

Electricity Pricing Event Report – Friday 16 September 2016

Market Outcomes: South Australia Raise and Lower Regulation Frequency Control Ancillary Service (FCAS) prices ranged between \$599/MWh and \$4,232.77/MWh for all trading intervals (TIs) between TIs ending 0730 hrs and 1100 hrs. Regulation FCAS prices ranged between \$7,875.50/MWh and \$11,250/MWh for all TIs between TIs ending 1130 hrs and 1530 hrs.

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) condition had been declared for the South Australia region between 0700 hrs and 1525 hrs on 16 September 2016 (Market Notices 54919 and 54922). During this LOR2 period, there were sufficient capacity reserves in the South Australia region to meet electricity demand, however due to the Moorabool - Mortlake 550 kV line outage a credible contingency could result in South Australia being separated from Victoria, which could in-turn trigger automatic under-frequency load shedding, and result in power interruptions.

Detailed Analysis: Between DIs ending 0705 hrs and 1100 hrs, the 5-minute Raise and Lower Regulation FCAS prices ranged between \$599/MWh and \$11,502/MWh. For all DIs between DI ending 1105 hrs and 1525 hrs, the Raise and Lower Regulation FCAS price reached \$11,250/MWh and \$9,450/MWh, respectively. These high prices were mainly attributed to increased Regulation FCAS requirements within South Australia during a planned outage of Moorabool – Mortlake 500kV line, limitations associated with available Regulation FCAS and shifting of Regulation FCAS capacity to higher priced bands, resulting in limited availability of lower priced Regulation FCAS in South Australia.

The Moorabool – Mortlake 500kV line was on a planned outage between 0702 hrs and 1509 hrs on 16 September 2016. This outage meant that a credible contingency could result in electrical separation between South Australia and Victoria. The outage constraint sets F-V-MLMO, S-X_BC_CP and V-MLMO were invoked between 0705 hrs and 1525 hrs on 16 September 2016. The constraint equations F_S+LREG_0035 and F_S+RREG_0035 contained within the F-V-MLMO 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, Torrens Island A PS, Pelican Point PS and Osborne PS.

Between DIs ending 0705 hrs and 1100 hrs, the Regulation FCAS prices remained at \$599/MWh for most DIs. For DIs ending 0740 hrs, 0810 hrs, 0825 hrs, 0835 hrs and 0840 hrs, the prices reached up to \$11,501.53/MWh for Raise Regulation and \$9,501.94/MWh for Lower Regulation FCAS. For these DIs, the output from Torrens Island A PS unit 3 exceeded the unit's Regulation FCAS trapezium maximum enablement limit of 109.53 MW. As a result, Torrens Island A PS unit 3 was stranded (unavailable) for Regulation FCAS and more expensive Regulation FCAS capacity had to be sourced from Torrens Island B PS unit 3.

For DI ending 1105 hrs, Origin Energy (Osborne PS) shifted 1 MW of Raise and Lower Regulation FCAS capacity from \$0/MWh to \$11,256.75/MWh and \$9,455.67/MWh, respectively. This resulted in sustained high prices until DI ending 1525 hrs.

For DI ending 1530 hrs, the 5-minute Raise and Lower Regulation FCAS prices reduced to \$17.28/MWh and \$3/MWh, respectively, when the outage constraint set F-V-MLMO was revoked following completion of the outage and the 35 MW Regulation FCAS requirement was removed.

The high Regulation FCAS prices were forecast in the latest pre-dispatch schedules except for TIs ending 0800 hrs and 0900 hrs, due to stranding (unavailability) of units within the affected TIs.

Version Control

VE R	DATE	REVISION DESCRIPTION	AUTHOR	CHECKED	RESPONSIBLE MANAGER	APPROVED
v1	20/09/20 16	Original Document	Manisha Senadeera	Eloise Taylor Abraham Yohannan	Laura Walsh	