

1 Q. **Transmission Rate and Methodology**

2 References:

- 3 (i) NLH 2017 GRA, Evidence, chapter 5, page 5.35
- 4 (ii) NLH 2017 GRA, Evidence, chapter 5, page 5.35, footnote 51
- 5 (iii) NLH 2017 GRA, Evidence, chapter 5, page 5.36
- 6 (i) *« Labrador West transmission is nearing its capacity limitations. The*
- 7 *cost of providing new transmission to meet load growth on the*
- 8 *Labrador Transmission System is high and can materially impact*
- 9 *future customer rates. »*
- 10 (ii) *« 51 In OC2014-034, Hydro was directed to construct a new 230 kV*
- 11 *transmission line between Churchill Falls and Labrador West; the*
- 12 *budget for this line was approximately \$330 million. The project was*
- 13 *suspended in September 2014. »*
- 14 (iv) *« The capital cost of new transmission line facilities servicing*
- 15 *Labrador West from Churchill Falls is projected to be in the range of*
- 16 *\$5 to \$6 per kW. »*
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18 Has the commissioning of series compensation been explored to increase available

19 transmission in Labrador West been explored?

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22 A. Application of series compensation on the existing two 230 kV transmission lines

23 between Churchill Falls and the Wabush Terminal Station has been explored;

24 however, it alone is not a technically viable alternative for increasing the power

25 transfer to western Labrador given the relatively small conductor size on the

26 transmission lines.

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1           Each of the existing 230 kV transmission lines have thermal ratings of 424 A at 30 °C  
2           ambient and 792 A at 0 °C ambient. Given a nominal 230 kV operating voltage, the  
3           current ratings yield nominal load ratings of 168.9 MVA and 315.5 MVA at 30 °C  
4           ambient and 0 °C ambient respectively. Exceeding the thermal rating of the line  
5           based upon the ambient temperature cannot be permitted as the overhead  
6           conductor would sag excessively, violating ground clearance standards and thereby  
7           causing a safety and reliability risk.

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9           Schedule 3-II indicates an IOC load forecast of 245 MW in 2018 and 2019. Of the  
10          162.4 MW for Hydro Rural Interconnected in 2018, 89 MW is forecast for supply to  
11          western Labrador. Combined, the 2018 peak load for western Labrador equals 334  
12          MW, excluding transmission system losses.

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14          Comparing the existing line ratings with the 2018 load forecast, the load exceeds  
15          the rating for a single 230 kV transmission line. As a result, the existing system  
16          cannot support supply the system load under loss of a single transmission line due  
17          to thermal rating. Application of series compensation will not improve this  
18          condition as the load current for each line cannot be increased.