

1 **Reference: "2023 Capital Budget Application," Newfoundland Power Inc., June 29,**
 2 **2022, Schedule B, p. 30, para. 2 (Distribution Feeder PEP-02**
 3 **Refurbishment).**

4
 5 **Q. The primary conductor faults are becoming more frequent, with**
 6 **eight faults occurring since July 2020. Approximately \$54,000 in**
 7 **maintenance costs to repair failed primary underground**
 8 **conductor have been incurred in the last 1.5 years.**

9
 10 **a) Please provide the SAIDI and SAIFI history for this feeder.**

11
 12 **b) Please indicate the improvements expected in terms of SAIDI and**
 13 **SAIFI due to this change.**

14
 15 A. a) Table 1 includes the SAIDI and SAIFI reliability statistics for distribution feeder
 16 PEP-02 for the period 2017 to 2021.

Table 1 PEP-02 Reliability Statistics 2017-2021						
	2017	2018	2019	2020	2021	Average
SAIDI	0.25	0.86	0.58	1.08	1.76	0.91
SAIFI	0.08	0.39	0.43	0.39	1.26	0.51

17 The *Distribution Feeder PEP-02 Refurbishment* project is not being brought
 18 forward as a result of historically poor reliability performance of the entire
 19 distribution feeder.¹ The 1.2 kilometres of direct buried XPLE insulated primary
 20 cable on Loop 34 of PEP-02 feeder is at end of life. This is demonstrated by the
 21 20 primary conductor faults since 2004 and the \$54,000 in corrective
 22 maintenance cost splicing the XPLE insulated primary cable in the past 1.5
 23 years.² Deterioration of the XPLE insulated primary cable has advanced to the
 24 point where it is no longer economical to repair and it must be replaced.³

¹ The Company's *Distribution Reliability Initiative* project identifies feeder refurbishments of the Company's worst performing feeders based on reliability performance.

² See the *2023 Capital Budget Application, Schedule B*, page 30.

³ The \$54,000 in maintenance cost splicing the XPLE insulated primary cable in the past 1.5 years is approximately 10% of the \$550,000 project cost to replace the 1.2 kilometres of direct buried cable.

1 The refurbishment work included as part of the PEP-02 refurbishment project
 2 involves replacing the deteriorated underground infrastructure on Loop 34. Loop
 3 34 provides service to 117 of the 1,334 customers supplied by distribution feeder
 4 PEP-02.

5
 6 Table 2 includes the SAIDI and SAIFI reliability statistics for Loop 34 of
 7 distribution feeder PEP-02 for the years 2020 and 2021.⁴

Table 2 PEP-02 Loop 34 Reliability Statistics 2020-2021			
	2020	2021	Average
SAIDI	8.15	3.71	5.93
SAIFI	3.20	1.74	2.47

8 Reliability statistics for looped distribution networks can be misleading when it
 9 comes to determining asset performance. The looped design of the underground
 10 distribution network, such as Loop 34, allows for service to be restored to
 11 customers once the crew arrives onsite and isolates the faulted cable through
 12 switching actions. Once service is restored to customers work to repair the
 13 faulted underground cable is completed. These repairs can take days to
 14 complete and require civil excavation and restoration work. As a result, the
 15 duration of the repair work is not reflected in the SAIDI statistics.

16
 17 b) It is not possible to predict the improvements in reliability for distribution feeder
 18 PEP-02 as a result of this project.

⁴ Reliability statistics for distribution feeder PEP-02 Loop 34 are only available for the years 2020 and 2021 as it comes from the Responder outage management database that went online in 2019.