

NOVA SCOTIA ENERGY BOARD

IN THE MATTER OF: THE PUBLIC UTILITIES ACT

- and -

**IN THE MATTER OF: A Review of NOVA SCOTIA POWER INCORPORATED's FIVE-
YEAR RELIABILITY PLAN 2025-209**

INFORMATION REQUESTS – SET 1

To: **Jennifer Power**
Senior Regulatory Counsel
PO Box 901
Halifax, Nova Scotia, Canada B3J 2W5
Email: Jennifer.Power@nspower.ca

From: **Synapse Energy Economics**
Board Counsel Consultant

Responses Due: **April 24, 2026**

Copies: 1 electronic copy (PDF searchable)

Contact Person: **Jennifer Kallay**
Synapse Energy Economics
485 Massachusetts Avenue, Suite 3
Cambridge, MA 02139
Email: jkallay@synapse-energy.com

Performance to Date

1 **Request IR-1:**

2 Please provide NS Power's planned SAIDI and SAIFI, with and without major events, from
3 2015-2025 on an annual basis. Please provide in Excel with all supporting data and
4 calculations.

5 **Request IR-2:**

6 Page 4 of the Reliability Plan states NS Power “has responded with \$1.8 billion in system
7 infrastructure investments over that period [10 years].” Please provide an overview of these
8 investments by category of expenditure (e.g. vegetation management-distribution,
9 reconductoring, etc.) on an annual basis and in total across all years.

10 **Request IR-3:**

11 Please provide NS Power’s actual SAIDI and SAIFI, with and without major events, from 2015-
12 2025 on an annual basis. Please provide in Excel with all supporting data and calculations.

13 **Request IR-4:**

14 Please provide NS Power’s actual SAIDI and SAIFI, with and without major events, from 2015-
15 2025 on an annual basis, related to distribution system level outages. Please provide in Excel
16 with all supporting data and calculations.

17 **Request IR-5:**

18 Please provide NS Power’s actual SAIDI and SAIFI, with and without major events, from 2015-
19 2025 on an annual basis, related to transmission system level outages. Please provide in Excel
20 with all supporting data and calculations.

21 **Request IR-6:**

22 Please provide the planned and actual overall reliability improvement (e.g., change in SAIDI and
23 SAIFI) from Reliability Plan investments in 2025. Please provide all supporting evidence,
24 calculations, and quantitative data in Excel to support this response. Please explain how actual
25 values compare to plan values, and the reasons for the differences between the two values.

26 **Request IR-7:**

- 1 Has NS Power assessed reliability performance for the following customer types?
- 2 a. end users in different rate classes;
- 3 b. the Mi'kmaq of Nova Scotia;
- 4 c. customers who are medically-dependent on electricity;
- 5 d. communities that are served by equipment that is overloaded or feeders that are
- 6 constrained;
- 7 e. critical facilities;
- 8 f. customers with or required to have backup power;
- 9 g. other customer types not listed (please identify the customer types).

10 If so, please provide the results of these assessments.

11 **Request IR-8:**

12 If NS Power has not assessed reliability performance for these customer types to date:

- 13 a. Has NS Power identified the prevalence of each of these customer types on each feeder?
- 14 If so, please provide this data.
- 15 b. If not, are there any barriers to NS Power identifying the prevalence of each customer type
- 16 on each feeder?
- 17 c. Is NS Power planning on assessing reliability performance for any of these customer types
- 18 in the future? If so, which customer types will be assessed and when?

Process

19 **Request IR-9:**

20 Did NS Power meet with the Mi'kmaq of Nova Scotia regarding its Reliability Plan?

- 21 a. If so, when and for what purpose? If not, why not?
- 22 b. If so, did that discussion affect the Reliability Plan investments? In what way(s)?

23 **Request IR-10:**

24 Did NS Power study and/or consider the impacts of its proposed vegetation management and

25 infrastructure plans on the livelihood of the Mi'kmaq of Nova Scotia including the land, mineral,

26 plant and other natural resources, and animals upon which the Mi'kmaq of Nova Scotia depend

27 for survival and economic wellbeing? If so, when and how? If not, why not?

