

1 **Reference: 2024-2028 Capital Plan**

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3 **Q. Page 7. Equipment failures on the distribution system are said to have**
4 **increased by 34% from 2018-2002 over the previous five-year period. It is**
5 **stated that the risk of equipment failures is increasing going forward due to**
6 **the age of the Newfoundland Power system. In Newfoundland Power's**
7 **opinion is age the only cause of the increase in equipment failures and does**
8 **the age affect the corrective measures which are taken?**
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10 A. No, in Newfoundland Power's view, age is not the only direct cause of the increase in
11 equipment failures. Indirectly, the age of an asset can contribute to increased
12 equipment failures over the longer term. The age of an asset would not affect the
13 corrective measures taken to address equipment failures¹, but may affect preventative
14 measures which may be taken.²
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16 Age affects the condition of an asset. For example, as distribution poles age, their
17 strength gradually diminishes.³ This typically is not an issue during normal operations;
18 however, the diminished strength will reduce the ability of an old distribution pole to
19 withstand extreme weather conditions.⁴ This will fully or partially reduce a distribution
20 feeders' capability to withstand extreme weather conditions. This reduced capability is
21 the result of a combination of diminished component strength over time (i.e., the old
22 pole) and the diminished strength of the overall feeder.
23

24 Similarly, as distribution overhead conductor ages, its material properties and condition
25 degrade. Conductor can eventually lose both its mechanical and electrical strengths.
26 Due to the reduced mechanical strength, aging conductor generally has a higher
27 probability of failure as compared to newer conductor.

¹ The primary corrective maintenance program for distribution assets is the *Reconstruction* program, which addresses distribution system assets that have failed, are at imminent risk of failure, or present a safety hazard to employees and the public. These include failures resulting from severe weather and vehicle accidents, and those identified through inspection. There is no viable alternative to replacing failed distribution equipment in a timely manner, as deferring this work would lead to the unreliable operation of the distribution system and safety hazards for customers and the general public. See Newfoundland Power's *2024 Capital Budget Application, Schedule B*, page 31.

² The Company evaluated the alternative of reducing the pace of its *Rebuild Distribution Lines* program, which is a preventative maintenance program which addresses deficiencies identified through inspections or engineering reviews. The evaluation determined that reducing the pace of the program would involve reducing the pace of the Company's inspection cycle for its distribution system. Given the age and condition of the distribution system, there is a high probability that reducing the pace of the current inspection cycle would increase the frequency of in-service equipment failures. Further increases in equipment failures on the distribution system would place upward pressure on Newfoundland Power's ability to respond to customer outages. Ultimately, this would be expected to result in reduced service reliability for customers and higher costs as additional work would be completed in an unplanned fashion under emergency conditions. See Newfoundland Power's *2024 Capital Budget Application, Schedule B*, page 36.

³ Strength will very gradually diminish due to the natural effects of time. Age is not the only criteria in determining strength. Condition assessments and inspections are critical to proper management of aging assets.

⁴ For example, wind speeds in excess of 100 km/hr occur routinely in Newfoundland Power's service territory, averaging 50 days per year since 2014. For additional details, see the response to Request for Information PUB-NP-002.

1 Additionally, major events have become more frequent in Newfoundland Power’s service
2 territory. Major events have caused customer outages in nine of the last ten years,
3 compared to just four years in the prior decade.⁵ A significant portion of Newfoundland
4 Power’s electrical system assets were constructed in the 1960s and 1970s. These assets
5 are now approaching 50 to 60 years in service and may be more vulnerable to extreme
6 weather conditions due to their age.⁶ While a major event may be a *direct* cause of an
7 equipment failure, the age of a piece of equipment may have *indirectly* been a factor
8 which lead to the failure. Ensuring the electrical system is resilient and designed to
9 standards that reflect local climatic conditions is also important as standards evolve to
10 adapt to climate change.⁷

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12 Overall, maintaining the condition of the Company’s electrical system to address aging
13 assets is critical to ensuring the delivery of reliable service to customers. For additional
14 details on forecast expenditures to maintain the condition of the electrical system, see
15 the response to Request for Information PUB-NP-019.

⁵ See Newfoundland Power’s *2024 Capital Budget Application, 2024-2028 Capital Plan*, page 4.

⁶ Major events can affect assets which are new or recently refurbished, regardless of age.

⁷ See the response to Request for Information CA-NP-050.