

# Non-Firm Rate Application

Information Session for Interested Parties

November 30, 2022



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# Background

# LIG Service Requests

- Minimal excess capacity on the Labrador Interconnected System (“LIS”) maintained to manage customer costs. Influx of cryptocurrency load contributed to system constraints.
- Additional firm load restrictions of 200 kW per customer have been implemented in Labrador East and Labrador West.
  - 840 MW of cryptocurrency firm load requests.
  - Mining industry looking to expand operations and decarbonize industrial processes.
  - Additional transmission investment provided 27 MW of additional transmission capacity to Labrador East. However, firm load requests far exceeded additional capacity.
- Due to the risk of materially increasing existing customer rates on the LIS, Newfoundland and Labrador Hydro (“Hydro”) will not approve firm load applications to serve cryptocurrency customers.
  - Government issued an Order in Council to enable Hydro to refuse service.
  - Existing cryptocurrency customers are prevented from increasing firm load.

# LIS Non-Firm Rate Background

- New LIS Network Additions Policy (“NAP”) implemented in March 2021.
- Settlement Agreement on NAP required Hydro to review whether non-firm service offering was reasonable to implement.
- Feasibility report filed in late June 2021. Non-firm service is feasible to limited number of customers if participants are willing to accept frequent and potentially extended curtailments throughout the year.
- Hydro currently sells energy in excess of monthly firm load forecasts to Labrador Industrial based on forecast monthly market value.
  - Market value of exports considered incremental cost on the LIS (i.e., “Imbalance Rate”).
- Objective: To provide non-firm service on the LIS without requiring capital investments on common grid so that the provision such service could: (i) enable use of surplus Recapture Energy in Labrador, but (ii) would not negatively impact existing customers in the delivery of service and the cost of firm service.

# Non-Firm Rate on Island Interconnected System

- Island Industrial customers are permitted to use in excess of firm load when system capacity is available to supply.
- The energy used to supply load in excess of firm load is referred to as non-firm energy.
- The price of non-firm energy is based on incremental cost to supply the energy. Incremental energy cost has historically been based on fuel cost incurred to provide service.
- Island Interconnected System incremental costs have changed. Increased load can also reduce available energy for exports.
- The Holyrood Thermal Generating Station (“Holyrood TGS”) may be required to operate to provide customer reliability but is not expected to increase output as customer loads increase (i.e., therefore, Holyrood TGS fuel is not expected to be incremental cost).
- Non-firm energy rate should be updated to reflect that either market or fuel can reflect system incremental costs. Otherwise, energy rate to customers may materially differ from cost to supply non-firm energy (i.e., non-firm rate may no longer be cost based).

# Non-Firm Rates Review

# Non-Firm Rates Review

- Non-firm service is commonly viewed as two types:
  - Interruptible load/capacity assistance; and
  - Non-firm or surplus/excess energy.
- Material differences in service obligations.



# Interruptible/Capacity Assistance

- Customers load curtailed on rare occasions normally during system peaks.
- Customers normally adjust their operations to accommodate service interruptions or have alternate supply to avoid reliability impacts of service interruptions.
- Customer load requirements normally included in load forecast.
- Utility plans to supply customer's demand and annual energy needs.
- Utility reflects interruptible/capacity assistance in reserve planning for capacity additions (i.e., non-firm capacity).
- Customer billing normally based on published firm rates with firm load reflective of customer load requirements (ignoring load that can be interrupted).
- Separate contract or billing credit to determine compensation for interruptible load/capacity assistance made available.

# Interruptible/Capacity Assistance in NL

- Hydro has utilized Capacity Assistance Agreements to manage system peaks (or system emergencies) on the Island Interconnected System.
  - Corner Brook Pulp and Paper Limited (customer reduces mill load and provides generation to Hydro).
  - Vale operates standby generation to support Hydro when requested.
- Hydro also utilized an Interruptible Agreement to manage peak in Labrador East while awaiting the in-service of the transmission interconnection between Muskrat Falls and Happy Valley-Goose Bay.
  - BlockLAB would be available to curtail load at the request of Hydro during peak times.
- Newfoundland Power has approximately 12 MW of curtailable load that Hydro can request to be curtailed.
- Hydro is considering additional interruptible/capacity assistance agreements to reduce the peak demand impacts of electrification.
  - In these instances, Hydro anticipates customers to maintain backup supply.

