Electricity Pricing Event Report - Wednesday 8 February 2017

Market Outcomes: Spot prices in South Australia ranged between $2,481.99/MWh and $13,440.01/MWh for 7 trading intervals (TIs) between TIs ending 1530 hrs and 1930 hrs on 8 February 2017.

Energy prices in other regions were not affected. FCAS prices across the NEM were not materially affected.

An Actual Lack of Reserve Level 1 (LOR1) condition was declared for the South Australia region from 1600 hrs (MN 57277), with an Actual Lack of Reserve Level 2 (LOR2) condition declared from 1700 hrs (MN 57279). During this LOR2 period, there were insufficient capacity reserves in the South Australia region to meet electricity demand. AEMO declared an Actual Lack of Reserve level 3 (LOR) condition at 1803 hrs (MN 57282) and instructed ElectraNet to shed 100 MW of load to restore the power system to a secure operating state. AEMO set the dispatch price in South Australia to the Market Price Cap (MPC) of $14,000/MWh for all dispatch interval (DIs) between DIs ending 1825 hrs and 1850 hrs, in accordance with the National Electricity Rules (NER). The LOR3 condition ended at 1900 hrs (MN 57284).

Detailed Analysis: The 5-minute energy prices in South Australia (SA) reached between $13,100.02/MWh and the Market Price Cap (MPC) of $14,000/MWh for 23 dispatch intervals (DIs) during the high priced TIs, and the MPC Override was applied for an additional 6 DIs. These high prices can mainly be attributed to high demand which was higher than forecast, insufficient scheduled generator capacity and low wind generation, while interconnector support was constrained.

Demand in SA was high during the high priced TIs, reaching a peak of 3,085 MW for TI ending 1800 hrs. The high demand coincided with high temperatures in SA, with a daily peak of 41.6 degrees (Adelaide).

For DI ending 0715 hrs, total wind generation in SA reached the daily peak of 998 MW. SA wind generation steadily decreased throughout the day, ranging between 227 MW (DI ending 1640 hrs) and 68 MW (DI ending 1905 hrs) during the high priced and MPC Override DIs.

Flow on the Heywood interconnector ranged between 551 MW and 600 MW towards SA during the high priced DIs, limited by the constraint equations V:S_600_HY_TEST_DYN and V:S_600_HY_TEST. The V:S_600_HY_TEST_DYN constraint equation limits the dynamic headroom for the upper transfer limit on the VIC to SA Heywood interconnector to 600 MW. Once the 600 MW flow limit is exceeded by more than 10 MW, the limit is temporarily reduced by the amount of exceedance. The V:S_600_HY_TEST constraint equation limits the upper transfer limit on the VIC to SA Heywood interconnector to 600 MW.

Flow on the Murraylink interconnector ranged between 83 MW and 197 MW towards SA during the high priced DIs, limited by the constraint equation V^SML_NSWRB_2, and violating this constraint equation for 17 DIs in total. The V^SML_NSWRB_2 voltage stability constraint equation avoids voltage collapse in Victoria for loss of the Darlington - Buronga (X5) 220 kV line.

At 1607 hrs Engie bid Port Lincoln units 1 and 3 unavailable (73 MW) and at 1718 hrs Origin Energy bid Quarantine unit 4 unavailable (20 MW).
At 1713 hrs AEMO declared an actual LOR2 condition and sought a market response (MN 57279).

The V^SML_NSWRB_2 constraint equation limiting flow across Murraylink interconnector started to violate in DI ending 1725 hrs, indicating that the power system was not in a secure operating state. AEMO is required to take all reasonable actions to return the power system to a secure operating state as soon as reasonably practicable, and in any event within 30 minutes. AEMO sought advice from generators in SA as to the availability of generating plant.

- At 1739 hrs, Engie confirmed that the off line generating unit at Pelican Point (165 MW) did not have sufficient gas to run, and if the gas were available, there would be a four hour minimum run up time.

- At 1742 hrs, AGL confirmed that Torrens Island A unit 1 was unavailable (120 MW), and Torrens Island B unit 1 was operating at a reduced capacity (50 MW reduction).

- At 1749 hrs Origin Energy advised AEMO that Quarantine unit 4 was available, and received a signal to synchronise at 1755 hrs.

At 1800 hrs, V^SML_NSWRB_2 constraint equation was still violating, with the power system not in a secure operating state for 35 minutes. AEMO concluded that all supply-side options to return the power system to a secure operating state had been exhausted.

At 1801 hrs, Engie confirmed that the off line generating unit at Pelican Point could be available to synchronise by 1900 hrs and be at full output by 1945 hrs for a 4 – 8 hrs run time. AEMO determined that the unit will not be available in time to restore power system security.

At 1803 hrs, an LOR3 condition was declared in SA and AEMO issued an instruction to ElectraNet to shed 100 MW of load to restore power system security in accordance with section 116 of the National Electricity Law (NEL). Load reduction commenced at 1810 hrs, and reached approximately 300 MW. At 1815 hrs, the V^SML_NSWRB_2 constraint equation was no longer violating, thereby returning the power system to a secure state. AEMO manually set the dispatch price in SA to the MPC (MPC Override) from DI ending 1825 hrs. NER clause 3.9.2(e) 1 states that following an instruction for load shedding in a particular region, AEMO must set the dispatch price to the MPC for that region. At 1830 hrs, AEMO advised ElectraNet to restore 100 MW of load and at 1840 hrs advised ElectraNet that all remaining load could be restored. AEMO removed the MPC from DI ending 1850 hrs. At 1908 hrs ElectraNet advised AEMO that all load had been restored.

The 5-minute energy price reduced to $300.02/MWh for DI ending 1935 hrs when demand in the SA region decreased.

The high 30-minute spot prices for South Australia were forecast in the pre-dispatch schedules from TI ending 1500 hrs. This was in accordance with revised demand forecasts for SA region throughout the day.

For further details regarding the load shedding, please refer to AEMO's System Event Report.