

## Electricity Pricing Event Report – Wednesday 06 July 2016 to Friday 08 July 2016

**Market Outcomes:** Spot price in South Australia ranged between \$508.89/MWh and \$8,897.80/MWh for 41 trading intervals (TIs) between TIs ending 0600 hrs on 06 July 2016 and 0000 hrs on 09 July 2016.

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

Actual Lack of Reserve Level 1 (LOR1) conditions had been declared for the South Australia region between 1800 hrs and 1900 hrs on 06 July 2016 (Market Notices 54247 and 54248), between 1800 hrs and 2130 hrs on 07 July 2016 (MN 54306 and 54352) and between 1830 hrs and 2000 hrs on 08 July 2016 (Market Notices 54371 and 54378).

**Detailed Analysis:** The 5-Minute dispatch price in South Australia ranged between \$503.70/MWh and the Market Price Cap (MPC) of \$14,000/MWh for 83 dispatch intervals (DIs) between DIs ending 0600 hrs on 06 July 2016 and 2335 hrs on 08 July 2016. These high prices can be mainly attributed to a planned network outage limiting South Australia imports over the Heywood interconnector, low wind generation and a steep supply curve in South Australia.

The Tailem Bend West 275 kV Bus (including Tailem Bend to South East No 1 275 line) was on a planned outage between 0811 hrs on 04 July and 2039 hrs on 14 July. This planned outage reduced the interconnector capacity on the Heywood Interconnector. Constraint set S-TB\_275KV\_W\_BUS was invoked for the duration of the outage.

The transient stability constraint equation  $V::S\_TB\_275KV\_W\_B\_1$ , from the constraint set S-TB\_275KV\_W\_BUS, limited the Heywood interconnector for all high priced DIs. This constraint equation prevents transient instability across the VIC-SA cut-set for the loss of the South East - Tailem Bend No. 2 275kV line, during the outage of the Tailem Bend West 275kV Bus (including Tailem Bend to South East No. 1 275kV line). The target flow on the Heywood interconnector ranged between 48 MW towards Victoria and 65 MW towards South Australia for all high priced DIs.

The target flow towards South Australia on the Murraylink interconnector ranged between 151 MW and 220 MW and was limited by one of the thermal constraint equations  $V^{\wedge}SML\_NSWRB\_2$  and  $N^{\wedge}V\_NIL\_1$  or the upper transfer limit constraint equation VSML\_220. The  $V^{\wedge}SML\_NSWRB\_2$  constraint equation prevents voltage collapse in Victoria for loss of the Darlington Point – Buronga (X5) 220 kV line. The  $N^{\wedge}V\_NIL\_1$  constraint equation prevents voltage collapse in the southern areas of New South Wales for the loss of the largest Victorian generating unit or Basslink, under system normal conditions.

Several South Australian generating units were unavailable during the high priced DIs. Torrens Island B unit 3 (210 MW) and Pelican Point CCGT (510 MW) were unavailable for the duration of 06 to 08 July. Torrens Island A units 1, 3 and 4 were unavailable for periods during 06 and 07 July.

For all high priced 5-minute DIs, wind generation in South Australia was between approximately 0 MW and 366 MW, with an average of 51 MW.

Rebidding from lower priced bands to higher priced bands occurred in 17 of the high priced DIs. For these DIs, up to 397 MW of generation capacity was rebid from the Market Floor Price (MFP) of -\$1,000/MWh to bands priced at \$10,580.20/MWh or above.

For the high priced DIs on the 6 and 7 July 2016, between 0 MW and 67 MW was offered between bands priced at \$500/MWh and \$10,000/MWh, resulting in a steep supply curve. For the high priced

DIs on 8 July 2016, between 84 MW and 460 MW were offered at bands priced between \$500/MWh and \$10,000/MWh.

Between DIs ending 2330 hrs and 2335 hrs on 8 July 2016, demand increased by 207 MW due to hot water load management. For DI ending 2335 hrs, wind generation was 284 MW.

Lower priced generation was limited due to ramp rates (Torrens Island A units 3 and 4, Hallet PS, Dry Creek GT unit 3, Snuggery PS, Osborne PS, Mintaro GT), or by fast start profiles (Snuggery PS, Dry Creek GT units 1, 2 and 3, Lonsdale PS, Angaston PS, Port Lincoln GT units 1 and 3, Port Stanvac PS 1, Hallet PS, Ladbroke Grove PS units 1 and 2, Quarantine PS unit 5) or required more than 1 DI to synchronise (Hallet PS, Snuggery PS, Dry Creek PS units 1, 2 and 3, Lonsdale PS, Port Lincoln GT units 1 and 3) or was constrained off by the thermal constraint equation V::S\_TB\_275KV\_W\_B\_1 (Lake Bonney WF Stage 2 and 3).

For the DIs subsequent to the high priced DIs, the 5-minute dispatch price reduced to \$499.68/MWh or below when up to 971 MW of generation capacity was rebid from positive priced bands to Market Floor Price of -\$1,000/MWh.

High prices were forecast in the latest pre-dispatch schedules between the 06 July 2016 to 08 July 2016.