28 **Request IR-11:**

1 Did NS Power solicit input on reliability concerns from particular communities, customer types, or
2 customers classes, including but not limited to the Mi'kmaq of Nova Scotia, customers who are
3 medically-dependent on electricity, low-income customers, communities served by equipment
4 that is overloaded or feeders that are constrained, critical facilities, customers with or required to
5 have backup power, and/or Industrial customers?

6 a. If so, from which customers and how?

7 b. If so, were the concerns from each customer type incorporated into the Reliability Plan
8 and how?

9 c. If not, why not?

Data and Experience from Other Jurisdictions

Request IR-12:

11 In developing its performance goals and Reliability Plan, did NS Power consider its reliability
12 performance as compared to other U.S. and Canadian jurisdictions?

13 a. If so, which ones and why did NS Power focus on those jurisdictions?

14 b. If so, how did NS Power incorporate its consideration of reliability performance relative to
15 other U.S. and Canadian jurisdictions into its Reliability Plan?

16 c. If not, why not?

17 d. If not, which U.S. and Canadian jurisdictions does it make sense to compare NS Power's
18 reliability performance to moving forward and why?

Request IR-13:

20 Please provide the actual SAIDI and SAIFI, with and without major events, of all other Canadian
21 utilities from 2015-2025 on an annual basis. Please provide in Excel with all supporting data and
22 calculations. Please explain and provide supporting data in Excel with all calculations. Please
23 explain if NS Power's current reliability is worse, better, or similar to the current reliability of other
24 Canadian utilities.

Request IR-14:

26 In developing its performance goals and Reliability Plan, did NS Power examine the reliability
27 practices of U.S. and Canadian utilities?

28 a. If so, which utilities and how did this examination inform the Reliability Plan?

29 b. If not, why not?

Scope of Investments

Request IR-15:

Please explain how NS Power defines a “reliability” investment. Would any investment or expenditure on or around overhead powerlines enhance reliability?

a. How does NS Power determine which investments should be included as a part of the Reliability Plan?

b. Which reliability-related investments are addressed through other investment plans and why?

Request IR-16:

Are the Reliability Plan investments intended to capture “proactive” investments (e.g. before it is necessary), “reactive” investments (e.g. when it is necessary for either compliance or to fix broken equipment), or both? Please explain why the Reliability Plan includes these types of investments.

Request IR-17:

Please quantify which of the Reliability Plan investments and expenditures are “proactive” (e.g. before it is necessary) versus “reactive” (e.g. when it is necessary for either compliance or to fix broken equipment). Please break this data out by capital and O&M, the category of expenditure (e.g. vegetation management-distribution, reconductoring, etc.), and provide the data on an annual basis and in total across all years.

Request IR-18:

Please provide Figure 1: Forecast Investment by Reliability Program 2025-2029 (\$ million) on page 5 of the Reliability Plan, in Excel with all supporting data, calculations, and work papers. As part of this response, please provide the unit cost assumed for each program (e.g., \$/circuit mile or \$/asset) and the derivation of that unit cost with all supporting data. For the \$/asset costs, please estimate a \$/circuit mile cost based on the average number of assets per circuit mile.

Request IR-19:

Please provide Figure 2: Contribution to CHI by Outage Cause 2019-2023 (Including all Storms) on page 9 of the Reliability Plan, in Excel with all supporting data, calculations, and work papers.

a. Please provide all data shown here in Excel by year for 2010-2025 (if available).

b. Please provide this data in Excel on a feeder-level basis.

- c. The note for this figure states, “*These cause codes have been adjusted from the original Electricity Canada methodology as discussed above to illustrate the additional contribution from tree contacts within Adverse Weather”.
- i. Please provide the Electricity Canada methodology that is referenced here.
 - ii. Please describe in more detail how the cause codes were adjusted in this figure.
- d. Please define the scope and contents of each of the following categories and address specific questions:
- i. Adverse weather: Were avalanche, coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane, ice storm, inland flooding, landslide, strong winds, tornados, wildfire, and winter weather considered? Which of these natural events were considered?
 - ii. Defective equipment: Were aging components, insulation breakdown, and loose connections considered? What other examples were considered?
 - iii. Foreign interference: Were cybersecurity attacks and terrorism considered? What other examples were considered?
 - iv. Adverse environment: Were animals, moisture, debris, and corrosion considered? What other examples were considered?
 - v. Human element: Were overloading and vandalism considered? What other examples were considered?

