Q. (Reference Newfoundland Power 2022/2023 General Rate Application, page 1-9, lines 6 to 9) It is stated "*The third change relates to the recovery of wholesale supply costs from forecast energy sales. A general rate application requires forecast supply costs to be reconciled with forecast revenue from energy sales during the test period. Rebalancing 2022 and 2023 supply costs and revenue from energy sales results in a 2.7% decrease in the revenue required from customer rates*."

a) Is the same load forecast used in both the GRA and the 2022 Capital Budget Application?
b) Please provide a comparison of this load forecast to Hydro's forecast of Newfoundland Power load, both demand and energy.
c) What impact has the reduction in the load forecast had on the 2022 Capital Budget Application?
d) What is being done to rationalize the Hydro and Newfoundland Power forecasts of Newfoundland Power load?
e) What entity in NL is ultimately responsible for the load forecast?

A. a) Newfoundland Power's *Customer, Energy and Demand Forecast* ("CED Forecast") is prepared annually and is filed with the Board as a part of the Company's general rate applications ("GRA"). The CED Forecast includes a 5-year forecast of: (i) customers by operating area and by rate class ("customer forecast");[1] (ii) energy requirements by area and by rate class ("energy forecast"); and (iii) overall peak demand ("peak demand forecast"). The CED Forecast filed with the *2022/2023 GRA* is dated May 2021.

The *2022 Capital Budget Application* uses the customer forecast dated May 2021 to determine cost estimates for the *Extensions, Meters,* and *Services* capital projects.[2]

The *2022 Capital Budget Application* does not use the energy or peak demand forecast dated May 2021. Capital projects proposed for 2022 to meet localized customer load requirements are based on Newfoundland Power's Substation Load Forecast and its Feeder Peak Load Forecast.[3]

The Substation Load Forecast provides a 5-year forecast of the peak demand required to be supplied through each of the Company's substation transformers. The Substation Load Forecast is completed using actual load data from the most recent year, forecast energy requirements, historical transformer peak demands, 5-year

[1] Newfoundland Power has 8 operating areas. These include: St. John's, Avalon, Clarenville-Bonavista, Burin, Gander, Grand Falls, Corner Brook, and Stephenville.

[2] See the *2022 Capital Budget Application*, *Schedule B*, pages 24–31, for descriptions of the *Extensions, Meters,* and *Services* capital projects.

[3] The Company also completes an Infeed Load Forecast, which provides a 5-year forecast of peak demand required at each of the locations where Newfoundland Power purchases power from Hydro, which may also inform capital budget requirements.

historic worst-case load factors, and knowledge of localized load growth.[4] The development of a Substation Load Forecast typically requires between 6 and 9 months to complete. As such, each Substation Load Forecast is based on the spring CED Forecast from the previous year.

For example, the Substation Load Forecast informed the development of alternatives associated with the Humber Substation refurbishment and modernization project.[5]

The Feeder Peak Load Forecast provides a 5-year forecast of the peak load for feeders that may become overloaded in the near term. The method used is based on projecting the existing base peak demand for the feeder into the future using the Substation Load Forecast, and knowledge of localized areas with higher and/or lower than average growth rates.

For example, the Feeder Peak Load Forecast informed the need to address overloaded conductor on 4 of the Company's distribution feeders.[6]

b) Each spring, Newfoundland Power provides Newfoundland and Labrador Hydro ("Hydro") with its energy forecast and peak demand forecasts.[7] The energy forecast is used by Hydro for system reliability and generation adequacy purposes.[8] This includes a semi-annual assessment of near-term reliability by Hydro.[9]

Hydro indicates updating its forecast energy requirements for Newfoundland Power based on the energy forecast included in the Company's *2022/2023 GRA*.[10] As a result, the forecast energy requirements for Newfoundland Power are expected to be consistent between Newfoundland Power and Hydro.

Newfoundland Power's peak demand forecast for the 2021-2022 winter season is 1,351 MW. Hydro's forecast of peak demand for Newfoundland Power is

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4 Load factors relate average loads (total energy delivered, in kWh, divided by the total number of hours over which it was delivered) to peak loads. Worst-case load factors reflect the lowest annual load factor over the previous 5-year period. Worst-case load factors are applied to adjust the actual peak load to reflect the extent to which the worst-case supply area load factor was different from the actual load factor during the previous winter season.

5 See the *2022 Capital Budget Application, Report 2.1 2022 Substation Refurbishment and Modernization*.

6 See the *2022 Capital Budget Application, Report 4.2 Feeder Additions for Load Growth*.

7 Newfoundland Power provided Hydro with the energy and peak demand forecasts used in the Company's *2022/2023 GRA* on May 18, 2021.

8 Newfoundland Power forecasts energy and demand over a 5-year period. For resource and transmission planning purposes Hydro also prepares a longer term (up to 20-year) forecast of Newfoundland Power's load.

9 Since 2016, the Board has required Hydro to provide the Board with semi-annual reports in May and November of each year to outline near-term reliability. Hydro provided its most recent Near-Term Reliability Report to the Board on May 17, 2021.

