Electricity Report

AUSTRALIAN ENERGY REGULATOR

20 – 26 September 2015

Introduction

The AER is required to publish the reasons for significant variations between forecast and actual price and is responsible for monitoring activity and behaviour in the National Electricity Market. The Electricity Report forms an important part of this work. The report contains information on significant price variations, movements in the contract market, together with analysis of spot market outcomes and rebidding behaviour. By monitoring activity in these markets, the AER is able to keep up to date with market conditions and identify compliance issues.

Spot market prices

Figure 1 shows the spot prices that occurred in each region during the week 20 to 26 September 2015. There were six occasions where the spot price exceeded the AER reporting threshold, two in Tasmania, and one in each of Victoria and South Australia. These are discussed later in this report. On 23 September there were also two spot prices in New South Wales which were above $5000/MWh. As required under clause 3.8.17 of the National Electricity Rules, the AER will publish a separate report into the events on that day.

Figure 1: Spot price by region ($/MWh)

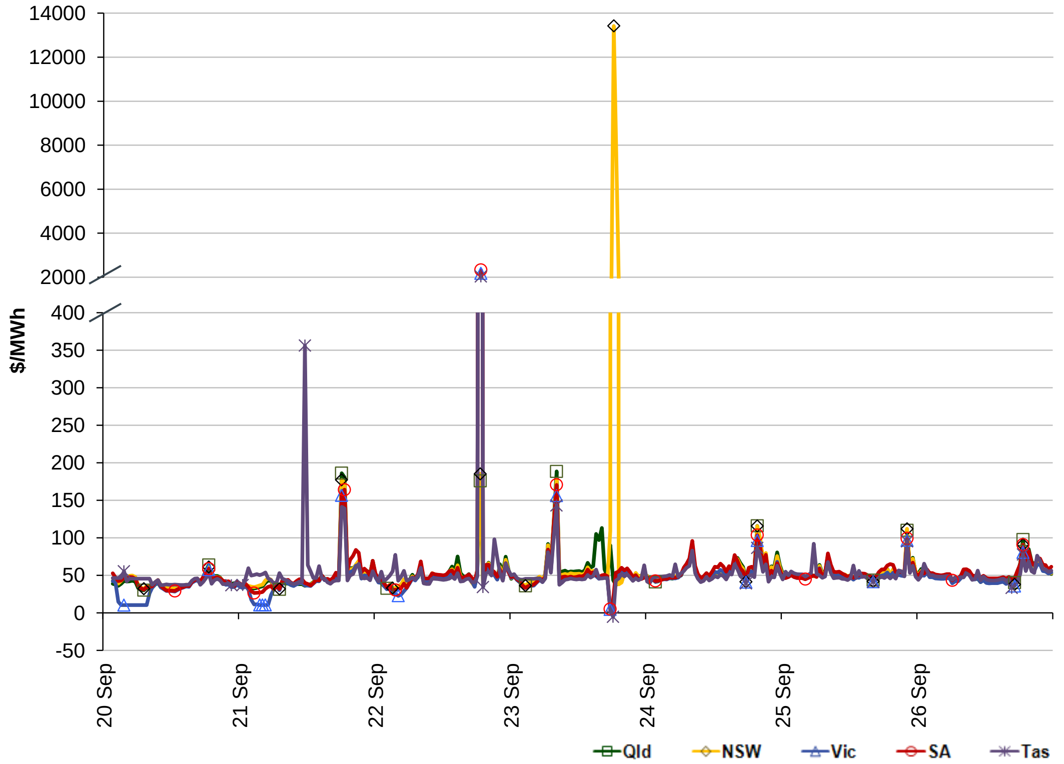


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

Figure 2: Volume weighted average spot price by region ($/MWh)

