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Request IR-10:

In Matter M12185, the Board established the following targets for CKAIFI and CKAIDI for the year 2024:

- **Circuit Average Interruption Frequency Index (CKAIFI) ≤ 5.03**

- **Circuit Average Interruption Duration Index (CKAIDI) ≤ 19.00**

Additionally, on PDF page 11 of the decision in Matter M12185, the Board included annual listings of problem circuits.

In response to IR-3, NS Power provided the CKAIDI and CKAIFI metrics for the feeders selected in this project, covering the period from 2020 to year-to-date 2025. If only the 2024 CKAIDI and CKAIFI targets are considered, all selected feeders meet the 2024 targets except for the CKAIFI of feeder 137H-414. However, for analysis purposes only, if the maximum values from the past five years (year-to-date) are considered, the following feeders do not meet the 2024 targets: feeder 11S-411 (both CKAIFI and CKAIDI), feeder 137H-414 (CKAIFI), and feeder 85S-401 (both CKAIFI and CKAIDI).

(a) Please explain why feeders with no history of issues and performance well below the CKAIFI and CKAIDI targets were selected for the FLISR upgrades.

(b) Please explain why the circuits identified as problem circuits in Matter M12185 were not selected.

Response IR-10:

(a) Feeders selected for deployment of FLISR technology are located in high customer density areas of the grid, where outages can impact a large number of customers. These areas are categorized as high criticality as interruptions result in disproportionately high localized Customer Hours of Interruption (CHI) impacts and can also contribute, on average, more significantly to system-level reliability metrics (SAIFI and SAIDI) due to customer density in these areas. These SAIFI and SAIDI system-level metrics are also included in performance-based standards set by the Board and are positively impacted by improving reliability on high customer count circuits. By mitigating outages in such areas, this can result in avoiding a proportionally larger contribution to CI and CHI, and consequently SAIFI and SAIDI respectively.

While traditional reliability prioritization focuses largely on lagging indicators, such as historical outage frequency and duration, to identify underperforming feeders, a risk-based approach expands the analysis by further incorporating both leading indicators as well as consideration for the consequence of interruptions. This approach highlights that in high-criticality, high-density areas, such as those identified in the project, avoided outages can yield proportionately greater customer and system value. The automated actions of a FLISR system can materially reduce outage duration and therefore reduce the amplified impacts in high customer density areas such as those targeted for deployment in this project.

In addition, the feeders selected for FLISR deployment were chosen, in part, based on minimal infrastructure build-out requirements to implement, allowing for cost-efficient deployment and faster realization of customer benefits. The deployment and operationalization of this project will also support and inform future scaling and optimization of FLISR across the system.

In summary, the FLISR deployment in these high criticality and high customer density areas provides cost-efficient reliability benefits, while advancing NS Power’s capability to deploy this technology more broadly and efficiently in the future.

(b) The feeders identified as problem feeders in M12185 were not selected because the impact and cost-effectiveness of the chosen feeders was greater, in part due to the radial configuration and existing ties. Please refer to part (a).

The Centralized FLISR deployment in Halifax West End / Fairview (2H-411, 2H-421, 104H-433, 104H-423, and 103H-433) and Decentralized FLISR deployment in Bedford West (129H-412 and 137H-414) were selected due to the criticality and customer density increasing impact of deployment and the cost-effectiveness of utilizing existing infrastructure.

Additionally, the FLISR deployments on 85S-401 and 11S-411 met the criteria and scope to be included in the NRCan funding project proposal for "Automated & Increased Segmentation" deployment in comparison to the feeders identified in M12185, allowing for more cost effective deployment through external funding contributions.

Subject to the completion and learnings regarding implementation of this deployment of FLISR on the NS Power system, potential future deployments will continue to take into consideration the factors noted in part (a) (i.e. impact and cost effectiveness) with further consideration of problem feeders identified under M12185.

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Request IR-11:

In response to IR-3(a), NS Power stated that the relative improvements in CKAIFI and CKAIDI will vary depending on the feeder configuration, other ongoing reliability investments, weather conditions, and the type of FLISR solution applied in each case.

In response to IR-1, Starting in 2020, NS Power provided a list all activities along with their investment dollar values that were undertaken to improve the reliability of each feeder. For example, the utility has spent approximately $3.7 million on feeder 11S-411 from 2020 through 2025 to improve reliability.

In response to IR-1, NS Power provided outage causes categorized by Customer Hours of Interruption (CHI), including defective equipment and tree contacts. These causes, which remain under the utility's control, still constitute a significant portion of the total CHI hours. Attachment 1, which was provided to highlight the benefits of FLISR technology in other jurisdictions, did not specify the extent of control other utilities had over the outage causes prior to the implementation of FLISR.

(a) Please explain how the Board can have confidence that this investment will deliver value if the other outage causes under the utility's control remain unresolved or unmanaged.

(b) Please provide outage causes categorized by CHI for each year since 2020, for any other jurisdiction noted in the Attachment 1.

Response IR-11:

(a) The proposed FLISR solutions are effective risk mitigation strategies regardless of the initial cause of an outage (excluding loss of supply events) and complement NS Power's ongoing mitigation efforts on targeted feeders. These investments in advanced protection

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schemes support the overall improvement of reliability for customers in concert with other risk mitigation strategies such as targeted asset replacements or vegetation management.

