

## ***Dispatch Anomaly –***

***7 to 9 April 2009***

***Prepared by: Market Operations Performance***

### **Background**

NEMMCO has found that some constraint equations that manage the Tasmanian Frequency Control Ancillary Service (FCAS) requirement did not operate under certain market and network conditions. This affected the dispatch outcome of 32 dispatch intervals (DI) between 7 and 9 April 2009.

### **Event Detail**

The Basslink HVDC interconnector has two important characteristics that are modelled in the National Electricity Market Dispatch Engine (NEMDE). Firstly, it has a limitation such that it cannot be operated at power levels less than 50MW (nominally) in either direction. This is called the 'Dead Zone or No-Go-Zone'. Secondly, the interconnector has the capability to transfer FCAS between Tasmania and the mainland when operating at power levels greater than 50MW in either direction. Simple linear programming based modelling cannot be used to model these characteristics.

In order to minimise market costs based on dispatch offers, NEMDE performs two runs<sup>1</sup> when the Basslink interconnector is able to provide FCAS transfer. The first NEMDE run uses the relevant initial conditions, while the second run assumes that the Basslink interconnector is unable to provide FCAS transfer by not using the Basslink Frequency Controller. The second run (and not necessarily the first run) is able to identify dispatch solutions from within the Dead Zone. Actual dispatch is determined by the run with the lower objective function.

Between 7 and 9 April 2009 for 32 DIs (Table 1), the second NEMDE run was selected as the optimal dispatch solution. During these DIs the Basslink interconnector flow from Victoria to Tasmania was often in excess of 350MW, well away from the no-go zone.

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<sup>1</sup> Refer to the paper on "Proposed Second Solve of NEMDE to Manage Basslink Operating Capability" (<http://www.nemmco.com.au/powersystemops/100-0041.pdf>)

In further analysis, NEMMCO found that in the second NEMDE run some FCAS requirement constraint equations were inactive during these 32 DIs. This resulted in inaccurate enablement of some Raise and Lower contingency services in several dispatch intervals. NEMMCO has subsequently modified this set of constraint equations (on 14 April 2009) so that dispatch outcomes satisfy the FCAS requirements under all circumstances.

**Table 1 - Intervals affected by inappropriate constraint equations**

<b>Day</b>	<b>Hours</b>
07/04/2009	07:10 - 07:30
	08:05 - 08:30
	12:05 - 12:20
08/04/2009	09:05 - 09:25
	17:35 - 18:00
09/04/2009	09:05 - 09:30

The only material effect on dispatch outcomes in these DIs was high prices for 6-second lower FCAS in the Tasmanian region, with a settlement value of around \$1.8M. This amount was paid to the various service providers of the service that were enabled, and recovered from the Market Customers in the Tasmanian region.

At dispatch time, there was no reason to consider these Tasmanian FCAS market outcomes as being suspect, due to the unusual and high priced FCAS offers that had been submitted since 1 April. Routine investigation of the high prices was conducted on 8 April and preliminary confirmation of a problem in the constraint equations was confirmed on 9 April. Appropriate changes were made and the new constraints tested before implementation on the next business day, 14 April. It is considered that NEMMCO acted in accordance with its established procedures in developing and implementing the constraints, monitoring the market outcomes and taking corrective action when the problem was confirmed. Accordingly, NEMMCO is not declaring it to be a scheduling error.

**Conclusion**

NEMMCO identified 32 DIs between 7 and 9 April 2009 where constraints did not operate.

Some FCAS constraint equations were inactive for the 32 DIs resulting in inaccurate enablement of some Raise and Lower contingency services in the Tasmanian region. These constraint equations were modified to operate correctly from 14 April.