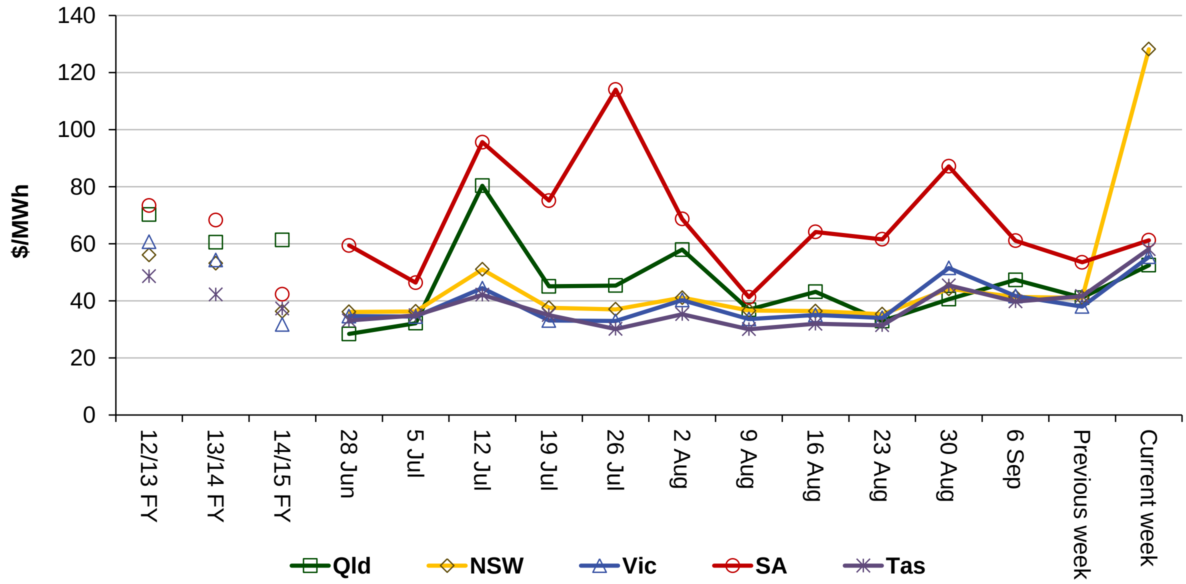


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	52	128	55	61	58
14-15 financial YTD	32	40	38	49	37
15-16 financial YTD	46	46	39	70	38

Longer-term statistics tracking average spot market prices are available on the AER website.

Spot market price forecast variations

The AER is required under the National Electricity Rules to determine whether there is a significant variation between the forecast spot price published by the Australian Energy Market Operator (AEMO) and the actual spot price and, if there is a variation, state why the AER considers the significant price variation occurred. It is not unusual for there to be significant variations as demand forecasts vary and participants react to changing market conditions. A key focus is whether the actual price differs significantly from the forecast price either four or 12 hours ahead. These timeframes have been chosen as indicative of the time frames within which different technology types may be able to commit (intermediate plant within four hours and slow start plant within 12 hours).

There were 139 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2014 of 71 counts and the average in 2013 of 97. Reasons for the variations for this week are summarised in Table 2. Based on AER analysis, the table summarises (as a percentage) the number of times when the actual price differs significantly from the forecast price four or 12 hours ahead and the major reason for that variation. The reasons are classified as availability (which means that there is a change in the total quantity or price offered for generation), demand forecast inaccuracy, changes to network capability or as a combination of factors (when there is not one dominant reason). An instance where both four and 12 hour ahead forecasts differ significantly from the actual price will be counted as two variations.

Table 2: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	6	29	1	3
% of total below forecast	53	5	0	4

Note: Due to rounding, the total may not be 100 per cent.

Generation and bidding patterns

The AER reviews generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figure 3 to

Figure 7 show, the total generation dispatched and the amounts of capacity offered within certain price bands for each 30 minute trading interval in each region.

