project was completed at a cost \$55 million under budget and five months, three weeks ahead of schedule.[1]

1969 Contract

The 1969 contract between CF(L)Co and HQ was signed on May 12th, 1969, after years of negotiation. However, Churchill Falls construction had started in 1966. By 1969, CF(L)Co had accumulated significant debt and the Company was challenged to finance the project to completion. The contractual agreement incomplete, the circumstance placed HQ in a strong bargaining position to obtain additional advantage as negotiations continued. HQ controlled the end market for the power sale, possessed an ownership stake in CF(L)Co, and had the financial capacity to complete the construction.[1]

During the final stage of negotiation HQ agreed to accept all the financial risks of the construction project and any potential cost overruns. In return it received a guarantee for most of

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the energy generated, less the recall energy block dedicated to Labrador west, and a second block as compensation for the closure of Twin Falls hydro power facility developed by the Iron Ore Company of Canada and Wabush Mines for their own industrial use. HQ also secured fixed energy prices for an initial period of forty years to 2016 with an automatic renewal for 25 years at a lower fixed rate to reflect the fact that the construction related debt would be retired in 2016.[2]

Initially, the rate for energy was pegged at 0.3 cents per kWh. The price declined to 0.25 cents per kWh in later years of the initial 40-year term. It dropped to 0.2 cents per kWh in 2016. Importantly, the contract contained no provision for a price adjustment or periodic reviews to reflect price inflation or any changes in the energy markets over the 65-year contractual period. Shortly after the plant was fully operational demand for energy increased. And, following the 1970s Middle East oil embargo energy prices increased markedly. As a result, starting in the early years of the agreement and continuing to today, the value of the contract became dramatically skewed in HQ's favour.

In Newfoundland, profound resentment greeted the Government and the general public blamed the Smallwood administration for the outcome of the weakness of the contract. To this day the public are generally unaware that Smallwood and his administration had no real decision-making authority in approving the 1969 contract. It is noteworthy, however, that in the 1985 court case, *NL v Churchill Falls (Labrador) Corp* it was found (paragraphs, 16 and 26) that GNL was consulted before the final agreement was signed.

The 1969 agreement was a private deal negotiated between CF(L)Co, a private company at the time and HQ, a minority owner in the same company. The Government of Newfoundland acquired Brinco's entire ownership interests, in CF(L)Co, in June 1974, when it became apparent that NL would not be getting any part of the increased value for the energy which was all to HQ's benefit. GNL then transferred the ownership to Newfoundland and Labrador Hydro (NLH). Today the ownership remains as it has since that acquisition, at 65.8% for NLH and 34.2% for HQ.

One of the biggest weaknesses in the 1969 contract was its failure to include a provision for price inflation. HQ had negotiated the contract on the basis of cost-of-service rates. While no one could have foreseen the OPEC induced energy crisis of the early 1970s, it completely changed energy pricing thereafter. The automatic renewal after 40 years in the '69 contract ensured continued cost-of-service pricing with all the market upside to HQ. To date the contract has provided HQ with significant windfall profits that it has refused to share, in part, as it views that the upper Churchill resource rightly belongs to Quebec.

CF(L)Co's revenues were fixed by low contractual pricing under the '69 contract and were established based on the Company's ability to retire CF(L)Co's debts over the contract term. The contract failed to consider the company's rising operating and maintenance costs. By the 1990s inflation had risen to the point that it was obvious that within a few years the payments to run the

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company and retire the debt would exceed the fixed revenues from energy sales. To prevent the company from becoming insolvent and unable to meet its financial obligations, NLH was forced to make another separate contract which added a feature that guaranteed HQ more energy capacity for the seasonal winter period (November through March, a period of high energy demand in Quebec). In return HQ agreed to make additional annual payments. The new contract, made on November 1, 1998, is known as the Guaranteed Winter Availability Contract, or GWAC.

In return for the additional GWAC annual payment, approximately \$35million, HQ also secured further control of CF(L)Co through a Shareholders' Agreement signed on June 18, 1999. HQ obtained further board representation and a veto over all major decisions of CF(L)Co. Today, CF(L)Co can make no significant operational or financial decisions without the consent of HQ. The provisions of GWAC are for the same term as the original 1969 contract and expire at August 31, 2041.[3]

The 2024 MOU

2.- Existing Plant Revenues from HQ

The most significant component of the December 12, 2024 MOU between NLH and HQ is the renewal of the current contract for capacity and energy from the existing Churchill Falls (CF) power plant. Not only is the contract renewal the most significant, it is also the only component that is a definitive commitment in the MOU. All the other MOU components - new capacity, generation and transmission developments, are contingent on future decisions of HQ. Given this fact, it seems clear that the Government of Newfoundland and Labrador's (GNL) primary objective was to secure new pricing for existing Churchill Falls energy as well as revenues in advance of 2041.

Under the MOU the term of the contract renewal is 51 years, 2025-2075. This term replaces the existing contracts, which were scheduled to expire on August 31, 2041 and extends the contract for an additional 34 years and four months to expire on December 31, 2075.[4]

Assumptions

The MOU revenue assumptions related to the value of energy from the existing CF plant are outlined below:

- The capacity from CF allotted to each of the off-takers (HQ and NLH) is stated in the left side table Schedule E of the MOU. HQ starts with its existing allotment of capacity at 4765MW and retains this allotment until 2030. The allotment of capacity in MW(s) and the changes thereto between HQ and NLH over the term of the MOU are summarized in the following table:

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<u>Year</u>	<u>HQ</u>	<u>NLH</u>	<u>Recapture</u>	<u>Expiring Block</u>
2025	4765	525		
2031	4460	830	305	
2032	4410	880	50	
2033	4310	980	100	
2034	4260	1030	50	
2035	4160	1130	100	
2051	3910	1380		250
2061	3660	1630		250

- The prices that determine the forecast yearly nominal revenues stated in MOU Schedule G, for energy sold to HQ from the existing CF plant, are not specifically stated in the MOU. However, NLH outlined the nominal prices following the signing of the MOU. These nominal price estimates start at 1.63 cents/kWh in 2025 and increase to 37.24 cents /kWh in 2075.
- These forecast prices are not specific energy prices. Rather, they are merely a composite of pricing derived from a combination of blocks of energy with certain pricing over varying terms within the 51-year contract and, importantly, pricing that is tied to certain energy indices – namely the wholesale electricity market value in Québec; replacement costs in Québec; and wholesale electricity market value in northeast export markets.

Presumably the parties to the MOU modelled the block pricing structure to provide the forecast prices stated. Arguably, they could not have been derived without due consideration given to the various blocks of energy/capacity on which it is based, the varying terms of prices applied to each block after weighting the indices to wholesale markets. It appears certain that the more detailed assumptions on which the forecast nominal prices are based have not been disclosed.

- The discount rate used to determine the \$33.8 billion present value of the HQ payments for energy over the 51-year term is stated in the MOU as 5.822%. The present value of the future estimated payments is derived from applying the discount rate noted to the nominal annual revenue payments from HQ to CF(L)Co. [4,5]

Present Value

The present value of the HQ payments for the energy to be sold to HQ by CF(L)Co from the existing CF plant, over the 51-year life of the proposed power purchase agreement, is established at \$33.8 billion. This value is determined by taking the forecast nominal annual revenue

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payments from MOU Schedule G and discounting them using the stated and agreed discount rate of 5.822%. The summation of these nominal payments totals \$194.7 billion.[4]

The \$33.8 billion present value (2024\$) represents an average value for the energy over the 51-year term of 2.67 cents /kWh. This average value is determined by taking the \$33.8 billion present value of the total energy to be sold to HQ and dividing it by the total kWh of energy to be supplied to HQ (1267.6 billion kWh) as stated by NLH.[5]

It is important to note that the \$33.8 billion is a gross value of revenue and not a net present value. The figure of 2.67 cents/kWh does not include deductions for operation and maintenance of the CF assets. Nor does it include other expenses of CF(L)Co such as royalties and rental expenses. In addition, the figure does not account for the incremental loss of revenue from the old 1969 contract that would have provided limited revenues to August 31, 2041. From a financial benefit perspective all these factors are relevant to determine the net present value of the MOU forecast revenues.

The present value estimate agreed on in the MOU appears to be solely for the purpose of limiting the value of what HQ has to pay for energy over the term of 51 years. The quantity of energy to be sold is confirmed year to year and is based on a known long history of operation from the existing plant. Less well known is the number of energy blocks and the terms of pricing for each block of energy being sold over the 51 years to 2075.

Based on the changes in the allocation of volumes of capacity from the existing plant noted in Schedule E, we can determine that there are at least seven energy blocks that represent changes in allocation from HQ to NLH over the 51-year period. Each increase in allocation of energy to NLH from HQ would represent one block at minimum. In addition, the minimum allocation to HQ is 3660 MW. This block of power is very large which suggests that there are likely multiple blocks associated with this volume of energy. [4]

The undisclosed factors that determine the present value relate to the pricing indices and how frequently they change or will be updated to account for material changes in the indices. The factors driving the value and how they interact are unknown to the public. Nevertheless, all these variables have specific assumed values, the parties having determined and agreed, when factored together and discounted, they must total \$33.8 billion, which is the present value of payments contained in the MOU. In other words, one cannot arrive at the calculation of the present value of \$33.8 billion without the underlying values having been agreed upon between the parties. There are many combinations of energy blocks, different terms for each block, differing prices for blocks, and differing weightings to various price indices for each block, all of which combine to reach the agreed \$33.8 billion present value. In the end, however, the \$33.8 billion present value, at the agreed discount rate, sets the value of the energy sold to HQ from CF(L)Co.[4]

How the future unfolds determines the level of risk to each party. The more frequently prices are subject to change and the more variables at play in determining the revenue stream will

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ultimately determine the future gains and losses under the agreement. All those uncertainties, the definitive agreements having been agreed to and signed off by the parties will still comprise the underlining factors that determine the \$33.8 billion present value. The agreed present value is a high estimate because the discount rate is very low compared, for example, with the 8% (real discount rate) used by the Government of Canada for evaluating the benefits and costs of major projects.[6] A more reasoned present value would have to reflect a discount rate including the time value of money and the risks appropriate to the determination of present value.

Discount Rate

The discount rate contained in the MOU is 5.822%. This is a very low discount rate. A discount rate is a means of determining the trade-off between receiving money today versus a time in the future, factoring uncertainty. The more uncertain the future cashflow or revenue the higher the discount rate.

The discount rate reflects an assessment of inflation and the time value of money, uncertainty as measured through a risk premium, and a base minimum risk-free real rate of return. Minimum rates of return are generally tied to medium (10 year) to long-term (30 year) rates of return on government bonds. For example, Government of Canada debt is viewed as a most secure investment with minimum risk. Today the 30-year bond rate is 3.9%.[7] This is what is referred to generally as a risk-free rate of return. There is financial risk with every investment but government debt from a secure country like Canada, which has a very low chance of default, is considered in theory to be as close as possible to a risk-free investment. It therefore pays the lowest rate of return.

The stated 51-year term of the MOU is an unusually long time. It represents tremendous risk, History, including the history of the Churchill Falls contract, demonstrates how risky it has been and, if history offers any measure, this experience is likely to continue. This risk is affirmed when established prices for energy cannot be renegotiated based on changing market and business conditions. In the past, CF development was financed by significant 40-year term debt. Therefore, fixed and assured pricing was a risk reducing factor which rationalized the long-term pricing. However, a contract that is reasonable and fair to the parties would still have had provisions for windfalls and downturns. The longer the contract the more likely that marked changes will occur.

Another element of risk that is represented in the risk premium is the difference between what an investor would consider a reasonable rate of return over the risk-free rate on a government bond. As an example, a long-term equity investor in TC Energy has had an average rate of return of 12% over the past decade. This 12% rate of return, when compared with a risk-free rate on government bonds of say 4%, discloses a difference of 8% which includes the risk premium associated with TC Energy.[8]

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Inflation and the time value of money are other factors that have to be considered in a discount rate. A dollar today has much more pricing power than the value of one in fifty years time. Uncertainty increases with time; inflation is a significant risk, both general inflation and inflation of energy prices. Over the past 56 years, since the existing 1969 contract was signed, inflation has reduced the value of \$1 by about 88%. Another way to express the inflation effect is to state that one would need 8.4 times more money to buy the same dollar value of something in 1969 as compared to today. What cost \$100 in 1969 on average today costs \$840.[9]

The initial price set for CF energy in 1969 was 0.3 cents/kWh. An equivalent price today is 2.52 cents/kWh. This compares very unfavourably with the current rate for energy under the 1969 contract at 0.2 cents/kWh. The current price is only a fraction of the equivalent inflation adjusted price (it represents only 8% of the purchasing power when adjusted for inflation). In other words, the current price for CF energy represents a loss of 92% of its value since 1969 and it will continue to lose value over the remaining 17 years of the contract, making the energy virtually free.

Annual inflation over the period since 1969, 56 years, has averaged 3.9 %. This is a measure of general inflation not necessarily reflective of markets for products where supply fails to meet the demand. In other words, if demand for something increases materially, or a certain good is in short supply, then inflation for that good would be much higher than the general average inflation of all goods. This is exactly what happened with electricity in the 1970s. The price of the good dramatically increased while the contract price for CF power remained fixed. In fact, in regard to CF energy, the price set by the 1969 power contract has fallen to 0.2 cents/kWh and continues at that price for the 25-year automatic renewal period from 2016 through to contract expiry in 2041. [10]

When one reflects on the discount rate applied to the CF price of energy in the MOU, it is very low, considering inflation, the real rate of return, and the risk premium. When historical annual inflation was 3.9%, this fact is proof that the 5.822% discount rate is not reasonably reflective of the risks associated with the payments for energy over the 51- year period to 2075.

In this context it is also noteworthy that the proponents of the MOU have agreed that a risk premium on equity associated with the Gull Island development and the CF2 development is 5%. The rate of return on equity for these projects is set at the ten-year Government of Canada bond rate plus 500 basis points. Consequently, the discount rate used is unreasonably low when considering historic general inflation, energy inflation, and an appropriate risk premium.[4]

As discussed earlier, a reasoned calculation of present value determined from the Schedule G forecast HQ annual revenue payments would be discounted at a higher discount rate than agreed in the MOU. Given that the risk-free rate is 3.5-4.0% and future inflation is assumed at 2.0% then the inclusion of a risk premium would bring the most conservative estimate for a reasonable discount rate to be about 7.5-8.0%. The Government of Canada guideline of 8% real discount rate appears to be a reasonable rate to use for demonstration. Adding a 2% inflation component

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would infer a reasonable discount rate of 10%. Calculating the present value at this rate would decrease the present value in the MOU from \$33.8 billion to \$14.3 billion. This is a very material change as it represents a reduction in value of \$19.5 billion, or a loss of 58% of the present value stated in the MOU. The calculation also demonstrates the sensitivity of expressing present value in terms of reasonable risks. [6,11]

Perhaps the basis for the discount rate in the MOU is the weighted average cost of capital (WACC) of HQ. Often rates are derived on the basis of the combined weighted cost of debt and equity in the capital structure of a business. This reflects the weighted average of the interest cost on the long-term debt and the cost of the equity invested. The weighting is based on the percentage of debt and the percentage of equity that comprises the capital structure of the business.

If one analyzes HQ's 2024 balance sheet as reported in its public annual report, the company had a total of \$60.4 billion of long-term debt at an average interest cost of 4.5%. In addition, it had \$28.7 billion of equity at a stated rate of return on equity of 9.6%. The weighted average cost of the combined capital structure of debt and equity is therefore 6.17% as reflected in the 2024 annual report. This WACC is not necessarily the long-term strategic policy target of HQ. In any case, the analysis suggests that the discount rate agreed in the MOU of 5.822% is very similar to the average rate based on the 2024 analysis. The discount rate in the MOU may indeed be based on the long-term WACC of HQ.[12]

A similar analysis of HQ's WACC for the year 2020 would calculate to be 5.96%. This further adds evidence that the discount rate stated in the MOU is reflective of the targeted long-term capital structure of HQ.

Note: This leads to an important task for the IRC - to determine the appropriateness and reasonableness of using such a low discount rate to establish the present value of 51-year revenue payments from the sale of energy to HQ.

Inflation

Inflation has already been discussed, chiefly in relation to the discount rate. Inflation is a key economic metric when considering changes in prices over time. The MOU and its proponents state that 2% inflation on pricing is representative of the expectation for price increases over the next five decades. It is the foundation of price change throughout the MOU. NLH describes the value of the MOU in the context that the average price for energy from the existing CF plant is about 30 times the current fixed price of 0.2 cents/kWh. The "average effective price" quoted for the energy is 5.9 cents/kWh. It is derived by assuming that energy is sold at the start of the term at 5.9 cents/kWh and inflated at 2% annually over the 51-year term. Then the figure is discounted by the agreed discount rate (5.822%) in order to arrive at a present value of \$33.8 billion, the agreed present value of the energy to be sold to HQ. NLH does not claim that the 5.9

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cents/kWh is the present value because revenues from that price increased by 2% yearly to 2075 reach \$33.8 billion only when discounted at 5.822%. [4,5]

As outlined above, the discount rate assumed in the MOU is an unreasonably low rate and, when one adjusts the discount rate appropriately, the present value declines markedly. For example, let's assume a discount rate of 10%. This rate reduces the present value of the HQ nominal payments for energy to \$14.3 billion. The same discount rate implies that the so-called "effective price" for energy will be much lower than the 5.9 cents/kWh claimed by NLH.

