Q. Further to the response to PUB-NLH-212, Attachment 2, please explain why steps have not been taken to reduce the estimated outage rate of the electrode lines to less than 2 per year, since the outage of the electrode line would result in a pole failure becoming a bipole outage, with consequent potential under frequency load shedding.

A. The estimated outage rate of the electrode lines of two per year is based upon a review of the CEA transmission line statistics. That is, a rate of 0.5 outages/100 km/yr and a 400 km electrode yields two outages per year. The outage rate is based upon an underlying assumption that the electrode lines will be carried on structures separate from the main HVdc conductors.

The design of the overhead HVdc system has the electrode conductors in Labrador being supported on the same towers as the pole conductors for nearly the entire route from Muskrat Falls to the coast. Therefore, the outage rate of the electrode conductors in Labrador is near equal the outage rate of the pole conductors. As a result, the design has improved the overall electrode outage rate in Labrador.

On the Island, the electrode line conductors will be carried on separate structures to the electrode site. From Hydro's response to PUB-NLH-519 Attachment 2, an Island electrode line approximately 10 km in length will have a outage rate of 0.05 outage per year (10 km/100 km x 0.5 outages/ 100 km/year), or one outage every 20 years.