# Non-Firm or Surplus/Excess Energy

- Enables the utility to increase sales without additional system investments.
  - Utility does not consider non-firm energy sales in system planning to determine additional transmission or generation investments.
- The amount of non-firm energy available fluctuates as firm load requirements change on the system by hour, day, week, month or year.
  - Customer interruptions can be frequent (i.e., not just system peak times).
- Customer billing generally reflective of incremental cost to supply the energy.
  - If use of non-firm energy reduces energy available for exports; lost export value is considered incremental cost.

# Non-Firm or Surplus/Excess Energy

- Four Canadian utilities sell surplus or additional energy on a non-firm basis.
  - Manitoba Hydro, BC Hydro, Hydro-Québec and New Brunswick Power.
- Non-firm rates not common in the U.S.A.
  - Grid is more network than radial; less requirement for non-firm arrangements.
- Hydro-Québec also has a specific rate for cryptocurrency customers. Firm rate is charged but customer load can be curtailed by the utility.
  - Government direction provided to implement rate for cryptocurrency customers.

# Non-Firm Energy in NL

- Non-firm energy price has historically been more costly than the firm energy price.
  - Linkage of non-firm price to Holyrood TGS fuel has made non-firm energy materially higher than firm industrial price.
  - Imbalance Rate in Labrador has been normally higher than Labrador Industrial firm energy rate.
- Hydro's current approach to pricing of non-firm energy using incremental cost approach is relatively consistent with Canadian utility practice.

# LIS Non-Firm Rate

# LIS Non-Firm Rate

- Hydro is recommending implementing a non-firm energy rate to enable the provision of service by utilizing the limited non-firm capacity available on the LIS.
- An interruptible rate does not provide adequate flexibility for frequent load curtailments to ensure no negative impacts on existing firm customers.
- Proposed non-firm rate to continue the use of incremental cost in establishing pricing of non-firm energy.
  - Proposed rate would offset the lost net export revenues resulting from non-firm energy sales.
- Non-firm energy use does not contribute to investments in common system capacity; therefore, no demand charge proposed.

# LIS Non-Firm Rate – Pricing

- Proposed rate to be computed based on forecast net market prices for the next month and communicated on the 21<sup>st</sup> day preceding the billing month.
  - The rate would reflect the weighted average of New York and New England wholesale market prices.
  - Weighting based on proportion of deliveries to each market in the previous month.
- Separate pricing for on- and off-peak periods to enable customers to incur a lower cost and lower probability of interruption by using energy during off-peak periods.
- Hydro has also proposed a monthly fixed charge per customer (i.e., Basic Customer Charge) of approximately \$85 per month to recover administrative costs.



# Non-Firm Price Variability

- Market value of exports has increased in 2022 and forecast to remain high in 2023 and 2024.
- Price forecast to be updated monthly to develop non-firm rate.

Historical and Forecast Net Market Prices (cents per kWh)		
Year	New England Mass Hub	New York Zone A
2020	1.73	2.28
2021	4.01	3.71
2022F	11.26	7.79
2023F	13.72	6.51
2024F	10.51	5.05
2025F	8.93	4.97

# Illustrative Calculation of Non-Firm Price

- The table below presents the calculation of forecast on-peak and off-peak prices for February 2023 and July 2023.
  - Assumes 75% export deliveries to New York and 25% to New England.
  - Actual rate will not be established until 21<sup>st</sup> day preceding the billing month.

	On-Peak Cents per kWh					Off-Peak Cents per kWh				
	New York		New England		Average	New York		New England		Average
February 2023	14.8	75%	37.7	25%	20.5	9.7	75%	32.3	25%	15.4
July 2023	8.3	75%	8.7	25%	8.4	5.2	75%	5.8	25%	5.35

- Material differences between New York and New England market prices and on-peak and off-peak periods. Weighting of market price will depend on prior-month market deliveries.