The suggestion that the average price for existing CF energy under the MOU is 5.9 cents/kWh is purely a theoretical mathematical exercise designed to misrepresent the real pricing structure under the MOU. The counterfactual price of 5.9 cents/kWh does not exist in the MOU. The most reasonable conclusion to be drawn is that the figure serves no other purpose than to provide a means for NLH to represent MOU pricing as 30 times current pricing. It is a statement absent a foundation of fact. The assumption that price inflation of 2% reflects an appropriate basis to convert the present value of the MOU to a unit average price of 5.9 cents is unwarranted and misleading; that is because it is dependent on many factors including an unreasonably low discount rate. Furthermore, the average general inflation over the past 56 years, a timeframe similar to the term agreed in the MOU, was 3.9%.

There is no reasonable basis to assume that energy pricing for the next fifty years is going to be about half the general inflation rate for the previous period of more than five decades. A reasonable estimate of inflation should reflect the average price of energy, which includes the cost of electricity. The average energy inflation rate was 4.9% as compared to general inflation of 3.9%, since 1969.[14] The fact is that energy inflation is, on average, much higher and much more volatile. It has experienced very wide swings, both increases (inflationary) and decreases (deflationary) over the past decades. Energy is very much tied to the price of fossil fuels – oil, gas, and coal as they remain the primary sources of electricity throughout North America and the world.

The MOU, as it is currently constructed, ignores a most prescient challenge. It is that demand for electricity is increasing rapidly due to technological change, primarily the enhanced use of computing technology and by increasing electrification which is policy driven by the need to address climate change. This trend is only gathering momentum, the evidence suggesting that the global economy is at only an early stage of transition to electrification. Therefore, real price changes, due to increased demand for electricity, are much more likely to enhance energy inflation beyond its historical trend.

As an example, the demand for electricity in the United States during this past year has resulted in average electricity costs rising by 6.7%.[15] In recent research J.P. Morgan stated as follows: "data centers could consume more than 9% of total U.S. electricity by 2030, up from just 4% today." It further highlighted – "that while electricity demand is surging due to AI and electrification, the existing power generation and transmission infrastructure may not be

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sufficient to meet this new demand, potentially making reliable electricity a scarce and strategic resource.” [16] These statements reflect the current trend and longer-term outlook for energy in North America. They also demonstrate the need to use reasonable estimates of energy price changes when considering long-term investments as are contemplated by the MOU i.e. fixed price, fifty-year plus term agreements.

An analysis solely for demonstration of the significant effect of inflation on pricing is to use the actual rate of 4.9% in the representation made by NLH to arrive at the 5.9 cent/kWh price. If one substitutes the actual average inflation rate of 4.9% for the 2% assumed by NLH then the average effective price falls from 5.9 cents/kWh to 3.3 cents/kWh. This is a decline of 44% and it demonstrates how sensitive pricing is to inflation change over a long period such as 51 years. In addition, as discussed earlier, the discount rate in the MOU is also unreasonably low. Both the real discount rate and energy inflation adjusted price forecasts require adjustment in the MOU to indicate a reasonable adjusted real price for CF energy.

A more appropriate forecast for inflation would have recognized a period of relatively high inflationary change over the first 25 years of the MOU to reflect the transitional period of electrification of the industry consistent with climate goals to 2050 (target date for net-zero) and a lower general rate of inflation beyond 2050.

The reality, however, is that the entire foundation for the assumption that electricity inflation will be 2% going forward is unfounded. Governments throughout the world, including Canada, are setting policies to increase demand for electrification of society. Year after year, international policy objectives are assessed to achieve net zero CO₂ emissions within the coming decades. These initiatives are adding the cost of carbon to industry and consumers, motivating adaptation which is increasing electricity demand and prices.

Renewable sources of electricity are growing and significant new investments are being made to upgrade the electricity grid and its transmission capabilities. Those investments are compounding the cost of electrical generation and adding to the cost of maintaining and operating the entire electrical system. This is a trend that is not likely to abate in the short to medium term given the climate change crises that the world faces. The assumption that electricity pricing can be controlled within the 2% general inflation target of the Bank of Canada, the case put forward by NLH in the MOU, simply does not reflect current economic realities. In short, the facts dictate the need for realistic global assumptions in any forecast for electricity pricing.

Other Risk Factors

While price inflation is the biggest risk to realizing benefits from the existing Churchill Falls power plant, there being no provision in the MOU to directly tie changes in the market to pricing on a timely and consistent basis, it is not the only one. Alone, however, the risk of inflation provides confirmation that the term of the MOU renewal is unreasonably long. Indeed, its similarity with the 1969 agreement is a reminder of how, in the absence of conditions that

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facilitate the opportunity for business and markets conditions to adapt over time, a lopsided outcome over a 51-year duration is a virtual certainty.

In the same context, the MOU fails to reflect other foundational issues bearing on the MOU's essentially ill-advised construction. The CF plant is majority owned by GNL and the plant has no debt. The assets have been fully paid for since 2016. Yet the MOU commits 74% of the total energy produced over the 51-year term to be sold to HQ at low prices. The initial term of the '69 contract was forty years, the period by which the substantial debt incurred to finance the development was retired. Now, without any debt, it is illogical to have such a long term applied to any renewal agreement. Given the high dependence on one customer, business logic dictates that a much shorter term (10-20 years) for any price agreement would be in order. Even then, under the current energy trends noted there should be provisions for contract renewal due to unforeseen changes in market conditions. The most reasonable structure would be to review and renew pricing on a five-year term similar to that proposed to link the rate of return on new developments to five-year reviews based on trends in the Bank of Canada long-term bond yield.

Reliance on a single external customer means higher risk for CF(L)Co. On this basis a priority for the GNL ought to have been diversification of its customer base for the sale of energy from the CF plant. Greater customer access would mean more competition for supply and the prospect of higher pricing value over time. Given the long history selling only to one customer, HQ, at extremely low value relative to real market value, one would expect that any renewal would have prioritized a shift away from this high-risk, low-return business contract model.

In fact, long term energy contracts range in length up to 25 years. Contracts of fifty years are non-existent, particularly when the generating assets are debt free. The MOU term for the renewal contract of 51-years has no basis from any business or risk perspective. A long-term energy supply agreement for CF(L)Co, or another energy company in a similar financial position to CF(L)Co would likely not extend beyond 25 years. Even a long-term agreement, however, would have secured a much higher value price for a very large quantity of supply. In a rapidly changing market environment, such as exists and will likely prevail over the coming decade or more, suppliers will be seeking much shorter-term contracts than those agreed in the MOU.

In addition, longer-term contracts generally obtain a premium price for the power contracted. Reflected in the premium, the customer receives the certainty of supply, mitigating the risk of shortages, price volatility, and supply disruptions. When one considers the 51-year term of the MOU for the sale of CF existing energy, none of this premium is evident in the price secured for either CF energy or capacity. The low value and low pricing point relative to these other factors clearly show why the term is of unreasonable length. This point will be addressed again as part of the discussion about whether HQ indeed gave up its rights and benefits for the remaining period of the existing 1969 contract or whether these benefits are embedded in the MOU.

Linked closely to the proposed length of term are risks associated with other MOU provisions that include no flexibility for renegotiation or any price adjustment formula. The pace of

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technological change is ever advancing, and this adds to the dynamic nature of business. This ever-changing world requires business to have flexibility to adapt. It is impossible to foresee or predict the nature of any business over five decades. Therefore, good contracts reflect this reality; they contain provisions for flexibility, for re-negotiation, enabling an ability to adapt. One thing is certain; it is impossible to accurately predict the market value of any commodity over a span of fifty plus years.

Energy is a volatile commodity; it is often delivered from sources both dispatchable and non-firm, from disparate locations and at variable costs. An important feature of hydroelectricity development is that it typically involves a huge initial capital investment for which stable customer contracts are required to secure financing. That is the case for the proposed new Gull Island development discussed later in this submission. However, that investment imperative does not apply to the existing energy at CF; nor does it apply to the upgrade of the CF plant envisioned in the MOU. This is a good example of how the bundling of these projects together detracts from the value of the existing plant and effectively cross subsidizes new development projects which should stand on their own merits, their own business case.

The debt-free status of the existing CF plant eschews any requirement for long-term contracts. Indeed, CF(L)Co's financial position and the business attributes that describe energy pricing in today's energy market dictate that supply contracts should be short-term. Through shorter-term supply contracts, not long-term as agreed in the MOU, the risks of not adapting to market dynamics can be significantly mitigated.

Benefits of Contract Renewal

Prior to the 2025 election, NLH and GNL's attempts to promote the MOU via the media and paid advertisements on both traditional and social media were intense. The campaign to achieve acceptance of the MOU boasted that it facilitated an outcome in which a value equal to 30 times the current price of the energy for CF(L)Co was obtained. It has, however, been shown that this claim is highly misleading as the metric on which it was based was decidedly inappropriate. NLH's narrative of an average price of 5.9 cents/kWh over 51 years was compared with current pricing in export markets for HQ (10-15 cents).[17] In addition, the real present value was recalculated by several analysts as 2.5-2.7 cents. Finding the claim of 5.9 cents/kWh unsustainable, NLH's MOU promotion campaign shifted focus. Its new emphasis in the fall of 2025 attempted to quantify the MOU's value to the public treasury as the sum of \$227 billion (nominal dollar) ostensibly to be realized over the 51-year duration of the deal.[5]

The campaign to convince the NL public of the MOU's merits also focused on the claim, that the NL treasury would receive \$17 billion, or on average a billion a year during the period 2025-2041, the remaining term of the 1969 power contract. Alongside this claim was the promise by both NLH and GNL of thousands of jobs. NLH officials and politicians failed to explain the MOU in a manner that was either coherent or that contained language the general public could be expected to comprehend. Perhaps most pronounced throughout NLH's marketing effort was the

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inability of its officials to explain the MOU's pricing mechanism, particularly as it relates to the existing CF energy.

As discussed earlier the 5.9 cents/kWh, the so-called "effective average price", is not reflective of what has been agreed. Behind the pricing structure is a multitude of assumptions regarding many different blocks of energy with differing price terms, and increases that are tied to various indices that are only conceptual. The stated average price is also based on the unrealistic assumption that energy inflation will be 2% over the next fifty years. NLH officials claimed that the pricing was tied to market change yet they could not explain how that is the case or they were not transparent about how the pricing system was actually calculated.

Without transparency one can only comment on the contract's benefits using the limited information available. Hence, the approach in this submission will be to use the information provided, recognizing its limitations but pointing out the shortcomings and risks that clearly arise from what is known.

To begin to quantify the benefit to the NL treasury we have to comment on the structure of ownership. CF(L)Co is the owner of the existing CF assets. CF(L)Co is owned by NLH (65.8%) and HQ (34.2%). Therefore, all revenues and any profits from which dividends may arise will flow directly through and from CF(L)Co, the owner of CF assets. It is important to note that the NL treasury will have no direct access to the funds of CF(L)Co. There are however, certain costs to CF(L)Co such as water rentals and royalties that will result in direct payments to the NL treasury. These payments, while material, are much lower in relative terms to the potential sales revenues and profits that will accrue to CF(L)Co. Any dividends from CF(L)Co will flow to NLH and HQ as owners.

Water rentals and royalties

The current structure of royalty payments and water lease payments from CF(L)Co to the GNL is based upon legislation dated 1961. The royalty rate is \$0.50 per horsepower year generated (one horsepower year is equivalent to 6535 kWh).[18] Therefore, the annual revenue to the NL treasury from the royalty is approximately \$2.56 million based on 33.5 terawatt hours of energy/year from the existing CF plant. This is the equivalent of 3.8% of the price for the energy which is one-fifth of a cent per kWh (or 0.0000765 cents/kWh). This is a minuscule amount to charge as a royalty for such an economically valuable resource. The Churchill Falls energy price today is almost free at 0.2 cents/kWh, and the royalty in quantifiable terms it is so small as to be irrelevant.

The water rental in the 1961 legislation governing the water lease that provides CF(L)Co with exclusive rights for 99 years is stated as 8% of annual net profits of the corporation. The water rentals have provided the NL treasury on average about \$6 million annually over the past four years. On a unit of energy produced basis the water rental is equivalent to \$0.000182 /kWh. A very low return for the resource. However, 8% of net profits has the opportunity to generate

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significant revenues for the NL treasury. For example, if CF energy was selling for its full market value (assuming its value is the lowest replacement cost cited by HQ at 16 cents/kWh), the annual profits of CF(L)Co would rise to approximately \$5.25 billion per year and the water rental at 8% would result in a payment direct to the NL treasury of \$420 million. [18,19]

GNL attempted to change the CF(L)Co lease through court challenges over the years. However, each attempt was rejected by the Supreme Court of Canada as a violation of the contract rights held by HQ under the 1969 agreement with CF(L)Co.

The low value water rental and royalty regime is a significant weakness of the MOU. The MOU is renewing an outdated low value resource rent for a very valuable asset and extending that same arrangement for a further period of 34 years to 2075. In effect, the term of the water rent and royalty arrangement will be 106 years by the end of the MOU extension.

The weakness of the rental and royalty regime is that the tax rates are fixed, and the treasury depends on common and preferred dividends from CF(L)Co profits to get its resource rents. The profits are shared with HQ as 34.2% owner of CF(L)Co. However, if the treasury were to update the amounts charged for water access and tie the rates to the units of energy produced and the inherent resource market value, then the NL treasury would be extracting its resource value directly without sharing them with HQ. The payments would come direct to the treasury from CF(L)Co and these rents would be an expense of CF(L)Co, thereby reducing the profits that the company earns. As it stands the treasury depends indirectly on a share of profits from CF(L)Co through dividend income. Consequently, any renegotiation of the 1969 contract, prior to or at contract expiry, should include statutory changes to the water royalty and rental arrangements for the existing CF generation as well as for any new development projects.

Using a website for its MOU marketing campaign in pursuit of public support called *Our Chapter*, GNL and NLH released a forecast of financial benefits from the MOU. They forecast that water rentals and royalties will bring a benefit to the NL treasury of \$12 billion (nominal value) over the 51-year term of the MOU. Already stated, the royalty component of this number is not material (approximately \$0.13 billion nominal value). On this basis it can be determined that the \$12 billion stated is almost entirely derived from the water rental rate of 8% of net profits. Using the same figure, we can infer that net profits over the 51 years are \$150 billion (8% of \$150 billion = \$12 billion). Yet the same benefit chart that portrays the \$12 billion benefit from water rental and royalties states that net profits from the existing CF plant are forecast to be \$236 billion (nominal value) over the 51-year term of the MOU. Clearly, this is a significant mistake or misrepresentation. Either the net profits are grossly overstated by some \$86 billion, or else the amount attributed to water rental and royalty is grossly understated.[5]

Based on a cursory analysis it is evident that the net profits forecast is a closer estimate. Therefore, one has to conclude, based on the MOU known facts, that the value of the water rents and royalties forecast should be much higher than the \$12 billion stated. Alternatively, there may be underlying reasons why the water rental and royalties maybe lower as very limited

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information has been released to inform the public and much of what has been released is in error or misrepresented. NLH and former GNL may have agreed through the MOU to change the calculation of the water rental in favour of HQ and not advised the public. These errors or misrepresentations need careful review by the IRC. And they will be discussed at length as each issue and component of the MOU is addressed throughout this submission.

Operations/Maintenance Expenses

The operating expenses of CF(L)Co are currently approximately \$115 million annually based on its recent annual reports. On a per kWh basis, these costs represent about one-third of a cent. This compares to the fixed rate for energy sales under the 1969 contract, which is at one fifth of a cent, or 0.2 cents per kWh. Operating costs that are actually higher than the revenues received by CF(L)Co on a per kWh unit basis characterized the predicament that forced the company in the late 1990's to make new agreements with HQ and raise enough revenue to pay the operating costs.

GWAC was negotiated to provide additional revenue that would enable the corporation to remain economically viable and pay its ongoing operating costs. The GWAC currently provides over \$38 million annually in additional revenues from HQ and is designed to marginally increase by one percent annually. This payment when combined with the low fixed revenue on a unit basis from the 1969 contract (the renewal from 2016 to 2041) is designed to keep the company solvent until the contract expires in 2041.

