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July 12, 2021

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Fiscal 2021 Fourth Quarter (Q4 F2021)
Summary Report of Customer Complaints and Consecutive Estimates
Information Responses to BCUC STAFF Questions No.1

BC Hydro writes in response to BCUC Staff Questions on BC Hydro's Fiscal 2021 Fourth Quarter (Q4 F2021) Summary Report of Customer Complaints and Consecutive Estimates. The questions are with regard to reliability issues experienced by residents in the Morris Valley area:

Our responses are as follows:

1.0 Reference: BCUC STAFF QUESTIONS
British Columbia Hydro and Power Authority's Q4 F2021 Summary Report of Customer Complaints and Consecutive Estimates, p. 1

On page 1 of the Q4 F2021 Summary Report of Customer Complaints and Consecutive Estimates, British Columbia Hydro and Power Authority (BC Hydro) states:

> Complaint volumes increased from 146 in Q4 F2020 compared to 189 in Q4 F2021. This increase can be attributed to a letter writing campaign from residents in Morris Valley regarding reliability. BC Hydro has acknowledged the need for upgrades to the Morris Valley area and is working closely with residents to address their concerns and keep them updated on progress to improve reliability.

1.1. Please provide the number of letters received and the number of individual customer accounts that submitted complaints

associated with the letter writing campaign from residents in Morris Valley.

RESPONSE:

BC Hydro has received 26 letters from Morris Valley residents associated with the letter writing campaign through the period of January 2021 to February 2021. Of these 26 letters, 25 corresponded to individual accounts with BC Hydro. Prior to this period, BC Hydro also received additional correspondence from a representative of Morris Valley residents.

1.1.1. Please provide further detail on the content of the letters and identify any recurring trends.

RESPONSE:

Letter writers in Morris Valley expressed concerns regarding the impacts and challenges experienced due to power outages. Both the frequency and duration of power outages were a consistent focus of the letters.

1.2. Please provide further details on the infrastructure that feeds this area. Include the specific substation and feeders.

RESPONSE:

The Morris Valley community is supplied by distribution feeder Mission Substation 25F51 which is supplied from the Mission Substation approximately 34 kilometers away.

Distribution feeder, Mission Substation 25F51 serves 2,869 customers and consists of approximately 158 kilometers of overhead powerline and 10 kilometers of underground cable. The feeder trunk runs along the shoulder of Lougheed Highway (Highway 7) and Morris Valley Road and serves the communities of Dewdney, Deroche, Lake Errock, Morris Valley, Sts'ailes First Nation, and the Sasquatch Mountain Ski Resort. There are four ties to alternate feeders in the first 10 kilometers from the Mission Substation and no ties to alternate feeders for the remaining 40 kilometers due to the geographical constraints of the area, which include mountains to the north, the Fraser River to the south and the Harrison River to the east.

1.3. Please describe the upgrades BC Hydro has identified that are needed in the area and a timeline for implementation.

RESPONSE:

Over the last 10 years, BC Hydro has undertaken a number of reliability improvement projects such as undergrounding 2 kilometers of distribution feeder and installing overhead line covers and reclosers. Over the past three years BC Hydro has removed over 400 hazard trees along the route to reduce vegetation related outages, installed a new automated switching device north of the Morris Valley community to reduce the impact of downstream faults, and installed protective barriers at a pole to minimize the impact of motor vehicle accidents. However, the reliability performance remains a concern, primarily due to motor vehicle accidents as well as vegetation. Long outages are often required to repair overhead lines and poles damaged by fallen trees and motor vehicle accidents.

BC Hydro has identified a capital project to address the load growth and improve the reliability of feeder MIS 25F51. Two alternatives are being evaluated: Alternative 1 is to provide new supply from the Kent Substation located in Agassiz and Alternative 2 is to provide new supply from Mission Substation. BC Hydro's assessment is that the leading alternative is Alternative 1.

BC Hydro determined that Alternative 1 was the leading alternative using a Structured Decision Making framework to evaluate a set of criteria related to the specific needs and requirements of this project. Alternative 1 is now being investigated further to determine whether it is feasible and is still the best alternative, according to the criteria. If so, it will be confirmed as the Preferred Alternative and taken forward for design and implementation.

