
2017/18 & 2018/19 ELECTRIC GENERAL RATE APPLICATION

Manitoba Hydro Undertaking #53

Manitoba Hydro to provide the distance between Bipoles III and Bipoles I and II at its point immediately west of Jenpeg. Then further to what level of resistance from when they've been built.

Response:

The minimum distance between Bipole III and Bipoles I and II is 23.8 km and occurs near the Jenpeg Generating Station.

Recognizing that there is a remote possibility that a single weather event could impact all Bipoles where the separation distance is less than 50 km, Manitoba Hydro increased the reliability level of Bipole III in these areas through stronger designs so that the line would withstand weather events with a return period of 1:500 as compared to the normal design return period of 1:150.

Manitoba Hydro does not design its transmission structures to resist tornado loadings as that would be prohibitively expensive. Rather Manitoba Hydro recognizes that in extreme events, such as tornados, only a limited number of towers will fail due to the narrow damage path of a tornado. Security against this type of failure is provided for by reducing the risk of progressive failures through the use of anti-cascading towers at specified intervals.

For the area of northern Manitoba near Jenpeg where separation distances are minimal, the risk of tornados is 25 times less likely than in southern Manitoba as indicated on the attached map.¹ For the MMTP transmission line which is in the higher risk region of Manitoba, its mainly east-west orientation and easy access in conjunction with the use of anti-cascading towers, means that both damage and repair times will be limited should a tornado strike.

¹ *Probability of occurrence of tornados* from Cheng et al. 2013. Probability of Tornado Occurrence across Canada. J. Climate. DOI: 10.1175/JCLI-D-13-00093.1

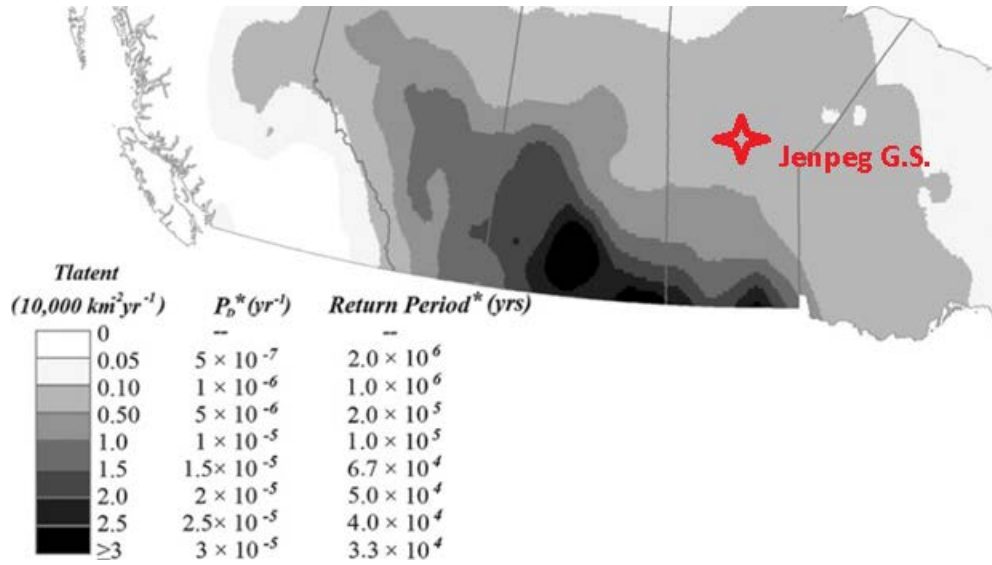


Figure 1 - Probability of Occurrence of Tornadoes