Over the 51-year life of the proposed MOU agreement it is estimated that the costs to operate and maintain the existing CF plant will be \$12 billion (nominal value). On average, this is \$235 million per year. The estimate reflects current costs with built in inflation of about three percent annually over the 51-year life of the MOU which appears as a reasonable estimate of costs over the period.[5]

Revenues

The forecast revenues from the sale of existing CF energy outlined by GNL and NLH in *Our Chapter*, are \$195 billion and \$65 billion to HQ and NLH, respectively. The total forecast revenue from the existing plant is depicted to be \$260 billion (\$195 billion HQ plus \$65 billion NLH). This is a gross revenue forecast which includes net profits for CF(L)Co, water rental revenues, preferred dividends, and profits available for distribution to the shareholders as common and preferred dividends, as the *Our Chapter* site records.[5]

Upon review the \$260 billion revenue forecast is significantly under-estimated based on MOU stated nominal prices. The annual energy produced for sale to the off-takers (HQ and NLH) by the existing CF plant is forecast to be approximately 33.5 terawatts. This is a reasonable estimate given the capacity and long history of energy production at CF. However, when one applies this annual energy production to the stated annual nominal prices the total nominal revenue value is

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\$278 billion, \$18 billion higher than the revenue stated in the forecast published on *Our Chapter*.^[5] This is a significant error, or a misrepresentation.

Closer analysis of the \$18 billion revenue difference indicates that the error/misrepresentation results from the exclusion of the expired 250 MW blocks at years 2051 and 2061. The revenue that CF(L)Co would realize from the sale of this energy is not included in the total revenue forecast. The MOU clause 2.1 (d) states as follows:

The Parties agree that, with respect to the two 250 MW volume blocks of CF generation to be contracted by HQ whose terms will expire on December 31, 2050 and December 31, 2060, respectively: (i) upon the expiration of each such block, NLH shall have the option to purchase all or a portion of the relevant block for use in NL at a price determined at the time of the exercise of such option based on pricing terms using commercially reasonable market principles to be agreed in the Definitive Agreements; and (ii) if NLH does not exercise such option, HQ will have a right of first refusal, on terms to be agreed in the Definitive Agreements, to purchase all or a portion of any remaining volumes of the relevant block.^[4]

These clauses imply that NLH will have the option to purchase the energy at an agreed price to be determined for use in the Province. And, in the event that NLH chooses not to use the energy or any portion thereof, then the energy will be sold to HQ. It is difficult to envision that HQ would agree that the energy available under the expiry blocks would be available for sale to NLH by CF(L)Co at prices below those that apply to HQ. The fact that HQ would earn significant dividends on this energy from their 34.2% ownership in CF(L)Co makes such a prospect unlikely. Such dividend value would be surely part of HQ's anticipated subsidy that it has publicly acknowledged is part of its net energy cost for CF energy under the MOU. Therefore, it is unreasonable that the revenue forecasts by NLH and GNL would exclude the value of this energy. If the intent of the parties was that this energy would be available to NLH preferentially at lower prices, then surely this would have been part of the extensive information campaign launched by NLH and GNL to convince the public of the benefits of the MOU.

The error or misrepresentation in the gross revenue forecast is again an issue that the IRC will need to clarify as it has significant effects on the water rentals, net profits, and dividends that would accrue to the beneficiaries.

Net Profits

The net profits forecast and released publicly by GNL/NLH are estimated at \$236 billion derived from the existing CF plant. The net profits estimate is clearly in error because, as stated earlier, the revenues forecast is underestimated by \$18 billion. In addition, the water rental and royalties are underestimated, if we assume they are unchanged from the historical amounts. Consequently, the net profits are also in error.^[5]

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Dividends

The dividends forecast in the data provided on the *Our Chapter* website are comprised of two amounts: preferred dividends of \$36 billion to NLH, and common dividends of \$201 billion (\$69 billion to HQ and \$132 billion to NLH).[5]

The preferred dividends result from the one preferred share owned by NLH in CF(L)Co. The payment represents a dividend in lieu of provincial tax revenue to GNL (it represents approximately 15% of net profits). The \$36 billion estimate for preferred dividends does indeed represent 15% of the forecast net profits of \$236 billion. As discussed earlier this net profit forecast contains errors due to the underestimation of revenues and water rental and royalties. Therefore, the estimate of dividends should be adjusted to reflect the value of net profits. Common and preferred dividends paid to NLH totalling \$168 billion amount to 71.2% of net profits, slightly higher than the 65.8% in dividends which would apply based only of common dividends. [5]

The common dividends comprise the entire balance of the estimated net profits in the amount of \$201 billion. By its nature this assumes that there is zero cash requirement from CF(L)Co over the entire 51- year life of the MOU to fund any capital expenditures. This is an unreasonable assumption as there will be funds required to upgrade or maintain the assets at CF over that long period of time. In addition, the common and preferred dividend estimates would need to be adjusted to reflect revised estimates of net profits that account for the errors noted earlier, along with funds required for sustaining capital.[5]

Forecast Benefit to NL Treasury

The total forecast NL Treasury benefit from the existing CF plant under the MOU as reported by NLH/GNL is \$179 billion. It is comprised of dividends of \$168 billion and water rentals of \$12 billion. As stated earlier there are a number of errors in the calculation of these numbers that are significant. Of course, all the amounts are stated in nominal dollars over the 51-years and, given that much of that value is in the period 2050 and beyond, the real value is grossly misrepresented. The true value of the benefits in the MOU can only be shown in real dollar values i.e. present value. All the forecasts of net profits, water rentals, dividends should be shown in real dollars for proper evaluation. Of course, the longer duration that a nominal dollar benefit is derived has consequences as well i.e. the real value lowered due to the discounted value of money over time.[5]

The MOU only has one stated value in present day terms from the existing CF operation and that is the value of the energy being sold to HQ - \$33.8 billion.[4] None of the values stated by GNL and NLH are present valued. Use of the nominal value can only serve to exaggerate the MOU's real benefits to the NL public. Nominal values always draw attention to a high dollar amount that in real terms is not nearly as significant.

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Hence, when one expresses the values in present day terms as shown below, we get a true picture of what the real forecast means. NLH's share of the present value of the forecast total revenue from HQ for existing CF energy is \$24.1 billion (\$33.8 Billion X 71.2% representing NLH's share of common and preferred dividends). The \$24.1 billion is derived from the published \$195 billion in nominal which is \$33.8 billion in present value. This clearly shows that the present values are but a fraction of the nominal values, especially when the nominal values are over such a long period of time.

The most significant misrepresentation of the MOU's benefits to the GNL relates to the claim that all of the nominal price change for the existing energy to which NLH has access over the life of the 51-year term is included. This contradicts what GNL/NLH have communicated to the ratepayers in Labrador. NLH has included \$65 billion in nominal revenues in the gross revenue forecast as a benefit to flow to the NL treasury. The figure represents the increased price for existing energy that NLH has to pay CF(L)Co (the price it has to pay to match what HQ is committed to pay). While from CF(L)Co's perspective this will be additional revenue, it will not be a benefit to NLH or to GNL unless NLH passes on the entire cost increase of the energy year to year to the ratepayers and energy users in Labrador.[5]

When asked about this issue NLH and GNL have consistently stated that there is no intention to pass on the higher energy costs to the ratepayers in Labrador. So, is this an intentional misrepresentation by NLH and GNL? On the one hand they are stating that the higher energy costs will not be borne by ratepayers in Labrador while also stating that there will be \$65 billion (nominal dollars) of value paid to CF(L)Co. It cannot be both. Either the facts are misrepresented to ratepayers or the stated benefits are grossly overstated. If it is NLH's intent to remit their share of net profits from the \$65 billion to GNL, then it would be up to GNL to reimburse ratepayers for the higher energy rates charged by NLH. Even under these circumstances the NL treasury cannot realize the net benefits claimed under the MOU.[5]

Further financial analysis of the benefits to GNL for the period to contract expiry in 2041 reveal the same misrepresentation. GNL and NLH have maintained that the MOU will provide the NL treasury with an average one billion dollars (nominal) of benefit over the next 17 years. This amount of cashflow to NL cannot be achieved at the prices stated in the MOU unless NLH passes on the new MOU energy pricing directly to Labrador ratepayers. CF(L)Co's total nominal forecast revenues from HQ to 2041 are \$19.2 billion. NLH's forecast payments over the same period are \$5.1 billion. On this basis total revenues due CF(L)Co amount to \$24.3 billion. From the same revenue CF(L)Co has to pay operating costs, estimated as \$2.4 billion. This reduces operating profits to \$21.9 billion of which NLH is entitled to its 65.8% after preferred dividends are paid. The preferred dividends are equivalent to 15% of net profits, or \$3.3 billion. The common dividends amount to approximately \$12.2 billion and the remaining cashflow would be derived from royalties and water rentals estimated to be \$1.8 billion. This analysis leaves \$17.3 billion as the total funds due to NLH and GNL in nominal terms.[5]

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On the other hand, if the NL treasury realized the benefit by passing on the price increases to Labrador ratepayers, then the present value of the stream of funds over the next 17 years to 2041 would provide a present value (at the stated MOU discount rate) of \$9.5 billion, or on average a value of \$560 million per annum – not the \$1 billion annually that GNL/NLH claims.

An alternative explanation for the claimed \$17 billion benefit to the NL treasury in the period to 2041 may be that the entities have included \$4.8 billion of potential funding that is conditional on HQ's decision to proceed with new energy developments. It appears that GNL/NLH are including these proposed developments as certainties and thus claiming these forecast benefits. Only in this way can the unwarranted conclusion that the NL treasury will realize \$227 billion from the MOU be calculated. If there is an alternative explanation it is not apparent.[5]

Assuming that the proposed new developments underpin the claims for \$17 billion in benefits to 2041, then these forecasts are equally misleading and would be misrepresentations. First the funds associated with the new developments do not flow to the NL treasury. Instead, the revenues flow directly to NLH to fund the new joint-venture company that will in turn fund the investments required to finance the projects. They are not framed or intended to fund the NL treasury.

If the alternative is intended, such an outcome requires the approval of HQ. NLH and GNL will not have any decision-making authority regarding these funds. Indeed, the only portion of the \$4.8 billion of potential payments available under MOU Schedule H is the \$1.4 billion payable from 2025-2027. Under the MOU the payments are unconditional and have specific reference to the exclusive option provided to HQ to control any potential future development of the Gull Island site. To the extent NLH and GNL have framed these funds as payments from HQ that will benefit the NL treasury, this is simply inaccurate and misleading. Notably, too, those funds are described by GNL as available to fund public expenditures in health and other public services. Can the IRC show how, based on the MOU, this is in any way a possibility? And, can the IRC clarify the circumstances in the MOU that surrounds these funds and the former government's claims? [5,20]

HQ Benefits

The benefits to HQ from the renewal of the existing CF energy are significant. First and foremost, HQ is awarded the right to purchase renewable, secure base load, highly dispatchable, energy and capacity from CF at rates well below market value.

The first announcement of the MOU led to an interesting interview exchange between a reporter for Radio-Canada and HQ CEO Michael Sabia. The interview is available on YouTube <https://www.youtube.com/watch?v=THmrumORmII>. [21]

The reporter starts by asking Mr. Sabia why HQ would open the 1969 contract and pay more for energy when HQ was guaranteed the energy until 2041 at a fixed price of 0.2 cents/kWh. Mr.

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Sabia responds by stating that there are several reasons (quotes are translated from the original french interview):

- with a price of 4 cents for existing CF energy from 2025 until 2075 and when combined with new energy from Gull Island and CF2, HQ arrives at a price of roughly 6 cents/kWh. “Therefore this award does not exist for renewable energy in North America. That does not exist.”
- it gives HQ the opportunity to start planning for Gull Island, CF2, which is important because HQ needs that power;
- “7,000MW is gigantic. Imagine, for 50 years, 7200 megawatts for 6 cents per kilowatt hour, which is, an extremely attractive price.”; and
- “At a remarkable price. And the remarkable price is so important because it is what keeps our rates low for residential, commercial and industrial use and therefore, indirectly, it is something that maintains Quebec’s competitive position in the world.” [21]

The Radio Canada reporter further inquires as to the rationale for the reopening of the 1969 contract and Mr. Sabia acknowledges that from a GNL perspective they wanted a new contract and money now. From Quebec’s perspective he states as follows: “Here we have so many values, essentially a huge reservoir of values in terms of price, in terms of volume.”[21]

Later in the interview Mr. Sabia is asked about what would happen without the deal with NL and he states: “The key to this agreement is that our alternative costs approximately 16 cents per kilowatt-hour. This deal is worth six cents. This therefore represents a reduction well over 50%. And so that’s why this agreement is so advantageous for Hydro-Quebec ...”.[21]

The interview reveals concisely and clearly the benefits for HQ. The four-cent price for existing CF energy is due to the fact that HQ owns 34.2% of CF and HQ intends to use its dividends from CF(L)Co to reduce its energy price to a net four cents/kWh. When it adds the costs of Gull Island energy (estimated at 11 cents/kWh) and its costs for CF2, HQ will achieve its stated 7200MW for an average price of 6 cents. This is the rationale for the statement that the price is “remarkable” for renewable energy and the rationale for why such a low price does not exist in North America.

The most revealing part of the interview is when Mr. Sabia stated [the former] GNL wanted a new agreement and money now. In order for GNL to get money now, it agreed to give HQ a long-term agreement for CF energy where no risk and no debt exist, with an assured supply at a very low price now and into the future until 2075. In effect, the former GNL proposed to borrow against the future value of the CF.

Mr. Sabia further acknowledged that the only relevant economic factor is HQ’s alternative to CF and, said in present value terms it is approximately 16 cents.[21]

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Under the MOU HQ secured energy at 6 cents for 7200MW for 51 years. This is a price much more than 50% below the alternative cost. The MOU is very advantageous to HQ and very unfavourable for NLH/GNL. HQ is clearly the primary beneficiary of existing CF energy. The economic analysis has to compare the present value of the existing CF energy to the alternative which is as stated 16 cents. This comparison demonstrates that the majority of the MOU economic benefits accrue to HQ.

CF Replacement Cost for HQ

Replacement of CF energy by HQ would pose a significant challenge. The existing plant produces about 33.5 terawatt-hours (TWh) of energy annually. It has a huge capacity and is the third largest source of electricity in Canada. In addition, other unique and beneficial features of CF power are:

- it has an enormous reservoir that can naturally store huge volumes of energy;
- it is an extremely cheap source of power (less than a third of a cent/kWh);
- it has hydraulic head of over 1000 feet making it highly efficient (more efficient than any other hydro facility in Canada);
- its energy is dispatchable on demand;
- it is proven highly reliable;
- it is renewable; and
- it is climate friendly.

This combination of favourable attributes makes it practically irreplaceable in the world today. While the volume of energy could be replaced, certainly at much higher cost, CF firm energy and its capacity, given its many attributes, are irreplaceable.

Wind and solar energy might be cheaper from a replacement cost perspective. However, both these sources are unreliable, non-dispatchable and require backup. CF represents 15% of the energy supplied annually to the HQ network; it is base load energy required for peak demand during winter. When one considers replacement there are really only a couple of alternatives, nuclear energy or fossil fuel energy. Nuclear energy has some of the same attributes as CF but it has significant disadvantages. It has much higher costs and represents significant environmental risk. While nuclear energy has proven to be safe (Ontario is a prime example) there have been several disasters worldwide with nuclear plants.

Nuclear energy construction in Quebec for the purpose of replacing the existing CF plant would be a massive undertaking. Currently, Ontario Power Generation is expanding its nuclear energy capacity by refurbishing the old Pickering nuclear plant and building new small mobile reactors (SMR) to be placed at the nearby Darlington nuclear station. The four new SMRs are 300MW each and the total cost for the 1200MW project is estimated to be \$21 billion. This is less than a quarter of the capacity and energy at CF. A large nuclear plant of the capacity of CF has not been constructed in the western hemisphere in decades. The newest nuclear plant (2224MW) recently

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completed in the USA cost US\$36 billion. In practical terms, the cost to replace CF energy with nuclear energy would be in the range of \$85-100 billion. Mr. Sabia's comparison of 16 cents replacement cost is the equivalent of \$92 billion based on the MOU discount rate of 5.822%. [22,23]

The challenge with nuclear power plants is that they are highly technical and regulatory/safety standards are onerous. They are prone to long construction timeframes, high labour costs for highly skilled tradespeople and engineers, and significant cost overruns. This is a particularly high risk for a jurisdiction like Quebec that has little to no recent experience in the construction of nuclear generation. HQ would be competing with three large ongoing construction projects in Ontario for skills associated with nuclear energy. Replacement costs with nuclear construction are very high risk. While the estimate of \$85-100 billion may appear reasonable the actual construction experience is that these projects routinely experience costly and significant overruns.

