

Network Additions Policy and Labrador Interconnected System Transmission Expansion Study

1 Q. **Reference: Transmission Expansion Study, Appendix B, Appendix A (“Labrador West**
 2 **Future Transmission Supply Alternatives”)**

3 Preamble:

4
 5 Appendix A to Appendix B presents 17 “alternatives” for the Labrador West Transmission
 6 system.

7
 8 a) Please provide a table summarizing the key data regarding these 17 alternatives. The
 9 following format is suggested, with alternatives sorted based on firm capacity provided:

Alternative #	Alternative name	Applicable Load Forecast	Principal elements	Resulting system capacity (MW)		Capital Cost
				Firm (n-1)	Total (all equipment in service)	

10 b) Please indicate which of the options studied in Appendix B is the Labrador West
 11 Transmission Project (LWTP), as described in the Labrador West Transmission Project
 12 Exemption Order NLR 11/14.

13
 14 i) According to NLR 11/14, “Newfoundland and Labrador Hydro is exempt from the
 15 *Electrical Power Control Act, 1994 and the Public Utilities Act* for all planning,
 16 design, construction and contribution activities pertaining to the Labrador West
 17 Transmission Project. » Please explain how the consequences of this exemption
 18 with respect to the Transmission Expansion Plan, the Network Addition Policy, and
 19 the various actions that the Board will take in relation to these two documents.

20
 21 ii) Insofar as other options described in the Transmission Expansion Plan include some
 22 of the elements described in section 2 of NLR 11/14, please explain Hydro’s

- 1 understanding of the implications of the Exemption Order with respect to these
 2 other options.
- 3
- 4 iii) Please indicate the amount that has been expended by Hydro to date with respect
 5 to the Labrador West Transmission Project (LWTP).
- 6
- 7 iv) Please indicate whether Hydro is considering writing off the past expenditures on
 8 the LWTP and, if so, when such an action could be taken.
- 9
- 10
- 11 A. a) Please refer to Table 1 for the key data, in the format requested.

Table 1: Key Data for each Labrador West Alternative

Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
1	Status Quo	335	<ul style="list-style-type: none"> Upgrade of distribution lines L32, L33, and L40 	252	350	1.43
2	Status Quo – Tacora Load (Interruptibles)	383	<ul style="list-style-type: none"> Curtailment in excess of 350 MW at \$10/kW per month. Upgrade of distribution lines L32, L33, L36, and L40 	252	350	1.82
3	Status Quo – Tacora + Data Centres (Interruptibles)	434	<ul style="list-style-type: none"> Curtailment in excess of 350MW at \$10/kW per month. Upgrade of distribution lines L32, L33, L36 and L40 	252	350	1.82
4	Tacora Upgrade	383	<ul style="list-style-type: none"> Commissioning of SC3¹ Replace T4 and 	252	421	15.12

¹ Synchronous Condenser #3 (“SC3”)

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
			<ul style="list-style-type: none"> T5 • New 23 MVAR cap bank • Replace 4, 46 kV breakers • Upgrade of distribution lines L32, L33, L36, and L40 			
5	Tacora and Data Centers Upgrade	434	<ul style="list-style-type: none"> • Commissioning of SC3 • Replace T4, T5, and T6 • New 72 MVAR cap bank • Replace 4, 46 kV breakers • Thermal upgrade of L23/L24 • Upgrade of distribution lines L32, L33, L36, and L40 	252	454	31.66
6	Third 230 kV Line from CF to Wabush	434	<ul style="list-style-type: none"> • New 215km of 230 kV line from CF² to WTS³ and terminations • Commissioning of SC3 • Replace T4, T5, and T6 • New 19 MVAR cap bank • Replace 15, 46kV breakers • Upgrade of distribution lines L32, L33, L36, and L40 	434	527	251.24

² Churchill Falls ("CF").

³ Wabush Terminal Station ("WTS").

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
7	Third 230 kV Line from CF to FLK ⁴ (230/46kV)	434	<ul style="list-style-type: none"> • New 215 km of 230 kV line from CF to FLK to WTS and terminations • New 230/46 kV TS⁵ at FLK including 29 MVAR cap bank • Commissioning of SC3 • Replace 10, 46 kV breakers • 25 km of new 46 kV distribution lines 	434	528	272.82
8	315kV Line from BLK ⁶ (HQ ⁷) to FLK (315/230 kV)	434	<ul style="list-style-type: none"> • New 50 km of 315 kV line from BLK to FLK and terminations • New 315/230 kV TS at FLK including 73 MVAR cap bank • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 15, 46 kV breakers • Replace T4, T5, and T6 • Upgrade of distribution lines L32, L33, L36, and L40 	434	514	141.40
9	315 kV Line from BLK (HQ) to FLK (315/230/46 kV)	434	<ul style="list-style-type: none"> • New 50 km of 315 kV line from 	434	502	146.99

⁴ Flora Lake ("FLK").

⁵ Terminal Station ("TS").

⁶ Bloom Lake ("BLK").

⁷ Hydro-Québec ("HQ").