Request IR-20:

Did NS Power consider changes to the frequency and severity of these root causes over time as part of its Reliability Plan?

- a. If so, what changes to the root causes were considered and how was each change factored into the plan? For example, is wildfire risk growing over time and if so, how is that change factored into the Reliability Plan?
- b. If not, why not?

Request IR-21:

Did NS Power consider backup power as a potential solution to reliability issues?

- a. If so, how was it considered?
- b. If so, why doesn't this solution appear in the plan?
- c. If not, why not?

Request IR-22:

1 Can NS Power identify the prevalence of customers with backup power on feeders? How robust
2 is NS Power's data on customers with backup power? Does NS Power have data on all
3 installations of backup power, or only a subset of the total installations? Please explain.

4 **Request IR-23:**

5 Would it make sense for NS Power to deploy backup power to address reliability issues on feeders
6 that serve a small number of customers?

7 a. Why or why not?

8 b. If so, would backup power be considered to be a temporary or permanent solution for
9 these customers?

10 **Request IR-24:**

11 Did NS Power consider diminishing returns in developing its Reliability Plan (e.g., reliability
12 improvements are harder and more expensive to come by as lower hanging fruit is addressed)?

13 a. If so, how?

14 b. If not, why not?

15 c. Is there a point at which the incremental investments would not be worthwhile? Please
16 explain.

17 **Request IR-25:**

18 Did NS Power reflect operational constraints (e.g., how many miles a vegetation crew can clear
19 in a day) in its Reliability Plan?

20 a. If so, how?

21 b. If not, why not?

22 **Request IR-26:**

23 Did NS Power account for the interactions between solutions in its Reliability Plan?

24 a. If so, how?

25 b. If not, why not?

26 **Request IR-27:**

27 Were any alternative plans considered?

28 a. If so, what were the alternatives and why was this plan selected over the other(s)?

29 b. If not, why not?

Prioritization of Investments

Request IR-28:

Regarding feeder-level prioritization for reliability and risk, please provide the following feeder-level basis for NS Power's service territory in Excel where possible with supporting data:

- a. Feeder ID (unique identifier that is consistent among data sets);
- b. Whether the feeder is underground, overhead, or both;
- c. Whether the feeder is distribution or transmission-level;
- d. Overhead circuit miles of the feeder;
- e. Underground circuit miles of the feeder;
- f. SAIDI from 2015-2025 on an annual basis;
- g. SAIFI from 2015-2025 on an annual basis;
- h. Outages by cause (e.g. vegetation, equipment failure, etc.) in each year. If additional detail on outage cause is available, please provide (e.g. tree fall-in vs. tree contact, specific equipment failure, etc.);
- i. Condition score or indicator;
- j. Number of residential customers;
- k. Number of commercial customers;
- l. Number of industrial customers;
- m. Load of residential customers;
- n. Load of commercial customers;
- o. Load of industrial customers;
- p. Ability to access score or indicator;
- q. Ability to mitigate score or indicator;
- r. Performance standard;
- s. Criticality score or indicator;
- t. The feeder risk rating (factoring in condition and criticality scores or indicators);
- u. An indicator of whether the feeder is targeted, or has already been targeted, for Reliability Plan investment, and for which year;
- v. Why the feeder is targeted, whether based on risk score or some other criteria;
- w. If targeted for Reliability Plan investment, what program(s) include the investments.
- x. Expected cost by program for each feeder, if targeted for investment under the Reliability Plan.

Request IR-29:

1 Please describe whether and how each of the following is weighted in the criticality score:

2 a. the number of customers;

3 b. the load of customers;

4 c. the performance standard.

5 **Request IR-30:**

6 Please demonstrate the mathematical calculation showing how the various components of the
7 criticality score are used to derive the criticality score for a single feeder. For the same feeder,
8 please demonstrate the mathematical calculation showing how the asset condition is combined
9 with the criticality score to arrive at the risk rating.