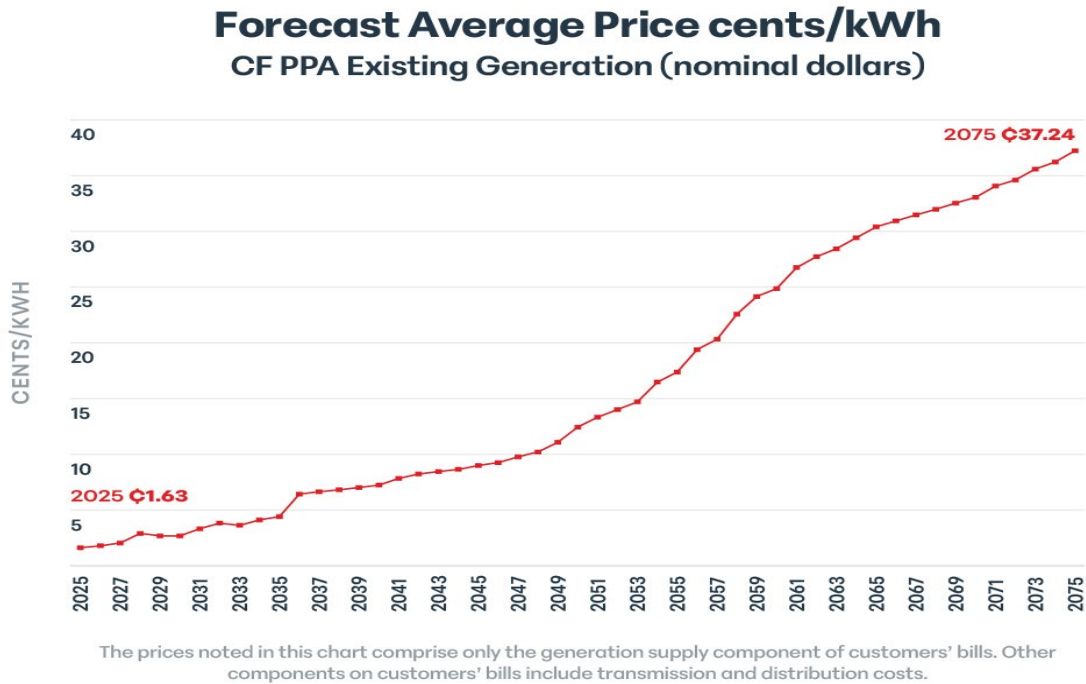
The other alternative for HQ is the construction of gas-fired generation. Large natural gas plants could replace the energy from CF at lower costs than nuclear energy depending on whether the gas infrastructure and fuel supply are readily available. While gas generation is cheaper to construct, the current high demand is causing prices to escalate sharply.[24] Currently, Quebec is heavily reliant on gas sourced through pipelines that originate from the USA. Therefore, long term reliability of supply is a concern particularly in the current political and economic climate. In addition, Quebec society has a strong sense of diminishing its carbon footprint and a move to utilize fossil fuels to replace 15% of its electrical energy needs is unlikely to be socially acceptable.

In summary, from a replacement cost perspective, the renewal of existing CF energy on a present value basis offers HQ a very low cost. Its 34.2% ownership in CF(L)Co reduces its cost of energy from CF to \$24 billion (\$33.8 billion X 71.2%). This compares very favourably with the alternative of \$92 billion (present value at 16 cents/kWh) given the reference by Mr. Sabia. In fact, the CF renewal replaces the energy at less than one-quarter the cost of the alternative. From NL's perspective it is difficult to understand how and why the CEO of NLH could say that this was the very best deal available. Obviously, the MOU provides HQ with a "remarkable" price, to quote M. Sabia, for energy that has attributes that are so much more valuable than any of the alternatives and at an unexplained highly discounted price. Why would the GNL agree to sell such valuable energy at such a low price? This is a central question for the IRC. [4,21]

MOU Pricing

The nominal price of energy from the existing CF plant is forecast to be 1.6 cents in 2025 rising to 37.2 cents in 2075, 51 years hence. This represents an average increase of 6.45%, year over year throughout the life of the proposed contract. This average price increase is what one would normally expect in a long-term forecast, a consistent change year to year over the term. But that is not what is in evidence in the MOU.

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The forecast nominal energy price changes erratically throughout much of the term particularly in the years to 2060. Post 2060, the price is forecast to increase on average by only 2.8%. In the period 2025 to 2060, the energy price is forecast to vary widely year to year. The range of annual change goes from -7.6% in 2029 to +45.8% in 2035. There is no real pattern of price change. Therefore, it is evident that there is no stable market-based index driving the annual pricing of energy. There are other pricing variables such as fixed year to year block prices over varying term lengths that affect average nominal prices. The underlying scheme supporting the price structure is, however, unexplained.[5]

The irregular pricing pattern was the first publicly written about on the *Uncle Gnarley Blog* by an anonymous source on January 6th, 2025. The article was titled “Hidden Financial Engineering in the MOU”. It concluded that the pricing scheme represented a loan to NLH from HQ for the period to 1969 contract expiry at August 31st, 2041. And that loan would be repaid with interest at a cost of 5.8% (the cost of capital in the MOU) in the 20-year period post 2041.[25]

The Uncle Gnarley January 6th post led to a further analysis posted on the same blog on January 18th, 2025, titled “MOU, the Mystery of 5.9 and the 1969 Contract”. In this article an analysis - that has been updated for this submission - was completed that demonstrates clearly the funds advanced by HQ in the period prior to the 1969 contract expiry (August 2041) are repaid in full through lower rates provided to HQ in the period post 2041 expiry. The analysis demonstrates that discounting the HQ nominal annual payments to CF(L)Co by 3% (the publicly stated threshold for annual inflation by HQ for its ratepayers), and then dividing the annual payments

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by the quantity of energy in each respective year, yields the inflation adjusted annual price that HQ pays. From this analysis a clear price pattern emerges over the MOU term. [26,27]

The inflation adjusted price (discounted at 3%) commences at 1.6 cents/kWh and increases somewhat in most years to 2035; remains constant at 4.6 cents/kWh from 2036-2040; remains constant at 4.9 cents/kWh for another six-year period from 2041-2046; then increases each year to reach their maximum level of 9.3 cents by 2065. During the final 10 years of the term there is a clear diversion as prices remain constant at that the same level when discounted at a lower inflation rate of 2% annually. (see Appendix I)

The price pattern clearly shows that HQ has maintained the value of the 1969 agreement and accommodated GNL's demand for upfront payments as described by Mr. Sabia in his Radio-Canada interview, until the 1969 agreement expiry in 2041. Post 2041 pricing is adjusted to fully recover the payments advanced prior to 2041. The MOU's pricing scheme is consistent with the objectives of HQ to maintain the 1969 contract value to its expiry and secure long-term energy from CF at preferential rates so as to maintain its stated economic and industrial strategy of providing ratepayers the lowest cost energy in North America. The IRC is asked to explain the assumptions that give rise to the irregularity of pricing in the MOU. And, to address the basis on which NLH/GNL agreed to continue the 1969 contract within the MOU, albeit in a manner that makes it difficult to discern. Was the pricing formula framed to garner public support for the MOU? Was former Premier Andrew Furey's public display of tearing up the 1969 contract in any way a true representation of the MOU, or a charade?

For emphasis, and to summarize the MOU's pricing in another way, HQ has achieved the maintenance of the egregious 1969 contract price structure. In addition, it has won renewal of existing CF energy at rates that:

- are not reflective of current price trends;
- do not link with the dynamics of real market change; and
- create a scheme in which HQ achieves significant price advantages over intervals in the 51-year term.

Block pricing mechanisms are at play that will achieve the pricing scheme depicted by the analysis. The CF renewal is complemented by the proposed new developments which also provide HQ with large volumes of new capacity and energy under very favourable cost-plus pricing terms. These new developments will be discussed in sections of this submission that follow.

The MOU's energy pricing mechanism has been framed in NL as a dynamic system based on future market trends for energy. The MOU references links to market pricing reflective of wholesale electricity market value in Québec, replacement costs in Québec, and wholesale electricity market value in northeast export markets. The MOU does not disclose how each one of the indices will affect and apply to various blocks of energy. Nor does it comment on how

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frequently block pricing will be subject to market price adjustments. Various energy blocks could have stable prices over relatively long periods within the 51-year term. Price adjustments may only change after long periods (20 years or more) and price changes may be subject to threshold percentage changes over a period of time to allow time to accommodate marked price change. [4,5]

Virtually no information is publicly disclosed to assess the adequacy or function of any pricing mechanism in the MOU. To the extent that pricing is tied to the wholesale market in Quebec, there is reason to be concerned. Quebec is a highly regulated monopolistic market. In 2024, HQ sold 192.3 terawatts of energy. The Quebec heritage pool (a large collection of 61 hydro electric generating plants) comprises 165 terawatts of this total energy, or about 85% of the total energy sold annually by HQ. The heritage pool of energy is regulated power with rates set by the Régie de l'énergie. The Quebec Régie sets rates based on five-year reviews. It was established in 1997. More than 25 years ago, it established a wholesale rate for energy in Quebec at 2.79 cents/kWh and in 2025 the Régie wholesale rate for heritage pool energy was reportedly 3.59 cents/kWh. The Quebec regulated wholesale rate includes the very low-cost energy from CF. CF energy comprises about 18% of the regulated heritage pool. [12,28]

Given the change in regulated wholesale energy pricing in Quebec since the establishment of the Régie, the annual rate of increase has been less than one percent. The 15 percent of wholesale energy outside the heritage pool is established by investor-owned utilities bidding in the wholesale market of Quebec. Therefore, it is fair to say that market dynamics in Quebec are very controlled and not representative of the real value of energy in North America. In addition, the index to wholesale energy pricing in Quebec is being lowered by the degree to which existing CF energy, priced at fixed rate of about 0.3 cents/kWh, is subsidizing the regulated wholesale rate that underpins the MOU pricing. This is an obvious pricing flaw in the MOU. The true effect of the MOU is that Quebec's price of CF energy is a circular argument whereby its low-cost energy structure is maintained for an additional 51-years.

Put another way, the inherent linkage through indexing of prices to an artificially monopolized wholesale market price in Quebec, is establishing the future energy price for CF(L)Co. It is maintaining a pricing system that unfairly values the commodity and robs NL of fair and reasonable revenue. Of course, given the priority of the former GNL for funds now and HQ's priority to retain its rights under the 1969 contract, both imperatives dictated that any pricing mechanism can only be a scheme divorced from real markets going forward. That is why the MOU is essentially an extension of the 1969 agreement. It is simply a continuation of the past, repackaged by its proponents and framed as a new partnership for the future.

We submit that market prices and a pricing mechanism that reflects the unique attributes of CF energy – capacity, reliability and dispatchability – must form the economic basis to establish future prices for existing CF energy. The indicator based on wholesale rates in Quebec, proposed in MOU Schedule F, should be rejected.

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Similarly, indices related to spot pricing and wholesale term pricing in New England markets are irrelevant to the future pricing of existing CF energy. The New England market is dominated by energy sourced from the burning of fossil fuels. Natural gas, coal and oil combine to comprise the majority of electrical energy generation supplied to New England markets. These sources are not comparative to existing CF energy. They have none of the attributes of CF energy and should not be utilized as an index to establish the future market price for CF energy.

The only comparative market pricing should be linkages to energy of the same or similar attributes to CF and be related to replacement costs in Quebec. Again, the indices noted in the MOU are irrelevant to establishing fair and reasonable market pricing for the renewal of existing CF energy. They should be rejected by the IRC as they are not comparative alternatives and not representative of the future market.[29]

The MOU repatriates some of CF's existing energy capacity for use in Labrador. Commencing in 2031 through 2035 NLH recaptures 605MW of power. In 2050 and 2060 CF(L)Co's commitment on two 250MW blocks expire and that energy is no longer available to HQ, if NLH chooses to use the energy in Labrador.[4]

Wheeling rights

The MOU possesses no provision that enables NLH to wheel energy through Quebec. This deficiency is a giant flaw in the MOU's construction. The inherent unfairness of the MOU exemplifies the fact that while HQ has wheeling access to export energy to the USA or Ontario it does not provide this access to NLH. The blocking of market access exclusively to Quebec has in the past forced NL energy to be sold in the monopolized Quebec market at very low rates. HQ exports much of that same energy to New England markets for extraordinarily high profits. In the most recent year, HQ achieved export sales for an average price exceeding 16 cents/kWh. The price at which the energy was acquired from CF(L)Co was a fixed price of 0.2cents/kWh. The export market price is over 80 times the price it pays to CF(L)Co. [17] The GNL should set as a condition precedent to negotiations with HQ a requirement that Quebec facilitate NL's sale of CF power to other customers for a market-based transmission fee as it applies to other customers on its network.

Considering, too, the history of Quebec's obstruction to Lower Churchill development since the 1969 Contract was signed, the NL public might have expected that any renewal of the agreement with HQ would address all power transmission impediments. That is to say that, under any new agreement with HQ, NLH would have the same rights as HQ to export energy and, having paid commercial market rates for transmission through the Quebec network, secured rights to sell its energy at market value. The MOU, however, prevents all such market access. Reinforcing the long-standing transmission impediment, the MOU is structured such that if any of the recaptured blocks of energy are in excess of NLH's domestic needs, the power must be sold exclusively to HQ at the rates prescribed in the MOU. In other words, if prevailing market prices are higher than those in the MOU (which will always be the case given the low rates that the MOU contains

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by design) then NLH must sell any export power exclusively to HQ at those same low rates. HQ receives all the upside of the real market value as it does today.[4]

Similarly, upon expiry of the two 250MW blocks in 2050 and 2060, while NLH will have the opportunity to gain some higher value the precise amount is detached from the price setting mechanism contained in the MOU. The MOU merely stipulates that there will be an agreed mechanism to establish prices for that energy. However, the MOU requires that if energy is not required for use in Labrador, NLH must give HQ the first option to acquire that energy at a price to be agreed, eliminating any potential gain for NLH. In other words, NLH remains captive to HQ at prescribed lower energy rates throughout the 51-year term of the MOU.[4]

THE CHURCHILL FALLS (LABRADOR) CORPORATION LIMITED (LEASE) ACT, 1961 Part 1, Section 2 (e), granted the Lessee, CF(L)Co, “the right to transmit throughout the Province any electric power generated as the result of the harnessing of the whole or any part of the Upper Hamilton and **to export from the Province** such power: Provided that upon the request of the Government consumers of electricity in the Province **shall be given priority** where it is feasible and economic to do so;” [18]

The MOU is not giving “priority” to “consumers of electricity in the Province when it places a cap of 1990MW on the amount of power from the existing plant. The statutory lease speaks to “priority” to local consumers, not a cap, not a fixed limit.[18]

The same Section of the 1961 Statutory Lease gives CF(L)Co the power to “export from the province” such power produced at Churchill Falls. The Statutory Lease did not contemplate that this right would be confined to HQ, as the only customer for power. Accordingly, GNL has perpetuated the monopoly position of HQ when a primary goal of any negotiation ought to have been to obtain access to their transmission lines. [18]

CF Renewal Term

Key factors that should influence the term of any new contract include an assessment of the resource, operational, market and financial risks associated with the contract. First, the resource risk on the existing CF energy plant is low. Climate change may occasionally affect the future levels of the water reservoir, cause some variation in the volume of energy output year to year but the catchment area of 72,000 square kilometers is huge.[1]

Second, the operational risks are extremely low. The CF plant has been operating for over five decades; it has been well maintained and has proven to be very reliable. It is the lowest cost energy in North America (virtually free) and it has no risk of cost escalation in the foreseeable future.

Third, the downside market risks, from a supplier’s price and value perspective, have never been better. Demand for electricity is dramatically increasing, and industry forecasts supply challenges over a prolonged period. Electrification of transportation and of industry generally are cited in

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addition to the demands of artificial intelligence technology, which continues to elude quantification. Burgeoning energy demand is certain to increase real prices. Underscoring the certainty of the forecast, too, many of the electrical grids of North America are old, need rebuilding, adding to the massive new investment required to meet the increasing demand. From a value perspective, CF existing energy has all the most highly valued attributes to meet market preferences over the short and long-term. These attributes have already been discussed in this submission but, in summary, the CF energy has the most valuable attributes that exist in the market today.

Finally, from a financial perspective the risk is extremely low. There is no debt on the existing CF plant. Its replacement value is extremely high. In practical terms the CF facilities are irreplaceable as the number of advantages attributable to existing CF power makes duplication of the energy source virtually impossible. In addition, as noted, the facilities have no requirement for extensive capital investment over the long-term.

In summary, the risks at CF from all perspectives clearly demonstrate that there is no reasonable basis for NL to facilitate a long-term supply contract with HQ for energy. Indeed, an abundance of caution demanded by massive forecast changes in the energy market confirms the necessity for shorter-term supply arrangements. Indeed, affirming this prudent approach the market environment for energy is likely to materially change year-to-year, making it difficult to predict pricing and value for energy for even short-term contracts. Accordingly, no basis exists for GNL to agree to a 51-year renewal term for existing CF energy. [15,16]

In this context, other terms of the MOU require the IRC's attention. The MOU's renewal term contains no exit provision and no provision to reopen the contract to deal with adverse or material changes. This was a serious weakness in the existing 1969 agreement. The same omissions in the MOU have perpetuated these flaws for another five decades.[4]

The fact that the MOU is a scheme designed to borrow from future generations of NL people has already been cited. The point, however, requires repetition. We conclude that the funds advanced during the 17- year period of the 1969 contract amount to an expensive loan to GNL, one that requires 20 years to repay, the terms to include an extension of 14 years. The MOU is essentially a continuation of the existing contract, extended to run until 2075. Accordingly, NLH negotiated no value from HQ. Rather, it saved Quebec the investment of tens of billions it would have needed to make for the replacement energy in the absence of CF energy.

