



# **CONNECTION ASSESSMENT & APPROVAL PROCESS ASSESSMENT SUMMARY**

**Applicant: Hydro One Networks Inc.**

**Project: Port Hope TS & Sidney TS – Provide  
Automatic Switching-off Scheme for Shunt  
Capacitor Banks**

**CAA ID: 2002-EX020**

**Long Term Forecasts & Assessments Department  
Consistent Information Set Department**

**Date: December 3, 2002**

## 1.0 Description of Proposal

Low voltage shunt capacitor banks have been installed at the Dobbin TS, Port Hope TS, and Sidney TS to provide reactive power supports at these stations. Table 1 lists the shunt capacitor banks, which are available at each transformer station.

Station	Operating Designation	Rated Voltage kV	Rated MVar
Dobbin TS	SC3	46	32.6
	SC4	46	32.6
Port Hope TS	SC1	46	23.4
	SC2	46	23.4
	SC3	46	21.6
	SC4	46	21.6
Sidney TS	SC1	46	20.7
	SC2	46	21.6
	SC3	44	21.6

Table 1: Available Shunt Capacitor Banks in Dobbin/Port Hope/Sidney Area

The shunt capacitor banks at Dobbin TS will automatically switch on sequentially after prescribed time delays when the Dobbin TS 230 kV bus voltage falls below 215 kV. The shunt capacitor banks at Port Hope TS and Sidney TS will automatically switch on sequentially after prescribed time delays when the 115 kV bus voltage at these stations fall below 115 kV.

Both shunt capacitor banks at Dobbin TS will also automatically switch off when the 230 kV bus voltage exceeds 245 kV. Two of the four shunt capacitor banks SC3 and SC4 at Port Hope TS are also equipped to switch off automatically when the 115 kV bus voltage at the station exceeds 127 kV. However, two shunt capacitor banks SC1 and SC2 at Port Hope TS and all three shunt capacitor banks at Sidney TS do not have automatic switch off capability and have to be manually operated in response to high station bus voltages.

In addition, load rejection schemes are also provided at all three stations to trip pre-selected 44 kV feeders when the 115 kV voltages at these stations remain below 107kV for about two seconds. Details of the existing automatic capacitor switching schemes and load rejection schemes at these three stations can be found in the System Control Order SCO L-0182 Version 06.

With the existing automatic capacitor switching schemes and load rejection schemes at Dobbin TS, Port Hope TS and Sidney TS, the 115 kV voltages at these three stations could, under certain contingency conditions, reach as high as 150 kV.

Hydro One Network Inc. is proposing to add automatic switch off capability to the existing capacitor switching schemes at Port Hope TS and Sidney TS to provide better flexibility in the voltage control in the area. The two shunt capacitor banks SC1 and SC2 at Port Hope TS and all three shunt capacitor banks at Sidney TS will be equipped to switch off automatically when the 115kV voltages at the stations remain higher than 127kV for a prescribed duration. The timing of automatic switching on and off of all the shunt capacitor banks at these three stations will be coordinated to avoid undesirable switching or hunting of shunt capacitor banks.

The scheduled in-service date for the work is Q2 of 2003.

## **2.0 Assessment**

The proposal is intended to provide better voltage control in the local area of Dobbin TS, Port Hope TS, and Sidney TS. The work involves a minor modification of the existing shunt capacitor switching scheme and will have no adverse impact on the IMO controlled grid.

## **3.0 Notification of Approval**

Based on the above assessment, it is recommended that a Notification of Approval for this proposal be issued to the applicant.