Figure 3: Queensland generation and bidding patterns

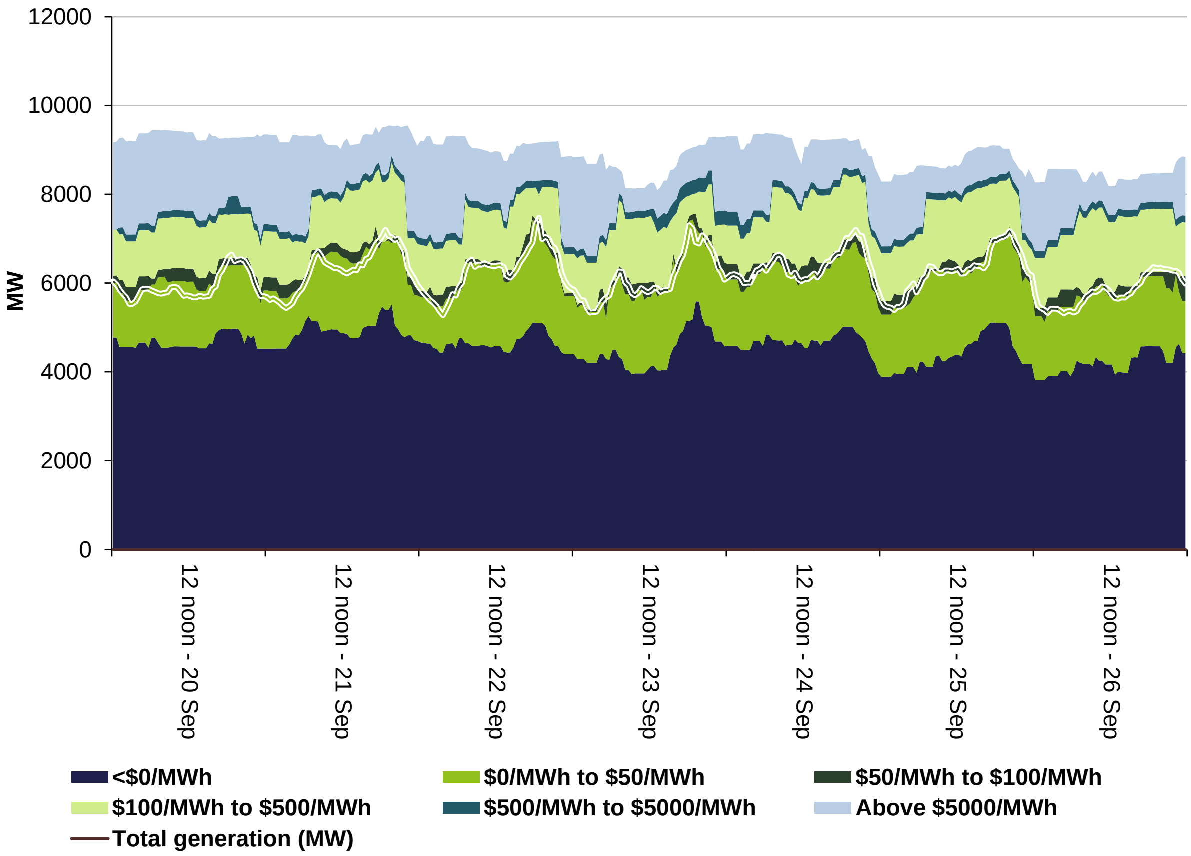


Figure 4: New South Wales generation and bidding patterns

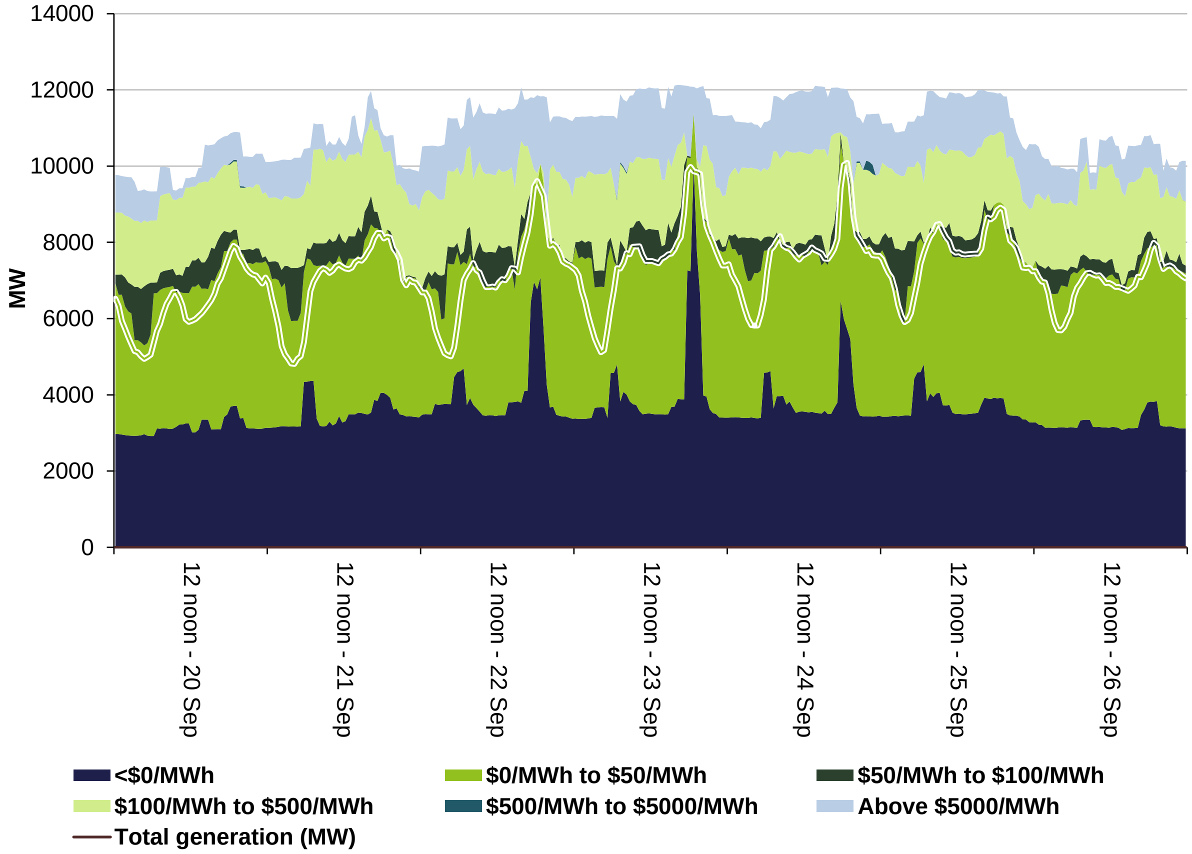


Figure 5: Victoria generation and bidding patterns

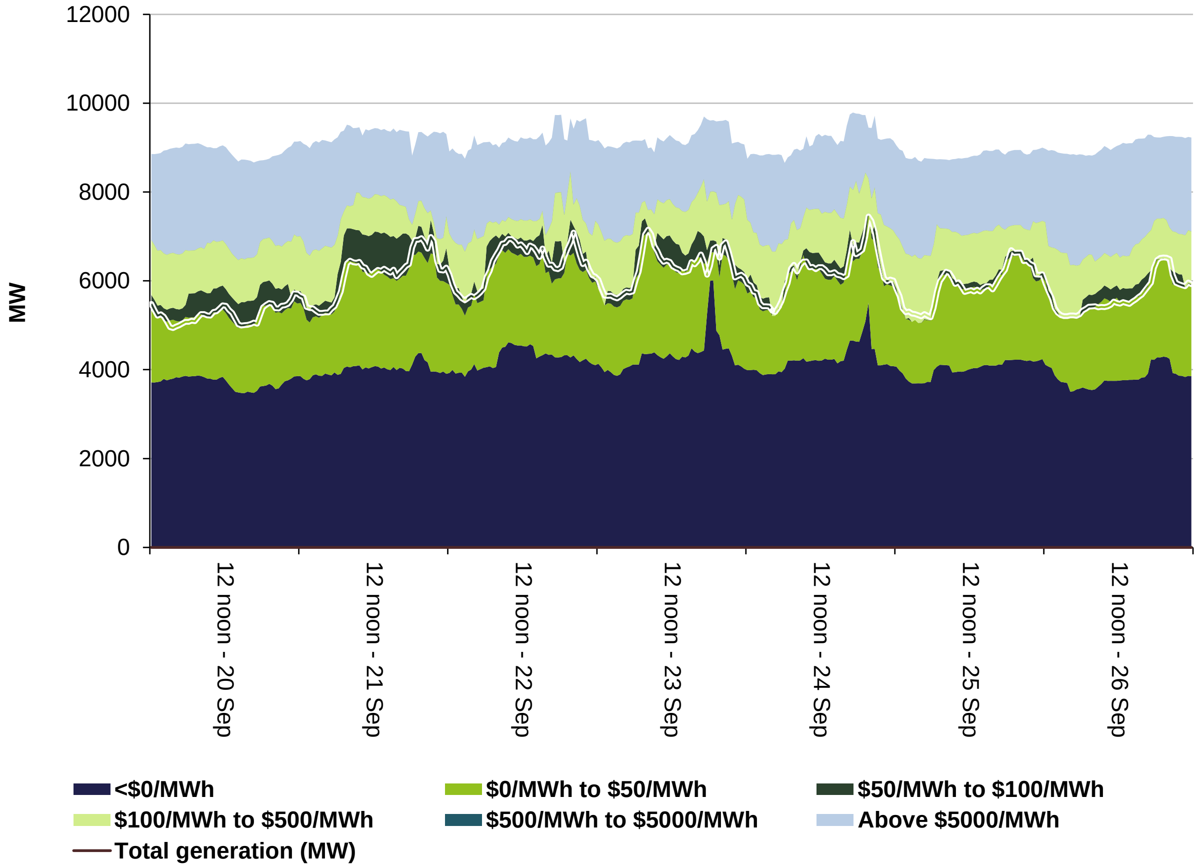


Figure 6: South Australia generation and bidding patterns

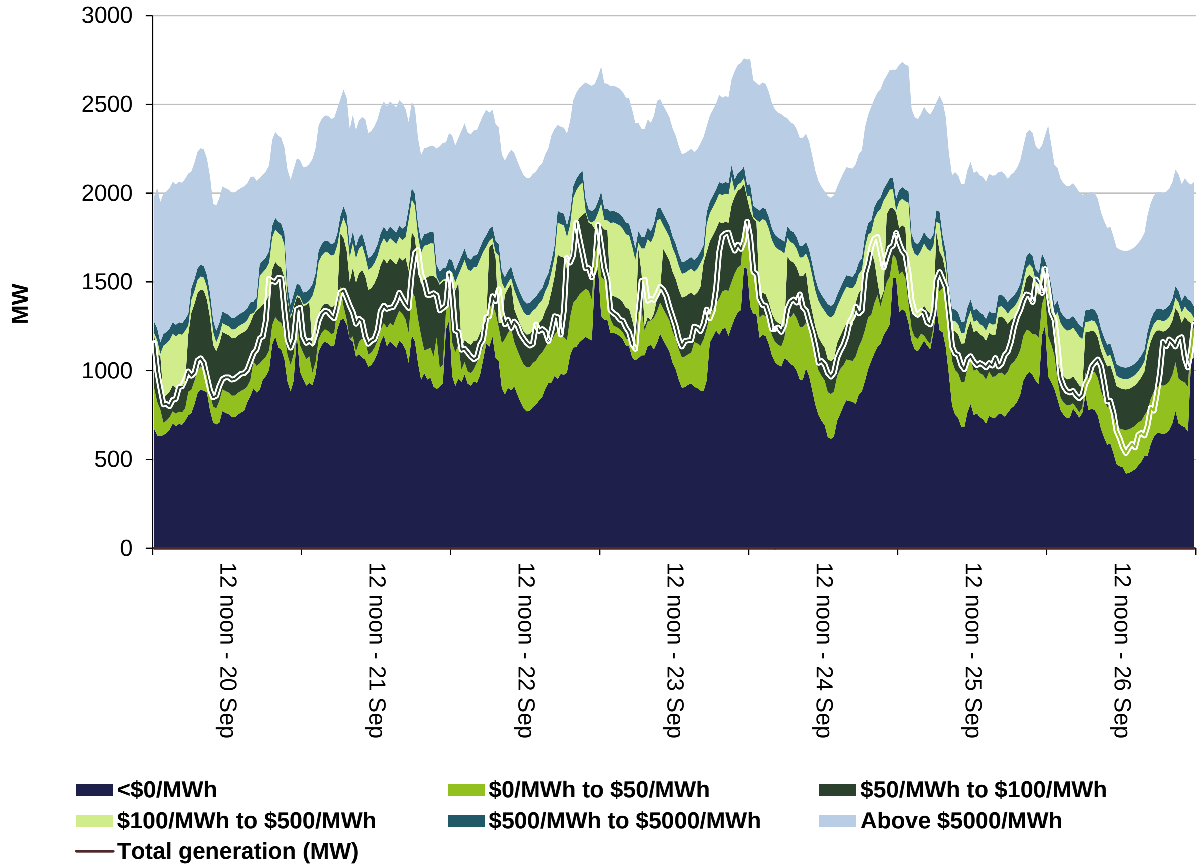
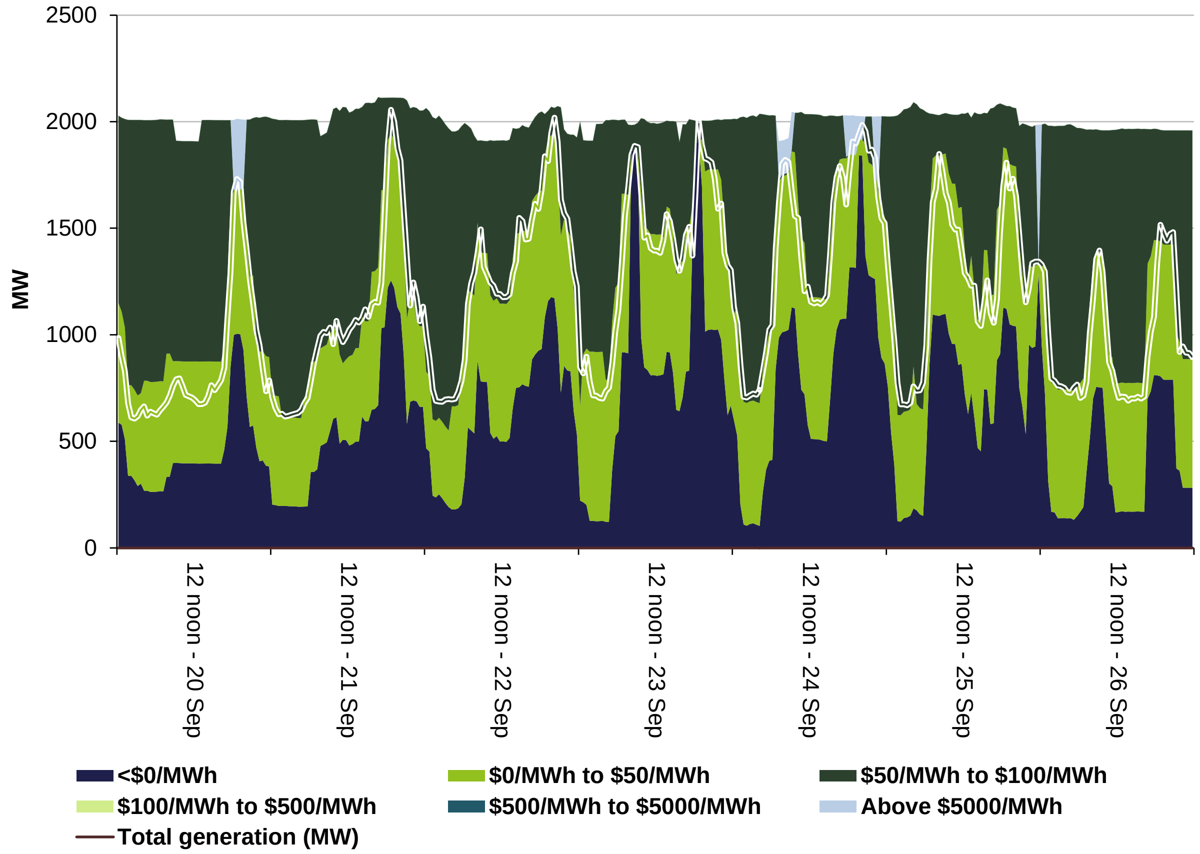


Figure 7: Tasmania generation and bidding patterns



Frequency control ancillary services markets

Frequency control ancillary services (FCAS) are required to maintain the frequency of the power system within the frequency operating standards. Raise and lower regulation services are used to address small fluctuations in frequency, while raise and lower contingency services are used to address larger frequency deviations. There are six contingency services:

- fast services, which arrest a frequency deviation within the first 6 seconds of a contingent event (raise and lower 6 second)
- slow services, which stabilise frequency deviations within 60 seconds of the event (raise and lower 60 second)
- delayed services, which return the frequency to the normal operating band within 5 minutes (raise and lower 5 minute) at which time the five minute dispatch process will take effect.

