

August 18, 2023

Board of Commissioners of Public Utilities  
Prince Charles Building  
120 Torbay Road, P.O. Box 21040  
St. John's, NL A1A 5B2

Attention: Cheryl Blundon  
Director of Corporate Services and Board Secretary

**Re: Long-Term Supply for Southern Labrador – Service to Charlottetown – Additional Information**

On June 30, 2023,<sup>1</sup> Newfoundland and Labrador Hydro (“Hydro”) received correspondence from the Board of Commissioners of Public Utilities (“Board”) requesting additional information from Hydro on its plan to reliably serve the Town of Charlottetown. More specifically, the Board requested that Hydro:

- i. Detail the number and size of gensets to be deployed for Charlottetown in both the summer and winter periods until the completion of the project;
- ii. Detail the modifications required to the genset housing structures, including timelines and costs, to allow them to provide safe and reliable power in the winter months;
- iii. Detail any other work, including timelines and costs, that Hydro plans to undertake to facilitate safe and reliable power until project completion; and
- iv. Explain any differences between Hydro’s initial proposal to provide safe and reliable power to Charlottetown and the responses provided herein.

Hydro’s responses with respect to the provision of service to the communities of Charlottetown and Pinsent’s Arm are provided herein.

***i. Number and size of gensets to be deployed for Charlottetown in both the summer and winter periods until the completion of the project.***

There is no change to the planned available generation between winter and summer seasons; however, there will be a difference in how the gensets will be dispatched as specific units’ onsite have been modified to be available for winter use. Hydro is ensuring that multiple redundant units (i.e., backups to backups) are available to minimize the risk of customer impact. As such, there is sufficient excess capacity on site in Charlottetown to meet peak community load forecasts even if multiple units are unavailable.

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<sup>1</sup> “Newfoundland and Labrador Hydro - 2021 Capital Budget Supplemental Application Approval of the Construction of Hydro’s Long-term Supply Plan for Southern Labrador - Revision 1 - Town of Charlottetown June 16, 2023 Correspondence,” Board of Commissioners of Public Utilities, June 30, 2023.

Hydro will continue to monitor the use of the gensets; as the existing supply configuration was implemented as an interim solution until an appropriate long-term solution was implemented, further work onsite will be dictated by failures of existing equipment or improvement opportunities when they arise.

### **Current Generation Status**

- G1– Unit 2102 (910 kW) is winterized and available for use year round;
- G2 – Unit 820 (725 kW) is a rental unit, is not winterized and would be primarily used during summer, late spring and early autumn;
- G3 – Unit 2088 (910 kW) is winterized and available for use year round;
- G4 – Unit 2108 (1,825 kW), is a mobile unit recently purchased from Muskrat Falls as a part of the approved supplementary project, is not winterized, and is intended for use during the seafood processing season; and
- G5 – Unit 2044 (600 kW) is onsite but currently not connected after recent site upgrade work due to the current presence of N-2 redundancy with other installed generation. Should another unit fail and capacity is required, this unit can be connected. This unit is not winterized.

### **Future Generation Status**

- In the third quarter of 2023, Hydro intends to exchange Unit 2090, currently located in Mary’s Harbour with Unit 2044, currently located in Charlottetown, as Unit 2090 is better suited for the load profile in Charlottetown. This move will result in an increase of firm capacity in Charlottetown by 125 kW. Reliability in Mary’s Harbour will not be negatively impacted as the 600 kW unit fits the load profile for that plant. Once installed in Charlottetown, Unit 2090 will also be winterized with remote equipment, similar to work undertaken on Units 2088 and 2102. This will provide three winterized units onsite, each sized to carry the typical peak monthly load<sup>2</sup> for winter months in Charlottetown.
- Rental Unit 820 will be returned after the shrimp processing plant halts production for the season and the exchange of Unit 2044 and Unit 2090 is completed. The installation of Unit 2090 will provide three winterized units, and along with other non-winterized units onsite, will achieve an N-2 redundancy. Should the need arise to rent another unit, there will be an engine bay and cables available at the Charlottetown site to quickly connect in the location vacated by the rental unit.

### **Summary Table**

Table 1 summarizes the current and future generation status described above.

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<sup>2</sup> During the winter of 2021–2022 and 2022–2023, the monthly peak load from November to May was typically between 650 kW and 700 kW.

**Table 1: Winter and Summer Charlottetown Generation Status**

Unit No.	Current		Post Mary's Harbour Swap and Rental Return	
	Winter (kW)	Summer (kW)	Winter 2023–2024 (kW)	Summer 2024 (kW)
2102 (Winterized)	910	910	910	910
820	725	725	-	-
2088 (Winterized)	910	910	910	910
2108	1,825	1,825	1,825	18,25
2044	600	600	-	-
2090 (Winterized)	-	-	725	725
<b>Total Capacity</b>	<b>4,970</b>	<b>4,970</b>	<b>4,370</b>	<b>4,370</b>
<b>Total Winterized Capacity</b>	<b>1,820</b>	<b>N/A</b>	<b>2,545</b>	<b>N/A</b>
N-1 Capacity	3,145	3,145	2,545	2,545
N-2 Firm Capacity	2,235	2,235	1,635	1,635
Forecast Peak Demand	770	1,462	770	1,462
<b>Forecasted N-2 Shortfall</b>	<b>No Shortfall</b>	<b>No Shortfall</b>	<b>No Shortfall</b>	<b>No Shortfall</b>
N-1 Capacity (Winterized only)	910	N/A	1,635	N/A
N-2 Firm Capacity (Winterized only)	0	N/A	725	N/A
<b>Forecasted N-1 Shortfall (Winterized only)</b>	<b>No Shortfall</b>	<b>N/A</b>	<b>No Shortfall</b>	<b>N/A</b>
<b>Forecasted N-2 Shortfall (Winterized only)</b>	<b>770</b>	<b>N/A</b>	<b>45</b>	<b>N/A</b>

