Q. **Re: 2018 CBA, MFHVI Project, Revision 2 (2018-01-25), pages 54-58 (pdf); PUB-NLH-049, page 8 of 10**

Citation (PUB-NLH-049):

Recall that Option One is the status quo option in which incremental transfer over the existing 269 km long line to Churchill Falls is met by adding a second transformer at Churchill Falls and 138 kV shunt capacitors at Happy Valley. In essence, the calculations provide the unavailability and expected unserved energy for the existing system at 0.0046 and 1747 MWh, respectively.

Preamble :

Section 9 provides a reliability analysis of the options studied, resulting in a calculated unavailability value (U) and expected unserved energy (MWh) for each one, as seen in Table 5 (p. 58 of the pdf).

a) Please confirm that the calculated unavailability and expected unserved energy of the current configuration (status quo) is the same as that given for Option 1.
b) For the current configuration and for Options 1 and 2, please express the calculated unavailability in hours/year.

A.

a) The calculated unavailability and expected unserved energy of the current configuration (status quo) is not the same as that of Option 1, due to the following considerations.

For Option 1, it is assumed that 42 MVA transformer T32 at Churchill Falls is replaced with a 125 MVA unit. This is to provide backup in the event of an outage to 125 MVA power transformer T31. The capacity of the transmission

system in the status quo case is reduced to 42 MVA in the event of an outage to T31. This has the effect in increasing the expected unserved energy of the system by approximately 360.7 MWh.

Option 1 also includes the addition of extra 67 MVAR of shunt compensation, which increases the transfer capacity of the system to 104 MW. The additional capacity afforded by this reactive support results in a reduction in the expected unserved energy of the system by 4.4 MWh.

b) As per Revision 2 of the "Muskrat Falls to Happy Valley Interconnection" report, the expected unserved energy for Option 1 is 1747 MWh. This equates to 40.3 hours per year.

The expected unserved energy for Option 2 is 194 MWh. This equates to 4.5 hours per year.

As per the calculations above, expected unserved energy for the status quo scenario is 1747 MWh + 4.4 MWh + 360.7 MWh = 2112.1 MWh. This equates to 48.7 hours per year.