Q. **Re: GRK-NLH-044**

Citation:

In the (very) unlikely event of a dam breach at Muskrat Falls, several options are available to Hydro. As stated in Hydro's response to GRK-NLH-004: "Upon the completion of the Labrador-Island Link and the Maritime Link, the Island of Newfoundland will, for the first time, have access to electricity from neighbouring utilities. … These transmission interconnections will, if necessary, enable the Energy Control Centre operators to utilize emergency support from neighbouring utilities and to obtain power through electricity market arrangements either through the Quebec or Maritime Link interconnections."

In addition, with a continued 60 MW interruptible arrangement, Hydro will have sufficient installed capacity to supply full load until at least 2025. Beyond the 1650 MW load level, there are options available to supplement capacity that Hydro will explore including:

- Additional industrial and commercial interruptible load arrangements;
- Customer demand side management initiatives;
- Additional imports via the Maritime Link when existing constraints in the Maritime/New England systems are mitigated; and
- Potential on-Island capacity additions. (underlining added)

Please provide detailed worksheets demonstrating that, “with a continued 60 MW interruptible arrangement, Hydro will have sufficient installed capacity to supply full load until at least 2025”. Is this based on a P50 or P90 estimate of future loads?

A. To answer this question, responses from two previous responses will be referenced. Table 1 (from Hydro's response to CA-NLH-028) indicates the Island System Capacity Resources until the winter of 2023 to 2024. This is based on a P-50 forecast.

Interconnected Island System Capacity Resource Table - Ratings at Winter Peak

	Island Interconnected Peak Demand (MW)	NL Hydro Hydro (MW)	NL Hydro Thermal[6] (MW)	Customer[7] Generation (MW)	NUG[5,8] Purchases (MW)	New Generation (MW)	Labrador Island Link[3,4] (MW)	Maritime Island Link[4] (MW)	Continuous Capacity at Winter Peak (MW)	Reserve Margin	Interrruptible Contracts (optional)[2] (MW)	Reserve Margin
2014-15	1,721	954	581	234	89	120	0	0	1,978	14.9%	60	19.1%
2015-16	1,736	954	581	234	89	120	0	0	1,978	13.9%	60	18.0%
2016-17	1,755	954	581	234	89	120	0	0	1,978	12.7%	60	16.7%
2017-18	1,757	954	581	234	89	120	0	0	1,978	12.6%	60	16.5%
2018-19	1,760	954	581	234	89	120	675	300	2,953	67.8%	N/A	N/A
2019-20	1,766	954	581	234	89	120	675	300	2,953	67.2%	N/A	N/A
2020-21	1,781	954	581	234	89	120	675	300	2,953	65.8%	N/A	N/A
2021-22	1,801	954	115	234	89	120	675	300	2,487	38.1%	N/A	N/A
2022-23	1,824	954	115	234	81	120	675	300	2,479	35.9%	N/A	N/A
2023-24	1,841	954	115	234	81	120	675	300	2,479	34.7%	N/A	N/A

1. There are currently no demand management initiatives, other than the potential use of interruptible contracts, forecast during this period.
2. Currently, there have not been any interruptible contracts signed.
3. Nova Scotia Block capacity excluded
4. Assumes capacity is available through market or other contractual means to enable full use of the available transmission capacity.
5. Assumes that CBPP Co-Generation NUG contract is not renewed in 2023.
6. Assumes that Holyrood shuts down in 2021.
7. Assumes capacity at winter peak of 121 MW for NP and 113 MW for Deer Lake Power.
8. Assumes capacity at winter peak of 18 MW for Star Lake, 8 MW for Corner Brook Co-gen and 63 MW for Nalcor Grand Falls and Bishop's Falls. Rattle Brook, Nalcor Buchans, St. Lawrence Wind and Fermeuse Wind are assumed to have 0 MW capacity at winter peak.

Table 1

Table 2 below shows Table 1 with the Labrador-Island Link set to 0 MW, the 60 MW Interruptible arrangement included in the Continuous Capacity at Winter Peak, and with the forecast extended to 2024 to 2025. Table 2 indicates that for 2024 to 2025, with the Labrador-Island Link set to 0 MW and the 60 MW Interruptible arrangement included in the Continuous Capacity at Winter Peak, the Continuous Capacity at Winter Peak is 1,864 MW and the Island Interconnected Peak Demand is 1,861 MW. This demonstrates that even with no supply from the Labrador-Island Link, Hydro will have sufficient installed capacity to supply full load until at least 2025.

Interconnected Island System Capacity Resource Table - Ratings at Winter Peak

	Island Interconnected Peak Demand (MW)	NL Hydro Hydro (MW)	NL Hydro Thermal[6] (MW)	Customer[7] Generation (MW)	NUG[5,8] Purchases (MW)	New Generation (MW)	Labrador Island Link[3,4] (MW)	Maritime Island Link[4] (MW)	Interrruptible Contracts (optional)[2] (MW)	Continuous Capacity at Winter Peak (MW)
2014-15	1,721	954	581	234	89	120	0	0	60	2,038
2015-16	1,736	954	581	234	89	120	0	0	60	2,038
2016-17	1,755	954	581	234	89	120	0	0	60	2,038
2017-18	1,757	954	581	234	89	120	0	0	60	2,038
2018-19	1,760	954	581	234	89	120	0	300	60	2,338
2019-20	1,766	954	581	234	89	120	0	300	60	2,338
2020-21	1,781	954	581	234	89	120	0	300	60	2,338
2021-22	1,801	954	115	234	89	120	0	300	60	1,872
2022-23	1,824	954	115	234	81	120	0	300	60	1,864
2023-24	1,841	954	115	234	81	120	0	300	60	1,864
2024-25	1,861	954	115	234	81	120	0	300	60	1,864

