

July 25, 2005

Mr. Bing Young  
Manager – Transmission System Planning  
Hydro One Networks Inc.  
483 Bay Street  
15th Floor - North Tower  
Toronto, ON M5G 2P5

Dear Mr. Young:

***Bruce Special Protection System (BSPS) – Incorporation of Wind Farm Generation Rejection (G/R)  
Notification of Conditional Approval of Connection Proposal - REVISED  
CAA ID Number: 2005-EX222***

Thank you for the information that you provided on Hydro One's proposed work on the Bruce Special Protection System (BSPS) to incorporate wind farm generation rejection (G/R).

The IESO has determined that this work will not have a material impact on the reliability of the IESO-controlled grid.

The IESO is therefore pleased to grant **conditional approval** for the proposed work. Any material changes to your proposal may require a re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

**Final approval** to connect the generation facility to the IESO-controlled grid will be granted upon successful completion of the IESO Facility Registration process. During facility registration you will be expected to demonstrate that the project you have installed is materially unchanged from the proposal assessed by the IESO.

For further information, please contact the undersigned.

Yours truly,

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cc: IESO Records

## ***EXPEDITED SYSTEM IMPACT ASSESSMENT***

This Expedited System Impact Assessment has been completed to examine if the proposed Hydro One modifications to the existing Bruce Special Protection System (BSPS) for incorporation of wind farm generation rejection (G/R) impacts the reliability of the IESO-controlled grid.

The incorporation of BSPS wind farm G/R is considered a new BSPS control action.

Several wind farm projects have proposed to connect to transmission lines and stations near the Bruce Nuclear Generating Station (NGS). The IESO has identified a requirement for some of these projects to participate in the BSPS. Participation requires the wind farm to have facilities to receive G/R trip signals from the BSPS and then trip their corresponding wind generating units. The first wind farm required to participate in the BSPS is Melancthon Grey wind farm Stage 1 - 75 MW (CAA ID 2003-103).

The BSPS modifications are expected to be completed by May 31, 2006. The Melancthon Grey Stage 1 wind farm is expected to be in-service at the end of 2005. Hence, wind farm G/R for Melancthon Grey will not be available for a period of up to five months.

### **BSPS BACKGROUND**

The BSPS is a collection of special protection systems installed at Bruce B Switching Station (SS) and associated stations, which perform pre-defined control actions in response to recognized contingencies by monitoring the status of the electrical connection between nodes in southern Ontario. The existing BSPS control actions include generation rejection at Bruce NGS, tertiary reactor tripping at Bruce SS and Longwood Transformer Station (TS), and load rejection at specific TSs across southern Ontario.

The BSPS is classified as a "Type I Special Protection System", and conforms to criteria and guidelines specified in NPCC Criteria A-11.

### **PROPOSED BSPS MODIFICATIONS**

Figure 1 shows the functional components of the BSPS with wind farm G/R incorporated.

To incorporate wind farm G/R as a new control action, software modifications are required to the Bruce Local and Interarea Stability (BLIS) sub-system of the BSPS. With the software modifications, the "Spare 1" outputs of the BLIS control processors are to initiate generation rejection for the wind farms when armed by the IESO. The "Spare 1" outputs are to be renamed "Wind Farm G/R".

The IESO understands that at least four spare outputs are available from the existing BLIS processors. Hydro One has proposed, as developments come into service, to group wind farms requiring participation in the BSPS into four distinct trip groups. The division of groups will be based on the point of connection of the wind generation facilities with respect to the transmission facilities emanating out of the Bruce Complex. The IESO supports this proposal since it would provide added operating flexibility.

## **IESO ARMING CAPABILITY**

The capability to arm “Wind Farm G/R” in real-time operations will be made by IESO Operations staff via a BLIS “selection table” on their console. The “selection table” will allow the IESO to select wind farm G/R for all BSPS connectivity modules. Selections made by the IESO will be transmitted from the IESO to Hydro One’s Network Management System (NMS) at the OGCC via the ICCP communication link and in turn, transmitted from OGCC to the BLIS control processors at Bruce B SS via existing communication facilities.

On-line monitoring of the “Wind Farm G/R” arming status from the “selection table” will also be provided to the IESO via Hydro One’s Ontario Grid Control Centre (OGCC).

## **TELECOMMUNICATION FACILITIES**

Wind farms are required to provide the telecommunications facilities to receive the “Wind Farm G/R” signals from the BLIS processors located at Bruce B SS. Hydro One will discuss with each wind farm required to participate in the BSPS the available communication options.

