Q. **Reference: 2024 Resource Adequacy Plan**

Please refer to Hydro's "2024 Resource Adequacy Plan: Technical Conference #4: Expansion Plan, Insights, and Next Steps," dated October 29, 2024, at slide 33. For each "model run" and "sensitivity" identified below, and with all units of measurement clearly indicated, please provide in Excel format and for the entire study period:

a) Loss of Load Hours (by year)

b) Loss of Load Expectation (by year)

c) Expected Unserved Energy (by year)

d) Overgeneration (by year)

e) Curtailed energy (by year)

f) Hourly operating reserves (by reserve product, e.g., 30-minute and 10-minute reserves, regulating reserves, etc.)

g) Hourly operating reserve requirements (by reserve product, e.g., 30-minute and 10-minute reserves, regulating reserves, etc.)

h) Total Fixed Cost (by year)

i) Total Operating/Variable Cost (by year)

j) Total Cost (by year)

k) NPV Total Cost (by year)

l) Incremental transmission expansion costs (by year)

m) Reserve Margin (by year)

n) Planning horizon (years)

o) Hourly load shapes

p) Years modeled (including identification of representative years)

q) Fuel price forecasts

r) Transmission constraints

s) LIL hourly available capacity (MW)

t) LIL hourly flows (MW)

u) Transmission losses

v) Hourly imports (via Quebec)

w) Hourly imports (via Nova Scotia)

x) Hourly exports (via Quebec)

y) Hourly exports (via Nova Scotia) (as broken down between Nova Scotia Block Energy, Energy Access Agreement Energy, and other bilateral transactions)

z) Spillage (by year)

aa) Fuel burn off volumes

bb) Fuel burn off costs

Model Runs and Sensitivities

Core PLEXOS Runs	
Scenario	**Model Run**
1	1AEF
4	Unrestricted
4	4AC
4	4AD
4	4AE
4	4AEC
4	4AEF
4	4AEF(ADV)
4	4AEI
4	4AH
4	4AB40H
4	4AB80H
4	4AEGH
3	3AEF
5	5AEF
7	7AEF
8	8EF

LIL Shortfall Runs		
BESS vs. CT (section 6.2.1.1.5, App C)	B	Two 47.2 MW CTs, one 47.2 MW BESS
BESS vs. CT (section 6.2.1.1.5, App C)	D	No CTs, three 47.2 MW BESS
Min Portfolio (4AEF)	2	Slow decarb, Min Investment Portfolio
Min Portfolio, advance COD to 2031	3	Same as (2), but advance CODs to 2031

A. **a)** Loss of Load Hours (by year) – Plexos is not configured to report Loss of Load Hours from the Expansion Model.

b) Loss of Load Expectation (by year) – Plexos is not configured to report Loss of Load Expectation from the Expansion Model.

c) Expected Unserved Energy (by year) – Expected Unserved Energy can be found in the attached spreadsheet labelled "Annual Outputs." Because of the way the Expansion Model assesses outages and load shapes, there is typically little or no unserved energy reported in the model. Instead, Loss of Load Events are assessed in the Reliability Model.

d) Overgeneration (by year) – Overgeneration can be found in the attached spreadsheet labelled "Annual Outputs." While the output of the Expansion Model indicates that there would be a small amount of overgeneration each year at the Muskrat Falls Plant, in reality, the excess energy would likely be banked in the Churchill Falls Reservoir.

e) Curtailed energy (by year) – Curtailment can be found in the attached spreadsheet labelled "Annual Outputs." While the output of the Expansion Model indicates that there would be some curtailed energy each year at the Muskrat Falls Plant, in reality, the curtailed energy would likely be banked in the Churchill Falls Reservoir.

f) Hourly operating reserves (by reserve product, e.g., 30-minute and 10-minute reserves, regulating reserves, etc.) – Plexos is not configured to report hourly operating reserves from the Expansion Model.

g) Hourly operating reserve requirements (by reserve product, e.g., 30-minute and 10-minute reserves, regulating reserves, etc.) – Plexos is not configured to report Hourly operating

reserve requirements from the Expansion Model. However, the reserve requirement is as follows:

- 206 MW of 10-minute reserves, which can be held at any Hydro-owned generators.
- 50 MW of spinning reserves, which can only be held at Hydro's hydraulic generators.