Principal Beneficiary of CF Renewal

The chart below summarizes the key components of the MOU and identifies which of the parties achieved the most advantageous outcome:

Component	Outcome
Energy volume	HQ receives the vast majority of the energy – approximately 74%

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Average price	The “effective average price” agreed between the parties is said to be 5.9 cents/kWh. This average price is overstated given the low rate of inflation (2%) and the unreasonably low discount rate on which the price is based. When compared with replacement cost of 16 cents quoted by HQ the “effective average price” is about 37% of real replacement cost.[5]
Value	The present value of the energy being sold to HQ is \$33.8 billion when discounted at the agreed rate of 5.822%. The present value is based on an unreasonably low discount rate. A more reasonable assessment of present value would be in the range of \$20.8 billion at a conservative discount rate of 8%. The estimated replacement value is \$92 billion at replacement cost quoted by HQ and discounted at the MOU rate of 5.822%.[4]
Discount rate	The discount rate appears to be based on the WACC of HQ. It is too low relative to inflation and market risk. A more reasonable rate yet conservative rate would be about 8%
Inflation	Inflation is assumed in the MOU to be 2% annually when escalating the price. This compares with historical general inflation since 1969 of 3.9% and energy inflation of 4.9%.
Water Lease/Royalty	The 1961 lease remains without any revisions for royalty changes that should be updated or changed to enable GNL to extract direct funding. The established very low rate of royalty remains in place and may have been reduced.
Reservoir management	The 1969 agreement provides HQ with control over the use of water from the reservoir. The MOU provides HQ with further control through its sole decision to develop, or not, CF2 and Gull Island. Any and all new capacity from CF2 is for HQ’s use. The MOU offers only “best efforts” for a water management agreement.[4]
Water Rentals	GNL could receive substantial water rental revenues based on high net profits. However, these payments are limited by the pricing which is much lower than market thereby substantially reducing the water rentals that would otherwise benefit the NL treasury. Overall pricing is very favourable to HQ. Therefore, on balance the water rental revenues are grossly diminished.
Replacement cost	The replacement cost of CF energy as quoted by HQ is 16 cents/kWh.[21] Under the discount rate assumed in the MOU the present value of replacement is \$92 billion. The renewal provides the CF energy to HQ for a value about one quarter of HQ’s replacement cost.
Wheeling rights	The MOU provides no wheeling rights to NLH for energy export. HQ maintains the right to control the sale of all energy for export and maintains all the market price upside (price above established MOU pricing).[4]
Term	The term is fixed 51-years [4]
Reopener/Price adjustment formula	There are no contract reopener provisions or any price adjustment formulas stipulated in the MOU [4]

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The summary demonstrates that in every respect the MOU favours HQ over NLH. That is the case though GNL owns 65.8% of CF(L)Co and is the owner of the natural resources that make this world-class hydroelectric site possible. Only one conclusion can be deduced from the outcome of the former GNL's negotiation. It is that NLH and the former GNL were out-negotiated in every respect by HQ. Worse, apparently having issued the negotiating committee no known Terms of Reference or guiding principles, the former GNL evidently entered the negotiation possessed of no strategy to address the weaknesses present in the existing 1969 contract. Some have suggested that the former GNL won nothing. The MOU is but an extension of the 1969 contract. [30,31]

3.- Upgrades at CF Plant

The upgrade of the existing plant involves the replacement of the existing eleven turbine generators. The MOU sets forth an investment estimated at \$1.9 billion to replace the turbine generators at CF. The development is planned to commence in 2028 and end in 2038. Each new turbine generator is forecast to add 50MW of additional capacity to the existing CF plant. This will increase total capacity to 5,978MW up from 5428MW, an increase of 550MW, or a 10.1%. In addition, the upgrades are estimated to increase the energy output from CF by one terawatt hour annually. [4,5]



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The MOU states that this \$1.9 billion capital program will be financed by CF(L)Co, the current owner, through the assumption of new debt. NLH is scheduled to lead the development and manage the construction. The plan prescribes replacement of one turbine generator each year over the eleven-year development period. Cost overruns on the development, if any, are to be shared in proportion to ownership in CF(L)Co (NLH-65.8%, HQ 34.2%). The additional 550 MW of additional generation capacity from the upgrades is allocated principally to HQ (the first 300 MW 2028-2033) and the 250MW of capacity in later years is shared (135 MW to NLH and the remaining 115 MW to HQ). In total HQ is allocated 75.5% of the new capacity.[4]

The power purchase agreement regarding the upgrades is scheduled to be for the same term as the CF renewal for existing energy to 2075. The contract for power will be on a cost-plus basis which means energy and capacity will be sold to the owners in proportion to their capacity allocation noted above at the investment cost which includes construction cost, financing costs of long-term debt, financing during construction and operational costs over the term. The energy price will be based solely on the actual cost of 100% debt financing with no provision for any rate of return on equity in CF(L)Co. [4]

The cost-based pricing regarding the CF upgrades will be fixed over the term to 2075 with a built in 2% escalation of revenue annually. There is no provision for market-based pricing throughout the term. Therefore, any increase in the real market value over time will accrue to the owners in proportion to their allocation of capacity as outlined above (HQ-75.5%, NLH-24.5%). NLH has no market access outside the Province to export energy. Implicitly, no market price upside is achieved, which is to say that HQ is the principal beneficiary of the investment. [4]

The estimated cost price of the energy from the CF upgrades has not been disclosed in the MOU, or made publicly available. In estimating the cost of this energy, a cost model was developed for this submission, based on the following assumptions:

- the capital cost including interest during construction is as stated in the MOU \$1.9 billion, capital costs are estimated to increase 2% annually during the eleven-year period of construction;
- the project is completed over the development time stated as 2028- 2038 one unit per year;
- the energy estimated upon completion of all units is one terawatt hour The year following completion of each unit, the unit is placed in service and generates one eleventh of the total estimated energy and capacity;
- no additional maintenance or operational cost other than that for the existing turbine generators being replaced by CF(L)Co;
- no incremental annual net profit to CF(L)Co; incremental annual revenues equal incremental interest costs and depreciation;
- the cost of capital is the cost of long-term debt (assumed at 3.5%); and
- no provision for return on equity to CF(L)Co. [4]

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Under these assumptions the estimated cost-plus price for energy is 6.7 cents in the initial year of energy – 2029 (this price increases to 7.5 cents if borrowing costs are 4% rather than 3.5%). The fixed cost-plus price is escalated at 2% annually as assumed in the MOU. Therefore, the price for the additional energy rises to 16.7 cents in 2075, the final year of the term of the power purchase agreement. The present value of the revenue stream over the term to 2075 when discounted at the cost of capital (3.5%) for the project is \$1.9 billion. The nominal value of the revenue stream to 2075 totals \$4.79 billion at the cost-plus price of 6.7 cents escalating at 2% annually as stated in the MOU (see Appendix II for pricing calculations based on the above assumptions).

The upgrades project has the potential for an attractive return considering the cost-plus price is very low at 6.7 cents/kWh. The price is well below replacement cost of energy for HQ at 16 cents/kWh. Based on replacement cost, the analysis indicates that nominal revenues are \$11.44 billion in total, or \$6.65 billion higher than under cost-plus pricing. On a net present value basis at replacement cost (HQ stated replacement cost of 16 cents/kWh), the NPV is \$ 4.55 billion, or \$2.65 billion higher than pricing on a cost-plus basis.[21] (See Appendix II)

Compared with existing CF energy pricing in the MOU, the cost-plus pricing of the upgrade is lower by \$3.23 billion in nominal terms and on a NPV basis it is \$0.83 billion lower.

In conclusion, the energy from the proposed upgrading for the turbine generators at CF is totally financed by CF(L)Co, a 65.8% majority owned company of GNL. Yet the power will be sold mainly to HQ (75.5%) based on cost pricing which is well below replacement cost and well below the cost of the existing CF energy under the renewal pricing in the MOU. The IRC is respectfully asked to:

- Consider whether there is a justification for this monumental giveaway independent of the pricing regime for existing energy at CF;
- Review the disproportionate share of the new CF capacity/energy given to HQ relative to NLH; and
- Outline the benefits if any, GNL received for a power purchase agreement regarding the CF upgrades.

In summary, the business proposition of upgrading of the turbine generators can be described as follows:|

- the minority shareholder (HQ) proposes to the majority shareholder (NLH) that the corporation (CF(L)Co) will borrow \$1.9 billion to finance 100% of cost to upgrade the existing CF plant;
- the minority shareholder (HQ) takes over 75% of the additional capacity/energy from the upgrades;
- the minority shareholder (HQ) pays CF(L)Co for the cost of the additional energy with no provision for any return on the investment by the corporation i.e. no profit. HQ's cost is extremely low and attractive, about 6.7 cents/kWh.

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- the minority shareholder (HQ) takes all of the market price upside and has the ability to sell the energy to whomever it wishes while restricting the price the majority shareholder can get for its small share of the energy; and
- the deal is fixed for over 50 years to 2075.[4]

On any commercial basis, the outcome just described is incredulous to the point of being offensive, especially when the evidence is so clear that HQ is the sole beneficiary of the capacity upgrade at CF. The IRC has the challenge to explain to the public how and why this has occurred.

4.- Churchill Falls 2 (CF2)

The MOU contains plans for a second powerhouse at Churchill Falls adjacent to the existing plant. The new plant known as CF2 will be constructed underground in a fashion similar to the existing plant. It will avail of water from the same reservoir to produce energy. There will be little additional energy produced annually from CF2 because all of the water available is currently being utilized through the existing plant. [4,5]

The forecast capital cost of CF2 is \$4.6 billion, including financing costs during construction. The decision to build or not build CF2 rests entirely with HQ and it will oversee and manage the entire construction. The expansion at CF2 contemplates the addition of two 550 MW turbine generators to add 1100 MW of capacity at CF. Once completed it will be owned and operated by CF(L)Co (65.8% NLH, 34.2% HQ). The plan is to complete construction by 2035. [4,5]

The power purchase agreement for CF2 makes 100% of the additional capacity available to HQ. The term of the agreement is 50 years post the completion date. The financing plan for CF2 proposes 75% debt and 25% equity. Therefore, NLH will have to invest \$757 million for the construction of CF2 and share 65.8% of the debt required to build CF2 (\$2.4 billion). All of the capacity from CF2 will be priced on a cost-of-service basis. The costs will include all construction, financing, operating and maintenance costs and include provision for a rate of return on the equity invested by the owners at a prescribed rate of 8-9% annually, reset every five years based on ten-year Government of Canada bond yields plus 500 basis points. Return of equity is capped, however, at a maximum of 9%. The revenues to NLH from equity have to be reduced by the borrowing costs incurred, or by the opportunity cost of capital, to calculate the net return on equity. [4,5]

Risks

CF2 will present many risks that have not been assessed as no environmental assessment of the project has been undertaken. The addition of 1100MW of capacity from CF2 will significantly enhance the energy output at CF at any given moment but it will provide no increase of “firm” energy. The existing plant capacity of 5,428MW will be increased to 7,078MW upon completion of the project. This represents a capacity increase of over 30%. Therefore, water flows will

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increase dramatically in the Churchill River basin when this capacity is in use. There will be significant variability in water flows as well. These changes will cause erosion in the basin and present adaptive challenges to wildlife and vegetation as well as to users of the river and the surrounds.

The higher flows will also impact downstream power generation and potentially lead to the requirement to spill water at downstream facilities. Muskrat Falls for example was not designed in contemplation of CF2. The effects on the Muskrat Falls infrastructure are unknown. The Joint Federal/Provincial Environmental Panel of 2011 recommended and NLH/Nalcor agreed that the reservoir height would remain stable which attended to a broad range of environmental risks. [32]

Other serious downsides to CF2 include a construction risk to the existing plant whereby blasting works will be required immediately adjacent to the existing operation. Those familiar with the construction of CF have noted that significant fault lines developed during the initial CF construction and remedial construction was required to secure the underground facilities to overcome these faults. Concern has been raised that new construction activity would present unique risks to the existing facilities. These are complex engineering issues that will require detailed investigation and study and could lead to significant cost adjustments and overruns during construction. Cost overruns are to be borne by the off-takers. [4]

Benefits

There are no benefits to GNL/NLH from CF2 except a rate of return on equity invested at 8-9%, equivalent to gross revenues of \$60-68 million annually. These gross revenues would have to be reduced to reflect the opportunity cost of capital or cost of borrowed funds to make the equity investment. The net benefit is substantially lower. For example, if the opportunity cost or borrowing cost is 4%, then the net benefit to GNL/NLH is 4-5%, not 8-9% as suggested by GNL/NLH. There is very little additional energy from CF2 and NLH has no need for extra capacity. CF2 has high relative risks for what amounts to a very marginal return.

Better alternative investment opportunities affording much lower risk and higher returns are available to GNL. Indeed, an investment in most any large publicly traded energy company in Canada offers much higher returns and considerably less relative risk. In short, there is no business rationale for NLH to participate in the construction of CF2. The proposed development adds significant financial risk to a business with little current risk exposure. While in most business models, growth necessitates financial risk, the MOU contemplates an approach to development where virtually all of the benefits associated with high-risk construction are for the minority shareholder, HQ. Risks to the existing plant, potential environmental and seasonal/daily disruption to the Churchill River basin, and associated investment risks taken together represent both potential financial loss and other unknown risks to the people of NL.

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HQ has announced plans to build out wind generation in Quebec. CF2 and the CF reservoir will serve as the energy storage backup for this huge expansion program. NLH is facilitating HQ's access to the CF reservoir. Essentially, it is providing HQ this high value storage for free. CF2 is entirely for the benefit of HQ. HQ's development of CF2 likely displaces any future opportunity for NL to develop wind resources in Labrador. [33]

HQ wants to build new capacity at CF because CF is the most efficient site in North America for such development. It can produce energy much more efficiently because the hydraulic head at CF is over 1000 feet and the reservoir provides all the storage necessary at no cost to HQ.

In conclusion, CF2 solely benefits HQ. NLH/GNL are not reasonably compensated for the costs, risks and significant investment proposed in the development of CF2 (\$3 billion, or 65.8% of \$4.6 billion). The IRC will want to assess, independent of the other development initiatives, on what basis CF2 is a wise investment decision for GNL.

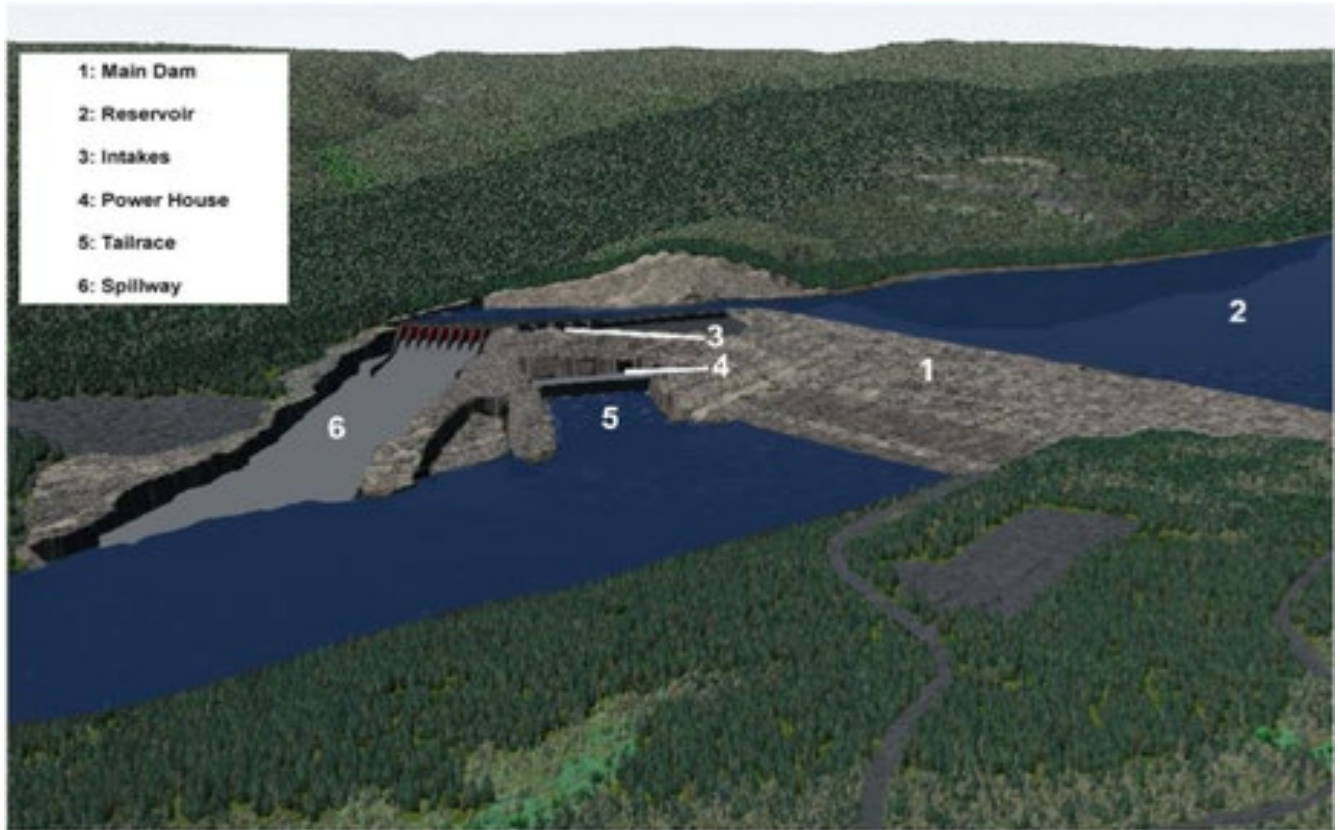
5.- Gull Island

The lower Churchill River has been the focus of hydro development since the completion of the CF plant. In fact, site investigation and clearing at Gull Island commenced in 1973 but was abandoned in 1975 when Quebec continued to refuse NL wheeling rights to deliver the power to the American market.

