Q. Reference: *Probabilistic Based Transmission Reliability Summary Report*, Appendix A, Page 23 of 56 and 28 of 56.

Please complete the following table:

Transmission Failure	**Failure Rate (failures/year/100km)**
Existing 230kV Transmission System *(Section 4.3.3 230kV Transmission Lines)*	
Average Failure Rate Per Pole *(Section 5.2.1.2 HVDC Overhead Lines)*	
Average Common Mode Failure Rate *(Section 5.2.1.2 HVDC Overhead Lines)*	

A. Please see the completed table below:

Transmission Failure	**Failure Rate (failures/year/100km)**
Existing 230kV Transmission System *(Section 4.3.3 230kV Transmission Lines)*	0.781[1]
Average Failure Rate Per Pole *(Section 5.2.1.2 HVDC Overhead Lines)*	0.191[2]
Average Common Mode Failure Rate *(Section 5.2.1.2 HVDC Overhead Lines)*	0.02[3]

As discussed in Hydro's response to PUB-NLH-133, the common mode failure rate of 0.02 per year per 100 km is an estimated value provided by SNC Lavalin where it was anticipated that common mode failures within the industry average data would occur one order of magnitude less than a single pole failure. Industry wide bipole

[1] Based on Hydro 230 kV transmission line performance from 2009-2013
[2] SNC Lavalin - Reliability & Availability Assessment of the HVdc Island Link – Calculated value based on a compilation of CIGRE statistics produced during the 1990's
[3] SNC Lavalin - Reliability & Availability Assessment of the HVdc Island Link – Assumed that this type of failure mode is at least one order of magnitude less likely than a single pole failure

failure rates would depend on the design characteristics of the systems, and, if weather related, the severity of the weather experienced. The Labrador Island Link is designed such that, for the overhead transmission line, common mode failures should only occur as a result of a structural failure of a transmission tower, and therefore should be based on the reliability return periods. With respect to the structural failure of the transmission line, values of 0.002/year should be applied for sections of the Labrador Island Link on the Avalon Peninsula and 0.00667/year should be applied for other sections.