10 **Request IR-31:**

11 Please describe how the condition of each asset is scored, the range of scores applied to the risk
12 rating, what each score means, and how asset condition is weighted in the risk rating.

13 **Request IR-32:**

14 Please describe how the ability to access each asset is scored, the range of scores applied to the
15 risk rating, what each score means, and how asset condition is weighted in the criticality score.

16 **Request IR-33:**

17 Please describe how the ability to mitigate each asset is scored, the range of scores applied to
18 the risk rating, what each score means, and how asset condition is weighted in the criticality score.

19 **Request IR-34:**

20 Please provide all documentation and data related to the derivation of the feeder reliability risk
21 score and how it was used to identify and prioritize investments. Please identify the proceedings
22 where this documentation and data was filed.

23 **Request IR-35:**

24 Please confirm if the risk rating methodology prioritizes any of the following customer types above
25 any other:

26 a. end users in different rate classes;

27 b. the Mi'kmaq of Nova Scotia;

28 c. customers who are medically-dependent on electricity;

- d. communities that are served by equipment that is overloaded or feeders that are constrained;
- e. critical facilities;
- f. customers with or required to have backup power
- g. other customer types not listed (please identify the customer types).

Request IR-36:

Did NS Power design its plan to address disparities in reliability for certain populations, including but not limited to the Mi'kmaq of Nova Scotia and vulnerable customers? If so, how?

Cost-Effectiveness

Request IR-37:

Please discuss how NS Power considered cost-effectiveness in its Reliability Plan.

- a. What metric(s) did NS Power use to evaluate cost-effectiveness?
- b. How did NS Power evaluate cost-effectiveness? What costs did NS Power include? What benefits did NS Power include?
- c. Did NS Power evaluate cost-effectiveness at the feeder level? If so, please provide all data and analysis related to this evaluation.
- d. Did NS Power evaluate the cost-effectiveness of each potential solution? If so, please provide all data and analysis related to this evaluation.
- e. Did NS Power evaluate the cost-effectiveness of improving reliability for certain types of customers? If so, please provide all data and analysis related to this evaluation.

Request IR-38:

Regarding Figure 4: The Path to Improving SAIDI by 20 Percent on page 13 of the Reliability Plan:

- a. Please provide this figure and all supporting data and calculations in Excel.
- b. Please provide all quantitative calculations and data in Excel for how reliability improvements were calculated. Please provide at the most granular level available (e.g. program or feeder level).
- c. Please also provide a narrative explanation of how SAIDI improvements were estimated.

Request IR-39:

Regarding the Storm Hardening-Vegetation Management program discussed starting on page 15 of the Reliability Plan:

- a. Please provide the derivation of the total cost, including all supporting data and calculations in Excel.
- b. Please provide the derivation of the SAIDI reduction, including all supporting data and calculations in Excel.
- c. Please provide the mitigation effectiveness (i.e. percent reliability improvement) for each of the listed strategies, separately (distribution corridor widening with managed right of way; transmission corridor widening with managed right of way, establishing new rights of way, and trimming and removal of power lines). Please provide the derivation of these estimates including all supporting data and calculations and a narrative explanation.
- d. Please provide the existing vegetation management standards for NS Power's system:
 - i. Is there a standard clearance requirement or utility standard (i.e. inches of clearance from conductor to a tree branch) for the distribution system? If yes, what is it? If no, why not? Please explain and provide supporting documents.
 - ii. Is there a standard clearance requirement or utility standard (i.e. inches of clearance from conductor to a tree branch) for the transmission system? If yes, what is it? If no, why not? Please explain and provide supporting documents.
 - iii. What is the standard requirement or utility standard for tree trimming and tree removal? Please explain and provide supporting documents.
- e. Please explain whether, to what extent, and how the Reliability Plan goes beyond these existing standards/requirements.
- f. Please provide and explain the criteria under which "tree removal" is recommended versus "tree trimming."

