

## Electricity Pricing Event Report – Wednesday 23 March 2016

**Market Outcomes:** Queensland spot price, Fast Raise Frequency Control Ancillary Service (FCAS) and Slow Raise FCAS prices reached \$2,344.16/MWh, \$2,027.02/MWh and \$205.15/MWh respectively for trading interval (TI) ending 1000 hrs.

FCAS prices and energy prices in other NEM regions were not affected.

**Detailed Analysis:** The Queensland spot price reached the Market Price Cap (MPC) of \$13,800/MWh for Dispatch Interval (DI) ending 1000 hrs. For the same DI, the Fast Raise FCAS price reached \$12,124.49/MWh and Slow Raise FCAS price reached \$1,200/MWh. The high energy and FCAS prices can be attributed to the rebidding of generation capacity and local FCAS requirement in Queensland during a planned network outage.

Planned outage of the Armidale – Tamworth no. 86 330kV line was scheduled between 0600 hrs and 1600 hrs on 23 March 2016. The outage increased the risk of synchronous separation between Queensland and New South Wales, which created a need for Contingency FCAS in QLD and limited interconnector flows. Outage constraint sets F-N\_ARTW\_86 and N\_ARTW\_86 were invoked between DIs ending 0600 hrs and 1515 hrs.

Between DIs ending 0945 hrs and 1000 hrs, Stanwell, CS Energy and Millmerran rebid 693 MW of generation capacity from bands priced below \$299.91/MWh to bands priced at or above \$13,799.99/MWh. For DI ending 0955 hrs, AGL withdrew 10 MW of generation capacity with the reason “0945~P~010 UNEXPECTED/PLANT LIMITS~MIN LOAD 10MW”.

For DI ending 0955 hrs, CS Energy withdrew up to 150 MW of Gladstone PS generation capacity from each Fast Raise, Slow Raise and Regulation Raise FCAS markets, with the reason “0947F FCAS/ENERGY CO-OPTIMISATION-SL”.

Cheaper priced generation in the energy market was available but required more than one DI to synchronise (Braemar PS units 5 and 6) or was limited by ramp rates (Tarong PS units 1, 2, 3 and 4) or was constrained off by a system normal constraint equation  $Q > \text{NIL\_MRTA\_B}$  (Oakey PS unit 1 and 2). This constraint equation limits the output of Oakey PS to prevent overloading of a Middle Ridge – Tangkam 110 kV line.

The target flow on the QNI interconnector was limited to 73 MW towards Queensland by the FCAS constraint equations F\_Q++ARTW\_R5, F\_Q++ARTW\_R6 and F\_Q++ARTW\_R60. The target flow on the Terranora interconnector was forced to 17 MW towards New South Wales by the same constraint equations. This circular flow was to maximise the net interconnector flows into Queensland, as different loss factors were applied to the parallel interconnectors.

The 5-minute price reduced to \$34.11/MWh in the DI subsequent to the high priced DI, when demand reduced by 354MW and 826 MW of generation capacity was rebid or shifted from bands priced at or above \$13,799.99/MWh to bands priced at or below \$299.91/MWh.

The Queensland Fast and Slow Raise FCAS prices reduced to \$0.80/MWh for DI ending 1005 hrs when Contingency Raise FCAS requirements reduced.

The high 30-minute spot price and sum of all FCAS price for Queensland was not forecast in the pre-dispatch schedules, as it was a result of the rebidding of generation capacity within the affected trading interval and the FCAS requirements in Pre-dispatch were much smaller than Dispatch.