Reference: "2023 Capital Budget Application," Newfoundland Power Inc., June 29, 2022, Schedule B, pp. 88–91 (Substation Spare Transformer Inventory).

Q. a) Please provide a summary of instances over the past ten years where unavailability of spare transformers has resulted in new or extended customer outages.

b) Please provide the quantity of spare transformers in Newfoundland Power's fleet that are 66-25/12.5 kV rates units up to 25 MVA.

c) Of the 11 transformers that failed in the last five years, please provide the age for each at the time of failure.

A. a) There have been no instances over the past 10 years where the unavailability of a spare transformer resulted in new or extended customer outages.[1] The proposed *Substation Spare Transformer Inventory* project is not justified on the basis of historical outages resulting from the unavailability of spare transformers. Rather, the project is justified on a risk assessment that shows an increasing risk of power transformer failure going forward due to the age of the Company's fleet, and a limited and diminishing supply of spare units. See report *2.2 Substation Spare Transformer Inventory, Section 2.2 Risk Assessment.*

b) There are currently six units in Newfoundland Power's inventory of spare transformers that have a high voltage winding of 66 kV, a low voltage winding of either 25 kV or 12.5 kV, and a capacity up to 25 MVA. These range in capacity from 1.68 MVA to 13.3 MVA.[2]

[1] However, there have been instances over the last 10 years where a spare unit was not available in response to transformer failure, which resulted in extended deployments of portable substations. As examples, there were no spare units available following the failure of transformer BVA-T1 in 2018 or transformer RVH-T1 in 2017, which resulted in portable substations being deployed for between 10 and 11 months in both cases. The extended deployment of portable substations reduces Newfoundland Power's emergency response capabilities during those periods, exposing customers to a risk of prolonged outages. This risk is expected to increase going forward based on the age of Newfoundland Power's fleet of power transformers, recent experience with failures, and the Company's limited and diminishing inventory of spare units.

[2] See the *2023 Capital Budget Application*, report *2.2 Substation Spare Transformer Inventory*, page 12, Table 23.

c) Table 1 provides the age at time of failure for the 11 power transformer failures that occurred from 2017 to 2021.

Table 1
Power Transformer Failures (2017-2021)
Age at Failure

Transformer	Age at Failure
BLK-T2	44
DUN-T1	31
SLA-T3	48
SLA-T4	33
GBS-T1	54
HUM-T2	52
HUM-T3	46
PIT-T1	37
BVA-T1	29
PUL-T2	8
RVH-T1	49

For more information, see report *2.2 Substation Spare Transformer Inventory*, Appendix A, page 1.