

1 Q. **Reference: Application, v. 2, Jean Lake Terminal Station, Att. 1, page 6 of 25 (481 pdf)**

2 Citation 1 (p. 486 pdf):

3 As part of Hydro’s Labrador Interconnected System Transmission Expansion
 4 Study, a three transformer solution was proposed for Jean Lake TS. This solution
 5 was demonstrated to provide adequate capacity to accommodate system
 6 demand until it exceeds the firm transformation capacity of 24.97 MVA. It was
 7 subsequently identified in the 2021 CBA Additions for Load – Wabush
 8 Substation Upgrades project that once the Jean Lake TS system demand
 9 reached that threshold, both Transformer T4 and T6 would be replaced with
 10 one 20/26.7/33.3 MVA transformer with an on-load tap changer (“OLTC”),
 11 resulting in a two transformer solution. Hydro’s analysis has since determined
 12 that there has been an acceleration to the load growth in Wabush necessitating
 13 the advancement of this transformer upgrade timeline.

14 Citation 2 (p. 481 pdf):

15 A ten-year load forecast for the Jean Lake TS is provided in Table 2. These values
 16 are based on the Wabush Spring 2022 Operating Load Forecast, dated July 5,
 17 2022. The extended forecast indicates that peak demand in the Town of
 18 Wabush will exceed 29 MW by 2041.

19 Citation 3 (p. 487 pdf):

20 The load is forecast to continue to increase over the ten-year period and
 21 beyond. This could result in the inability to reliably serve the Jean Lake TS
 22 customers.

**Table 1: Wabush Spring 2022 Operating Load Forecast
 Town of Wabush Load (Jean Lake TS)**

Year	Peak (kW) ⁶ P50	Peak (kW) ⁶ P90
2022–2023	22,684	23,164
2023–2024	23,382	23,862
2024–2025	23,719	24,199
2025–2026	23,901	24,381
2026–2027	24,101	24,581
2027–2028	24,332	24,812
2028–2029	24,487	24,967
2029–2030	24,677	25,157
2030–2031	24,899	25,379
2031–2032	25,149	25,629

1 **a)** Please confirm that, according to the Load Forecast shown in Table 2, even under the P90
2 forecast, the Town of Wabush Load will remain under the firm transmission capacity of
3 24.97 MVA through 2030-2031 (according to the P50 forecast) and until 2028-2029
4 (according to the P90 forecast).

5 **b)** Please provide the Wabush Spring 2021 Operating Load Forecast for the Jean Lake TS, and
6 explain the reasons for the differences.

7 **c)** Please explain in detail Hydro’s reasons for believing that the Wabush load forecast will
8 continue to increase during the period 2032-2041.

9

10

11 A. **a)** The above statement is not confirmed. The load forecast provided in Table 2 provides the
12 peak loads in kW, not MVA,¹ so a direct comparison cannot be performed. Rather, a load
13 flow analysis must be performed to assess the real and reactive power loading of the power
14 transformer in consideration of the 24.97 MVA rating. The peak loads provided in Table 2
15 serve as an input into the load flow software. The results of this analysis are presented in
16 Additions for Load Growth – Upgrade Transformer Capacity (2023–2024).² The load flow
17 software also accounts for things such as transformer losses and circulating currents, to
18 provide the most accurate transformer loading results which confirmed the firm capacity
19 violation occurs in the winter of 2023–2024.

20 **b)** Please refer to Table 1 for the Wabush Spring 2021 Operating Load Forecast.

¹ kW represents “real” power, whereas MVA represents “apparent” power, which is a combination of real and reactive power.

² “2023 Capital Budget Application,” Newfoundland and Labrador Hydro, July 13, 2022, vol. II, sch. 6, proj. 1, att. 1, p. 8 of 25, Table 3.

**Table 1: Wabush Spring 2021 Operating Load Forecast
Town of Wabush Load (Jean Lake Terminal Station)**

Year	Peak (kW) P50	Peak (kW) P90
2022–2023	23,038	23,518
2023–2024	23,125	23,605
2024–2025	23,287	23,767
2025–2026	23,622	24,102
2026–2027	23,784	24,264
2027–2028	23,842	24,322
2028–2029	23,890	24,370
2029–2030	23,937	24,417
2030–2031	23,985	24,465
2031–2032	24,032	24,512

1 The Wabush Spring 2022 Operating Load Forecast is higher than the Wabush Spring 2021
2 Operating Load Forecast primarily due to the approval of the upgrade to the Wabush
3 Airport terminal building’s heating system and to construct a new runway sweeper garage
4 and sand and urea shed.^{3,4}

5 **c)** The long-term load forecast for Wabush is prepared on the basis of historical trend analysis
6 for the region. The increase in load from 2032–2041 can be primarily attributed to the
7 forecasted increase of electric vehicles in the area. A forecast for the electricity
8 requirements of electric vehicles is developed separately and built into the load forecast.⁵

³ Newfoundland and Labrador Hydro (“Hydro”) received a request for service from Transport Canada for an exemption to the load restriction in Labrador West to allow for an increase to its electrical supply. The total request was 825 kW.

⁴ Approved in *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 15(2022), Board of Commissioners of Public Utilities, May 6, 2022.

⁵ In 2022, Hydro engaged Dunsky Energy Consulting to provide a system planning study to evaluate the forecast impact of electric vehicles on the Island and in Labrador. The results from that study were utilized in the Wabush Spring 2022 forecast.