

Electricity Pricing Event Report – Thursday 11 to Friday 12 August 2016

Market Outcomes: South Australia Raise and Lower Regulation Frequency Control Ancillary Service (FCAS) prices ranged between \$96.69/MWh and \$11,469.00/MWh for all trading intervals (TIs) between TIs ending 0030 hrs 11 August 2016 and 1330 hrs on 12 August 2016.

FCAS prices in the other regions and energy prices in all regions were not affected by this event.

Actual Lack of Reserve Level 2 (LOR2) conditions had been declared for the South Australia region between 1630 hrs on 10 August 2016 and 1130 hrs on 12 August 2016 during the planned outage of the Heywood No 1 500 kV Bus (Market Notices 54693 and 54710). During these LOR2 periods, there were sufficient capacity reserves in the South Australia region to meet electricity demand. However in the event of a credible contingency, whereby South Australia separated from the rest of the NEM, power interruptions would have been likely due to automatic under-frequency load shedding as a result of ramp rate limitations associated with dispatching additional generation in a short timeframe.

At 1925 hrs on 11 August 2016, the rolling sum of Lower Regulation FCAS price for the South Australia region for the previous 2,016 dispatch intervals (DIs) exceeded six times the cumulative price threshold (CPT) of \$210,100. As a result, an administered price cap (APC) of \$300/MWh was applied to all ancillary service prices in South Australia for DIs ending between 1930 hrs on 11 August 2016 and 0400 hrs on 19 August 2016 (Market Notices 54699 and 54759).

Detailed Analysis: The 5-minute Raise Regulation FCAS prices ranged between \$98.00/MWh and \$11,469.00/MWh for all DIs between 0005 hrs on 11 August and 1320 hrs on 12 August. The 5-minute Lower Regulation FCAS prices ranged between \$96.69/MWh and \$11,469.00/MWh for the same DIs. These high prices were mainly attributed to increased Regulation FCAS requirements within South Australia during a planned outage of Heywood No.1 500 kV bus and shifting of Regulation FCAS capacity to higher priced bands resulting in limited availability of lower priced Regulation FCAS in South Australia.

The Heywood No 1 500 kV Bus was on a planned outage from 0708 hrs on 10 August 2016 to 1254 hrs on 12 August 2016. This outage increased the risk of electrical separation between South Australia and Victoria. The outage constraint sets F-I-HYSE, S-BOTH_BLKRG_C_OS, V-HYTX_M12 and V-HY_500BUS were invoked for the duration of the outage. The constraint equations F-S_LREG_0035 and F-S_RREG_0035 contained within the F-I-HYSE constraint set required 35 MW of Lower and Raise Regulation FCAS capacity to be sourced from within South Australia.

Regulation FCAS in South Australia during the outage period was provided by Torrens Island B PS, Quarantine PS and Pelican Point PS.

On 11 August 2016, until DI ending 1030 hrs there was at least 39 MW of Regulation FCAS capacity offered in bands priced at \$300.00/MWh or below. As a result, the Regulation FCAS prices ranged between \$96.69/MWh and \$124.99/MWh until then.

For DI ending 1035 hrs, Origin shifted 5 MW of Raise and Lower Regulation capacity from Quarantine PS unit 5 from \$0.00/MWh to bands priced at \$12,148.43/MWh or above. This shift resulted in more expensive Raise and Lower Regulation capacity (priced up to \$11,469.00/MWh) to be sourced from Torrens Island B PS and Pelican Point PS to meet the 35 MW Regulation requirement. The Lower and Raise Regulation FCAS price was \$11,469.00/MWh for all DIs between DIs ending 1035 hrs and 1130 hrs.

For DI ending 1135 hrs, Origin shifted 5 MW of Raise Regulation capacity from \$12,520.28/MWh to \$0.00/MWh and 2 MW of Lower Regulation capacity from \$12,148.43/MWh or above to \$11,141.52/MWh. As a result, the Raise Regulation FCAS price reduced to \$98.00/MWh between DIs ending 1135 hrs and 1230 hrs. The Lower Regulation FCAS price continued to stay high at \$10,990/MWh for all DIs between DIs ending 1135 hrs and 1230 hrs.

For DI ending 1235 hrs, Origin shifted 5 MW of Raise Regulation capacity from \$0.00/MWh to \$11,141.52/MWh. The Raise and Lower Regulation FCAS prices continued to stay high at \$10,990.00/MWh for all DIs between DIs ending 1235 hrs and 1925 hrs.

By DI ending 1925 hrs on 11 August 2016, the prolonged high prices caused the rolling sum of Lower Regulation FCAS prices in the South Australia region for the previous 2,016 DIs to exceed six times the CPT, thus triggering an Administered Price Period (APP). An APC of \$300/MWh was applied to all ancillary service prices for the South Australia region from DI ending 1930 hrs on 11 August 2016.

On 12 August 2016, the APC continued to apply since the cumulative sum of both Lower and Raise Regulation FCAS prices remained above the CPT. The 30-min Regulation FCAS prices ranged between \$96.69/MWh and \$300.00/MWh following the commencement of APP (at 1925 hrs on 11 August 2016) and completion of the Heywood No.1 500kV bus outage at 1315 hrs on 12 August 2016. For DI ending 1325 hrs, the Raise and Lower Regulation FCAS price reduced to \$28.98/MWh and \$3.00/MWh, respectively, when the outage constraint set F-I-HYSE was revoked following completion of the outage.

The APC was removed at 0400 hrs on 19 August 2016 when the cumulative sum of Lower and Raise Regulation FCAS prices reduced to below six times the CPT.

The high Regulation FCAS prices were forecast in all pre-dispatch schedules from 1300 hrs on 10 August 2016.