Q. Regarding additional loads in Labrador East, including non-data centre loads, please disclose Hydro's plans for system upgrades (including high-level cost estimates) for the next 200 MW of load, in increments of 25 MW.

A. Section 5.0 of the report (2018 Capital Budget Application, Volume 2, Tab 13, Appendix A – the report) provides the transfer capacities and costs of each of the transmission options considered. Of particular note Section 5.2 provides the firm transfer limits of the preferred alternative are as follows:

i) 129 MW for single contingency of loss of a 50MVA transformer at Happy Valley and the gas turbine available for 25 MW. (Overloading of remaining Happy Valley transformers).

ii) 142 MW for single contingency of loss of a 125MVA transformer at MFATS2 and the gas turbine available for 25 MW (Overloading of remaining MFATS2 transformers).

iii) 77 MW for the single contingency loss of the first 6 km section of L1302 at MFATS2 through operation of L1301 and connection to Churchill Falls (voltage constraint)

iv) 25 MW for the single contingency loss of L1302 between MFATS2 and Happy Valley Terminal Station (rating of gas turbine).

v) 104 MW for double contingency of loss of a 50MVA transformer at Happy Valley and the gas turbine out of service. (Overloading of remaining HV-GB transformers)

vi) 116 MW for double contingency of loss of a 125MVA transformer at MFATS2 and the gas turbine out of service (Overloading of remaining MFATS2 transformers).

Beyond a single 138 kV connection to Muskrat Falls Section 5.4 of the report summarizes the firm transfer capacity of the system with two 138 kV transmission line interconnections at Muskrat Falls (Option 4) as follows:

i) 129 MW for single contingency of loss of a 50MVA transformer at Happy Valley and the gas turbine available for 25 MW. (Overloading of remaining Happy Valley transformers).

ii) 142 MW for single contingency of loss of a 125MVA transformer at MFATS2 and the gas turbine available for 25 MW (Overloading of remaining MFATS2 transformers).

iii) 104 MW for double contingency of loss of a 50MVA transformer at Happy Valley and the gas turbine out of service. (Overloading of remaining HV-GB transformers)

iv) 116 MW for double contingency of loss of a 125MVA transformer at MFATS2 and the gas turbine out of service (Overloading of remaining MFATS2 transformers).

v) With one 138 kV line out of service the transfer is limited by the thermal rating of the remaining 138 kV line: 89.1 MVA at 30 °C ambient, 130.8 MVA at 15°C ambient and 161.7 MVA at 0 °C ambient.

Similarly, Section 5.5 of the report provides the firm transfer limit for two 138 kV lines and two 138/25 kV stations in Happy Valley (Option 5) as follows:

> *The overall firm transfer limit of this option approximately 150 MW, based on loss of one 315/138 kV, 125MVA transformer at MFATS2 and operation of the Happy Valley gas turbine for 25MW. This option provides Happy Valley-Goose Bay with the highest degree of*

reliability with a redundant 138 kV feed from Muskrat Falls. Appendix E provides the single line diagrams associated with this option.

The cost estimates for these alternatives are provided in the report.

The transmission expansion plans beyond these load levels are dependent upon a number of factors including:

- The location and magnitude of the load
  - Is it a larger single load that is better served at 138 kV dedicated transmission or via 315 kV
- The location of the least cost resource to supply the load
  - There is limited recall available to supply load in Labrador, therefore the location of the next resource will have a major impact on the overall transmission configuration

At this point any load beyond the 150 MW firm capabilities of the alternatives provided in the report would have to be assessed in detail. Consequently, transmission alternatives to meet that load would be merely speculative.