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
			BLK to FLK and terminations <ul style="list-style-type: none"> • New 315/230/46 kV TS at FLK including 73 MVAR cap bank • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 14, 46 kV breakers • 25 km of new 46 kV distribution lines 			
10	315 kV Line from CF to FLK (315/230/46 kV)	434	<ul style="list-style-type: none"> • New 210 km of 315 kV line from CF to FLK and terminations • New 315/230/46 kV TS at FLK including 29 MVAR cap bank • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 13, 46 kV breakers • 25 km of new 46 kV distribution lines 	434	574	335.86
11	315 kV Line from CF and BLK to FLK (315/230/46 kV)	434	<ul style="list-style-type: none"> • New 210 km of 315 kV line from CF to FLK and terminations • New 50 km of 315 kV line from BLK to FLK and terminations • New 315/230/46 	473	563	397.97

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
			<ul style="list-style-type: none"> • kV TS at FLK • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 10, 46 kV breakers • 25 km of new 46 kV distribution lines 			
12	250 MW Monopole from BLK to FLK	434	<ul style="list-style-type: none"> • New 50 km of 200 kV HVdc line from BLK to FLK and terminations • Construction of FLK and BLK Converter Bldg. and Filter Banks • New 230/46 kV TS at FLK • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 4, 46kV breakers • 25 km of new 46 kV distribution lines 	453	585	347.90
13	250 MW BtB ⁸ Converter at BLK – 230 kV Line from BLK to FLK	434	<ul style="list-style-type: none"> • New 50 km of 230 kV ac line from BLK to FLK and terminations • Construction at BLK of VSC⁹ BtB Converter • New 230/46 kV 	434	612	233.16

⁸ Back-to-Back (“BtB”).

⁹ Voltage Source Converter (“VSC”).

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
			TS at FLK including 29 MVAR cap bank <ul style="list-style-type: none"> • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 10, 46 kV breakers • 25 km of new 46 kV distribution lines 			
14	250 MW BtB Converter at BLK – 230 kV Line from BLK to Wabush	434	<ul style="list-style-type: none"> • New 55 km of 230 kV ac line from BLK to WTS and terminations • Construction at BLK of VSC BtB Converter • Commissioning of SC3 • Replace T4, T5, and T6 • New 19 MVAR cap bank • Replace 10, 46 kV breakers • Upgrade of distribution lines L32, L33, L36 and L40 	434	603	216.70
15	200 MW Gas Turbine	434	<ul style="list-style-type: none"> • Installation of 4, 50 MW gas turbines and fuel storage • Replace T4, T5, and T6 • Replace 15, 46 kV breakers • Upgrade of distribution lines L32, L33, L36, and L40 	482	573	589.20

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Alt. #	Alternative Name	Load Forecast (MW)	Principal Elements	Resulting System Capacity (MW)		Capital Cost (\$ million)
				Firm (n-1)	Total (all equipment in service)	
16	3 rd 230 kV Line to FLK (230/46 kV)	499	<ul style="list-style-type: none"> • New 210 km of 230 kV line from CF to FLK and terminations • New 230/46 kV TS at FLK including 126 MVAR cap bank • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 10, 46 kV breakers • 25 km of new 46 kV distribution lines 	499	636	279.72
17	315kV Line from BLK (HQ) to FLK	499	<ul style="list-style-type: none"> • New 50 km of 315 kV line from BLK to FLK and terminations • New 315/230/46 kV TS at FLK including 161 MVAR cap bank • New 5 km of 230 kV line from FLK to WTS and terminations • Commissioning of SC3 • Replace 14, 46 kV breakers • 25 km of new 46 kV distribution lines 	499	600	153.15

- 1 b) Of the options studied in the “Labrador Interconnected System Transmission Expansion
2 Study,” App. B, Alternative 7 reflects the project as described in the “Newfoundland and

1 Labrador Regulation 11/14 *Labrador West Transmission Exemption Order*” as the “Labrador
2 West Transmission Project.”

3
4 i. The purpose of the review of the “Labrador Interconnected System Transmission
5 Expansion Study” is to determine whether the process and analysis described in the
6 Study is appropriate and reasonable. Newfoundland and Labrador Hydro (“Hydro”) has
7 not requested approval of any particular option or alternative in this process. Once
8 Hydro determines that proceeding with a particular alternative is warranted, Hydro will
9 apply to the Board of Commissioners of Public Utilities (the “Board”) through the
10 Capital Budget Application process. Alternative 7 was not identified as a least-cost
11 solution to provide capacity; however, if Hydro wished to proceed with Alternative 7,
12 the exemption order would then exempt Hydro from having to bring the alternative to
13 the Board for approval.

14
15 Hydro filed the “Network Additions Policy – Labrador Interconnected System”¹⁰ for
16 review and approval by the Board. However, approval of the “Network Additions Policy
17 – Labrador Interconnected System” does not require approval of its application to a
18 specific project or projects. If the “Network Additions Policy – Labrador Interconnected
19 System” was approved, the Board would not then review each application of the policy.
20 If there were any implications under the “Network Additions Policy – Labrador
21 Interconnected System” for the customer whose request for service drove the
22 necessity for Alternative 7, Hydro would apply the policy in the same manner as any
23 other. The exemption order does not have any implications for the “Network Additions
24 Policy – Labrador Interconnected System.”

¹⁰ Filed as part of the “Labrador Interconnected System Network Additions Policy Summary Report,”
December 14, 2018.

- 1 ii. The exemption order applied to the “230 kV transmission system between Churchill
2 *Falls and Labrador West*”¹¹ (i.e., the project as a whole). Hydro’s position is that the
3 individual elements, on their own, would not meet the definition of the project and
4 therefore not be captured by the exemption.
5
- 6 iii. Hydro expended \$12.9 million up to September 2017.
7
- 8 iv. Settlement proceeds of \$9.5 million were received and the remaining \$3.4 million
9 was expensed as a loss.

¹¹ *Newfoundland and Labrador Regulation 11/14, Labrador West Transmission Exemption Order* under the *Electrical Power Control Act, 1994* and the *Public Utilities Act* (O.C. 2014-033), s.2 (February 13, 2014).