

1 Q. Hydro’s correspondence dated October 5, 2023, Attachment 1, Midgard Consulting Inc’s Report,
 2 page 13 of 74 states:

3 The existing powerhouses were designed to serve their local loads and were not
 4 intended to be interconnected to serve multiple communities. As such, these
 5 powerhouses were designed and constructed to output their firm (N-1) capacity
 6 rather than their installed (sum of all generators) capacity.

7 a) What is the wire size and amperage capacity of the existing and proposed system bus
 8 and service conductors for each of the diesel generating stations at Mary’s Harbour, St.
 9 Lewis, and Port Hope Simpson?

10 b) Is it consistent with industry standards to design and construct a diesel generating
 11 station, particularly the main system bus, for its firm load capacity rather than the
 12 capacity of the installed generation at the plant?

13

14

15 A. a) The wire gauge and capacity of the service conductors and main bus are included in Table 6,
 16 Table 7, and Table 8 of Technical Note RP-TN-054¹ and are copied herein for ease of
 17 reference.

Table 6: Mary's Harbour Diesel Plant – Capacity Constraints

Equipment	Equipment Size	Capacity Limitation	Required Capacity ²	Upgrade Required (Y/N)
Service Conductor	4 x 777 MCM ³	1,660 kW	1,787 kW	Y
Main Bus	1,400 A	1,310 kW	1,787 KW	Y
Substation Transformer	3 x 500 kVA	1,485 kW	1,787 KW	Y

¹ “Long-Term Supply for Southern Labrador – Phase 1 – Supplemental Information,” Newfoundland and Labrador Hydro, March 17, 2022, att. 2, pp. 4–5 of 11.

² Installed capacity within diesel generating station minus station service (28 kW in Mary’s Harbour and Port Hope Simpson, 19 kW in St. Lewis); represents the required capacity of all equipment to be able to supply full installed genset capacity to the system.

³ Thousand circular mils (“MCM”).

Table 7: Port Hope Simpson Diesel Plant – Capacity Constraints

Equipment	Equipment Size	Capacity Limitation	Required Capacity	Upgrade Required (Y/N)
Service Conductor	4 x 313 MCM	1,075 kW	1,697 kW	Y
Main Bus	1,200 A	1,122 kW	1,697 kW	Y
Substation Transformer	3 x 333 kVA	989 kW	1,697 kW	Y

Table 8: St Lewis Diesel Plant – Capacity Constraints

Equipment	Equipment Size	Capacity Limitation	Required Capacity	Upgrade Required (Y/N)
Service Conductor	3 x 750 MCM	1,321 kW	1,001 kW	N
Main Bus	1,200 A	1,122 kW	1,001 kW	N
Substation Transformer	3 x 333 kW	989 kW	1,001 kW	Y

- 1 **b)** Newfoundland and Labrador Hydro (“Hydro”) is uncertain if its approach to sizing a main
 2 bus and service conductor for a diesel generating station servicing an isolated system is
 3 consistent with industry common practice; however, it is common to select equipment
 4 based on the capacity requirements of that specific equipment. The service conductor and
 5 main buses at Hydro's isolated diesel generating stations are only required to provide power
 6 to the community or communities that they serve; therefore, they are sized to withstand
 7 the peak load of those communities.