Request IR-40:

Please refer to the list of strategies on page 15, lines 23-26 of the Reliability Plan. Please provide the following (in Excel with all calculations, where applicable):

- a. Assumed or estimated unit cost (e.g. \$/circuit mile or other unit where applicable);
- b. The most granular unit cost available (i.e. by asset or activity), at minimum separate unit costs for tree trimming versus tree removal;
- c. Source and derivation of total cost estimate;
- d. Estimated reliability improvement in total and all support for the derivation of this estimated reliability improvement, including all calculations in Excel;

Request IR-41:

Regarding Figure 5: Distribution Vegetation Management Right of Way Widening (2025) on page 17 of the Reliability Plan and the Distribution Corridor Widening with Managed Right-of-Way program:

- a. In Excel, please provide the Feeder IDs shown that correspond to this map and align with the Feeder IDs provided in response to question 17.
- b. Please explain and provide all quantitative support for why these feeders were targeted in 2025. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.
- c. Please indicate the feeder IDs for which work was completed in 2025.
 - i. Please provide the total cost of each program for each feeder where work was accomplished.
 - ii. For feeders where work was not accomplished, please explain why this was the case.
 - iii. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.
 - iv. Why did NS Power implement programs on feeders it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.

Request IR-42:

Regarding Figure 7: Transmission Corridors Targeted for Widening (2025) on page 19 of the Reliability Plan and the Transmission Corridor Widening with Managed Rights of Way program:

- a. In Excel, please provide the Feeder IDs shown that correspond to this map and align with the Feeder IDs provided in response to question 17.
- b. Please explain and provide all quantitative support for why these feeders were targeted in 2025. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.
- c. Please indicate the feeder IDs for which work was completed in 2025.
 - i. Please provide the total cost of each program for each feeder where work was accomplished.
 - ii. For feeders where work was not accomplished, please explain why this was the case.
 - iii. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.

- 1 iv. Why did NS Power implement programs on feeders it had not originally planned
2 on targeting? Please provide all qualitative and quantitative analysis in support of
3 this response.

4 **Request IR-43:**

5 Regarding Figure 8: New Rights-of-Way for Distribution Feeders on page 21 of the Reliability Plan
6 and the New Rights-of-Way for Distribution Feeders:

- 7 a. In Excel, please provide the Feeder IDs shown that correspond to this map and align with
8 the Feeder IDs provided in response to question 17.
- 9 b. Please explain and provide all quantitative support for why these feeders were targeted in
10 2025. Please use data provided in response to question 17 as part of this response, and
11 provide any other data or calculations as needed in Excel.
- 12 c. Please indicate the feeder IDs for which work was completed in 2025.
- 13 i. Please provide the total cost of each program for each feeder where work was
14 accomplished.
- 15 ii. For feeders where work was not accomplished, please explain why this was the
16 case.
- 17 iii. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan
18 but were targeted for reliability investment in 2025.
- 19 iv. Why did NS Power implement programs on feeders it had not originally planned
20 on targeting? Please provide all qualitative and quantitative analysis in support of
21 this response. XXX

22 **Request IR-44:**

23 For each feeder listed in Figure 10: 2025 Trip Saver Installations on page 5 of the Reliability Plan,
24 please explain and provide all quantitative support for why these feeders were targeted in 2025.
25 Please reference the data provided in question 17 as part of this response, and provide any other
26 data or calculations as needed in Excel.

- 27 a. Please provide the reliability improvements from trip saver installations for each feeder
28 and the derivation of the estimate.
- 29 b. Please provide the total cost of the program for each feeder where work was
30 accomplished.
- 31 c. For feeders where work was not accomplished, please explain why this was

d. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.

e. Why did NS Power implement programs on feeders it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.

Request IR-45:

Regarding page 25, lines 11-19, and page 26, lines 1-7 of the Reliability Plan, discussing new equipment and infrastructure projects meant to serve significant demand growth:

a. Please describe why these investments belong in the 5-year reliability plan, as opposed to a different proceeding or filing.

b. Please provide the cost of these activities on an annual basis and across all years. Please provide all supporting workpapers in Excel related to these cost estimates.

