

1 Q. **Reference: Labrador East Reliability Plan, Monthly Status Report, December 17, 2018,**  
2 **page 2**

3 Citation 1:

4  
5 The proposed plan for Alternative 1 is to offload L1301/L1302 under peak  
6 conditions through the interruption of customer load and the operation of back-  
7 up generation on the Happy Valley–Goose Bay system.  
8

9 Citation 2:

10  
11 The capital budget estimate for this project is approximately \$8.2 million. The  
12 majority of the lifecycle costs associated with this alternative are operational  
13 costs for fuel and controlled customer interruption.  
14

15 Preamble:

16 According to Table 7 on page 27, the CPV of this alternative is \$52.4 million.  
17

18 a) Referring to the Labrador East baseline P50 forecast provided in response to LAB-NLH-  
19 74, excluding all data centre loads (including existing loads), please indicate how many  
20 times per year the forecast loads would exceed 77 MW, and for how many total hours  
21 per year;  
22

23 b) Referring again to the Labrador East baseline P50 forecast provided in response to LAB-  
24 NLH-74, excluding all data centre loads (including existing loads), please indicate how  
25 many hours of operation of the HVYGT would be required each year, assuming the  
26 operating regime described in this section;  
27

28 c) Please provide detailed assumptions and calculations in Excel format (including  
29 formulas), demonstrating a CPV of \$52.4 million for Alternative 1.

- 1 A. a) Table 1 summarizes the number of times per year and the total estimated hours per  
 2 year the Happy Valley-Goose Bay demand would exceed 77 MW, assuming no data centres  
 3 are in service. However, Newfoundland and Labrador Hydro (“Hydro”) notes that there are  
 4 existing data centres which contribute to the total load. Hydro has no reason to believe the  
 5 data centre load will not be part of the future total load. The numbers below provide no  
 6 useful basis for future planning.

**Table 1: Happy Valley-Goose Bay Demand**

<b>Year</b>	<b>Number of Occurrences (Demand &gt; 77MW)</b>	<b>Total Hours (Demand &gt; 77MW)</b>
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	1	2
2030	1	2
2031	1	2
2032	2	3
2033	3	6
2034	3	7
2035	5	9
2036	5	11
2037	6	17
2038	10	22
2039	10	27
2040	13	37
2041	13	42
2042	17	54
2043	18	66
2044	23	83

1           b) Table 2 summarizes the total estimated hours of operation for the Happy Valley Gas  
 2           Turbine (“HVYGT”) each year, assuming no data centres in service and the operating regime  
 3           outlined in the “Labrador Interconnected System Transmission Expansion Study,” Sec.  
 4           5.1.1. As Hydro noted in Part b), there are existing data centres which contribute to the  
 5           total load. Hydro has no reason to believe the data centre load will not be part of the future  
 6           total load. The numbers below provide no useful basis for future planning.

**Table 2: Total Estimated Hours of Operation for the Happy Valley Gas Turbine**

<b>Year</b>	<b>Total Operating Hours</b>
2019	0
2020	0
2021	0
2022	0
2023	0
2024	0
2025	0
2026	0
2027	0
2028	0
2029	0
2030	0
2031	0
2032	0
2033	0
2034	0
2035	0
2036	0
2037	0
2038	127
2039	127
2040	130
2041	130
2042	130
2043	130
2044	260

1 c) Please refer to Attachment 1 of Newfoundland and Labrador Hydro's response to IOC-  
2 NLH-032 for the calculations in Excel format.

3  
4 The following are the detailed assumptions for the cost benefit analysis for Alternative 1:

- 5
- 6 • Cost of Energy: \$35/MWh;
  - 7
  - 8 • Fuel prices as per "Labrador Interconnected System Transmission Expansion  
9 Study," Sec. 3.2, at p. 13, Table 4;
  - 10
  - 11 • HVYGT operations and maintenance costs: \$351,000/year;
  - 12
  - 13 • Cost associated with Interruptible Customers: \$240,000/year;
  - 14
  - 15 • L1301/L1302 Transmission Lines operations and maintenance costs:  
16 \$455,000/year;
    - 17 ○ Inspection costs for ten-year interval have been spread over four years  
18 (\$207,400/year);
    - 19
  - 20 • Projected fuel consumption for HVYGT based on operating regime described in  
21 "Labrador Interconnected System Transmission Expansion Study," Sec. 5.1.1. An  
22 additional three days of operation was included for the annual planned summer  
23 outage to transmission line L1301/L1302;
  - 24
  - 25 • Transmission line losses calculated using PSSE<sup>1</sup> load flow software;
  - 26
  - 27 • Installation of fourth transformer at the Happy Valley Terminal Station: \$3,805,500;

---

<sup>1</sup> Power System Simulation for Engineering ("PSSE").

- 1           • Replacement of transformer T32 at the Churchill Falls Terminal Station: \$4,166,600;
- 2
- 3           • Future capital expenditures for HVYGT were included based on increased operation
- 4           associated the proposed operating regime described in “Labrador Interconnected
- 5           System Transmission Expansion Study,” Sec. 5.1.1; and
- 6
- 7           • Expected Unserved Energy calculated based on analysis described in the “Labrador
- 8           Interconnected System Transmission Expansion Study,” App. E.