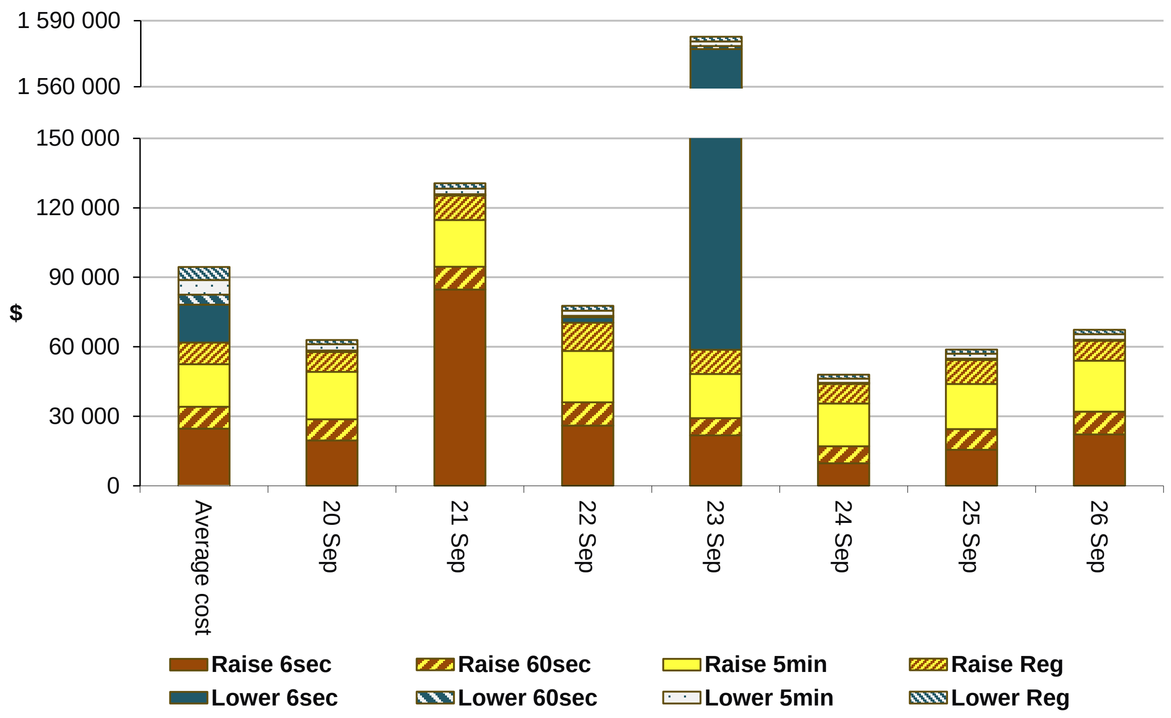
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $1 875 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $153 000 or around 1.5 per cent of energy turnover in Tasmania.

Figure 8 shows the daily breakdown of cost for each FCAS for the NEM, as well as the average cost since the beginning of the previous financial year.

Figure 8: Daily frequency control ancillary service cost



In Tasmania on Monday 21 September at 11.35 am a system normal constraint which manages the raise 6 second FCAS requirement in Tasmania for the loss of a Smithton to Woolnorth 110 kV line, or Norwood to Scotsdale to Derby 110 kV lines violated. While the constraint was binding or violating Basslink was unable to transfer FCAS and the region had to source the service locally. Increased raise 6 second requirements saw the price spike to $7390/MW.

In Queensland on Wednesday 23 September Lower 6 second service prices exceeded $13 200/MW from 6.05 pm to 6.45 pm at a cost of around $1.5 million. A line outage in Northern New South Wales which affected QNI resulted in the requirement for local lower 6 second services in Queensland. Events of 23 September 2015 will be discussed in the relevant *Spot prices above $5000/MWh* report which will be available on the AER website.

Detailed market analysis of significant price events

We provide more detailed analysis of events where the spot price was greater than three times the weekly average price in a region and above $250/MWh or was below -$100/MWh. There was one occasion in South Australia and Victoria, and two occasions in Tasmania and New South Wales that exceeded this threshold.

Tasmania

Monday, 21 September

Table 3: Midday Price, Demand and Availability

Time	Price ($/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
Midday	356	38	38	1020	1094	1057	2067	1996	1997

Conditions at the time saw demand and available capacity close to forecast.

At 11.35 am the dispatch price rose to $1803/MWh as a result of the co-optimisation of energy and FCAS before falling to $46/MWh at 11.40 am. This was related to the raise 6 second FCAS requirement in Tasmania, explained in more detail in the *Frequency control and ancillary services* section of this report.

South Australia, Victoria, Tasmania

Tuesday, 22 September

Table 4: 7 pm Price, Demand and Availability

Region	Price ($/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
SA	2329	55	65	1785	1771	1791	2375	2407	2476
VIC	2173	50	61	6518	6360	6384	9552	9706	9695

Region	Price ($/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
TAS	2036	47	57	1522	1413	1402	2036	2021	2007

Conditions at the time saw demand in Victoria and Tasmania around 267 MW higher than forecast 4 hours ahead. Available capacity in Victoria was 154 MW lower than forecast four hours earlier.