Request IR-46:

Regarding Figure 11: 2025 Bring-to-Roadside Projects on page 27 of the Reliability Plan and the Distribution Build-to-Roadside Program:

a. Please explain and provide all quantitative support for why the feeders listed were targeted in 2025. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.

b. For each feeder listed in Figure 11:

i. Please provide the reliability improvements from conductor upgrades for each feeder and the derivation of the estimate. Please provide supporting workpapers and calculations in Excel.

ii. Please provide the total cost of each program for each feeder where work was accomplished. Please provide supporting workpapers and calculations in Excel.

iii. For feeders where work was not accomplished, please explain why this was the case.

iv. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.

v. Why did NS Power implement programs on feeders it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.

Request IR-47:

Regarding Figure 12: 2025 Conductor Upgrades by Region on page 28 of the Reliability Plan and the Distribution System Conductor Upgrades program:

- a. Please explain and provide all quantitative support for why the feeders listed were targeted in 2025. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.
- b. For each feeder listed in Figure 12:
 - i. Please provide the reliability improvements from conductor upgrades for each and the derivation of the estimate. Please provide supporting workpapers and calculations in Excel.
 - ii. Please provide the total cost of each program for each feeder where work was accomplished. Please provide supporting workpapers and calculations in Excel.
 - iii. For feeders where work was not accomplished, please explain why.
 - iv. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.
 - v. Why did NS Power implement programs on feeders it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.

Request IR-48:

Regarding the Distribution System Underground Upgrades Program described on pages 28-29 of the Reliability Plan:

- a. Please provide a comparison of overhead versus underground reliability basis for 2020-2025 or recent years available. Please provide supporting workpapers and calculations in Excel.
- b. Does NS Power consider underground and overhead infrastructure to have similar levels of reliability issues? Please explain and provide supporting analyses.
- c. For 2020-2025, please provide the number of outages and customer minutes of outage on for distribution overhead and distribution underground miles. Please provide on a per total overhead and per total underground miles or other normalized basis to compare these statistics. Please provide supporting workpapers and calculations in Excel.
- d. In Excel, please provide the feeders and Feeder IDs that correspond to each underground upgrade project that is described.

- 1 e. Please explain and provide all quantitative support for why these feeders were targeted in
2 2025. Please use data provided in response to question 17 as part of this response, and
3 provide any other data or calculations as needed in Excel.
- 4 i. Please provide the total cost of each program for each feeder where work was
5 accomplished.
- 6 ii. Please provide the reliability improvements from underground upgrades for each
7 and the derivation of the estimate.
- 8 iii. For feeders where work was not accomplished, please explain why this was the
9 case.
- 10 iv. Please provide a list of feeder IDs that were not prioritized in the Reliability Plan,
11 but were targeted for reliability investment in 2025.
- 12 v. Why did NS Power implement programs on feeders it had not originally planned
13 on targeting? Please provide all qualitative and quantitative analysis in support of
14 this response.

15 **Request IR-49:**

16 Regarding Section 5.2 (Transmission System Upgrades and Replacements) on page 29 of the
17 Reliability Plan:

- 18 a. Please describe the projects that comprise the \$33 million in investments in 2025 in more
19 detail.
- 20 b. For each initiative described (traditional replacements and upgrades, site-specific unique
21 projects, key programs aimed at ongoing maintenance and asset life extension), please
22 break out proposed projects in more detail.
- 23 i. Please provide the total cost of each initiative subcomponent.
- 24 ii. Please provide the reliability improvements of each initiative subcomponent.
- 25 iii. For each initiative subcomponent where work was not accomplished, please
26 explain why this was the case.
- 27 iv. Please provide a list of projects that were not prioritized in the Reliability Plan, but
28 were targeted for investment in 2025.
- 29 v. Why did NS Power implement programs on projects it had not originally planned
30 on targeting? Please provide all qualitative and quantitative analysis in support of
31 this response.
- 32 c. Beyond the budgeted amounts for the initiatives described (\$14.7 million for traditional
33 replacements and upgrades, \$3.6 million for site-specific unique projects, \$4.8 million for

key programs aimed at ongoing maintenance and asset life extension), which projects did the remainder of the \$33 million in 2025 spending for this program go toward?