### *Melancthon Grey Wind Farm – Stage 1 75 MW (CAA ID 2003-103)*

Hydro One identified two communication options for sending the generation rejection trip signals from the Bruce B SS. The first option provides a direct new path from Bruce B SS to Melancthon Grey wind farm via phone lines with a communication time of 20 ms. The second option provides a longer path, with a communication time of 30 ms. Under option two, the tripping signal is to be sent from Bruce B SS to Orangeville TS via Hydro One sonet link and from Orangeville TS to Melancthon Grey wind farm via phone lines that are already leased for transfer trip. The IESO has reviewed the options and finds the second option acceptable.

## **ASSESSMENT**

The BSPS “Wind Farm G/R” will not be available until May 31, 2006, a period of five months after the expected in-service of Melancthon Grey wind farm. During this period, should arming of the Melancthon Grey wind farm be required, the facility will be requested to reduce its output, or disconnect from the IESO-controlled grid, to respect prevailing operating security limits.

The proposed BSPS modifications will have no adverse reliability impact on the IESO-controlled grid.

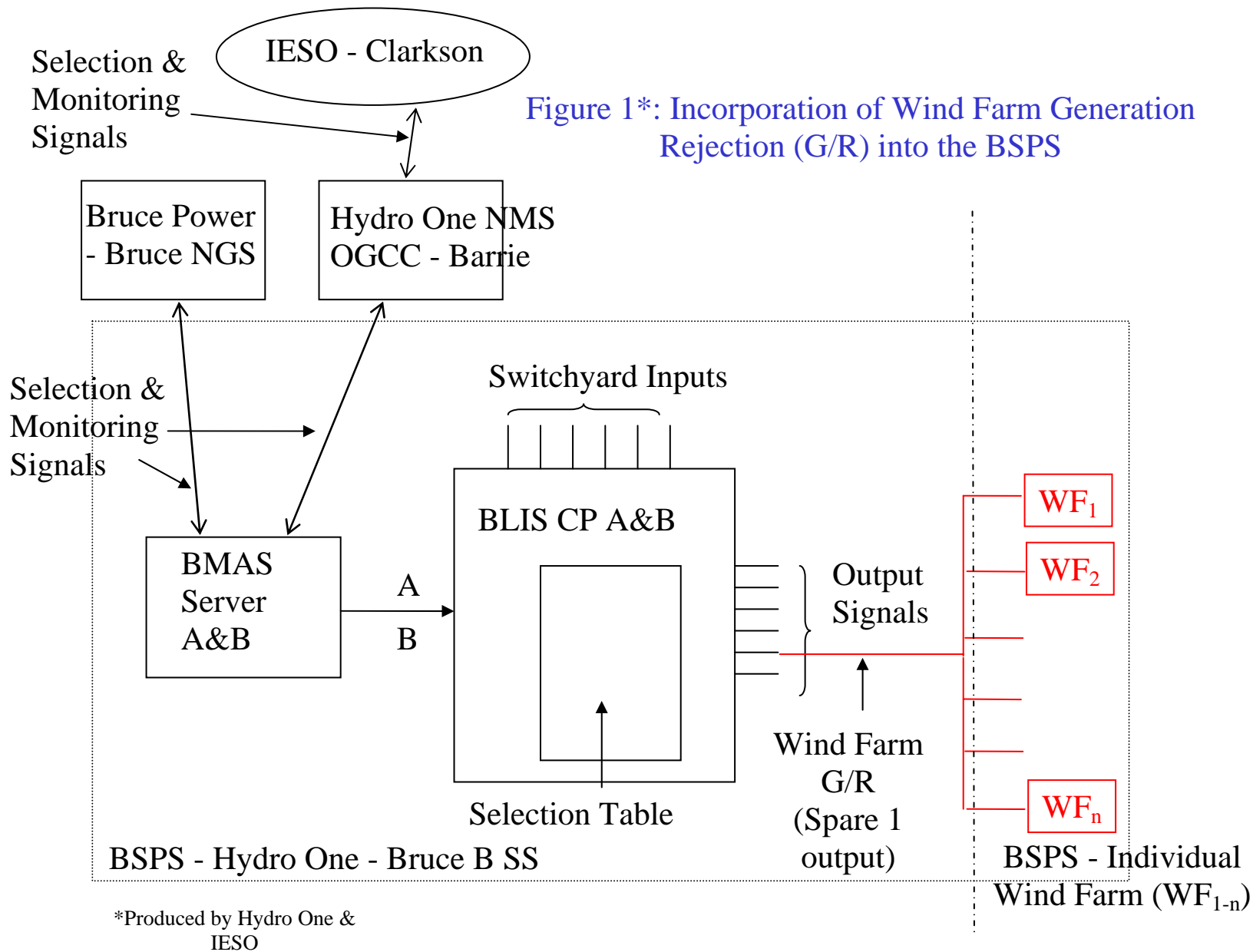


Figure 1\*: Incorporation of Wind Farm Generation Rejection (G/R) into the BSPS

\*Produced by Hydro One & IESO