A planned outage of the Upper Tumut to Canberra No.1 330 kV line saw flows forced into Victoria across the VIC-NSW interconnector (at times counter-price). This separated South Australia, Victoria and Tasmania from the rest of the market, aligning their prices. A constraint used to manage counter-prices flows reduced flow into Victoria to 18 MW at 7 pm.

Table 5: Rebids the 7 pm trading interval

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from ($/MWh)	Price to ($/MWh)	Rebid reason	Region
6.41 pm	6.50 pm	Origin Energy	Mortlake	270	75	N/A	1835A AVOID UNECONOMIC START - AVOID SHORT RUN SL	VIC
6.52 pm	7 pm	Alinta Energy	Northern	33	46	13 330	1850~A~DISPATCH $319.93 V 5PD $66.99~	SA
6.53 pm	7 pm	Origin Energy	Mortlake	270	98	N/A	1851A AVOID UNECONOMIC START - AVOID SHORT RUN SL	VIC
6.53 pm	7 pm	Origin Energy	Quarantine	48	95	N/A	1851A AVOID UNECONOMIC START - AVOID SHORT RUN SL	SA

The above rebids collectively removed 621 MW of low priced generation within the southern states. Additionally, every dispatched generator in Tasmania was either fully dispatched or trapped/stranded in FCAS. Together these factors saw the dispatch price increase at 7 pm to $12 438/MWh in Victoria, $13 330/MWh in South Australia and $11 656/MWh in Tasmania, set by Northern power station. Decreases of demand (non-scheduled generation coming online and apparent demand side response) in all three regions and rebidding of capacity to low prices saw the price fall in all three regions for the 7.05 pm dispatch interval.

New South Wales

Wednesday, 23 September

Table 6: 6.30 pm and 7 pm Price, Demand and Availability

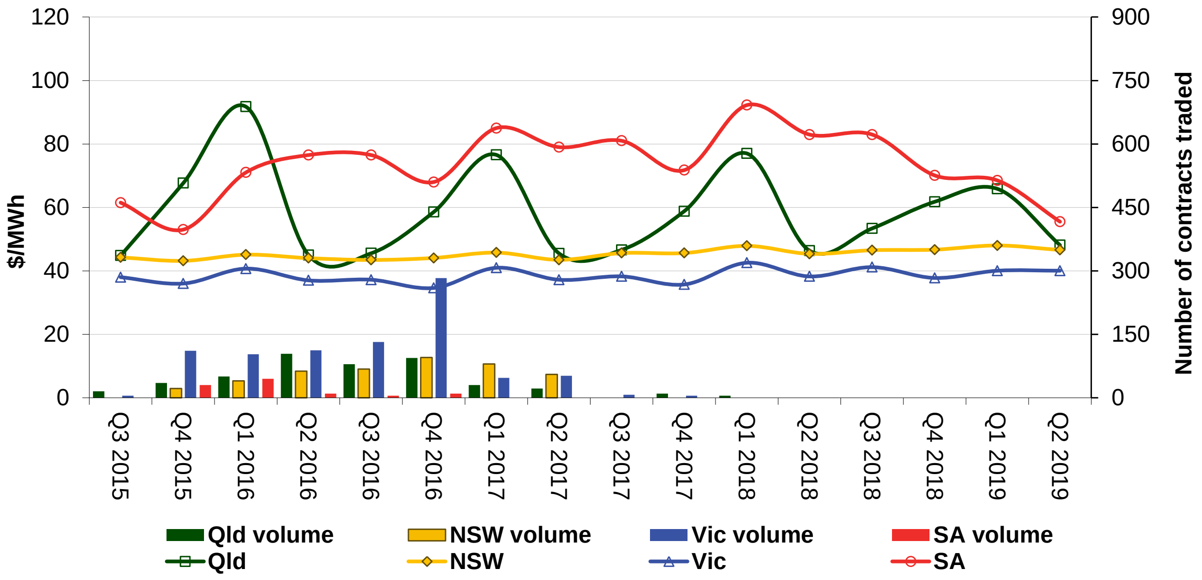
Time	Price ($/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
6:30 pm	13 420	317	314	9963	9736	9723	11 956	11 960	12 010
7 pm	6717	338	321	10 169	9885	9861	11 952	11 948	11 993

Events of 23 September 2015 will be discussed in the relevant spot prices above $5000/MWh report which will be available on the AER website.

Financial markets

Figure 9 shows for all mainland regions the prices for base contracts (and total traded quantities for the week) for each quarter for the next four financial years.