No single risk mitigation strategy can fully address all outage causes, including equipment defects or vegetation encroachments, so investments such as FLISR provide an additional layer of reliability improvement. In the cases of vehicle accidents, off-ROW tree contacts, lightning strikes, animal contacts, equipment manufacturing defects, adverse weather, and other outage causes where many risk mitigation strategies are less effective, FLISR can provide reliability improvements for customers through faster switching, increased segmentation, and/or fault detection.

NS Power evaluates reliability initiatives through its Asset Management framework, ensuring an appropriate mitigation approach is applied to identified risks on targeted feeders. As outlined in IR-10, the proposed solution has demonstrated industry-wide value, remains effective regardless of the outage cause, and is cost-effective.

(b) NS Power does not have access to this level of data granularity as the information is not publicly available.

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Request IR-12:

Page 6 of Attachment 1 lists the benefits. Among other advantages, under operational efficiency, it notes that FLISR schemes improve cost-effectiveness by reducing manual switching and fault patrols, lowering field technician hours, truck rolls, vehicle maintenance, and GHG emissions. When fault location data is available and outages are minimized, utilities can optimize crew deployment and prioritize restoration efforts more effectively and efficiently.

(a) Please estimate the five-year benefits following the implementation of this project, in terms of time and cost savings as noted above, for each of the feeders selected in the application.

Response IR-12:

(a) FLISR benefits are well established and demonstrated in comparable utility implementations, as described in IR-4 Attachment 1. High-level avoided time and operational costs can be estimated as presented below. These potential avoided operational costs have been developed using average historical data for the selected feeders. While past outage data can help frame an order of magnitude of potential benefits, historical reliability performance may not be a reliable predictor of future benefits. Additionally, as noted in IR-11, FLISR is one layer of additional reliability protection; no single risk mitigation strategy can fully address all outage causes, including motor vehicle accidents, equipment defects or vegetation encroachments. Therefore, results specifically with respect to the FLISR technology should be considered directional rather than prescriptive.

Historical data for the selected feeders, as provided in IR-1(a), was analyzed to identify the annualized average number and duration of outages, for outages greater than 100 customers (set as the *approximate* minimum for a FLISR operation), for each project, as presented in the table below.

Feeder Circuit or FLISR Type	Count of Outages (>100 cust) [outages per year]	Average Outage Duration (> 100 cust) [hrs]
85S-401	25.9	4.6
11S-411	13.2	3.6
Centralized 103H-433, 104H-433, 104H-423, 2H-411, 2H-421	19.7	2.7
Decentralized 129H-412, 137H-414	13.5	2.3

Evidenced by the jurisdictional scan and experience, as described in IR-4 Attachment 1, the expected reduction in impacted customers during outage conditions ranges from 40-60 percent.

Feeder Circuit or FLISR Type	Total Customers	40% of Customers	60% of Customers
85S-401	2,256	902	1,354
11S-411	3,315	1,326	1,989
Centralized 103H-433, 104H-433, 104H-423, 2H-411, 2H-421	10,954	4,382	6,572
Decentralized 129H-412, 137H-414	4,182	1,673	2,509

As further described in IR-4 Attachment 1, the estimated directional reduction in duration of outages conservatively ranges from 12-25 percent. Using the average avoided outage duration, PLT Labour, and Administrative and Vehicle Overheads, the resulting potential avoided operational costs from this FLISR installation are estimated at approximately $16,500 annually.

Feeder Circuit or FLISR Type	Average Outage Duration (> 100 cust) [hrs]	FLISR Restoration Time (min)	Average FLISR (10-25%) Reduced Outage Duration [hrs]
85S-401	4.6	1	3.8
11S-411	3.6	1	3.0
Centralized	2.7	10	2.3
Decentralized	2.3	1	1.9

Feeder Circuit or FLISR Type	85S-401	11S-411	Centralized	Decentralized
PLT hourly Rate	$91.11	$91.11	$91.11	$91.11
PLT Per Trip	2	2	2	2
Average Reduced Time (hour)	0.8	0.6	0.5	0.4
Labour $ Saved per Outage	$146.06	$115.16	$87.67	$73.57
Average Outages per year	25.9	13.2	19.7	13.5
PLT Labour Avoided per year	$3,783.03	$1,520.05	$1,727.05	$993.16
Labour Overhead Rate	0.56626	0.56626	0.56626	0.56626
Labour Overhead	$2,142.18	$860.74	$977.96	$562.39
Vehicle Overhead Rate	0.49888	0.49888	0.49888	0.49888
Vehicle Overhead	$1,887.28	$758.32	$861.59	$495.47
Total Potential Avoided Operational Costs	$7,812.49	$3,139.12	$3,566.59	$2,051.02

Potential Avoided Labour	$8,023.29
Potential Avoided Labour-related Overhead	$4,543.27
Potential Avoided Vehicle Overhead	$4,002.66
Total Potential Avoided Operational Costs	$16,569.22
5 Year Potential Avoided Operational Costs	$82,846.10

These potential avoided operational costs may offset the overall costs of the project over time, providing an additional benefit to customers in addition to the primary justification related to improving feeder reliability.