



## **CONNECTION ASSESSMENT & APPROVAL PROCESS**

### ***ASSESSMENT SUMMARY:***

*Applicant: TransAlta Energy Corporation*

*Project: Increase in the Registered Capacity of the TransAlta  
Co-generation Facility in Mississauga*

***CAA ID No. 2004-EX187***

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

*Date: 17<sup>th</sup> March 2004*

## **ASSESSMENT SUMMARY**

### **TRANSALTA CO-GENERATION FACILITY - MISSISSAUGA**

#### ***Increase in Registered Capacity from 110MW to 115MW***

#### ***1.0 INTRODUCTION***

The TransAlta Co-generation Facility in Mississauga is connected to Bramalea TS via a double-circuit 44kV line, owned by EnerSource Hydro Mississauga. These two circuits are terminated on to the 44kV busbars of the following DESN stations that, together with a separate 27.6kV DESN station, compose Bramalea TS:

- feeder circuit M50 into the EZ DESN station, with the steam-turbine unit and one of the gas-turbine units connected to it, and
- feeder circuit M29 into the JQ DESN station, with a single-gas-turbine unit connected to it.

The registered peak output from this facility is presently 110MW and the TransAlta Energy Corporation is seeking approval to increase this to 115MW, with no changes being made to the existing facilities.

In addition, the KMS Peel generating facility, with a peak output of approximately 15MW, is connected via the 44kV feeder circuit M26 into the JQ DESN station.

#### ***2.0 ASSOCIATED GENERATION PROJECTS***

Applications have been received and are currently being assessed for the following generation projects that are proposing to connect, either directly or indirectly, to the two 230kV circuits, V72R & V73R, between Claireville TS and Bramalea TS:

- The Sithe-Goreway Project -  
This Project is to be incorporated via both 230kV circuits, V72R & V73R.  
The maximum output of this facility is 1009MW.
- The Boralex-Mississauga Project -  
This Project is to be incorporated via only the 230kV circuit, V72R.  
The maximum output of this facility is 150MW.
- The GTAA Project -  
This Project is to be incorporated into the EZ DESN station at Bramalea TS via the 44kV feeder circuits M45 & M46, and into the 44kV DESN at Woodbridge TS via the M12 feeder circuit.  
The maximum output of this facility is 117MW, with 95MW to be incorporated into Bramalea TS.

#### ***3.0 EXISTING TRANSMISSION FACILITIES***

The two 230kV circuits V72R & V73R terminate at Claireville TS via underground cables that pass beneath the existing right-of-way of the 500kV circuits into Claireville TS. These cables represent the most thermally-limiting section of these circuits.

The *minimum* summertime rating for these cables is 1510A or 627MVA at 240kV.

However, since the thermal rating of the cables is influenced by the ground temperature, the ratings vary from a maximum continuous value of approximately 1690A (or 702MVA at 240kV) during the winter.

#### **4.0 ASSESSMENT**

For the purpose of this assessment it was assumed that all of the generating units associated with circuits V72R & V73R would be operating at a lagging factor of 0.9, to deliver the maximum reactive power output as required under the Market Rules.

In addition, it was assumed that the peak load at Bramalea TS would be 360MW, at a power factor of 0.9 lagging.

##### *Results*

With all of the existing and proposed generating facilities in-service, and with the TransAlta Co-generation Facility producing 110MW, a minimum load of approximately 254MW (equivalent to 70.6% of the peak value) would be required at Bramalea TS to ensure that the net flow into Claireville TS would remain within the *minimum* thermal rating of the cables.

Increasing the output of the TransAlta Co-generation Facility by a further 5MW to 115MW would require the minimum load at Bramalea TS to be at least 259MW (or 72% of the present peak value).

#### **5.0 CONCLUSIONS**

While it is expected that the minimum load at Bramalea TS could be substantially lower than the required 72% of the present peak value, it is also expected that there will be further load growth in this area, which would reduce the risk of overloading the 230kV cables.

Furthermore, for overloading of the 230kV cables to occur, it would be necessary for all of the proposed generating facilities to be developed and for them to be fully dispatched during off-peak periods. Under normal system conditions, with lower-cost generation capacity available, this is considered unlikely.

Consequently, depending on which Projects are eventually developed and the minimum load experienced at Bramalea TS, there could be a requirement to restrict the output of the TransAlta Co-generation Facility to its registered output of 110MW if all of the generating facilities are fully dispatched. The situation would be especially acute during the summer months when the thermal ratings for the cables are lower.

#### **6.0 CONCURRENCE BY HYDRO ONE & ENERSOURCE HYDRO MISSISSAUGA**

Notification has been received from Hydro One Networks Inc. and from EnerSource Hydro Mississauga that the proposed increase in the output from the TransAlta Co-generation Facility would remain within the rating of the local 44kV facilities at Bramalea TS.

Specifically, circuit M50 is rated for 80MVA and circuit M29 is rated at 48MVA, while the expected transfers corresponding to a peak output of 115MW would be as follows:

- Circuit M50      77.5MVA
- Circuit M29      48.0MVA

#### **7.0 NOTIFICATION OF APPROVAL**

It is therefore recommended that a Notification of Approval be issued for the proposed increase in the registered capacity for the TransAlta Co-generation Facility from 110MW to 115MW, subject to the following conditions:

- that the TransAlta Co-generation Facility be required to reduce its output to 110MW before similar reductions are instigated at the Sithe-Goreway, the Boralex and the GTAA Projects that precede it in the IMO's Connection Assessments Queue.
- that the TransAlta Energy Corporation **not** be compensated with CMS (Congestion Management Settlement) Credits for any reductions within the range of 115MW to 110MW that might be required in the output from the TransAlta Co-generation Facility to respect the thermal ratings of the 230kV cables.