Q. **Project C-53: Upgrade Corner Brook Frequency Converter, Corner Brook**

At page C-54 (Volume I) of Hydro's Application, Hydro states:

"The Corner Brook Frequency Converter is an important component of the Island Interconnected System in that it enables 50 Hz power generation from Deer Lake to be accessible to the 60 Hz Island grid."

Please identify what benefits the frequency converter provides to the Island Interconnected System?

A. Please refer to IC-NLH-015 Attachment 1, Hydro's response to IC-NLH-186, filed in relation it Hydro's 2013 General Rate Application.

Q. Further to CA-NLH-295: Please confirm that the Frequency Converter provides benefit to all customers and Island Interconnected System when capacity assistance is provided by CBPP or during system outages as experienced in January 2014.

A. The Corner Brook Frequency Converter remains of primary benefit to Corner Brook Pulp and Paper Limited (CBPP). The currently installed capacity of CBPP is approximately 135 MW of total generating capacity, of which 81.1 MW is 60 Hz[1]. Further, the frequency converter converts 18 MW of CBPP's 50 Hz generation to 60 Hz for supply to the Mill. Therefore, CBPP has 99.1 MW of total 60 Hz supply capability. CBPP also contracts 8 MW of power on order for 2015 from Hydro to meet the remainder of its 60 Hz power requirements.

The frequency converter allows CBPP to convert some of its 50 Hz generating capability that would otherwise be trapped or unusable. This results in less dependence on more expensive power purchases and utilization of inflows in the Grand Lake and Corner Brook Lake watersheds that could otherwise be spilled. The frequency converter also provides for the ancillary benefit of strengthening what would otherwise be a weak 50 Hz CBPP power system.

Under the piloted demand credit service agreement, Hydro will call on CBPP to maximize its 60 Hz generation (including the frequency converter) prior to increasing generation at Holyrood for system reasons and prior to starting its standby units (i.e., a "capacity request"). However, capacity will only be made available to the grid in this manner if Mill loads are reduced and CBPP is able to generate in excess of what it requires for its own use. Otherwise, if the Mill is using

[1] Units 1-7 at the Deer Lake Powerhouse.

its maximum power requirements, there is no excess generation made available to the grid under this provision. Savings are provided to CBPP for allowing this additional capacity to the system by permitting CBPP to exceed its firm power requirements and to avoid costs associated with thermal or standby energy rates.

Hydro entered into capacity assistance arrangements with CBPP for the winter periods of 2013-2014 and 2014-2015. Although the payment structure and usage terms in each of these two winters differed, the basic principle remained the same in that Hydro could call on CBPP to interrupt up to 60 MW of its Mill load in order to provide a corresponding level of hydraulic generating capacity to the system. In the theoretical absence of the frequency converter, the 60 MW of capacity assistance could still be provided by the Mill's 60 Hz generation at Deer Lake Power with enough generation remaining to provide for Mill essential service load.

In the winter of 2014/2015 Hydro also entered into a Supplemental Capacity Assistance Agreement with CBPP, under which Hydro could request an interruption of up to 30 MW above what had already been provided under the Capacity Assistance Agreement. In order to make capacity available under these arrangements, the incremental generation provided by the frequency converter would be required. However, the availability of capacity under these arrangements was less certain and that was reflected in the contract terms. There were no fixed fees or failure to deliver penalty clauses stipulated, and payments were to be based on usage only. CBPP is compensated for any benefits derived from the frequency converter and provided to the system through supplemental capacity assistance.