In 1978, the Governments of Canada and Newfoundland and Labrador established a company, known as the Lower Churchill Development Corporation (LCDC), to pursue developments on the Lower Churchill River. LCDC is owned 51% -GNL and 49%-Canada. Despite several attempts over the past five decades, the Gull Island site remains undeveloped. The most recent and promising effort was made in 2002 by the administration of Premier Grimes. The core elements of that unfinished deal with HQ included a long-term contract to sell the energy to HQ, along with limited rights for GNL to recall power for its own use and maximization of employment benefits in Newfoundland and Labrador. HQ agreed to finance the project. [34,35]

The hydro development at Gull Island, by any measure, is a massive undertaking. It has the potential to generate 2,250 MW of electrical capacity and is estimated to have the capability to produce 12 terawatt hours of energy annually. The forecast construction cost in the MOU is \$24.9 billion. The site has been touted as the most economic, large, undeveloped hydro site in North America. [5]

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A summary of the MOU Gull Island project has been described by GNL/NLH to include the following details:

- A new generating station on the Churchill River capable of producing 2,250 MW;
- An estimated cost of \$24.9 billion including financing with the target for commissioning in 2035;
- Ownership of the new JV entity: 60% by NL Hydro and 40% by Hydro-Québec;
- NLH equity investment to be covered by the \$3.5 billion payment from Hydro-Québec;
- An Environmental Assessment of the Lower Churchill Project completed in 2012;
- Innu Nation Impacts and Benefits Agreement already in place;
- Return on equity range between 8.0-9.0%, set every 5 years on Government of Canada 10-year bond yields plus up to 500 basis points;
- 50-year power purchase agreement, covering all costs to develop, construct, operate, and maintain the facility including a return on equity ranging between 8-9 percent;
- Fixed cost-based price subject to increase 2% annually;
- No automatic renewal rights;
- HQ to manage construction and completion, and accept cost overruns which will be included in the PPA;

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- Hiring protocol set out in the Environmental Assessment and related to qualified workers hired in order: Innu Nation, residents of Labrador, residents of the island, rest of Canada;
- Hydro-Québec to manage construction and completion, including funding any cost overruns. NLH to participate in the oversight of the project;
- NLH to operate and maintain the facility once commissioned (Note: the MOU states that the joint-venture entity will be the plant operator once completed);
- NLH has access to 225 MW and HQ has access to 2025 MW; and
- 15 years of exclusivity for HQ to build/develop Gull Island, beginning at target date of December 31, 2029, thereby giving HQ exclusive rights for 20 years beyond the MOU signing December 12, 2024. [4,5]

In addition to the above features, forecast revenues in nominal dollars together with costs and benefits for all the proposed developments, are posted online by NLH, Gull Island being the largest component thereof. The former GNL /NLH public information campaign requires review, analysis and commentary to gain a complete understanding of the Gull Island development proposed in the MOU. [5]

Ownership and Water Management

The ownership of the Gull Island (GIJV) development is contemplated via a new joint-venture company owned 60% by NLH and 40% by HQ. The MOU proposed that the Gull Island hydroelectric facility will be undertaken using a new and separate business entity from CF(L)Co. This approach contrasts with the upgrading project and CF2, which become assets of CF(L)Co. The MOU contemplates GNL, through NLH, selling 40% interest in the Gull Island development permanently to HQ. The consideration obtained for the sale of development rights is \$3.5 billion (2024\$) based on the discount rate of 5.822% stated in the MOU. The funding represents the equity to be used by NLH to fund its share in the new corporation. [4]

Payments to NLH for the Gull Island development site are spread out over the period of construction to 2035; their nominal values are described in MOU Schedule H (nominal payments total \$4.8 billion). The initial three payments nominally total \$1.4 billion (\$1.25 billion present value) and are unconditional payments for HQ's exclusivity development rights over the Gull Island site for a period of fifteen years post initial target date of December 31, 2029 for the start of construction. In other words, the exclusive right to develop Gull Island belongs to HQ until 2044. Payment to NLH of the remaining payments described in Schedule H are conditional on future decisions of HQ including a final decision to proceed with the Gull Island development. [4]

To date GNL/NLH have not disclosed the valuation of Gull Island nor the basis on which the development rights and the exclusivity agreement for development are valued. Therefore, it is difficult to comment on whether the value of the 40% ownership rights in the project was reasonably assessed on the basis of generally accepted methodologies and valid criteria. If the value was based on cash flows that reflected energy pricing for Gull Island contained in the

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MOU, then the value is low, especially on the basis of a valuation derived from market-based energy pricing. Throughout the MOU, the absence of market-based pricing is a material problem, including valuation of an asset as important as the Gull Island site which in the current context must include a valuation for the Upper Churchill reservoir without which the development of Gull Island would cost additional billions of dollars. Additionally, the inflation rate for pricing and the discount rate for valuation are all important issues that must be reviewed by the IRC to assess the reasonableness of the agreement made between GNL/NLH and HQ in respect to Gull Island.

The people of our Province should also be deeply concerned over the long-term implications of selling such a large interest in the Gull Island asset on a long-term basis. Neither the political nor the economic implications of this plan have been assessed. While it is not the IRC's role to consider any except economic matters, the failure of GNL to impose a sunset clause on ownership rights to the Gull Island asset by another government strikes us as patently irresponsible. In this regard, the historical context relating to the 1927 court decision on the Quebec/Newfoundland and Labrador boundary, and HQ's refusal to grant the province energy transmission rights, are factors that cannot be ignored when negotiating the ownership of our major hydro power assets.

As a starting point, ownership rights held by HQ threaten to have a significant effect on the ability of CF(L)Co to exercise water management on the Churchill River. The problem first became evident when HQ effectively contested the Water Management Agreement imposed by the NL Public Utilities Board on CF(L)Co in relation to the operation of Muskrat Falls. HQ's position was substantially upheld in the Quebec Superior Court.

The MOU also fails to secure water management rights for NLH. In addition, considering that the MOU ties up in long term contracts such a large proportion of the capacity and energy at CF and at Gull Island, GNL will effectively be continuing to cede control over the Churchill River to HQ, possibly in perpetuity. The generation assets are destined to become integrated components of the HQ network for the long-term. This will significantly reduce and restrict the Province's ability to manage and use its resources to develop the NL economy. As the future economy becomes more dependent on electricity, Churchill River assets will be viewed with envy given their favourable attributes and as compared with alternatives.

The history of ownership in CF(L)Co by HQ has not been beneficial to our Province. It is a narrative of obstruction and control over market access for the energy from Churchill Falls. The idea of facilitating a forty percent interest in a second venture having the same characteristics as the 1969 contract can hardly be judged a prudent way forward for GNL. A sensible, less acrimonious, and more advantageous long-term strategy is one that will reduce dependence on HQ and diversify our own investment and economic opportunities.

Neither Quebec's position preventing open access for transmission to third party customers, nor the opportunity costs cited are the only reasons that the Gull Island development as proposed in

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the MOU requires a complete re-thinking. Accounting for the equity contribution of the two parties, total debt financing required is \$18.7 billion assuming the project costs is as planned at \$24.9 billion. The benefits to NL of the venture do not measure up to the attendant risks for the small NL economy. As much as it is desirable to develop Gull Island, only the benefits of the project have been articulated. The financial risks have been vastly understated including in relation to overruns on construction and financing risk.

Construction Cost

The construction cost of the Gull Island (GI) development is estimated in the MOU at \$24.9 billion, including financing costs during construction. The development at GI involves the placement of a large dam across the Churchill River that will flood the entire river valley west from the site all the way back to the CF site, a distance of approximately 230 kilometers. Unlike CF, the GI site will be a "run-of-the-river" facility. It will have no huge reservoir for water storage like CF. The dam is estimated to be about 100 meters in height by 1300 meters in length. The river valley flooding is expected to cover approximately 85 square kilometers, or an average of approximately 370 meters of land adjacent to the river over the 230 kilometers. [36]

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Five-450 MW turbine generators will provide a total capacity of 2250 MW. NLH is allocated 225 MW (10%) from GI while HQ will be entitled to 2025 MW (90%). HQ will be the development lead and NLH relinquishes control over the development including all decisions regarding the design, engineering and construction of the facility. NLH will have a consultative role only. In addition, HQ is not required to develop Gull Island. In return for the option price noted earlier, the MOU gives HQ the exclusive rights to develop the Gull Island site until 2044. [4,5]

Financing GI

Financing construction of the Gull Island Joint Venture (GIJV) will be conducted under HQ's lead. Cost overruns on construction will be financed solely by HQ. However, any such overruns will be added to construction costs and amortized over 65 years. The initial power purchase agreement runs for a period of 50 years post commissioning in 2035. Assuming it proceeds within the timeframe proposed, the term will expire in 2085. Other features of the financing plan

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already given reference, requires 75% debt and 25% equity. The equity component offers a return of between eight and nine percent, set as the ten-year Government of Canada bond rate plus 500 basis points to a cap up nine percent, annually. The rate of return is set to change at five-year intervals over the contract life of fifty years. [4,5]

GI Pricing

The GI pricing is based on a cost-of-service model. This 50-year power purchase agreement covers certain costs to develop and construct GI (though not to the extent claimed by the information campaign of NLH/GNL), costs to operate and maintain the facility, and a return on equity ranging between 8-9 percent annually. The fixed pricing mechanism affords an annual inflation increase of 2%. [4,5]

The GI pricing mechanism includes amortization of development and construction costs related to 50 years of the established 65-year amortization of the assets. Therefore, if one assumes construction is completed at the estimated cost, then 23% of this cost (\$5.75 billion) will not be recovered over the 50-year power purchase agreement. Notably this arrangement is dissimilar from the 1969 contract under which the entire cost of construction was recovered during the first forty years of the 65-year contract. The Gull Island financing plan amortizes the construction cost over 65-years. The outcome is favourable for the chief off-taker, HQ, because the cost-based energy pricing is dramatically lower than a more conventional financing plan.

Most significantly, the longer amortization period leaves significant financial risk for the majority shareholder (NLH) after the 50-year agreement expires. Substantial unamortized costs will be unrecovered including the portion of any cost overruns which threaten to be substantial considering the poor record of mega-projects globally.

The GI power purchase agreement is a fixed price agreement with an established 2% annual inflation factor built into the cost-based price. It is reported that the cost-of-service based price of energy from GI is initially 11 cents and that price is set to increase each year by 2% through the life of the 50-year term of the agreement. It bears repeating that this type of pricing mechanism is highly advantageous to the off-takers. The risk to NLH of this drastically inequitable scheme is further increased as the pricing mechanism is not enhanced by the market value of the electricity produced. [37]

Market-based pricing is essential to contemplate a project like Gull Island, the share-split of developing the entity notwithstanding. While it is unknown what future electrical energy prices will be, it is a reasonable expectation that real energy prices will continue a trend higher than general inflation. The demand for electricity is skyrocketing currently and price escalation in the

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most recent year in the export markets outside Quebec have been very high. For example, wholesale electric pricing over the ISO New England region increased by 16% over 2024. [38]

Pricing has experienced a widespread inflationary cycle with increasing demand from data centers and higher costs, mainly for natural gas. Therefore, long term fixed pricing as is planned for GI can only be attractive to HQ as all the market price upside will accrue to the principal off-taker (90% of the energy is going to HQ from GI for 50 years). The power purchase agreement does not contemplate a price adjustment mechanism when market prices offer extraordinary profit upside as occurred with the CF 1969 contract. [4]

HQ has sold significant volumes of energy on export markets for average prices of 11 and 16 cents/kWh in 2024, 2025, respectively. Comparing these average export prices of recent years to the forecast cost of GI energy at 11 cents/kWh, it is clear that HQ will reap significant market price upside at least in the near term from GI energy, especially considering the cost-of-service rates are fixed for 50 years.

Decision-Making & Construction Management

GNL/NLH relinquished decision-making and management of the construction roles to HQ in the MOU. This is a serious mistake. Decision-making should rest with the GIJV, not HQ. As the majority shareholder, NLH is obligated to maintain control of the Board of Directors of GIJV. Its first obligation is to appoint professionally qualified directors, the majority of whom, including the chair, should be independent of the owners.

GIJV should have the responsibility to contract HQ officials with expertise in hydro dam construction management. HQ could also be contracted to do design engineering and project management. However, it is most important that these functions report directly to GIJV senior management and not HQ.

While HQ has the experience to oversee and manage the construction from an execution perspective, they should not be in a position to solely decide what contractors are hired – this will naturally favour companies that HQ has experience with over companies in NL or in the rest of Canada. If HQ is tasked with all decision-making as contemplated under the MOU, then it can be expected that all decisions will reflect the culture, systems, strategy and priorities of HQ. GNL and NLH will have no role in the decisions of the development or the running of the GIJV. GIJV must act as owner not HQ. A governing structure of this nature would ensure that NL's interests are not secondary to HQ, particularly, as GNL is the majority owner of the development.

Exclusivity Agreement

The MOU's exclusivity agreement is another significant giveaway for NL. HQ has exclusive rights to develop GI for a period extending to 2044. In this era of vastly heightened electricity demand, NLH has removed all options to explore other development partners. This short-sighted

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approach restricts the GNL's ability to diversify the market for energy. In essence it hands HQ total control of NL's hydro resources on the Churchill River.

Strategically, GNL should be prioritizing diversification on hydro energy markets rather than increasing and locking in its dependency on HQ. This is not a plan that positions our Province for long-term success and maximization of economic opportunity.

In summary, the exclusivity agreement, HQ's significant ownership and decision-making authority combine to effectively hand HQ control of the Churchill River. The IRC needs to address this one customer over-dependence and the extensive new rights and power that HQ gains and determine the long-term strategic consequences for GIJV, NLH and GNL.

Environmental Assessment

An environmental assessment, conducted jointly by the Government of Canada and the GNL, of the hydro developments on the lower Churchill River was completed in August 2011. While the assessment did not recommend development, the governments approved the developments for construction. The MOU contemplates the GI site being developed based on this 15-year old assessment. For example, Muskrat Falls has been completed since that assessment was conducted. How might that major development impact the GI assessment? It follows a normal course for environmental assessments, even long-term assessments of the nature conducted in 2011, to be reviewed and updated after a period of time. Certainly, after 15 years such an assessment cannot be considered relevant today.[32]

The MOU includes significantly different developments than were contemplated during the 2011 assessment. The expansions at CF, both the upgrades of the turbine generators and the construction of CF2, will add over 30% hydro capacity at the CF site. This is an enormous change in waterflows that will affect the entire river system downstream as well as the surrounding ecology within the river basin. The effects will be over hundreds of kilometers. The added capacity will also affect the seasonal timing of water flow which will be dependent on the use and changing demand for capacity within the HQ network. The whole downstream river system will face new previously unassessed risks. The heightened and changing risks will affect all users and the environment in unknown ways.

However, there is one important known factor and that is Muskrat Falls which can now be measured in environmental terms to assess the changes between forecast outcomes prior to construction with actual outcomes and observances since development.

The IRC needs to determine whether the factors influencing the 2011 assessment should be updated allowing for a consideration of how major changes, such as the completion of Muskrat Falls, will impact any new assessment.

