

Electricity Pricing Event Report – Thursday 17 December 2015

Market Outcomes: South Australia spot prices reached \$863.88/MWh, \$2,310.06/MWh and \$1,682.40/MWh for trading intervals (TIs) ending 1500 hrs, 1530 hrs and 1630 hrs respectively. Victoria spot price reached \$1,626.30/MWh for TI ending 1630 hrs. Tasmania spot price reached - \$410.38/MWh for the same TI.

Actual Lack of Reserve Level 1 (LOR1) condition had been declared for the South Australia region from 1600 hrs to 1825 hrs (Market Notices 50993 and 51010).

Energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price in South Australia was between \$3,457.73/MWh and the Market Price Cap (MPC) of \$13,800/MWh for three dispatch intervals (DIs) between DIs ending 1500 hrs and 1605 hrs. The 5-Minute dispatch price in Victoria reached \$13,499.86/MWh for dispatch interval (DI) ending 1605 hrs. The 5-Minute dispatch price in South Australia, Victoria and Tasmania all reduced to between -\$708.69/MWh and the Market Floor Price (MFP) of -\$1,000/MWh for four dispatch intervals (DIs) between DIs ending 1615 hrs and 1630 hrs.

The high prices can be attributed to a tight supply curve during high demand period, low wind generation, non-scheduled generation changing their availability and rebidding of generation capacity. The negative prices can be attributed to rebidding of excess cheaper priced generation.

The South Australia demand peaked at 2,974 MW for TI ending 1730 hrs and the Victoria demand peaked at 8,572 MW for TI ending 1700 hrs. During the high priced TIs, wind generation in South Australia was between 120 MW and 137 MW.

Between DIs ending 1450 hrs and 1505 hrs, Alinta and AGL shifted or rebid a total of 150 MW of generation capacity from the bands priced at lower than \$125.00/MWh to bands priced at higher than \$13,329.00/MWh. For DI ending 1500 hrs, South Australia demand increased by 96 MW which was contributed by a decrease in non-scheduled generation. Cheaper priced generation was available but limited due to ramp rates or required more than one DI to synchronise or constrained off by the thermal constraint equation $S \gg \text{NIL_SETB_KHTB1}$.

For DI ending 1500 hrs, the target flow on the Heywood interconnector was limited to 418 MW towards South Australia by the thermal constraint equation, $S \gg \text{NIL_SETB_KHTB1}$. This constraint manages the post contingent loading on the Keith - Tailem Bend no. 1 132 kV line. For DI ending 1505 hrs, the target flow on the Heywood interconnector was limited to 460 MW towards South Australia by the same thermal constraint equation and the Victoria to South Australia Heywood upper transfer limit thermal constraint equation, $V > S_{460}$.

The target flow on the Murraylink interconnector was limited to up to 33 MW towards South Australia for the two DIs by the voltage stability constraint equation, $V^{\wedge} \text{SML_NSWRB_2}$. This constraint avoids the voltage collapse in Victoria for loss of the Darlington Point to Buronga (X5) 220 kV line.

The 5-minute price in South Australia reduced to \$260.69/MWh in the subsequent interval, DI ending 1510 hrs, when the demand was reduced by approximately 154 MW when 113 MW of non-scheduled generation came online. Also, a total of 253 MW of generation capacity was rebid from price bands higher than \$590.00/MWh to market floor price (MFP) of -\$1,000/MWh.

Between DIs ending 1600 hrs and 1605 hrs in South Australia, Synergen, Alinta and AGL shifted or rebid a total of 166 MW of generation capacity from the bands priced at lower than \$591/MWh to bands priced at higher than \$10,759.30/MWh. For DI ending 1605 hrs, SA demand increased by 146 MW which was contributed by a decrease in non-scheduled generation. Cheaper priced generation was available but limited due to ramp rates or required more than one DI to synchronise or limited due to FCAS.

For the same DIs in Victoria, Origin and Snowy Hydro rebid a total of 780 MW of generation capacity from the bands priced at lower than \$300.00/MWh to bands priced at or higher than \$13,794.00/MWh. Cheaper priced generation was available but limited due to ramp rates or required more than one DI to synchronise or limited due to FCAS profile or constrained off by the voltage stability constraint equation $N^{AV_NIL_1}$.

For DI ending 1605 hrs, South Australia generation capacity was offered at less than \$590/MWh or above \$10,759/MWh and Victoria generation capacity was offered at less than \$299/MWh or above \$13,314/MWh resulting in a steep supply curve.

For DI ending 1605 hrs, the target flow on the VIC-NSW interconnector was limited to 213 MW towards Victoria by the voltage stability constraint equation, $N^{AV_NIL_1}$. This constraint prevents voltage collapse in Southern NSW for the loss of the largest VIC generating unit or Basslink. The target flow on the Basslink interconnector was limited to 515 MW towards Victoria by the voltage stability constraint equation, $T^{AV_NIL_11}$. This constraint equation prevents voltage collapse at George Town 220 kV bus for the trip of Basslink harmonic filter.

Following high prices at DI ending 1605 hrs, between DIs ending 1615 hrs and 1625 hrs, Victoria moved 2,930 MW of capacity to the MFP, South Australia moved 42 MW of capacity to the MFP and Tasmania moved 1,745 MW of capacity to the MFP. These contributed to the negative dispatch prices below -\$708/MWh in Victoria, South Australia and Tasmania. Prices returned to normal in Victoria, South Australia and Tasmania when generation capacity was shifted to higher priced bands.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebid of generation capacity within the affected trading interval.