Q. Provide a copy of the PowerPoint presentation titled *Realtime Indication of Island Generating Capacity and Reserves, Presentation to Newfoundland Power February 2015*.

A. The PowerPoint presentation titled *Realtime Indication of Island Generating Capacity and Reserves, Presentation to Newfoundland Power February 2015*, is attached as NP-NLH-298, Attachment 1. This presentation was provided to NP Operations Management staff on February 9, 2015. The presentation was developed following a request by Newfoundland Power at the January IUSPRC[1] meeting to receive, via ICCP[2] data exchange, Hydro's Available and Spinning reserves in real time. Hydro developed the presentation to provide context for NP Operations staff regarding each of the real time data. NP began to receive Hydro's Available and Spinning reserve data in real time during the week of February 16, 2015.

[1] Inter-Utility System Planning and Reliability Committee.
[2] The Inter-Control Center Communications Protocol (ICCP) is specified by utility organizations throughout the world to provide data exchange over wide area networks (WANs) between utility control centers, utilities, power pools, regional control centers, and Non-Utility Generators.

Realtime Indication of Island Generating Capacity and Reserves
Presentation to Newfoundland Power

February, 2015

newfoundland labrador hydro
a nalcor energy company

Realtime Indications of Island Generating Capacity and Reserves

Actual Generation	1475	MW	Available Capacity	1909	MW	Available Reserve	531	MW	Spinning Reserve	248	MW

Realtime indications of:

- Actual Generation;
- Available Capacity;
- Available Reserve; and
- Spinning Reserve

are calculated and reported using the Automatic generator Control (AGC) application of Hydro's Energy Management System. They are reported on an overall Island basis and include the following generating sources:

- NLH hydro generation;
- NLH thermal generation (Holyrood);
- NLH standby generation (gas/combustion turbines and diesels);
- NLH purchases (Nalcor Exploits, Star Lake, Wind, CBPP Co-gen, Rattle Brook);
- Vale diesels (currently 10.8 MW under the capacity assistance arrangements)
- Newfoundland Power hydro and standby generation; and
- Corner Brook Pulp and Paper 60 Hz generation (Deer Lake Power and 60 Hz frequency converter output).

Realtime Indications of Island Generating Capacity and Reserves (cont'd)

Actual Generation **1475** MW

- '**Actual Generation**' is a realtime indication of the 'gross' Island load and is the sum of the outputs from all generating sources (including customer owned at NP and CBPP). It includes plant station service amounts, the most notable being Holyrood at approximately 8 MW per operating unit.

Available Capacity **1909** MW

- '**Available Capacity**' is a realtime indication of the total Island generating capacity and is the sum of the reported capacities from all generating sources (including customer owned at NP and CBPP).
- For NLH units and Star Lake, the calculation uses the gross continuous unit ratings which may be adjusted on an operational basis from time to time, to reflect low water levels or inflows, unit availability and temporary unit de-ratings. 'Available Capacity' from 'non-dispatchable' sources such as Nalcor Exploits, Wind, CBPP Co-gen, Rattle Brook are taken as the current value of generation only.
- For Newfoundland Power units, the calculation uses the "Island Reserve MW" capacity as reported by NP operations personnel in their daily report to Hydro.
- For CBPP units, the calculation uses the current values which make up CBPP's generation credit, i.e. 81.1 MW for DLP 60 Hz units + 18 MW for the frequency converter.
- The 'Available Capacity' numbers are primarily entered and maintained in the AGC application by the ECC operators.

Realtime Indications of Island Generating Capacity and Reserves (cont'd)

Available Reserve **531** MW

- '**Available Reserve**' is a realtime indication calculated as follows:

  {'Available Reserve' = 'Available Capacity' - 'Actual Generation' + Impact of Load Reduction Strategies}

- There are two load reduction strategies currently included in Hydro's realtime reporting of 'Available Reserve'[1]:
  1. Corner Brook Pulp and Paper load interruption. Under the capacity assistance arrangements with CBPP, Hydro can call on CBPP to interrupt up to 90 MW of native load at is paper mill to make its 60 Hz generating capability available to the grid. Hydro plans on a net gain of 80 MW from these arrangements, as the decrease in Mill load and process steam requirements results in a shutdown of the CBPP Co-gen.
  2. System voltage reduction. By reducing the voltage at several of NP's supply points, there is a net reduction of up to 20 MW in customer demand. In its 'Available Reserve' calculation, Hydro prorates the total reduction of 20 MW based on the current load and the percentage of the Island winter peak (currently forecast at 1713 MW) .

- The realtime status of the load reduction strategies (i.e. CBPP Capacity Assistance active/inactive, amount requested and voltage reduction active/inactive) is maintained by the ECC operators in the AGC application.

[1] Hydro can also call upon Newfoundland Power's curtailable load (approximately 11 MW). This is not currently included in the available reserve calculation.

Realtime Indications of Island Generating Capacity and Reserves (cont'd)

Spinning Reserve **248** MW

- '**Spinning Reserve**' is the amount of unloaded generation that is synchronized to the power system and ready to serve additional demand, calculated as follows:

  {'Spinning Reserve' = 'On-Line Capacity' – 'Actual Generation'}

- For the most part, the 'On-Line Capacity' is the sum of the 'Available Capacities' for each of the on-line units. The exception is the NP hydro units, whereby only the present value of generation is included in the spinning reserve calculation.

- The impact of the load reduction strategies is not included in the calculation of 'Spinning Reserve'.