**ii. Modifications required to the genset housing structures, including timelines and costs, to allow them to provide safe and reliable power in the winter months.**

Winterization of the mobile units includes modifications to the genset housing “structures”, or containers, which includes installation of snow hoods on air intakes to reduce snow intake, and relocation of radiators and ventilation modifications to manage airflow in the container to further mitigate snow intake during winter operation. Currently there are two winterized units onsite, Unit 2102 and Unit 2088.<sup>3</sup> Work on each has already been completed as a part of approved capital expenditures.

<sup>3</sup> Hydro acknowledges that a fixed and permanent generating station is preferable to mobile generators. To further address the situation, Units 2102 and 2088 have been retrofitted for full winter operation and have adequate capacity for the communities. These units have been “winterized” to the extent possible in the current configuration, which includes the use of remote radiators, remote after-coolers, snow hoods for intake vents and additional heating in the containers housing the units. Although the units are “winterized” as much as possible, Hydro still believes there is some reliability risk operating them in severe winter conditions.

Unit 2088 was winterized under an Allowance for Unforeseen Expenditures project completed in late 2019 and early 2020 in response to the original fire in Charlottetown that destroyed the diesel plant. This project also included the winterization of Unit 2089 (which has since been destroyed by fire) and the original installation of Unit 2102. Details on work undertaken to make Unit 2088 ready for winter operation, as well as costs for the project, can be found in the Allowance for Unforeseen report filed with the Board on March 9, 2020.<sup>4</sup>

Unit 2102 was winterized as a part of the 2022 supplemental project filed in response to the July 2022 fire that destroyed winterized Unit 2089.<sup>5</sup> Work to winterize Unit 2102 was completed in December 2022. With Unit 2102 now winterized, the site has been returned to the pre-2022 fire conditions when two winterized units were available for use.

As discussed in response to part i, in the third quarter of 2023, Hydro plans to exchange Unit 2090 with Unit 2044. Once installed in Charlottetown, Unit 2090 will also be winterized with remote equipment, similar to work undertaken on Units 2088 and 2102.

Each winterized unit will undergo further upgrades during the summer and autumn of 2023 to install Variable Frequency Drives on the remote after-cooler motors in order to address potential overcooling issues during the winter. The cost of these upgrades are estimated at \$30,000.

***iii. Other work that Hydro plans to undertake to facilitate safe and reliable power until project completion.***

The installation and winterization of Unit 2090 is anticipated to cost approximately \$405,000 and will be completed in conjunction with work being completed on the supplementary capital project approved in late 2022. As noted above, further work on site will be dictated by failures of existing equipment or improvement opportunities when they arise. Hydro has completed all work that can reasonably be undertaken to reinforce the mobile generating units that have been acting as the interim solution for electrical service in Charlottetown since 2019.

***iv. Differences between Hydro's initial proposal to provide safe and reliable power to Charlottetown and the responses herein.***

Hydro's response to providing service to Charlottetown on a temporary basis while working towards a permanent solution has remained consistent since the response to the original fire in 2019, with the exception of a decision to move to N-2 redundancy onsite after the fire on Unit 2089 in July 2022. As per Hydro's response to request for information PUB-NLH-051 of this proceeding, units owned by Hydro have been modified for winter use to the extent possible in the current configuration, which includes the use of remote radiators, remote after-coolers, snow hoods for intake vents, and additional heating in the containers housing the units.

While executing the supplemental project that resulted from the fire on Unit 2089 in Charlottetown, Hydro recognized an opportunity to install the mobile unit purchased from Muskrat Falls directly in Charlottetown, rather than the proposed L'Anse-au-Loup unit switch, since each have an identical rating

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<sup>4</sup> "Charlottetown Diesel Generating Station Fire – Preparation for Winter Operation Allowance for Unforeseen Items Final Report," Newfoundland and Labrador Hydro, March 9, 2020.

<sup>5</sup> Approved in *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 32(2022), Board of Commissioners of Public Utilities, November 7, 2022.

of 1,825 kW. This scope change involved the purchase of a new dual voltage (480 V to 4,160 V/600 V to 4,160 V) pad mount transformer to eliminate the voltage incompatibilities in Charlottetown, leaving L'Anse-au-Loup in its existing, reliable configuration. This change also added a level of redundancy to Charlottetown by installing a second pad mount transformer that can be used in multiple voltage configurations (480 V to 4,160 V and 600 V to 4,160 V) and improving overall reliability. While the new transformer for Charlottetown is being manufactured, a rental transformer has been installed to allow use of Unit 2108 during peak demand in the summer during the shrimp processing season.

As noted, Hydro has completed all work that can reasonably be undertaken to reinforce the mobile generating units that have been acting as the interim solution for electrical service in Charlottetown since 2019. Although Hydro will continue with any necessary inspections and regular maintenance, including winterization of the units in advance of any winter season for which they are providing service, a long-term supply solution must be decided upon and implemented to address the remaining concerns associated with the continued use of mobile generation in Charlottetown.

Should you have any questions, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**



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