

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

3 *“Based on a total of 59 sustained outages over 23 transmission lines with a total*  
4 *length of 1510 km, an average failure frequency of 0.781 outages per 100 km per*  
5 *year was calculated.”*

6 Considering the Labrador Island Link is designed with a single series of transmission  
7 line towers over a distance of 1,100km, please comment on why this line will not  
8 experience similar outage statistics to what is described above.

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11 A. It should be noted that HVdc systems can't be treated as an ac transmission line for  
12 the following reasons:

- 13  
14 • HVdc overhead line consists of two conductors, one conductor per monopole.  
15 Ac transmission line is usually in three phases (one conductor per phase). The  
16 permanent loss of one phase for ac transmission line would result in a line trip  
17 while a monopole outage would not result in a bipole outage.  
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- 19 • An HVdc pole is a system that consists of many components in addition to the  
20 overhead line/underground cable. Reliability consideration must therefore be  
21 given to equipment such as valve groups, smoothing reactors, ac filters, and  
22 other equipment for an HVdc system. Similarly, consideration must be given to  
23 line specific equipment such as surge arresters and switchgear for an ac  
24 transmission line.