Reference: "2023 Capital Budget Application," Newfoundland Power Inc., June 29, 2022, Schedule B, p. 107, para. 2 (Transmission Line 55L Rebuild).

Q. Inspections have identified that half of the poles on this line are deteriorated and a significant quantity of structures contain deficiencies. The probability of failure is therefore likely.

Please explain how Newfoundland Power quantifies the probability of failure and quantifies the consequence of failure in risk ratings.

A. Newfoundland Power used its risk matrix methodology to assess the risks associated with the capital projects and programs included in its *2023 Capital Budget Application*.[1] The risk assessments completed using this methodology are qualitative in nature and consider the potential consequences to customers of a capital project or program, and the probability of those consequences occurring if the project or program did not proceed.

The assessment of consequences considers risks to four principal business objectives: (i) maintain long-term reliable service; (ii) protect safety of employees and the public; (iii) avoid environmental degradation; and (iv) advance operational efficiency and effectiveness. Consequence values are assigned to capital projects and programs based on scoring guidelines.

The *Transmission Line 55L Rebuild* project involves rebuilding approximately 45 kilometres of transmission line serving customers in the Placentia area. Newfoundland Power identified the primary consequence of not executing this work as deteriorated service reliability to these customers.

In determining consequence values, the risk matrix methodology establishes that capital projects and programs driven by reliability consequences are first assessed based on the number of customers that would be affected by a potential outage. The values range from Negligible (1), meaning an outage would affect less than 100 customers, to Critical (5), meaning an outage would affect over 5,000 customers. Other considerations that may warrant a higher or lower value include outage duration, system configuration and resiliency to severe weather.

Transmission Line 55L is a radial line that serves as the sole source of supply for approximately 3,400 customers in the Placentia area. An equipment failure on Transmission Line 55L would result in outages to all customers served by the line. As large portions of the line are located across country away from road rights of way, customers served by this line have been exposed to lengthy customer outages. For example, customers experienced an outage that lasted approximately 4.5 hours in 2017 due to an equipment failure that occurred during a severe wind storm.

[1] For the risk matrix methodology, see the *2023 Capital Budget Application, 2023 Capital Budget Overview,* Appendix C.

Based on the number of customers that would be affected by an outage, and the prolonged nature of the outages these customers experience, the *Transmission Line 55L Rebuild* project was assigned a consequence value of Critical (5).

In determining probability values, Newfoundland Power's risk matrix methodology relies primarily on engineering judgment. Probability values range from Rare (1), meaning the probability of a consequence occurring is 10% or less, to Near Certain (5), meaning the probability of a consequence occurring is 91% or higher. For expenditures involving the refurbishment or replacement of existing plant, the probability value is determined primarily based on asset condition. Other considerations include previous operating experience and whether an asset has exceeded its expected useful service life.

Transmission Line 55L was originally constructed in 1971. The transmission line was not designed to meet current engineering standards and is therefore not built to withstand local climatic conditions. Customers served by Transmission Line 55L have experienced outages in recent years due to equipment failure and severe weather. Inspections completed in 2022 determined that 253 of 490 poles on the line have deteriorated to the point where replacement is required. In addition, 61 structures were identified as having other deteriorated or deficient equipment.

Based on the line's deteriorated condition and non-standard construction, the *Transmission Line 55L Rebuild* project was assigned a probability value of Likely (4), meaning the probability of a customer outage occurring is judged to be within a range of 76% to 90% if the project does not proceed.

This risk assessment resulted in the *Transmission Line 55L Rebuild* project having an overall priority score of 20, meaning not proceeding with the project would pose a high risk to the delivery of reliable service to customers.