

1 **Q. Reference: 2027 Capital Budget Application, Project 16, Replace T1 (2027-2029), page 8.**

2 For the alternative of completing a voltage conversion of the 4.16 kV feeders, did Hydro
3 complete any assessments of the benefits of completing a voltage conversion giving
4 consideration to the radial nature of the distribution system and the age and condition of the
5 existing 4.16 kV infrastructure? If so, please provide the results of the assessment. If not, why
6 not?

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9 **A.** Newfoundland and Labrador Hydro (“Hydro”) completed a 50-year Least Cost Evaluation (“LCE”)
10 between 2025 and 2075 for the three identified viable alternatives: (i) Upgrade Life Extension,
11 (ii) Like-for-Like Replacement, and (iii) Voltage Conversion. The LCE considered operation and
12 maintenance costs and future replacement costs of the transmission and distribution
13 infrastructure (including insulators and distribution transformers), as well as the power
14 transformer for alternatives where a power transformer would still be required.

15 Hydro assessed the following benefits of completing a voltage conversion:

- 16 • Distribution insulators undergo a Preventive Maintenance (“PM”) inspection every six
17 years, with replacement occurring every 35 years. These timelines would reset when the
18 4.16 kV assets are upgraded.
- 19 • Distribution transformers undergo a PM inspection every six years, with replacement
20 occurring every 30 years. These timelines would reset when the 4.16 kV assets are
21 upgraded. The existing distribution transformers are currently scheduled for
22 replacement in 2040, with the following replacement to occur in 2070.
- 23 • Annual benefits, such as less losses on the 25 kV distribution system compared to the
24 existing 4.16 kV system, were also considered.

- 1 • Benefits for the remaining service life of the distribution insulators, distribution
2 transformers, and the power transformer were also considered in the analysis.
- 3 The results of the completed LCE, as provided in the Replace T1 (2027–2029) – Burgeo proposal,
4 identified that the like-for-like replacement of the power transformer is the least-cost viable
5 option with the necessary costs and benefits for the voltage conversion options applied.