Request IR-50:

Regarding Section 5.3 (Substation Upgrades and Replacements) on pages 29 and 30 of the Reliability Plan:

- a. What is the expected reliability improvement for these projects? Please explain and provide quantitative support and analysis in Excel.
- b. In Excel, please provide the Substation IDs for all projects described that correspond to the map that was provided as part of the response to question 17.
- c. Please describe the projects that comprise the \$33 million in investments in 2025 in more detail.
- d. For each substation transformer replacement described, as well as for the spare transformer purchase:
 - i. Please provide the total cost of each project.
 - ii. Please provide the reliability improvements from each project.
 - iii. For each project where work was not accomplished, please explain why this was the case.
 - iv. Please provide a list of projects that were not prioritized in the reliability plan but were targeted for investment in 2025.
 - v. Why did NS Power implement programs on projects it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.
- e. Beyond the budgeted amounts for the initiatives described (\$14.7 million for traditional replacements and upgrades, \$3.6 million for site-specific unique projects, \$4.8 million for key programs aimed at ongoing maintenance and asset life extension), which projects did the remainder of the \$33 million in 2025 spending for this program go toward? Please explain and provide supporting workpapers in Excel.

Request IR-51:

Regarding page 30, lines 9-13 of the Reliability Plan, regarding new substations meant to serve new customers and evolving demand growth, please explain and cite applicable Board Orders for why these investments belong in the 5-year reliability plan, as opposed to a different proceeding.

Request IR-52:

Regarding the Advanced Grid Modernization Programs program discussed starting on page 31 of the Reliability Plan:

- a. Please provide the derivation of the total cost, including all supporting data and calculations in Excel.
- b. Please provide the derivation of the SAIDI reduction, including all supporting data and calculations in Excel.
- c. Please provide the mitigation effectiveness (i.e. percent reliability improvement) for each of the listed subprograms, separately (Connected Assets and Fault Isolation and Service Restoration). Please provide the derivation of these estimates including all supporting data and calculations and a narrative explanation.
- d. Please describe the existing grid visibility and monitoring capabilities being used today.
 - i. What level of control and visibility currently exists regarding Distributed Energy Resources (DERs)?
 - ii. Please describe and quantify, if possible, the increased level of visibility and control the programs described in this chapter will allow the Company. Please provide all supporting workpapers.
- e. Regarding part (d), please explain whether and how the reliability plan goes beyond these existing requirements.
- f. Please describe how grid modernization interacts with the other categories of investment proposed in the reliability plan. For example, will increased automation and monitoring of grid conditions allow the Company to more effectively conduct vegetation management or equipment replacement programs?

Request IR-53:

For each of the listed areas of focus on page 31, lines 18-19 of the Reliability Plan and discussed in Section 5, please provide the following (in Excel with all calculations, where applicable):

- a. Assumed or estimated unit cost (e.g. \$/circuit mile or other unit where applicable).
- b. The most granular unit cost available (i.e. by asset or activity).
- c. Derivation of total cost estimate.
- d. Estimated reliability improvement in total and all support for the derivation of this estimated reliability improvement, including all calculations in Excel.

Request IR-54:

Regarding Section 6.1 (Connected Assets) on pages 31 to 33 of the Reliability Plan:

- a. Please explain and provide examples, at the substation (and associated feeder level), the current level of SCADA deployment.
- b. What are the upgrades necessary to implement SCADA, and how will the programs in the reliability plan allow NS Power to implement it? Please be as specific as possible.
- c. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.

Request IR-55:

Regarding Figure 13: Remote Terminal Units Proposed for 2025 on page 32 of the Reliability Plan and the Remote Terminal Units (RTUs) program:

- a. Please explain and provide all quantitative support for why these substations were targeted in 2025. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.
- b. Please explain how Remote Terminal Units improve reliability.
- c. Please provide the feeders and Feeder IDs associated with the substations listed.
- d. For each listed substation in the figure:
 - i. Please provide the reliability improvements from RTU upgrades for each substation (and feeder, if available) and the derivation of the estimate.
 - ii. Please provide the total cost of the program for each substation (and feeder, if available) where work was accomplished.
 - iii. For substations where work was not accomplished, please explain why this was the case.
 - iv. Please provide a list of substations that were not prioritized in the Reliability Plan but were targeted for reliability investment in 2025.
 - v. Why did NS Power implement programs on substations it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.XXX

Request IR-56:

Regarding Section 6.1.2 (Downline Connectivity), where NS Power discusses “learnings in field deployment and Control Center integration” on page 33, line 10 of the Reliability Plan, please describe the lessons learned from previously executed projects and how they will lead to improved reliability benefits in the Downline Connectivity program proposed in the reliability plan.

