

1 **Reference: Schedule B Projects and Programs over \$750,000**

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3 **Q. Page 61, Gambo Substation Refurbishment and Modernization Substations. It**

4 **is stated that a condition assessment determined that the substation contains**

5 **a significant amount of deteriorated and obsolete equipment with several**

6 **pieces of equipment at the end of life. List the number of equipment failures**

7 **at this substation in the last five years.**

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9 A. The only significant piece of equipment that has failed at Gambo ("GAM") Substation in

10 the last five years is the GAM-121L-B 138 kV circuit breaker which failed in 2022.¹ The

11 failure of GAM-121L-B was addressed under the *Substation Replacements Due to In-*

12 *Service Failures* program. There were other minor failures that were addressed during

13 corrective maintenance activities.²

14

15 GAM Substation contains equipment that is deteriorated, obsolete, and at end of life

16 which increases the probability of outages to customers. Two circuit breakers and a

17 significant quantity of switches require replacement based on their age and mechanical

18 condition. The electromechanical protection relays are obsolete and are no longer

19 industry standard. The wood pole structures and crossarms in the substation are

20 deteriorated and require replacement. The power transformers and voltage regulators

21 do not have spill containment foundations. There are deficiencies identified with the

22 ground grid that require upgrades.

23

24 The likelihood of substation outages is higher for substations with deteriorated

25 equipment and legacy equipment that lacks the functionality of modern protection and

26 control systems. This substation infrastructure is critical to electrical system reliability as

27 unplanned substation outages can result from failure of this infrastructure, affecting

28 thousands of customers. In the case of GAM Substation, approximately 4,870

29 customers are served directly and indirectly from the substation assets.

¹ The former GAM-121L-B oil-filled General Electric KSO 138 kV circuit breaker was 45 years old at the time of failure. For further details see Newfoundland Power's *2024 Capital Budget Application*, report 2.1 *2024 Substation Refurbishment and Modernization*, Appendix A, page 4.

² For example, failed battery chargers were replaced in 2019.