



## System Operator Discretion 23 – 27 January 2011

### Background

Between 23 and 27 January 2011, the System Operator was frequently required to dispatch additional unscheduled generation in the upper North Island to maintain system security.

This report provides an overview of the issues presented to the System Operator over this period and the actions taken.

### System Conditions

On 23 January 2011, as a consequence of wet weather conditions, a significant quantity of additional generation was made available in the Waikato region. The generation mix in the North Island was further changed by a notable reduction in offered thermal and combined cycle gas turbine generation. This coincided with the on-going outage of Otahuhu CCGT (OTC), and resulted in a significant reduction in the total quantity of generation offered in the upper North Island.

As a result, the System Operator implemented a split on the 110 kV bus at Kinleith (KIN) to maintain security on the Kinleith-Tarukenga (KIN-TRK) circuits for the tripping of one of the parallel 220 kV circuits.

### Sequence of Events

#### *23 January*

Following the splitting of the 110 kV Kinleith bus, the System Operator received multiple contingency violations for the Hamilton-Whakamaru circuit (HAM-WKM) for a tripping of the Ohinewai-Whakamaru circuit (OHW-WKM). This was again attributable to the change in generation mix.

An increase in generation north of Whakamaru was required to reduce the loading on the 220 kV circuits. As no security constraint was available to manage the situation, the System Operator used discretion to bring on additional generation from the two offered stations in the Upper North Island; Huntly (HLY) and Southdown (SWN).

Upper North Island generation was constrained on between 11:13 and 21:00.

The need for a new constraint to manage the situation was identified and work started on its development.

#### *24 January*

On 24 January, the issues on the system persisted, requiring the System Operator to again use discretion to bring on additional Upper North Island generation to alleviate contingency violations on the 220 kV circuits.

Upper North Island generation was constrained on between 08:17 and 21:00.

A new constraint was in development to manage flows through HAM-WKM for a contingency of OHW-WKM with the KIN bus split, the Arapuni Runback enabled, and high Waikato generation.

**25 January**

On 25 January, the issues on the system persisted. Upper North Island generation was constrained on between 07:35 and 21:15.

The new constraint was completed and testing commenced.

**26 January**

Similar circumstances pertained on 26 January.

Upper North Island generation was constrained on between 08:00 and 21:05.

Testing of the new constraint continued until late in the afternoon.

**27 January**

On 27 January, the System Operator continued to manage the 220kV contingency violations via discretion.

Upper North Island generation was constrained on between 07:15 and 19:55.

The 110 kV KIN bus split is only available to the System Operator in a grid emergency situation. Given that the 110 kV KIN bus split was a prerequisite for the constraint to be implemented, the System Operator required Grid Owner approval to schedule the bus split in order for the constraint to be incorporated into SPD ahead of dispatch. This was required in order to create forward prices and give participants' time to take any action.

The Grid Owner agreed to the System Operator's proposal. A Customer Advisory Notice (CAN) was issued on 27 January to inform participants of the new constraint and how it would be used. The constraint was implemented on 28 January at 07:00 hours.

**Conclusion**

In the absence of a constraint to bring on the Upper North Island generation, the System Operator resorted to using discretion to dispatch upper North Island generation to manage system security (contingency violations on the HAM-WKM for a tripping of the OHW-WKM). As a consequence, market mechanisms were unable to provide participants with advance information or warning of the situation.

The development of a new constraint to manage security and to provide the market with the necessary signals was undertaken in parallel with the real time management of the situation. The constraint was implemented with urgency upon the satisfactory testing and analysis of the potential consequences.