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NLH/GNL Benefits of GI Development

The benefits and costs of GI have not been disclosed by NLH. However, a forecast has been released which combines the benefits and costs of all the development projects together (CF upgrades, CF2 and GI). [5]

Revenues

Revenues from the development projects are forecast to be \$136 billion in nominal terms. If it is assumed that the 11-cent price, escalating at 2% annually, accurately reflects the revenue stream from Gull Island as reported, then it can be forecast that approximately \$112 billion of the total \$136 billion, or about 82% of development revenues, are derived from GI. Taking account of the long-time horizon and the time value of money, it is necessary to express the value in present value terms. Applying a discount rate of 10%, as suggested earlier by the Federal Government, would indicate that the present value of revenues from GI are approximately \$4.6 billion (2024\$). [5]

The development projects are priced on a cost-of-service basis, so there is no potential for returns beyond the return on equity, which is capped at 9%, but not guaranteed to net 9%. If the return were based on market prices, rather than cost-based, then our Province would share value when prices rise and profits would have the potential to exceed any arbitrary cap. All four development projects envisioned as part of the MOU, the upgrades, the CF2 expansion, Gull Island, and its associated transmission line to the Labrador border, are all cost-based and not based on market value.

In the case of cost-based projects the return on equity is a cost to the production company, whether CF(L)Co or the GIJV. For the owner, the return on equity is revenue, once costs of acquiring the investment funds have been netted out.

Royalties under the 1961 statutory lease are based on energy production measured in horsepower hours but the revenue to the Treasury is immaterial. The water rentals are set at 8% of profit but if there is no profit there will be no water rental royalty.

The forecast “TB Treasury Benefit” of \$48 billion to the NL Treasury includes \$43 billion in forecast dividends and \$5 billion in water rentals and royalties. If the forecast return on equity is only half, then benefits to the provincial Treasury would suffer a similar fate.

The Province’s revenues arising from return on equity are overstated because no recognition is taken of the opportunity cost of the funds invested, as measured by the Province’s borrowing rate. This applies to both Gull Island and CF2. For example, if the provincial borrowing rate were 6% then the MOU return on equity would be capped at 9%, in which case revenues would be only one third of projections. If the borrowing rate increased to 9% then there would be no revenues payable to the Province, whether from dividends or from water rentals.

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We have raised a number of caveats throughout this submission about overestimation of revenues and it should be understood that the \$48 billion attributed to new developments are significantly overestimated. We ask that the IRC make appropriate adjustments in its estimation of the revenues arising from the MOU.

Royalties and Water Rentals

As discussed above in relation to the CF renewal, the water royalty is immaterial to any total financial benefit because the royalty is so low and remains as initially established under the 1961 lease agreement. There appears to be no change in the royalty applied to the GI development.

The water rentals are calculated at 8% of net profits, or in nominal terms are \$5 billion. The equivalent present value of the water rentals to the NL treasury are approximately \$200 million, assuming a discount rate of 10%. [5]

Preferred Dividends

Unlike CF(L)Co, GIJV appears to have no provision for preferred dividends from any of the development projects. This means that the NL Treasury will not benefit from dividends in lieu of provincial income tax at 15% of net profits.

Common Dividends

The common dividends from the development projects are estimated to be \$24 billion to HQ and \$43 billion to NLH, both expressed in nominal terms. Of this total, it is estimated that approximately \$56 billion is derived from GI with the total nominal value of dividends to NLH of \$34 billion and to HQ of \$22 billion. When these dividends are expressed in present value terms (discounted at 10%), the benefit is: \$1.4 billion to NLH and \$0.9 billion to HQ. [5]

HQ Benefits of GI Development

As noted earlier, it was reported that the financial benefit from GNL/NLH to HQ from the GI development is comprised of the nominal value of total dividends forecast to be \$22 billion. This benefit has a present value of \$0.9 billion when discounted at the discount rate of 10%.

Indeed, the benefits to HQ are more extensive than publicly reported by GNL/HNL. Detailed analysis of the MOU, together with statements by David Rhéaume — Hydro-Québec's senior vice-president who co-led the negotiations with CEO Michael Sabia — in an interview with La Presse, paints the following picture:

- As in the past, Hydro will not pay for the new electricity under the contracts at market price, neither in the first year nor 50 years later. Its payments to Newfoundland, between 2028 and 2084, will instead be based on the production cost of the new generating stations, regardless of the market value of electricity.
- In short, Hydro will pay the cost price, not the market price. And the cost price, according to projections, would be the lowest among potential projects in North America.

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- Hydro-Québec will purchase 90% of this new energy, distributed among the Gull Island project (2,250 MW), the Churchill Falls 2 project (1,100 MW), and the upgrade of the old Churchill Falls generating station (500 MW).
- "It's the same thing as in 1969 in the end," Rhéaume is quoted as stating in the interview.
- To benefit from such an advantage, Hydro agrees to assume virtually all the risks of cost overruns in the projects, as in 1969. It also finances almost all of the projects, even the advance payment that Newfoundland must make to be the majority shareholder in the joint ventures with Hydro-Québec.
- The difference with 1969, in fact, is the distribution of this cost price over time. At the time, it had been agreed that under the 1969 contract Hydro-Québec would pay a fixed annual amount, essentially, which meant that the payments were actually much higher during the first few years due to the loss of value of money over time. Under the new agreement, the cost price paid annually by Hydro will start at a much lower level and will increase by 2% per year until 2084. This mechanism ensures that the gap between the price paid by Hydro and the market price will be smaller at the end of the 50 years than is the case with the current Churchill Falls contract.
- Rhéaume is again quoted "in today's dollars, the total cost-price payments made by Hydro-Québec over 50 years, even indexed at 2%, will give the same total amount as if Hydro had chosen to make constant fixed payments as in 1969.
- Importantly, the 2% indexation will not increase with inflation. Rhéaume states: "They wanted a curve that goes up to 2% per year. So we're going to start lower, but in the end, it's the same cost price on all project payments..."
- At this cost price, it will average 11 cents per kilowatt-hour in today's dollars for the entire duration of the new energy contracts. [39]

Rhéaume noted HQ's concessions in negotiation with NLH/GNL were as follows:

1. Hydro-Québec is paying 3.5 billion over 11 years (in present value in 2024) for the option to develop the projects, an amount which is integrated into the cost price.
2. Hydro-Québec agreed to reopen the old contract that was set to expire in 2041, even though the courts had upheld its legality. The Crown corporation thus agreed to gradually increase the price from the current 0.2 cents per kilowatt-hour to an average of approximately 9 cents between 2041 and 2075 (adjusted to today's dollars). Hydro-Québec believes it will recoup the price concession granted to Newfoundland for the first few years in the long run. This price is very attractive for Hydro. Hydro must also finance the earlier cash advances in Newfoundland by raising rates for its commercial and industrial customers by 0.4 percentage points and reducing its annual net profit by 200 to 300 million for 10 years
3. Hydro-Québec agrees to accommodate Newfoundland and Labrador regarding the source of the energy the province wants to retain for its own use. By the end of the contracts, Newfoundland and Labrador will increase its purchases from 525 MW to 1990 MW.[39]

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The interview concludes with some other notable remarks regarding the MOU:

- Wherever the text refers to today's dollars, it should be understood to mean the present value (as of December 31, 2024) of future payments. These payments are discounted at a rate of 5.822%.
- In the case of the old power plant, the price indexation will not be 2%, as it is for new energy. The formula will be based 90% on the price of Hydro-Québec's supplies – including the heritage block – and 10% on the market price of electricity in the Northeastern United States.[39]

The above remarks by M. Rhéaume summarize the benefits to HQ from the GI development. They also confirm the pricing basis for the CF existing energy. This includes:

- the low agreed discount rate;
- the fact that inflation is agreed at 2% for electricity and the market value of higher rates accrues to HQ, as in the 1969 agreement;
- the advances to NLH in the period to 2041 will be recovered post 2041 with an average rate of 9 cents over that period; and
- the fact that there is no indexation at 2% as suggested by NLH on the existing CF energy. Rather, the price formula will be tied 90% on the price of HQ's supplies – including the heritage block, which comprises 85% of HQ's supply– and 10% on the market price of electricity in the Northeastern United States. [39]

In summary, the GI development is exactly the same as the 1969 agreement. It has all the same characteristics:

- fixed term – 50 years;
- fixed cost-based pricing, no market pricing;
- fixed value once construction is complete;
- all the upside market value accrues to HQ;
- overruns borne by off-takers;
- HQ finances the project and assumes most of the risk;
- HQ gets most all the energy – 90% (it is normal to assume risk in proportion to the allocation of capacity and energy); and
- there are no contract renewals or openers for any material changes of any nature.

Therefore, HQ is clearly the principal beneficiary of the GI development. It has secured an even more beneficial arrangement in regard to GI than it did for the existing CF plant. This because the cost-based price is set lower relative to the fact that the GI development will remain largely unpaid for after 50-years, whereas CF was fully paid after 40 years. In addition, the starting fixed price of 11 cents is already well below the export market price that HQ can realize today — in

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the first nine months of 2025, HQ secured average rates for export electricity reaching approximately 16.2¢/kWh. [17]

The export market value today at 16.2 cents/kWh equates to a current windfall of \$624 million annually (12 terawatt hours at 5.2 cents/kWh). With electricity demand skyrocketing and prices escalating well beyond 2% inflation agreed there is every likelihood that the value of the energy is going to far outpace the fixed-cost pricing related to GI. It is evident today.

The IRC has the obligation to advise the NL public of GNL/NLH's rationale as to why the GI development is the same as the '69 contract.

6. – Transmission Developments

The MOU proposes that new transmission systems will be required to serve the new developments at CF and Gull Island. This requires NLH and HQ to develop the transmission infrastructure in their respective provinces. The transmission systems required in Labrador are discussed in the MOU, however, Quebec transmission requirements are omitted. This omission creates a serious shortcoming because the total cost of the developments has not been disclosed. The cost of transmission is a material, integral component of the developments. Its cost has to be recovered from the pricing established to ensure the developments are economic and feasible. Unfortunately, without such information on a critical component, a complete cost assessment of the developments is not possible.

Any assessment of the total costs of the developments will have to include all transmission requirements in order to fully determine the economic viability of projects such as CF2 and Gull Island. The upgrading at CF may have the transmission in place to serve the development, however, it would appear that the large developments (CF2 and Gull Island) will require significant new transmission investments in the Province of Quebec. The cost of this transmission will have to be considered in the cost and economic review of these developments.

Labrador Transmission

The MOU includes the following information regarding the Labrador based transmission required:

- 340 km of 735kV AC transmission lines are required to enable the new developments;
- NLH is the owner and operator of 100% of the new transmission to be built;
- Financing and construction are the sole responsibility of GNL/NLH;
- Commissioning of the transmission will be required prior to completion of new power capacity developments;
- The capital cost for new transmission is estimated at \$3.6 billion; and
- There is a requirement for GGNL/NLH to provide HQ with a completion guarantee on the new transmission assets. [4.5]

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The transmission infrastructure is a significant financial and operational risk for NLH/GNL. The financing required is not discussed in the MOU. GNL/NLH will have to fund the investment through new debt as the development funds advanced by HQ are insufficient to fund all the equity requirements of NLH. There is \$4.8 billion (nominal \$) in equity funds potentially derived from the MOU as outlined in Schedule H. These funds are insufficient to meet the equity requirements of NLH for the developments and the transmission infrastructure to be financed by NLH. If the CF2 and Gull Island developments proceed and there are no overruns on either of them, then NLH will have used \$4.5 billion of the Schedule H funds to meet the NLH equity requirements of those two developments. That would leave \$0.3 billion remaining to fund the equity for the transmission assets required by NLH. Given the total transmission estimate of \$3.6 billion, the equity required to finance the investment is likely \$900 million (25% of \$3.6 billion). Therefore, GNL will have to provide the additional \$600 million equity shortfall. [4,5]

The NLH transmission development will also bring many other risks. First and foremost is the risk that the construction costs will be much higher. With the Muskrat Falls development, NLH experienced very significant cost overruns on the transmission component of the construction. In addition, there were serious issues with execution including serious safety incidents that led to complete shutdowns on construction; material deficiencies that cost rework; and costly performance related work due to incomplete soil and site conditions for transmission towers placement, as well as access to the remote sites for transmission. Importantly, the estimate for transmission costs is based on the same unknown environmental factors that will be present in Labrador. There is no road access to much of the area that transmission will be required in Labrador. There is also no environmental assessment completed for the transmission development planned under the MOU. [4,5,35]

7. – Beyond the MOU

In addition to the issues we have researched in this submission we would like to direct your attention to other important issues which government must consider. A decision to accept, reject or amend the MOU cannot be made without reference to alternative courses of action. The MOU needs to be compared with the next best alternative. However, review of alternative options is not central to the mandate of the IRC, as expressed in its terms of reference, nor is there time being taken or provided for considering the many possible alternative opportunities we have for the future use of the enormous hydroelectric resources available to our Province.

Upon receiving the IRC report, GNL will have to decide what course of action which should be pursued if the MOU is rejected. GNL should not be pressured into short-term decisions which the Province will likely regret if we do not seriously consider and pursue our other opportunities. Time is to our advantage. The government must use this time wisely. We have years to get this right. Thus far the new government has acted prudently and refused to be pressured by others' timeframes and agendas, political and otherwise. We can and must get this right by doing our homework.

In considering opportunities we suggest the IRC reflect on the following points for its advice and possible recommendations to GNL.

1. The NL public has not been informed of the objectives the GNL set for the negotiating team. The Terms of Reference request the IRC to comment on: “whether the negotiators representing Newfoundland and Labrador Hydro and the government of the province were given an appropriate mandate before beginning the Memorandum of Understanding, and whether any such mandate was consistent with the final report of the Commission of Inquiry respecting Muskrat Falls Project, advice from the 2041 Churchill River Management Expert Panel and any other reports the inquiry committee considers relevant;”

The larger and more relevant question is what policy goals and objectives were given to the negotiating team by the former government. It is not possible to determine if the MOU has succeeded without knowing what was the objective. We cannot state strongly enough that the deficiencies in the MOU are, in large part, a direct consequence of the failure of the former GNL to define the parameters and publicly state its goals in advance of negotiations. Successful negotiation is impossible unless NL is clear about the magnitude of the resource, its value, and its economic potential. Equally important, is to know the expectations of the people of our Province. We believe that the IRC should clarify, as a matter of priority in assessing the success or failure of the MOU, whether the MOU fulfilled the established values, goals and objectives.

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2. We recommend that the MOU be rejected in its entirety. We recommend that other options be explored carefully before any further discussions with HQ take place. There is no merit to attempt to salvage the MOU. The MOU process, however, has likely hindered any short-term reasonable discussion with Quebec in our view. But there should be no doubt that there will be opportunity for serious discussion with Quebec in the coming years. Quebec like many jurisdictions have enormous future challenges to meet their energy needs and the Churchill River assets will become increasingly valuable in the next few years. In the meantime, a moratorium should be placed on further negotiations with HQ. Reengagement at this time is not in our interest. The province is not ready.
3. It is important to elicit proposals and pursue opportunities with potential partners and purchasers. Priority should be given to using the power and developing our economy. The coming years will position our province as a much sought after place to do business because we have access to one of the most valuable resources the world is most in need of in the coming few decades. The economic and social potential that can be derived from our power generation assets is virtually beyond limits.
4. The IRC has been asked to consider: “whether alternative markets for power were considered, including pursuing opportunities with entities other than Hydro-Quebec, concerning both existing and potential hydropower assets on the Churchill River”. We do not know the answer to this question but it is clear from the public debate that has arisen over the past year that the former GNL and NLH have made no references to any such engagements. This is a necessary step that our government needs to be advised to take. Diversification of users for our hydropower is essential. We clearly have too much dependence on one customer that is only interested in securing energy at monopolistic rates. That is not consistent with a strategy to maximize the benefit of one of our most valuable resources.
5. GNL should conduct an intensive communications and marketing effort to inform potential power users of the availability of energy in our Province which can be used to diversify our economy through mineral processing, smelting and refining that can radically address industrial needs for clean renewable electricity. We have only to look to our Quebec neighbours who have in the past used its vast hydropower resources, as well as ours, to build an economy that is envied by many jurisdictions in North America. They have by far the most advantageous power rates on our continent. It has successfully attracted many large industrial users who depend highly on electrical resources. Many of these users create high-skilled, high paying employment opportunities.
6. The information technology, artificial intelligence and a plethora of other industries which require large amounts of energy are placing ever increasing demands on energy suppliers for power. While our first priority should be to use our energy within our

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Province, we should also seek partners who have sufficient heft to negotiate transmission rights with Quebec for export to third parties. Marketing and promotion initiatives to seek customers for Churchill Falls power will enable us to diversify the market and reduce reliance upon HQ. All of this can be done without fear that the assets will be stranded and GNL should take whatever time is necessary, without fear that rejection of the MOU will exclude HQ. GNL needs to first establish clear strategies to limit volumes of energy to any one major customer. We need diversification to achieve value over the long-term, it cannot be derived from one customer. That is not a strategy.

7. A mindset has evolved that our fiscal, economic and social policy objectives can only be achieved if GNL takes an equity stake in new developments. The IRC should question the wisdom of further equity participation in major projects. We believe that provincial legislation can be used to ensure that the people of the Province receive maximum benefits in terms of employment of local workers, services and materials without the necessity of major investment that threaten our already precarious financial position.