10 See Hydro's *Reliability and Resource Adequacy Study 2021 Update – Volume II: Near-Term Reliability Report – May Report,* May 17, 2021, page 17.

approximately 55 MW higher than Newfoundland Power's forecast of peak demand.[11]

c) As outlined in part (a) to this response, the *2022 Capital Budget Application* does not use the energy or peak demand forecast dated May 2021. The 2022 capital projects necessary to address customer load are based on either the Substation Load Forecast or the Feeder Peak Load Forecast.

Generally, declining customer load will tend to result in the deferral of a planned substation or distribution feeder upgrade if it is deemed to no longer be required to address customer load growth.[12]

For example, distribution feeder additions in the City of Corner Brook were originally planned for 2022 to address forecast load growth associated with the construction of the new hospital. A review of the load forecast requirements and revised construction schedule for the new hospital was completed in late 2020 and determined that the existing distribution system in the Corner Brook area has available capacity to supply the increased load requirements until 2023.

See response to Request for Information CA-NP-090 for information on how the customer forecast dated May 2021 impacted 2022 customer growth driven projects included in the *2022 Capital Budget Application*.

d) Newfoundland Power and Hydro have been working together to understand the difference in each utility's forecast of Newfoundland Power's peak demand since 2020.[13] Both utilities have shared forecasting methodologies and assumptions in order to better understand the approximate 55 MW difference in peak demand forecasts.

[11] See Hydro's presentation *Reliability and Resource Adequacy Study Review – Technical Conference #3*, June 9, 2021, page 91, filed in advance of Hydro's 3rd technical conference in relation to Hydro's *Reliability and Resource Adequacy Study Review*.

[12] See *2022 Capital Plan, Section 2.1.3 Deferral in the Planning Proces*s.

[13] See Hydro's presentation *Reliability and Resource Adequacy Study Review – Technical Conference #2,* November 30, 2020, page 30, filed in advance of Hydro's 2rd technical conference in relation to Hydro's *Reliability and Resource Adequacy Study Review*.

Newfoundland Power's and Hydro's peak demand forecasts for Newfoundland Power's load are based on different forecast methodologies. Newfoundland Power uses a load factor approach to forecast its peak demand.[14] Hydro uses a statistical regression approach to forecast Newfoundland Power's peak demand.[15]

The primary difference between the utilities' forecasts arises from the declining sales experienced by Newfoundland Power in recent years. Newfoundland Power's load factor methodology reflects a decline in demand corresponding to the Company's declining energy sales. Hydro's statistical regression methodology does not reflect a decline in demand corresponding to Newfoundland Power's declining energy sales.[16] Both utilities have agreed to continue efforts to better understand the effects of declining energy requirements on Newfoundland Power's peak demand.[17]

e) Forecasts of Newfoundland Power's energy and demand requirements are required for multiple purposes. Both Newfoundland Power and Hydro are responsible for developing forecasts that are appropriate for their intended purposes.

Newfoundland Power forecasts its energy and peak demand requirements to addresses the estimation of future revenue from electricity sales and the Company's single largest expenditure, purchased power. As discussed in part a), these forecasts also inform the Company's Substation Load and Feeder Peak Load forecasts.

Hydro is responsible for reliability and resource adequacy on the Island Interconnected System. As a result, Hydro requires a forecast of Newfoundland Power's energy and peak demand requirements for system reliability and generation adequacy purposes.[18] Forecasts that are too high or too low may have implications for system reliability. For this reason, Hydro has indicated it is taking a conservative approach in forecasting Newfoundland Power's peak demand.[19]

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[14] Load factor is the ratio of the average demand on the electrical system to the peak demand on the system. Newfoundland Power's typical load factor is approximately 50%. Conceptually, this implies that peak demand expected by Newfoundland Power in a year will be approximately twice the average demand for the year.

[15] Hydro's statistical regression forecasting approach develops a peak demand forecast using independent variables that include: (i) the number of electric heating customers; (ii) the number of non-electric heating customers; (iii) wind-chill during annual peak periods; (iv) electricity price; (v) annual general service energy consumption; (vi) a technology variable; and (vii) a variable that considers if a peak occurred in the month of December.

[16] See Hydro's presentation *Reliability and Resource Adequacy Study Review – Technical Conference #2*, November 30, 2020, page 30, filed in advance of Hydro's 2rd technical conference in relation to Hydro's *Reliability and Resource Adequacy Study Review*.

[17] For example, Newfoundland Power is currently completing a heat pump load research study for heat pumps installed within its service territory to understand potential impacts of heat pumps on peak demand. In consultation with Hydro, Newfoundland Power is considering extending the study into future winter periods given the relatively mild winter seasons experienced in the last 2 years.

[18] Hydro also requires a forecast of Newfoundland Power's energy and peak demand requirements to determine cost allocation among customers on the Island Interconnected System.

[19] See Hydro's presentation *Reliability and Resource Adequacy Study Review – Technical Conference #2*, November 30, 2020, page 30, filed in advance of Hydro's 2rd technical conference in relation to Hydro's *Reliability and Resource Adequacy Study Review*.