1. There are currently no demand management initiatives, other than the potential use of interruptible contracts, forecast during this period.
2. Currently, there have not been any interruptible contracts signed.
3. Nova Scotia Block capacity excluded
4. Assumes capacity is available through market or other contractual means to enable full use of the available transmission capacity.
5. Assumes that CBPP Co-Generation NUG contract is not renewed in 2023.
6. Assumes that Holyrood shuts down in 2021.
7. Assumes capacity at winter peak of 121 MW for NP and 113 MW for Deer Lake Power.
8. Assumes capacity at winter peak of 18 MW for Star Lake, 8 MW for Corner Brook Co-gen and 63 MW for Nalcor Grand Falls and Bishop's Falls. Rattle Brook, Nalcor Buchans, St. Lawrence Wind and Fermeuse Wind are assumed to have 0 MW capacity at winter peak.

Table 2

While Table 2 demonstrates that under the conditions given, Hydro will have sufficient installed capacity to supply full load until at least 2025, Table 2 indicates that the full load/peak demand in 2025 will be 1,861 MW while the question also refers to a 1650 MW load level:

> *In addition, with a continued 60 MW interruptible arrangement, Hydro will have sufficient installed capacity to supply full load until at least 2025. Beyond the 1650 MW load level…*

This statement comes from Hydro's response to PUB-NLH-217. However, the analysis in PUB-NLH-217 was carried out on a Hydro Interconnected System basis (i.e., customer hydroelectric generation (Newfoundland Power - 80 MW and Deer Lake Power - 113 MW, total 193 MW) was excluded in both the Peak Demand and the Continuous Capacity at Winter Peak. Tables 1 and 2 assume the entire Island Interconnected System, which includes customer generation. To translate from the Island Interconnected System to the Hydro Interconnected system, both the Peak Demand and the Continuous Capacity at Winter Peak were reduced by 193 MW as shown in Table 3, giving a Continuous Capacity at Winter Peak of 1,671 MW.

PUB-NLH-217 assumed from 1,013 to 1,043 MW of on-island hydro-electric capacity (variation due to reservoir levels); the 1,650 MW capacity assumes a 1,014 MW figure being used. Table 3 assumes 954 MW (Hydro hydro) + 81 MW (NUG Purchases) = 1,035 MW for on-island hydro-electric capacity, giving a total capacity of 1,671 MW.

Table 3 indicates that for 2024 to 2025, with the Labrador-Island Link set to 0 MW and the 60 MW Interruptible arrangement included in the Continuous Capacity at Winter Peak, the Continuous Capacity at Winter Peak is 1,671 MW and the Island

Interconnected Peak Demand is 1,668 MW. Again, this demonstrates that even with no supply from the Labrador-Island Link, Hydro will have sufficient installed capacity to supply full load until at least 2025.

Interconnected Island/Hydro Interconnected System Capacity Resource Table - Ratings at Winter Peak

	Island Interconnected Peak Demand (MW)	Hydro System Interconnected Peak Demand (MW)	NL Hydro Hydro (MW)	NL Hydro Thermal[6] (MW)	Customer[7] Generation (NP Thermal Only) (MW)	NUG[5,9] Purchases (MW)	New Generation (MW)	Labrador Island Link[3,4] (MW)	Maritime Island Link[4] (MW)	Interrruptible Contracts (optional)[2] (MW)	Continuous Capacity at Winter Peak (MW)
2014-15	1,721	1,528	954	581	41	89	120	0	0	60	1,845
2015-16	1,736	1,543	954	581	41	89	120	0	0	60	1,845
2016-17	1,755	1,562	954	581	41	89	120	0	0	60	1,845
2017-18	1,757	1,564	954	581	41	89	120	0	0	60	1,845
2018-19	1,760	1,567	954	581	41	89	120	0	300	60	2,145
2019-20	1,766	1,573	954	581	41	89	120	0	300	60	2,145
2020-21	1,781	1,588	954	581	41	89	120	0	300	60	2,145
2021-22	1,801	1,608	954	115	41	89	120	0	300	60	1,679
2022-23	1,824	1,631	954	115	41	81	120	0	300	60	1,671
2023-24	1,841	1,648	954	115	41	81	120	0	300	60	1,671
2024-25	1,861	1,668	954	115	41	81	120	0	300	60	1,671

1. There are currently no demand management initiatives, other than the potential use of interruptible contracts, forecast during this period.
2. Currently, there have not been any interruptible contracts signed.
3. Nova Scotia Block capacity excluded
4. Assumes capacity is available through market or other contractual means to enable full use of the available transmission capacity.
5. Assumes that CBPP Co-Generation NUG contract is not renewed in 2023.
6. Assumes that Holyrood shuts down in 2021.
7. Assumes capacity at winter peak of 121 MW for NP and 113 MW for Deer Lake Power less 80 MW NP hydro and 113 MW Deer Lake Power, leaving 41 MW NP Thermal
8. As 80 MW of NP hydro and 113 MW Deer Lake Power are not included in Customer Generation, NP forecast was reduced by 80 MW and Deer Lake Power's forecast by 133 MW, thus reducing the Hydro System forecast by an equivalent amount.
9. Assumes capacity at winter peak of 18 MW for Star Lake, 8 MW for Corner Brook Co-gen and 63 MW for Nalcor Grand Falls and Bishop's Falls. Rattle Brook, Nalcor Buchans, St. Lawrence Wind and Fermeuse Wind are assumed to have 0 MW capacity at winter peak.

Table 3