Provincial legislation can also offer revenues through the redesign of fiscal instruments which have not been altered since the 1961 statutory lease. Upon the expiry of the 1969 power contract, we need a strategy designed and ready to be implemented that can produce a much more efficient and modern fiscal regime. One that would enable us to collect revenues and royalties directly from electrical generators and transmission resource users. Similar to the fiscal regimes used for offshore oil development. We do not need to take equity risks in such resource developments. These developments are attractive in their own standing and private equity should be our first option for development, not our last. Research is needed to determine the limits, if any, to the ability of the province to change the fiscal regime now in place.

8. The IRC has been asked to review: “whether the sufficiency of water rentals or royalties, or both, were or should have been considered”. Nothing to date has indicated that the former government has seriously considered this option. There is nothing new, in relation to any of the proposed new developments in the MOU, that would indicate that GNL/NLH have offered as a means to enhance resource rents directly to the NL treasury. In fact, all of the developments are based on a cost-of-service rates to establish pricing without any mention of resource rents and royalties as a priority for revenue generation to the treasury. This is not good resource development policy.
9. The MOU requires GNL to provide a completion guarantee for the new transmission line from Gull Island to the Quebec boundary. GNL should invite proposals from developers who would finance both the transmission and generation components of the Gull Island project. It does not need to invest equity or incur debt to achieve its fiscal, economic and

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social policy objectives. The financial impact and risks associated with new MOU projects should be carefully measured to determine whether our borrowing cost and fiscal ratings will be jeopardized.

10. The MOU bundles a new power purchase agreement for the existing plant with the new developments by transferring revenues from the existing plant to inject equity into CF2, Gull Island and the new transmission line in Labrador. This creates a cross subsidy which makes the development projects reliant upon the Churchill Falls plant, whose revenues are intended to be market driven rather than cost based. The IRC has been asked to review this matter. We have concluded based on our analysis that the new developments can and should stand on their own merits. However, we also see absolutely no reason for our Province to participate in building CF2. It is of no benefit to our people and it inhibits and limits the future energy development in Labrador. The project is solely for HQ's benefit and it places significant financial and operational risks on CF(L)Co to our detriment.

We believe GNL should resist bundling in its future energy plan. Rather, it should ensure that new projects are self sustaining and that NL is the principal benefactor.

11. The IRC was asked to review: "whether there are any barriers to maximizing export opportunities"

The issue of wheeling rights through Quebec deserves much more research. The Report of the [Muskrat Falls Inquiry](#) page 19, tells us that in January 2006, "NLH applied to Hydro-Québec TransÉnergie for the right to wheel electricity from Labrador to markets in Ontario, New Brunswick, New England and New York using existing transmission lines. This application led to a dispute about available transmission capacity and NLH filed complaints with the Québec energy regulator, the Régie de l'énergie. (These complaints were dismissed in 2010.)" It appears that this matter has been in abeyance since 2010. It may be necessary for GNL to seek a project proponent independent of HQ to make application to the Régie de l'énergie. The IRC should recommend further research to clarify open access rights assured by the Federal Energy Regulatory Commission (FERC). This research should be assigned the highest priority. It would appear that a prospective customer based in the export market outside Quebec would represent a unique proposition to assist NLH/GNL in gaining wheeling rights over the Quebec transmission system.

8. - Conclusions and Recommendations

Our conclusions and recommendations to the IRC, based on our analysis, are outlined below:

Conclusions

1. The MOU should be rejected in its entirety. It does not make our Province the principal beneficiary. It does expose our Province to unnecessary risks.

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2. It purports to be a departure from the 1969 contract, but it is simply a continuation of cost-of-service pricing, effectively placing the existing plant and the new developments within the HQ network.
3. The MOU undervalues the product offered by the existing CF plant.
4. The risks to our Province are much higher than those to Quebec because the price increases are back-end loaded late in the 51-year term.
5. The benefits arising from the MOU are overstated.
6. The revenue projections assume that Labrador power rates will rise significantly, contrary to stated policy.
7. The MOU offers no access to transmission rights through Quebec.
8. The MOU enshrines the monopoly position of HQ.
9. The benefits stated in the MOU should be measured on a net present value basis.
10. The present value of benefits from the existing CF plant should be compared to the alternative replacement market value, based on energy of the same attributes as CF.

Recommendations

It is recommended that the IRC undertake to:

1. Explain the highly complex pricing terms used to calculate the revenues included in Schedule G involving unknown and varying blocks of power;
2. Conduct the necessary research into the questions we have raised and clearly explain the findings to the public;
3. Disclose what the negotiating team has done to measure the value of the electric power product we have to offer from the Churchill River, with particular value to its capacity, energy, dispatchability and reliability; and
4. Define what are the factors which should be used to measure the value we should be obtaining for our power.

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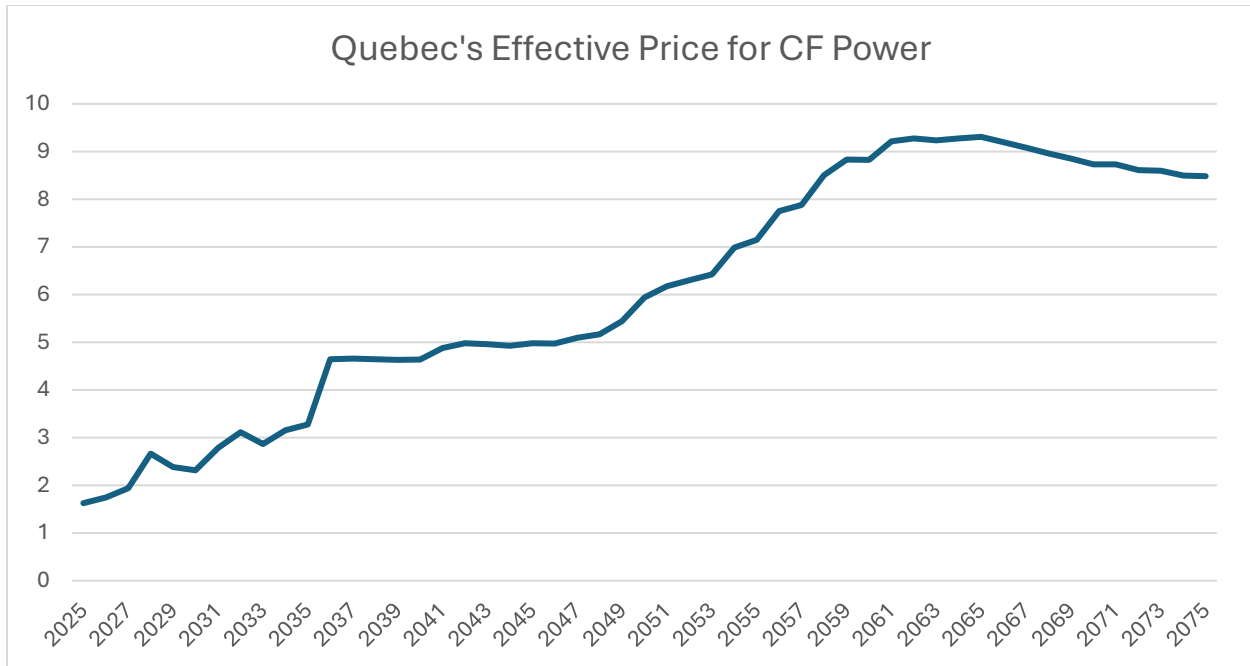
Appendix I

	A	B	C	D=A/C	E=B/D
	Schedule G Nominal Payments	HQ PV Payments	Nominal Price	Energy sold to HQ	HQ PV Price(\$2024)
Year	\$ billions	@ 3% \$ billions	cents/kWh	Terawatt hours	cents/kWh
2025	0.475	0.475	1.63	29.21	1.63
2026	0.525	0.51	1.8	29.21	1.75
2027	0.6	0.566	2.06	29.21	1.94
2028	0.85	0.778	2.92	29.21	2.66
2029	0.785	0.697	2.69	29.21	2.39
2030	0.785	0.677	2.69	29.21	2.32
2031	0.91	0.762	3.34	27.37	2.78
2032	1.035	0.842	3.84	27.06	3.11
2033	0.96	0.758	3.64	26.45	2.87
2034	1.075	0.824	4.13	26.14	3.15
2035	1.125	0.837	4.42	25.53	3.28
2036	1.64	1.185	6.45	25.53	4.64
2037	1.695	1.189	6.66	25.53	4.66
2038	1.74	1.185	6.84	25.53	4.64
2039	1.79	1.183	7.04	25.53	4.63
2040	1.845	1.184	7.25	25.53	4.64
2041	2	1.246	7.86	25.53	4.88
2042	2.1	1.271	8.25	25.53	4.98
2043	2.155	1.266	8.47	25.53	4.96
2044	2.205	1.257	8.67	25.53	4.92
2045	2.295	1.271	9.02	25.53	4.98
2046	2.36	1.269	9.28	25.53	4.97
2047	2.49	1.3	9.79	25.53	5.09
2048	2.605	1.32	10.24	25.53	5.17
2049	2.825	1.39	11.1	25.53	5.45
2050	3.175	1.516	12.48	25.53	5.94
2051	3.195	1.482	13.36	24.00	6.18

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2052	3.36	1.513	14.05	24.00	6.31
2053	3.525	1.541	14.74	24.00	6.42
2054	3.95	1.676	16.52	24.00	6.98
2055	4.165	1.716	17.42	24.00	7.15
2056	4.65	1.86	19.45	24.00	7.75
2057	4.87	1.891	20.37	24.00	7.88
2058	5.41	2.04	22.62	24.00	8.50
2059	5.79	2.119	24.21	24.00	8.83
2060	5.96	2.118	24.92	24.00	8.83
2061	6	2.07	26.81	22.46	9.22
2062	6.22	2.084	27.79	22.46	9.28
2063	6.38	2.075	28.5	22.46	9.24
2064	6.6	2.084	29.49	22.46	9.28
2065	6.82	2.091	30.47	22.46	9.31
2066	6.94	2.066	31.01	22.46	9.20
2067	7.06	2.04	31.54	22.46	9.08
2068	7.175	2.013	32.06	22.46	8.96
2069	7.3	1.988	32.61	22.46	8.85
2070	7.415	1.961	33.13	22.46	8.73
2071	7.64	1.961	34.13	22.46	8.73
2072	7.765	1.935	34.69	22.46	8.61
2073	7.985	1.932	35.67	22.46	8.60
2074	8.125	1.909	36.3	22.46	8.50
2075	8.355	1.906	37.33	22.462	8.49

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MOU Forecast prices in cents/kWh adjusted by 3% for inflation as assumed by HQ

The sum of the payments from HQ (column B above) to 2040 plus the estimated portion of the 2041 payment ($8/12 \times 2041$ HQ column B payment) totals \$14.4 billion. The degree to which the HQ inflation adjusted prices in column E in the above table are less than the peak price of 9.3 cents/kWh in the period from August 2041 to 2064 totals the same value \$14.4 billion. The analysis clearly demonstrates that HQ agreed to advance NLH funds in the MOU period 2025 to the expiry of the 1969 contract on August 31, 2041 and the MOU pricing for the period from August 2041 to 2064 was constructed to recover the full \$14.4 billion advanced by reducing the annual pricing accordingly in each of those subsequent years.

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Appendix II

A summary of the MWs of capacity added from the CF upgrading of the turbine generators, the estimated capital cost including 2% annual inflation, interest cost during construction, and energy produced annually is outlined in the following table.

		Capital Cost	Interest	Energy
Year	MW	Millions \$	Millions \$	TWh
2028	50	133.18	4.00	
2029	100	135.85	8.07	.09
2030	150	138.56	12.23	.18
2031	200	141.33	16.47	.27
2032	250	144.16	20.79	.36
2033	300	147.04	25.20	.45
2034	350	149.98	29.70	.55
2035	400	152.98	34.29	.64
2036	450	156.04	38.97	.73
2037	500	159.16	43.75	.82
2038	550	162.35	48.62	.91
2039	550			1.00
2040	550			1.00
2041	550			1.00
2042	550			1.00
2043	550			1.00
2044	550			1.00
2045	550			1.00
2046	550			1.00
2047	550			1.00
2048	550			1.00
2049	550			1.00
2050	550			1.00
2051	550			1.00
2052	550			1.00
2053	550			1.00
2054	550			1.00
2055	550			1.00
2056	550			1.00
2057	550			1.00
2058	550			1.00
2059	550			1.00
2060	550			1.00
2061	550			1.00
2062	550			1.00

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2063	550			1.00
2064	550			1.00
2065	550			1.00
2066	550			1.00
2067	550			1.00
2068	550			1.00
2069	550			1.00
2070	550			1.00
2071	550			1.00
2072	550			1.00
2073	550			1.00
2074	550			1.00
2075	550			1.00

The table below outlines the nominal value of the energy at the levelized price of 6.7 cents per kWh inflated at 2% annually. When present valued at the estimated cost of financing as described to be 100% debt financed at the assumed long-term rate of 3.5%, the revenue stream when totalled equates to the initial capital cost of \$1.9 billion.

	Energy	Nominal	Nominal	PVIF	Revenue
Year	TWh	Price Cents/kwh	Revenue \$Millions	3.5%	PV \$Millions
2028					
2029	.09	0.067	6.09	0.9662	5.88
2030	.18	0.068	12.43	0.9335	11.60
2031	.27	0.070	19.01	0.9019	17.15
2032	.36	0.071	25.85	0.8714	22.53
2033	.45	0.073	32.96	0.8420	27.76
2034	.55	0.074	40.35	0.8135	32.82
2035	.64	0.075	48.02	0.7860	37.74
2036	.73	0.077	55.97	0.7594	42.51
2037	.82	0.079	64.23	0.7337	47.13
2038	.91	0.080	72.79	0.7089	51.60
2039	1.00	0.082	81.67	0.6849	55.94
2040	1.00	0.083	83.31	0.6618	55.13
2041	1.00	0.085	84.97	0.6394	54.33
2042	1.00	0.087	86.67	0.6178	53.54
2043	1.00	0.088	88.41	0.5969	52.77
2044	1.00	0.090	90.17	0.5767	52.00
2045	1.00	0.092	91.98	0.5572	51.25
2046	1.00	0.094	93.82	0.5384	50.51
2047	1.00	0.096	95.69	0.5202	49.77
2048	1.00	0.098	97.61	0.5026	49.05

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2049	1.00	0.100	99.56	0.4856	48.34
2050	1.00	0.102	101.55	0.4692	47.64
2051	1.00	0.104	103.58	0.4533	46.95
2052	1.00	0.106	105.65	0.4380	46.27
2053	1.00	0.108	107.77	0.4231	45.60
2054	1.00	0.110	109.92	0.4088	44.94
2055	1.00	0.112	112.12	0.3950	44.29
2056	1.00	0.114	114.36	0.3817	43.65
2057	1.00	0.117	116.65	0.3687	43.01
2058	1.00	0.119	118.98	0.3563	42.39
2059	1.00	0.121	121.36	0.3442	41.78
2060	1.00	0.124	123.79	0.3326	41.17
2061	1.00	0.126	126.26	0.3213	40.57
2062	1.00	0.129	128.79	0.3105	39.99
2063	1.00	0.131	131.37	0.3000	39.41
2064	1.00	0.134	133.99	0.2898	38.84
2065	1.00	0.137	136.67	0.2800	38.27
2066	1.00	0.139	139.41	0.2706	37.72
2067	1.00	0.142	142.19	0.2614	37.17
2068	1.00	0.145	145.04	0.2526	36.63
2069	1.00	0.148	147.94	0.2440	36.10
2070	1.00	0.151	150.90	0.2358	35.58
2071	1.00	0.154	153.92	0.2278	35.06
2072	1.00	0.157	156.99	0.2201	34.55
2073	1.00	0.160	160.13	0.2127	34.05
2074	1.00	0.163	163.34	0.2055	33.56
2075	1.00	0.167	166.60	0.1985	33.07
Total		4790.8			1907.64

Note that if the cost of debt financing for the upgrades is assumed at 4% rather than 3.5% then the cost of energy increase to 7.0 cents from the 6.7 cents/ kWh as shown in the table above.

If we assumed that the energy produced from the upgrades project was sold at HQ's replacement cost of 16 cents/kWh, then the above the analysis would indicate total nominal revenues in the amount of \$11.4 billion, or \$6.6 billion higher than under cost-plus pricing. On a net present value basis at replacement cost, the NPV is \$ 4.55 billion, or \$2.65 billion higher than pricing on a cost-plus basis shown above.

If we compare the 6.7 cents/kWh with existing CF energy pricing in the MOU, the cost-plus pricing of the CF upgrades is lower by \$3.23 billion in nominal terms and on a NPV basis it is \$0.83 billion lower.

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In conclusion, the cost-based pricing for energy from the CF upgrade project appears very attractive in comparison to both replacement cost and the forecast pricing for existing CF energy under the MOU.