h) Total Fixed Cost (by year) – Please refer to the attached spreadsheet labelled "Annual Costs." Please note that these costs reflect the expansion units only. For fixed and variable costs associated with existing units, please refer to Newfoundland and Labrador Hydro's ("Hydro") response to PUB-NLH-325 of this proceeding.

i) Total Operating/Variable Cost (by year) – Please refer to the attached spreadsheet labelled "Annual Costs." Please note that these costs reflect the expansion units only. For fixed and variable costs associated with existing units, please see Hydro's response to PUB-NLH-325 of this proceeding.

j) Total Cost (by year) – Please refer to the attached spreadsheet labelled "Annual Costs." Please note that these costs reflect the expansion units only. For fixed and variable costs associated with existing units, please refer to Hydro's response to PUB-NLH-325 of this proceeding.

k) NPV Total Cost (by year) – Please refer to the attached spreadsheet labelled "Annual Costs." Please note that these costs reflect the expansion units only. For fixed and variable costs associated with existing units, please see Hydro's response to PUB-NLH-325 of this proceeding.

l) Incremental transmission expansion costs (by year) – Transmission is considered outside of the Plexos model. The transmission expansion is discussed in the 2024 Expansion Plan.[1]

m) Reserve Margin (by year) – Reserve Margin can be found in the attached spreadsheet labelled "Annual Outputs." It is important to note that the Reserve Margin presented in the

[1] "2024 Resource Adequacy Plan – An Update to the Reliability and Resource Adequacy Study," Newfoundland and Labrador Hydro, rev. August 26, 2024 (originally filed July 9, 2024), app. C, sec. 7.3.

report is based on a calculation that includes losses in the load, while the Reserve Margin in Plexos is exclusive of losses.

n) Planning horizon (years) – The planning horizon is a 10-year period from 2025 to 2034.

o) Hourly load shapes – Hourly load shapes can be found in the attached spreadsheet labelled "Hourly Load Shape."

p) Years modelled (including identification of representative years) – The modelling horizon was 2024 to 2038.

q) Fuel price forecasts – Fuel price forecasts can be seen in Hydro's response to PUB-NLH-324 of this proceeding.

r) Transmission constraints – With the exception of the Labrador-Island Link ("LIL"), transmission limits are considered outside the Plexos model. The transmission constraints are discussed in the 2024 Expansion Plan.[2]

s) LIL hourly available capacity (MW) – Plexos is not configured to export LIL hourly available capacity. The capacity is constant in the model at 700 MW at Muskrat Falls (642.4 MW after losses) and is further restricted by the LIL to Maritime Link relationship.

t) LIL hourly flows (MW) – Plexos is not configured to export LIL hourly flows. Annual LIL Flows can be found in the attached spreadsheet labelled "Annual Output."

u) Transmission losses – Annual Transmission Losses can be found in the attached spreadsheet labelled "Annual Output."

v) Hourly imports (via Québec) – There are no imports in any of the model runs.

w) Hourly imports (via Nova Scotia) – There are no imports in any of the model runs.

x) Hourly exports (via Québec) – Plexos is not configured to export hourly exports. Monthly exports via Québec can be found in the attached spreadsheet labelled "Monthly Exports -

[2] *Supra*, f.n. 1.

Confidential." As this attachment contains commercially sensitive information, it has been provided to the Board of Commissioners of Public Utilities ("Board") on a confidential basis.

y) Hourly exports (via Nova Scotia) (as broken down between Nova Scotia Block Energy, Energy Access Agreement Energy, and other bilateral transactions) – Plexos is not configured to export hourly exports. Monthly exports for publically available contractual agreements (i.e., the Nova Scotia Block ("Emera Block") and Supplemental Energy can be found in the attached spreadsheet labelled "Monthly Exports." Other exports are considered commercially sensitive information and have been provided to the Board on a confidential basis.

z) Spillage (by year) – Spillage in the model would be the same as the Curtailed Energy reported in part e). In reality, most spilled energy from Muskrat Falls would be banked in the Churchill Falls reservoir.

aa) Fuel burn off volumes – Annual fuel consumption can be found in the attached spreadsheet labelled "Annual Output."

bb) Fuel burn off costs – Annual fuel costs can be found in the attached spreadsheet labelled "Annual Output."