# LIS Non-Firm Rate – Terms

- Customer curtailments to be automated and controllable by Energy Control Centre.
- Ten-minute minimum notice to customers.
- To enable effective administration, Hydro requires that the non-firm customers be supplied at transmission voltage and the total number of customers be limited. Hydro has indicated a minimum service connection of 1.5 MW per customer to allow for monitoring and control purposes.
- Interconnection costs to be funded by non-firm customers.

# LIS Non-Firm Energy Rate – Terms

- Hydro will maintain separate regions for Labrador East and Labrador West for allocating and monitoring the use of non-firm capacity.
- When full non-firm capacity is utilized in a region, Hydro will not add additional non-firm customers unless additional common transmission investments result in additional non-firm capacity becoming available.
- Any investment in transmission to provide non-firm service will be recovered through up-front contributions from non-firm customers.
  - Investment in transmission infrastructure is required to provide non-firm service to Labrador East.

# LIS Available Non-Firm Capacity

## Maximum Non-Firm Load for Labrador East and Labrador West (MW)

	Winter December to March	Spring April to June	Summer July to September	Fall October to November
Labrador East	28	43	58	38
Labrador West	20	50	50	50

- The non-firm capacity projected to be available on the LIS assumed up to 50 interruptions for each of the four seasons. However, the actual number of interruptions could be more depending upon firm load requirements and equipment status (eg. maintenance, unplanned outages, etc.).

# Temporary Service Agreement with BlockLAB

- In 2017, BlockLAB requested 20 MW of capacity to serve a blockchain data centre in Wabush. However, the transmission line was technically limited to 7.75 MW.
- Hydro was in the process of developing its NAP and the 200 kW load restriction was not yet in effect for Labrador West.
- Tacora Resources Inc. (“Tacora”) was in the process of reopening Wabush Mines with a requirement of 55 MW. Hydro had transmission capacity available to provide temporary service until Tacora ramp-up was complete.
- A temporary service agreement with BlockLab of up to 7.75 MW was approved by the Board of Commissioners of Public Utilities (“Board”) which expires December 31, 2022.
- BlockLAB has no entitlement to the temporary load currently available beyond December 31, 2022. Therefore, BlockLAB’s existing load was not considered in determining the sharing on non-firm service among applicants.
- Hydro plans to extend Temporary Service Agreement until non-firm service application is concluded (i.e., subject to Board approval).

# Sharing LIS Non-Firm Capacity

The projected available non-firm capacity to be made available to each customer is provided below.

	Winter December to March	Spring April to June	Summer July to September	Fall October to November
Labrador East	5.5	8.5	11.5	7.5
Labrador West	5	12.5	12.5	12.5

- The nine customers requested Hydro make a total of 294.5 MW of non-firm capacity available (an average of 33 MW per applicant).
- The proposed allocation reflects an approach of sharing *equally* the projected available non-firm capacity among the applicants.
- Since OC, Hydro has had an additional cryptocurrency operation requesting non-firm service; this applicant initially applied for firm service only. Given the change in supply availability, Hydro believes the request is not unreasonable.

# Priority of Service on LIS

- Load would be served in the following priority:
  - First – Firm Town Loads
  - Second – Firm Industrial Customer Loads up to the contracted Power on Order
  - Third – Interruptible Industrial Customer Loads up to contracted amounts (5 MW each)
  - Fourth – Non-Firm Customers
- The implementation of the non-firm service would limit the ability of the mines to exceed their contracted interruptible load availability.



# LIS Firm Load Additions – Near term

- Hydro plans to extend regulation limiting firm load additions to 200 kW per customer.
- Hydro needs to conclude system impact studies for mining load additions in Labrador West.
- Updated system impact study also required for Labrador East.
  - Supplying new firm service requests in Labrador East may fully utilize available transmission capacity provided by transmission interconnection between Muskrat Falls and Happy Valley.
- Hydro also needs to implement internal processes to ensure firm service is not provided to either new cryptocurrency customers or new cryptocurrency load.

