Q. Please provide updated and detailed documents that describe the methodology, data, and results of the probabilistic reliability evaluation of the Muskrat Falls and LIL HVDC Project, expressed in terms of the commonly used probabilistic indices LOLH, LOLE, and EUE. How does the probabilistic evaluation of the Muskrat Falls and LIL HVDC project compare with the Isolated Island Option?

A. For both the Isolated Island option and the Interconnected Island option, least-cost expansion plans were developed that met Hydro's reliability criteria, as noted in *Section 4.0 Planning Criteria* of Exhibit 16 *Generation planning Issues July 2010 Update*:

> To guide Hydro's planning activities the following have been adopted:
>
> **Capacity:** The Island Interconnected System should have sufficient generating capacity to satisfy a Loss of Load Hours (LOLH) expectation target of not more that 2.8 hours per year[1].
>
> **Energy:** The Island Interconnected System should have sufficient generating capability to supply all of its firm energy requirements with firm system capability[2].

[1] LOLH is a statistical assessment of the risk that the System will not be capable of serving the System's firm load for all hours of the year. For Hydro, an LOLH expectation target of not more than 2.8 hours per year represents the inability to serve all firm load for no more than 2.8 hours in a given year.
[2] Firm capability for the hydroelectric resources is the firm energy capability of those resources under the most adverse three-year sequence of reservoir inflows occurring within the historical record. Firm capability for the thermal resources (HTGS) is based on energy capability adjusted for maintenance and forced outages.

Please see *MHI-Nalcor-13* for an annual summary of forecast load versus firm energy capability from 2010 to 2067, as well as the LOLH for each year, for both the Island Isolated and Island Interconnected generation expansions plans.

For the transmission aspects of both the Interconnected Island and Isolated Island options analysis has been conducted to ensure that the established transmission planning criteria are met. By meeting the established transmission planning criteria, transmission system reliability is deemed to be met. Exhibits 24, 59 and 105 along with Confidential Exhibits CE-03 and CE-10 Rev.1 address the required system additions to meet the transmission planning criteria for both options.

Beyond the transmission planning criteria, Exhibit 106 provides an assessment of the level of exposure and unserved energy due to a transmission loss on a probabilistic basis for the Interconnected Island and the Isolated Island options on a comparable basis. Table 5 of Exhibit 106 provides the results of the analysis. In summary it indicates that between 2017 and 2027 the Interconnected Island option has less unserved energy for the worst case two week outage window than the existing system today. In terms of level of exposure the availability values for the Isolated Island and Interconnected Island are very similar in the long term with both options providing energy availability values in excess of 99% and unsupplied energy values less than 1% of the annual energy forecast in any year.