Request IR-57:

Regarding Figure 14: Downline Reclosers Planned for 2025-2026 on page 33 of the Reliability Plan:

- a. Please explain and provide all quantitative support for why the substation-feeder connections listed in Figure 14 were targeted in 2025-2026. Please use data provided in response to question 17 as part of this response, and provide any other data or calculations as needed in Excel.
- b. For each feeder-substation connection listed:
 - i. Please provide the reliability improvements from substation-feeder connectivity for each upgrade and the derivation of the estimate.
 - ii. Please provide the total cost of each project for each substation-feeder pair where work was accomplished.
 - iii. For feeders where work was not accomplished, please explain why this was the case.
 - iv. Please provide a list of feeder-substation pairs that were not prioritized in the Reliability Plan, but were targeted for reliability investment in 2025.
 - v. Why did NS Power implement programs on connections it had not originally planned on targeting? Please provide all qualitative and quantitative analysis in support of this response.

Request IR-58:

Regarding Section 6.2 (Fault Location Isolation and Service Restoration) starting on page 34 of the Reliability Plan:

- a. Please provide the industry case studies and statistics mentioned on page 34, lines 17-18, showing that investment in Centralized and De-centralized self-healing grid projects can improve reliability.
- b. Please explain and provide all studies and quantitative support for the 61 percent reduction in CHI discussed on page 34, line 24. Please provide the percentage reduction expected from Reliability Plan projects with supporting workpapers and analyses.
- c. Regarding individual feeder-level installations:
 - i. Please provide the expected reliability improvements from substation and/or feeder-level projects and the derivation of the estimate. Please provide each unique feeder ID.
 - ii. Please provide the total cost of each potential program at each substation and/or feeder where work will be accomplished.

Request IR-59:

Regarding Section 6.2.1 (Distributed Energy Resources (DERs) on page 35, lines 7-8 of the Reliability Plan, where it says “Following on the successes of the Intelligent Feeder and Smart Grid Nova Scotia projects, NS Power is evaluating its approach to best integrate DER into the Nova Scotia grid”:

a. Please describe how this evaluation of the approach to integrating DERs will be conducted, and what the proposed budget will be.

b. Please describe the lessons learned from the Intelligent Feeder and Smart Grid Nova Scotia projects, and how these will be incorporated into the DER evaluation.

Request IR-60:

When will the results of the Residential and Commercial jurisdiction-specific studies on dollar benefits associated with the Value of Lost Load (VoLL) be available?

Request IR-61:

Is NS Power planning to incorporate dollar benefits associated with VoLL into its cost-effectiveness evaluation, based on the jurisdiction-specific studies that are currently in process?

a. If so, when and how?

b. If not, why not?

Request IR-62:

What other benefits should be considered in a cost-effectiveness evaluation of Reliability Plan investments?

Request IR-63:

Is NS Power planning to incorporate dollar values associated with any other types of benefits (other than VoLL) into evaluation of cost-effectiveness for reliability planning? If so, which values, when, and how?

Request IR-64:

Does NS Power think that some investments in its Reliability Plan may not be cost effective?

a. If so, which investments and why would they not be cost-effective?

b. If so, why were these investments included in the Reliability Plan?

Affordability

1 Request IR-65:

2 Please discuss how NS Power considered affordability in its Reliability Plan.

3 a. What metric(s) did NS Power use to evaluate affordability?

4 b. How did NS Power evaluate affordability?

5 c. Did NS Power evaluate affordability for different types of customers or overall?

6 d. Did NS Power evaluate the affordability relative to other types of investments or as
7 compared to other investment plans?

8 e. Did NS Power evaluate any affordability benefits associated with avoiding potential future
9 costs? If so, please identify those costs and explain how.

10 f. How does NS Power ensure that its Reliability Plan investments are not duplicative and
11 do not overlap with its other investment plans?