

1 Q. **Re: CBA, Rev. 1, vol. II, Wabush Substation Upgrades, Attachment 1 (Labrador West 46 kV**
2 **System Expansion, Wabush Substation Recommended Upgrade), page 5 (p. 564 pdf)**

3 A complicating factor in consideration of power transformer capacity at the Wabush Substation
4 is that assessments for the station have historically been performed by Distribution Planning.
5 However, in 2017, equipment operating in Labrador City and Wabush at 46 kV became the
6 responsibility of the Newfoundland and Labrador System Operator (“NLSO”) and was therefore
7 reclassified from distribution to transmission.

8 It is noted that Distribution Planning and Transmission Planning practices for the calculation of
9 transformer ratings are different for reasons that are summarized in the sections below. For the
10 purposes of this investigation, power transformer capacity will be investigated from both
11 standpoints.

12 The primary difference in the rating calculation methodologies relates to the consideration of
13 ambient temperature. Distribution Planning applied the 0°C ambient temperature ratings when
14 rating the Wabush Substation transformers. The NLSO standard involves the application of a
15 25°C ambient temperature ratings to all loading scenarios, including summer, spring/fall and
16 winter.

17 The rationale for this difference is explained in the following excerpt from the NLSO
18 Transmission Facilities Rating Guide:

19 For transmission planning purposes, the summer, spring/fall and winter rating
20 limits of all power transformers and autotransformers will be equal to the
21 nameplate rating at 25°C ambient as provided by the manufacturer.

22 Given the time requirements for the procurement of a new transformer(s), once
23 installed unit(s) reach nameplate rating the increase in transformer rating limit
24 associated with lower ambient air temperatures at time of system peak (i.e.
25 spring/fall and winter) available from transformers designed to CAN/CSA-C88-
26 M90 is allocated as operational margin to avoid loss of transformer life due to
27 excessive loading in the period between transformer reaching 100% of
28 nameplate rating and installation of additional transformer capacity following
29 transformer failure in multiple transformer installations. (underlining added)

1 **a.** Please confirm that, under the Distribution Planning criteria, the firm transformer rating of
2 25.5 MVA would be adequate to meet Wabush forecast P90 loads until after 2045-2046.

3 **b.** Please explain the underlying reason, if any, why the Wabush Substation should be
4 governed by transmission criteria rather than distribution criteria.

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6

7 A.

8 **a.** Under the Distribution Planning criteria, the firm transformer rating of 25.5 MVA would be
9 adequate to meet the Town of Wabush forecasted P90 loads until after 2045–2046.

10 However, as per the citation referenced above and Newfoundland and Labrador Hydro’s
11 (“Hydro”) response PUB-NLH-035 of this proceeding, this approach is not recommended.

12 **b.** Please refer to Hydro’s response to PUB-NLH-035 of this proceeding.