Q. Reference: *Hydro's 2016 Standby Fuel Deferral Application, February 5, 2016, Page 3,* Chart 1.

Please explain what Hydro's "minimum storage target" represents and describe in detail how Hydro manages energy production, and in particular thermal production, to ensure reservoir levels do not fall below minimum targets or exceed levels that may cause spill to occur.

A. Hydro's minimum storage target represents the lowest aggregate storage level that Hydro's main reservoirs could reach and still ensure that native load could be met using hydraulic production supplemented by maximum Holyrood generation, should there be a repeat of the hydro critical dry inflow sequence (January 1959 through March 1962). The analysis considers only Hydro's large storage reservoirs; Victoria, Meelpaeg, Long Pond, Cat Arm, and Hinds Lake, and includes a small buffer of storage at each reservoir to give some protection against a record dry sequence and to enable all plants to provide their firm capacity when required. The derivation uses Vista simulations to estimate the energy storage through the dry period and to estimate the coincident Holyrood usage. Then, a spreadsheet model is used to determine how much lower the storage could be if maximum Holyrood thermal was used for the remaining months of the dry period.

Through the year, Hydro has at least weekly water management meetings where guidelines for operations of Hydro's generating resources are prepared for the Energy Control Centre (ECC). Factors such as recent and forecast weather, reservoir levels relative to minimum and maximum targets, and system conditions, such as unit outages, and watershed conditions, such as snow pack levels, are taken into

account in recommending the setting for each generating unit on the Island Interconnected System. Under normal conditions, the water management guidelines indicate that thermal units should be set to minimum but generation at these units may be increased for reliability or energy. If thermal units are run as required for Island and Avalon reliability, over the long term these units provide the thermal energy required by the system.

In early 2016, the aggregate storage was low and Long Pond in particular was lower than in any year of recent history. This prompted additional Vista simulations and what-if scenarios to evaluate the risk of impacts to generation. Results indicated that additional thermal generation[1] would be required to prevent the aggregate storage from going below minimum if the dry weather continued.

During periods of high water levels at one or more reservoirs, water management is independent of thermal generation, given that the thermal units are normally operated at minimum levels for reliability. In general the objective is to keep Victoria, Meelpaeg, Cat Arm, and Hinds Lake reservoirs at a similar percentage of full. If any reservoir gets out of balance because of isolated precipitation, unit outages, etc., generation is generally increased or decreased to restore the balance.

If any reservoir approaches full, and therefore there is a risk of spill, generation at that plant would be maximized and any upstream generation would be reduced, if possible, to minimize the risk of spill.

[1] Hydro's first unit of dispatch of thermal generation in this case would be the Holyrood Thermal Generating Station (Holyrood TGS). If for any reason maximum Holyrood TGS was not available and reservoir levels were nearing minimum, stand-by would be required to prevent storage dipping below minimum levels.