The scope of work for Alternative 1 includes a new approximately 650 meter underground crossing of the Harrison River, upgrades at Kent Substation, and voltage conversion and upgrades to the existing Kent Substation feeder. The project is in the Conceptual Phase and is planned to be in service by 2024.

By upgrading the configuration of the existing feeder, this project will improve reliability by reducing the number of customers impacted by a single power outage. The project will also provide an alternate source of power to the area that can be used in the event of an outage, reducing the duration of outages for customers.

Recently, on June 29, 2021, BC Hydro representatives met with Morris Valley residents to provide an update on vegetation management and the Morris Valley Reinforcement Project. The residents support the project and were appreciative of the vegetation work that has been completed in the last two years, including plans this year to remove another 125 trees and prune a 40 kilometer section of the feeder that provides service to the Morris Valley area.

1.4. Please provide a breakdown of the causes of any outages during that time.

RESPONSE:

Please refer to BC Hydro's response to BCUC Staff Question 1.5.3.

1.5. Please provide the previous 3-year reliability data for the substation and feeder and compare that with BC Hydro system averages in terms of:

1.5.1. System Average Interruption Duration Index;

RESPONSE:

The following table contains the Mission Substation, Mission Substation 25F51 and the BC Hydro System Average Interrupting Duration Index (SAIDI) in hours for all events in the last three fiscal years.

	SAIDI (hours)		
Fiscal Year	**MIS Substation**	**MIS 25F51**	**BC Hydro Average**
2019	6.74	65.58	8.58
2020	9.55	28.92	4.78
2021	4.42	39.86	5.73

1.5.2. System Average Interruption Frequency Index; and

RESPONSE:

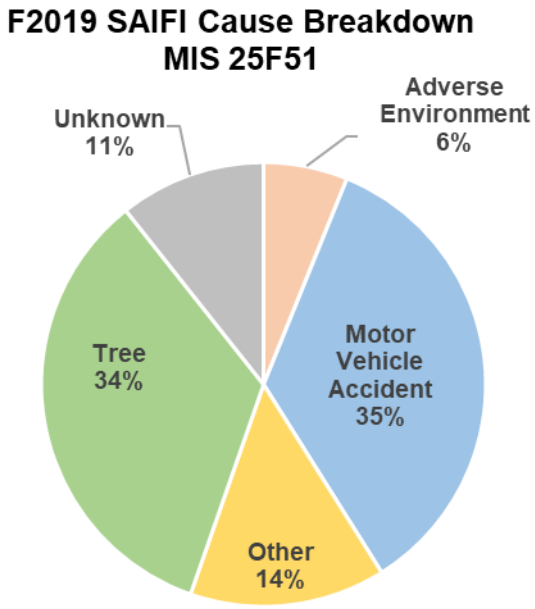
The following table contains the Mission Substation, Mission Substation 25F51 and the BC Hydro System Average Interrupting Frequency Index (SAIFI) for all events in the last three fiscal years.

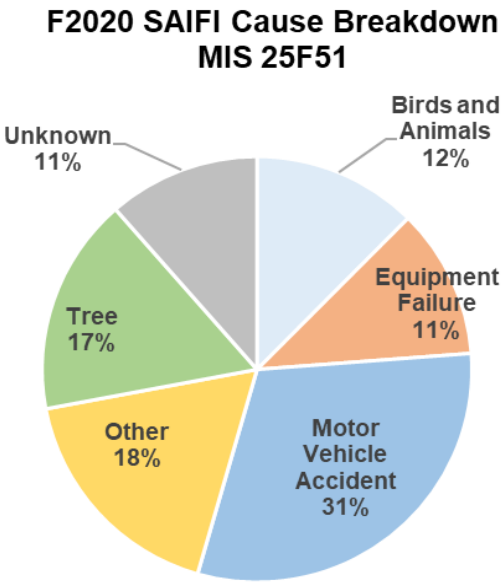
	SAIFI		
Fiscal Year	**MIS Substation**	**MIS 25F51**	**BC Hydro Average**
2019	2.48	8.29	1.90
2020	4.97	7.62	1.96
2021	2.20	8.85	1.98

