

Electricity Pricing Event Report – Friday 03 June 2016

Market Outcomes: The Mainland (Queensland, New South Wales, Victoria and South Australia) had high Raise Regulation Frequency Control Ancillary Service (FCAS) prices, reaching \$68.27/MWh and \$149.47/MWh for trading intervals (TIs) ending 0000 hrs and 0600 hrs, respectively. The Mainland Fast Raise and Slow Raise prices reached \$31.88/MWh and \$24.89/MWh, respectively, for TI ending 0000 hrs.

FCAS and Energy prices in Tasmania were not affected by this event. Energy prices for the Mainland were elevated but did not reach the price threshold for reporting purposes.

Detailed Analysis: The 5-minute Raise Regulation FCAS prices in the Mainland ranged between \$75.10/MWh and \$203.70/MWh for 8 dispatch intervals (DIs) within the high priced TIs. The 5-minute Slow Raise FCAS prices ranged between \$29.95/MWh and \$34.00/MWh between DIs ending 2335 hrs and 2345 hrs. Fast Raise prices ranged between \$34.20/MWh and \$38.00/MWh for the same DIs. These high FCAS prices can be mainly attributed to increased FCAS requirements on the Mainland, due to an increasing time error. Other contributing factors include, rebidding and withdrawal of FCAS capacity, limited availability of cheaper priced FCAS capacity and steep supply curves in the Raise FCAS markets. In addition, FCAS support from Tasmania was unavailable due to the outage of the Basslink interconnector from 20 December 2015.

Since early April 2016, there has been limited availability of cheaper priced Raise FCAS capacity across the Mainland. Several generating units that typically provide cheaper priced Raise Regulation and Delayed Raise FCAS capacity were unavailable for extended periods. These include, Bayswater PS Unit 2, Vales Point PS Unit 6 and Torrens Island PS B Unit 2. In addition, Torrens Island PS A unit 1 was unavailable for the duration of the price event.

Between DIs ending 2325 hrs and 2340 hrs, Mainland demand increased by 323 MW, mainly due to hot water load management in South Australia. During this period, a number of units providing cheaper priced FCAS in the Mainland were dispatched close to their maximum capacity in the energy market, which effectively reduced their Raise FCAS availability. Between DIs ending 2335 hrs and 2345 hrs, 5-minute energy prices were between \$161.96/MWh and \$323.19/MWh across the Mainland regions. This energy price impacted the FCAS prices as the Raise FCAS availability was adjusted against the energy dispatch.

For DI ending 2305 hrs, AGL shifted up to 150 MW of Raise FCAS capacity from bands priced at or below \$3.03/MWh to bands priced at \$13,773.82/MWh with the reason '0835~F~00 INITIAL BID~'.

For DIs ending 2325 hrs and 2335 hrs, up to 30 MW of Raise FCAS capacity was withdrawn by CS energy from Gladstone PS units 3 and 5 with the reasons '2301P FCAS ENABLEMENT UPDATE-SL' and '1110P UNIT OFFLINE REVISED-SFP TX ISSUE-SL'.

Between DIs ending 2330 hrs and 2335 hrs, Raise Regulation FCAS availability in the Mainland decreased by 146 MW to 227 MW. During the same DIs, Fast Raise and Slow Raise FCAS availability decreased by 80 MW and 92 MW, respectively.

The Mainland FCAS prices for Fast Raise, Slow Raise and Raise Regulation Services reduced to \$34.2/MWh, \$25.43/MWh and \$55.00/MWh, respectively, for DI ending 2350 hrs, when Mainland demand decreased by 228MW and Raise FCAS availability increased.

Between TIs ending 0500 hrs and 0600 hrs, Mainland total demand increased by 1,478 MW. Thus, additional generation capacity was dispatched in the energy market, which further reduced Raise

FCAS availability for that period. For the high priced DIs, between DIs ending 0535 hrs and 0600hrs, 5-minute energy prices were between \$197.37/MWh and \$319.24/MWh across the Mainland regions. This energy price impacted the FCAS prices as the Raise FCAS availability was adjusted against the energy dispatch.

Between TI ending 0100 hrs and 0530 hrs, wind generation steadily reduced across South Australia from 274 MW to 48 MW. This contributed to an increase in the accumulated time error in the mainland.

The accumulated time error in the Mainland was below -1.5 sec for 77 minutes between 0517 hrs and 0700 hrs. To manage the time error, the amount of Raise Regulation services enabled in the Mainland increased from 130 MW for DI ending 0520 hrs to 205 MW for DI ending 0600 hrs.

The Mainland FCAS prices for Raise Regulation Services reduced to \$49.20/MWh for DI ending 0605 hrs, when the Raise Regulation requirement reduced by 13 MW and 160 MW of Raise Regulation capacity was shifted from bands priced at or above \$298.43/MWh to bands priced at or below \$58.89/MWh.

The high 30-minute Mainland FCAS prices were forecast in the latest pre-dispatch schedules.

Version Control

VER	DATE	REVISION DESCRIPTION	AUTHOR	CHECKED	RESPONSIBLE MANAGER	APPROVED
v1	15/06/16	Original Document	Eloise Taylor	Jennie Liu Abraham Yohannan	Laura Walsh	