

Electricity Pricing Event Report – Friday 13 January 2017

Market Outcomes: Spot prices in Queensland (QLD) ranged between \$2,200.28/MWh and \$13,882.77/MWh for 8 trading intervals (TIs) between TI ending 0700 hrs and 2030 hrs on 13 January 2017. For TI ending 1700 hrs, the QLD spot price reached the all time high of \$13,882.77/MWh.

Energy prices in other regions were not affected by this event. FCAS prices in all regions were not affected by this event.

Counter price flows caused negative settlement residues of approximately \$1,130,000 to accumulate on the QLD to New South Wales (NSW) directional interconnector between 0700 hrs and 2330 hrs. AEMO managed negative settlement residues from 0655 hrs to 0715 hrs (Market Notices No. 56760 and 56761), 1850 hrs to 2115 hrs (Market Notices No. 56765 and 56767) and 2250 hrs to 2345 hrs (Market Notices No. 56776 and 56782).

Detailed Analysis: The 5-Minute dispatch energy prices in Queensland (QLD) reached between \$12,518.69/MWh and the Market Price Cap (MPC) of \$14,000/MWh for 13 dispatch intervals (DIs) during the high price TIs. The high priced DIs were DI ending 0640 hrs, 1445 hrs, 1605 hrs, 1635 to 1705 hrs, 1835 hrs, 1915 hrs and 2015 hrs. These high prices can mainly be attributed to rebidding and shifting of generation capacity, during a period of high demand, while interconnector support was constrained.

Demand in QLD was high during the high priced TIs, reaching a peak of 9,078 MW at TI ending 1700 hrs. This high demand coincided with consecutive high temperature days in QLD, with a daily peak of 33.7 degrees (Archerfield Airport) on the 13 January 2017.

During the high priced DIs, the target flow on the QNI interconnector towards QLD was limited between 169 MW and 267 MW by the system normal constraint equations $N^{Q_NIL_B1}$ or $N\>>N-NIL_3_OPENED$. The $N^{Q_NIL_B1}$ constraint equation avoids voltage collapse on the loss of Kogan Creek generator. The thermal constraint equation $N\>>N-NIL_3_OPENED$ avoids overload of the Liddell – Muswellbrook No.83 330 kV line for the trip of the Liddell – Tamworth No.84 330 kV line.

For DI ending 0640, the target flow on the Terranora interconnector towards QLD was limited at 64 MW by the system normal constraint equations $N\>N-NIL_LSDU$. The thermal constraint equation $N\>N-NIL_LSDU$ avoids the overload of the Lismore - Dunoon 132 kV line for the trip of the other parallel Lismore - Dunoon 132 kV line. For all other high priced DIs, the target flow on the Terranora interconnector towards NSW was constrained at 95 MW by the system normal constraint equation $N\>>N-NIL_3_OPENED$ or the quick constraint equation $\#N-Q-MNSP1_I_E$. The quick constraint equation $\#N-Q-MNSP1_I_E$ was built to manage oscillations on the Terranora interconnector caused by constraint action for the outage of Coffs Harbour – Koolkhan 96H 132 kV transmission line.

Generation capacity of up to 319 MW was shifted or rebid by a number of generators, from lower priced bands to bands priced at or above \$13,641/MWh or the Market Price Cap (MPC) of \$14,000/MWh. For the high priced DIs, cheaper priced generation was available but required more than one DI to synchronize, limited by ramp rates or by the FCAS trapezium profile.

The 5-minute energy spot prices in QLD reduced to or below \$98.66/MWh in the DIs subsequent to the high priced intervals, when demand decreased and generation capacity was also rebid from higher price bands to lower price bands.

The high 30-minute spot price for QLD was forecast in the pre-dispatch schedules.