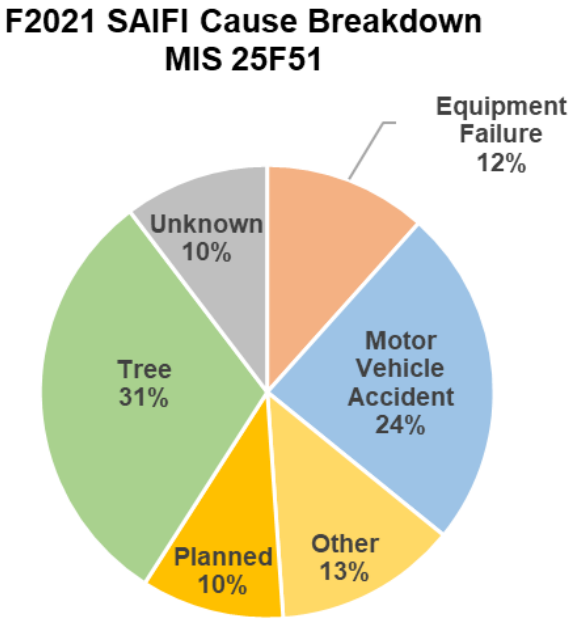
1.5.3. Breakdown of causes of outages.

RESPONSE:

The following charts show the Mission Substation 25F51 SAIFI outage cause breakdown for fiscal 2019, fiscal 2020, and fiscal 2021. "Tree" outages are the result of trees or tree branches falling on to a line and causing damage to conductors and/or poles that often require longer outage durations while being repaired. "Motor Vehicle Accidents" include collisions that occur causing poles to break or overhead lines to contact and fault. Similar to tree-related outages, damage caused by motor vehicle accidents often result in longer outages. "Equipment Failure" refers to instances where equipment fails, such as the failure of a distribution transformer. "Planned" refers to outages that require our lines to be de-energized in order for our crews to safely conduct their work and customers are notified of planned outages in advance. "Adverse Environment" includes outages caused by mudslides or snow. Outages are considered "Unknown" when crews are unable to identify the cause of an outage after conducting a patrol of the line. Finally, "Other" includes various outage causes that contribute less than 2 per cent to the total number of outages.







1.6. Was vegetation management a major contributor to reliability performance due to the nature of the area?

RESPONSE:

The primary contributors to the reliability performance on Mission Substation 25F51 are trees (vegetation) and motor vehicle accidents. In fiscal 2021, trees contributed 31 per cent of the SAIFI outage causes.

The distribution feeder that serves Morris Valley consists of approximately 158 kilometres of overhead powerline that runs through a relatively remote region, traverses dense forest vegetation and is subject to adverse weather. The circuit has also been subject to a number of unusual weather events in the past five years that have had an impact on overall tree health, including major ice storms and summer drought.

1.7. Please provide details of the vegetation management program in the area.

RESPONSE:

BC Hydro has two Distribution Vegetation Management programs: Routine Maintenance (pruning) and removal of Hazard Trees (which are deemed as either dead, dying or leaning).

To reduce vegetation related outages, BC Hydro has spent approximately $1.6 million dollars over the past five years on vegetation maintenance and pruning along MIS 25F51 and has removed over 400 hazard trees along the route. This year, we have plans to remove another 125 hazard trees and to prune along a 40 kilometer section of the feeder that provides service to the Morris Valley area.

Pruning for Mission Substation 25F51 has been maintained on a regular three-year cycle, which is the average cycle for the Lower Mainland. The latest pruning work was completed in fiscal 2021 for about $767,000 and covered 62,131 linear meters along the feeder route. Hazard Tree removals are completed as needed according to field inspection results. The latest Hazard Tree removals occurred in fiscal 2021. Total costs related to Hazard Tree removals in the area were approximately $51,000 for fiscal 2021, $96,500 for fiscal 2020 and $142,000 for fiscal 2019.

In its Fiscal 2022 Revenue Requirements Application, BC Hydro increased forecast spending on vegetation management to improve BC Hydro's overall vegetation management capacity and capability to meet transmission and distribution system needs in fiscal 2022.

BC Hydro's upcoming Fiscal 2023 to Fiscal 2025 Revenue Requirements Application will provide a Vegetation Management Strategy to inform vegetation management funding in future years.

Routine Maintenance and Hazard Tree work in the Morris Valley area is expected to increase as a result of the budget increases that were approved by the BCUC in its decision on BC Hydro's Fiscal 2022 Revenue Requirements Application.

For further information, please contact Alicia Henderson at 604-623-4381 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Chris Sandve
Chief Regulatory Officer

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