

Electricity Pricing Event Report – Friday 18 November 2016

Market Outcomes: Spot price in New South Wales ranged between \$587.87/MWh and \$11,700.63/MWh between trading intervals (TIs) ending 1500 hrs and 1630 hrs on 18 November 2016.

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

Detailed Analysis: The 5-Minute Energy prices in New South Wales (NSW) ranged between \$288/MWh and \$13,999.96/MWh between dispatch intervals (DIs) ending 1435 hrs and 1630 hrs. These high prices were mainly due to high demand (driven by warm weather), generator outages, rebidding of capacity in NSW, and limited interconnector support available from VIC to NSW.

During the high price TIs, demand in NSW was high, ranging between 10,190 MW and 10,373 MW. These demands coincided with high temperatures in NSW, with a daily peak of 33.4 degrees at 1300 hrs (Sydney Airport).

During this period, all Eraring PS units (4x750 MW) and Liddell PS unit 1 (550 MW) were out of service.

Between DI ending 1410 hrs and 1430 hrs, Origin Energy and Snowy Hydro generators rebid 679 MW from bands priced at \$299.60/MWh and above to the Market Floor Price (MFP) of -\$1000/MWh.

Increased loading on the Kangaroo Valley – Dapto No.18 and Canberra – Yass No.9 330 kV lines caused the system normal constraint equation N>>N-NIL_01N to bind between DIs ending 1420 hrs and 1655 hrs. This thermal constraint avoids the overload of the Canberra to Yass No.9 330 kV line for the loss of Kangaroo Valley to Dapto No.18 330 kV line.

The binding constraint equation limited target flows on the VIC-NSW interconnector for most of the period between DI ending 1420 hrs and 1655 hrs. During this time, average flow was 164 MW towards NSW, compared to 713 MW at DI ending 1415 hrs before the constraint began to bind.

The binding constraint also constrained off up to 78 MW of other available generation in NSW.

During most DIs within the high price period, flow from QLD to NSW was limited by the system normal constraint equations Q:N_NIL_AR_2L-G and Q>NIL_MUTE_757. The former limits flow on the Queensland – New South Wales interconnector (QNI) to avoid transient instability for a two line to ground fault at Armidale, while the latter maintains transfer on the NSW-QLD Terranora interconnector within thermal limitations.

The net effect of high demand, reduced interconnector support into NSW, and reduced cheaper priced generation availability, resulted in more expensive generation being dispatched to meet demand.

Rebidding and shifting of generation capacity also contributed to the high prices during some intervals as follows:

- For DI ending 1505 hrs Delta Electricity and AGL shifted 115 MW from MFP to bands priced at \$13,800/MWh and above.
- For DI ending 1545 hrs, Snowy Hydro rebid 280 MW of capacity from MFP to bands priced at \$299.80/MWh and above. Snowy Hydro also withdrew 20 MW of capacity priced at MFP from Upper Tumut and Tumut 3 power station with the reason '15:34:45 P MATCH BID TO CAPABILITY/POND LEVEL CHANGE'.

Between DIs ending 1435 hrs and 1630 hrs, there were 6 DIs when energy price in NSW remained relatively low, ranging between \$288/MWh and \$305.70/MWh. Rebidding and shifting of generation capacity to lower priced bands contributed to the low prices during these DIs.

These were as follows:

- Between DIs ending 1445 hrs and 1450 hrs, Delta Electricity and AGL rebid 200 MW of generation capacity from bands priced at \$13,800/MWh and above to the MFP.
- For DI ending 1505 hrs, Snowy Hydro rebid additional 9 MW of capacity to the MFP.
- Between DIs ending 1515 hrs and 1535 hrs, Energy Australia and AGL rebid or shifted 110 MW of capacity from the \$13,637.81/MWh and above to bands priced at \$29.96/MWh or less.
- For DI ending 1605 hrs, AGL shifted 40 MW of capacity from bands priced at \$13,999.96/MWh to bands priced at \$29.96/MWh.

The 5-minute price reduced to \$142.20/MWh for DI ending 1635 hrs, when 40 MW of capacity was shifted from bands priced at \$13,999.96/MWh to bands priced at \$29.96/MWh. The NSW demand also reduced by 84 MW during this DI.

The high spot price for NSW was forecast in the pre-dispatch schedule.