# Update to Island Industrial Non-Firm Rate

# Update on Island Industrial Non-Firm Energy Rate

- Applies to energy use in excess of firm load (i.e., when interruptible load is being utilized).
- Historical pricing based on incremental cost approach.
  - Incremental cost on the Island previously tied to incremental fuel cost.
  - 10% administrative overhead applied; no demand charge.
- With interconnection to the North American grid, long-term incremental cost approach expected to reflect market value of exports.
  - Proposed to modify the non-firm rate to recognize that market value of exports may be the incremental cost (same pricing approach as LIS Non-Firm Rate).
  - Still maintain the approach for using fuel costs in non-firm rate if Holyrood generation is operating above minimum levels to support the grid.
  - Proposed to eliminate 10% admin fee.

# Industrial Non-Firm Energy Rate – Longer-term

- In future, depending on the relative cost differences between firm rates and market value, Island Industrial customers may want to increase purchases of non-firm energy.
  - Limits currently established based on contracted interruptible load.
  - Hydro needs to recover its fixed costs through customer firm rates so expanding the availability of non-firm energy needs further review.
  - May need to enhance non-firm rate option in future to consider avoidance of spill energy.
  - Timing of non-firm price updates may need to become more frequent once more experience is gained.

# Revenue Impacts & Implementation

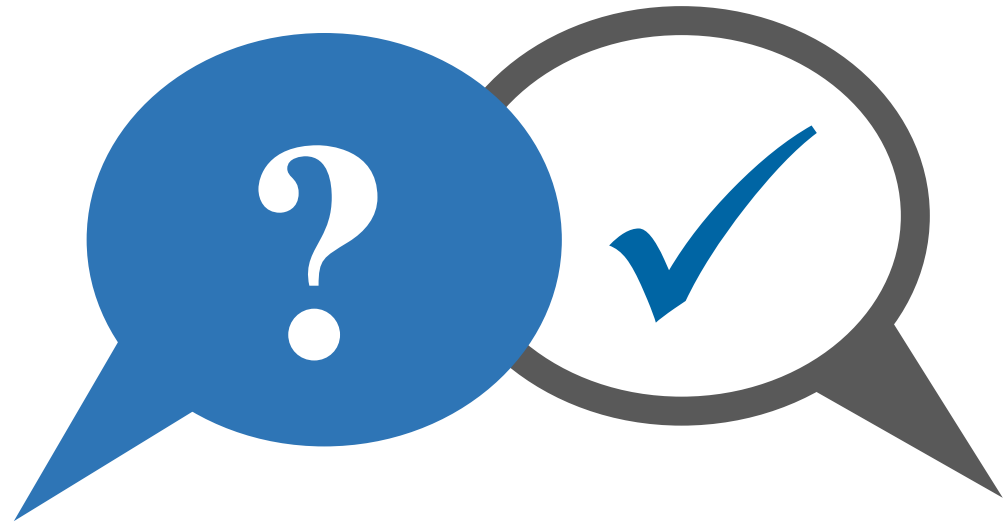
# Revenue Impacts

- For the Island Interconnected System, all additional net revenue from non-firm sales supplied by Hydraulic generation will be credited to the Supply Cost Variance Deferral Account (i.e., export revenues component). This is currently approved.
- Consistent with past practice, Hydro would not reflect forecast of non-firm sales in load used to establish rates in its General Rate Application (“GRA”). Too much uncertainty.
- For the LIS, there is no mechanism to deal with increased non-firm revenues under the proposed new rate.
  - Potential net revenues are material, for example, 10 MW at 9 cents per kWh operating 50% of the time would provide net revenue of approximately \$4 million.
  - Hydro believes it would be reasonable for non-firm revenues from LIS Non-Firm Rate should also be credited to a deferral account for disposition by the Board in Hydro’s next GRA.

# Implementation

- Subsequent to a Board Order on the application, Hydro will need a couple of months to implement processes to administer non-firm rates for the LIS and the Island.
  - Monitoring processes to be established to deal with customer curtailments.
  - Communication process to be implemented to deal with switching from market-based rate to fuel based rate (and vice versa).
  - Discussions with customers required on non-firm rate implementation processes and mechanics.

**Questions?**





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