

1 Q. **Re: CBA, Rev. 1, vol. II, Wabush Terminal Station Upgrades, Attachment 3, Lab West System**
2 **Expansion Study, Wabush Terminal Station Recommended Upgrades, page 2 (p. 448 pdf)**

3 Citation:

4 Each transmission line has the following thermal limits, based upon a 50°C
5 conductor temperature:

- 6 • 425 A @ 30°C;
- 7 • 638 A @ 15°C; and
- 8 • 921 A @ -15°C.

9 a. Based on these current limitations, please provide the transmission capability of each of
10 these two 230 kV transmission lines, at each of the three ambient temperatures mentioned.
11 Insofar as these values exceed the 350 MW mentioned earlier, please explain the difference.

12 Preamble:

13 Table 2 on page 4 (p. 450 pdf) presents the year-by-year load P50 and P90 forecasts for western
14 Labrador for the 25-year study period.

15 b. Please break down the year-by-year load P50 and P90 forecasts for western Labrador for the
16 25-year study period, distinguishing between:

- 17 i. Residential loads,
- 18 ii. Existing cryptocurrency loads,
- 19 iii. Other general service loads,
- 20 iv. Additional cryptocurrency loads,
- 21 v. Existing industrial loads, and
- 22 vi. Additional industrial loads.

1 A.

2 a. The thermal ratings of each of the two 230 kV transmission lines are as follows:

- 3 • 169 MVA @ 30°C;
- 4 • 250 MVA @ 15°C; and
- 5 • 367 MVA @ -15°C.

6 As indicated in Table 1, at temperatures of 15°C and lower, the transmission system is
7 constrained by voltage limitations that are more onerous than the thermal limits described
8 above. From the standpoint of transmission planning analysis, these constraints would be
9 applicable in cases representing spring, fall, and winter conditions. The values in Table 1
10 reflect power delivered at the 46 kV bus at the Wabush Terminal Station with all of
11 Newfoundland and Labrador Hydro’s (“Hydro”) equipment in service.

Table 1: Power Delivered at 46 kV bus at the Wabush Terminal Station

Season	Temperature (°C)	Power Delivered (MW)	Limitation
Summer	30	310	Thermal
Spring/Fall	15	350	Voltage
Winter	-15	350	Voltage

12 b. Table 2 provides the available breakdown of the year-by-year P50 peak demand forecast for
13 western Labrador for the 25-year study period. Note that Hydro retail customer peak
14 demand load forecast methodology does not provide for a breakdown of residential and
15 general service loads and that only larger identified data centre/cryptocurrency customer
16 loads are explicitly forecast. The additional data centre/cryptocurrency loads identified in
17 column (iv) reflect forecasted increased load of existing customers whose loads have been
18 approved. Also note that data centre/cryptocurrency loads are implicitly assumed in the
19 load forecast beyond the year 2024–2025. Please refer to Hydro’s response to part b of LAB-
20 NLH-008 of this proceeding.

21 The forecast incremental P90 peak demand is 1.8 MW and reflects the expected increased
22 demand requirements of the residential (i) and general service (iii) customers in more

1 severe peak weather conditions than average winter peak weather conditions. There is no
2 additional peak demand expected or forecast due to severe weather conditions for the
3 customer groups (ii), (iv), or (v).

Table 2: Breakdown of Forecast P50 Peak Demand for Labrador West (MW)

Year	Residential and Other General Service Loads	Existing Cryptocurrency Loads	Additional Cryptocurrency Loads	Existing Industrial Loads	Additional Industrial Loads
2020–2021	70.2	6.3	0.5	301.2	0.0
2021–2022	70.5	6.3	0.5	301.2	0.0
2022–2023	70.5	6.3	0.5	301.2	0.0
2023–2024	70.6	6.3	0.5	301.2	0.0
2024–2025	71.1	6.3	0.5	301.2	0.0
2025–2026	71.3	6.3	0.5	301.2	0.0
2026–2027	71.4	6.3	0.5	301.2	0.0
2027–2028	71.6	6.3	0.5	301.2	0.0
2028–2029	71.8	6.3	0.5	301.2	0.0
2029–2030	72.0	6.3	0.5	301.2	0.0
2030–2031	72.1	6.3	0.5	301.2	0.0
2031–2032	72.2	6.3	0.5	301.2	0.0
2032–2033	72.3	6.3	0.5	301.2	0.0
2033–2034	72.4	6.3	0.5	301.2	0.0
2034–2035	72.5	6.3	0.5	301.2	0.0
2035–2036	72.6	6.3	0.5	301.2	0.0
2036–2037	72.7	6.3	0.5	301.2	0.0
2037–2038	72.8	6.3	0.5	301.2	0.0
2038–2039	72.9	6.3	0.5	301.2	0.0
2039–2040	73.0	6.3	0.5	301.2	0.0
2040–2041	73.1	6.3	0.5	301.2	0.0
2041–2042	73.2	6.3	0.5	301.2	0.0
2042–2043	73.3	6.3	0.5	301.2	0.0
2043–2044	73.4	6.3	0.5	301.2	0.0
2044–2045	73.5	6.3	0.5	301.2	0.0
2045–2046	73.6	6.3	0.5	301.2	0.0