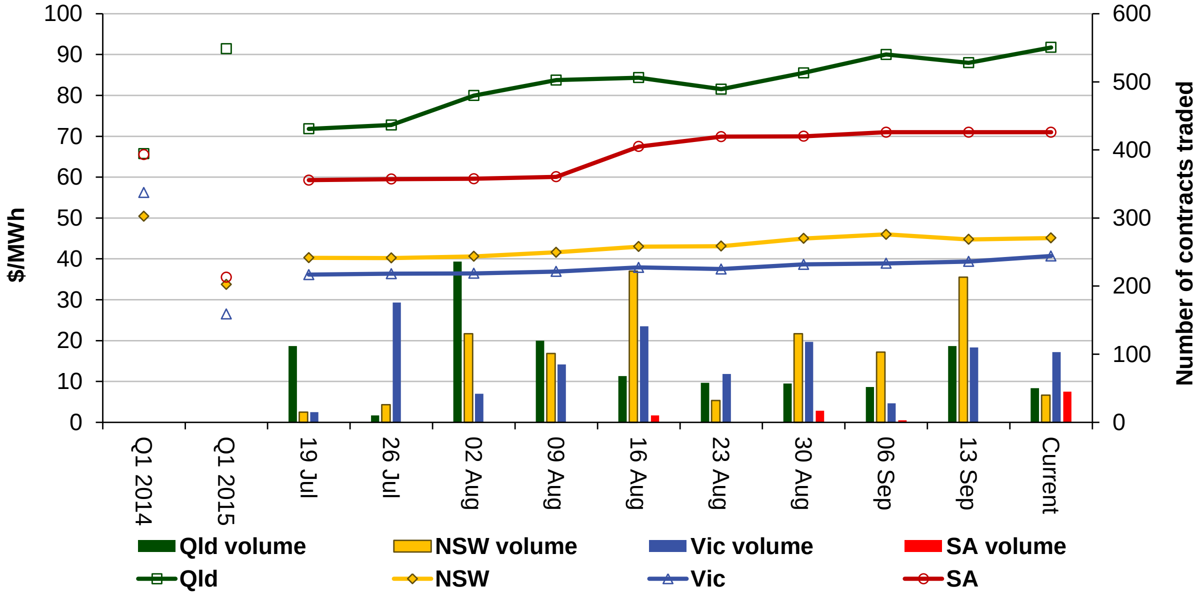
Figure 9: Quarterly base future prices Q3 2015 – Q2 2019



Source. ASXEnergy.com.au

Figure 10 shows how the price for each regional Quarter 1 2016 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2014 and quarter 1 2015 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades but this week there were trades in South Australian contracts.

Figure 10: Price of Q1 2016 base contracts over the past 10 weeks (and the past 2 years)



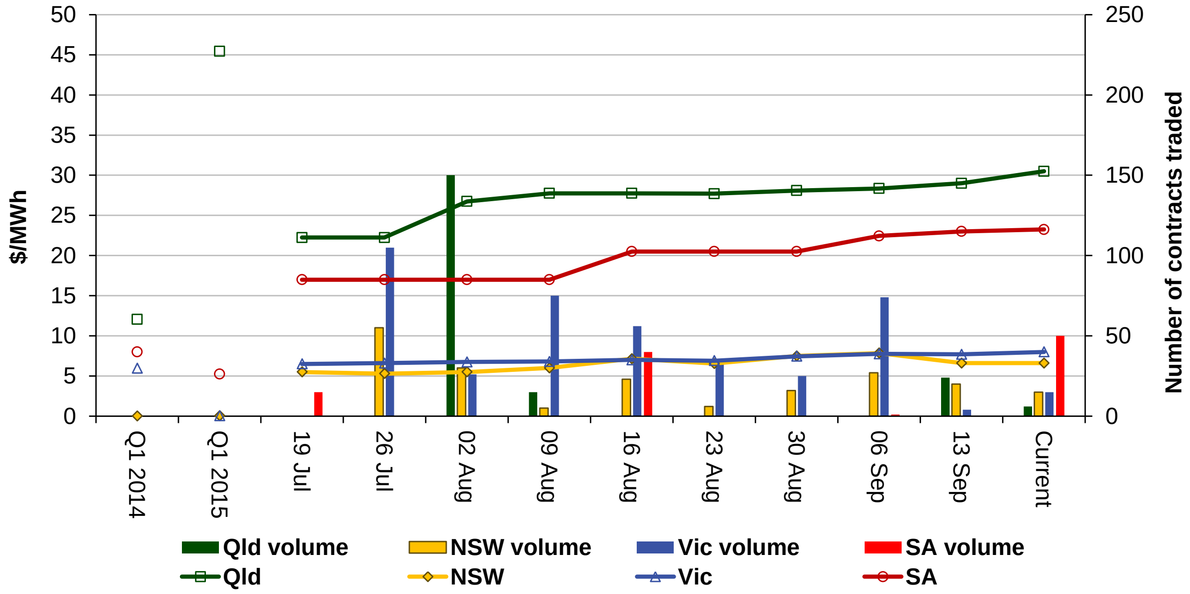
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for yearly periods 1 and 2 years prior to the current year.

Source. ASXEnergy.com.au

Prices of other financial products (including longer-term price trends) are available in the Performance of the Energy Sector section of our website.

Figure 11 shows how the price for each regional Quarter 1 2016 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2014 and quarter 1 2015 prices are also shown.

Figure 11: Price of Q1 2016 cap contracts over the past 10 weeks (and the past 2 years)



Source. ASXEnergy.com.au

Australian Energy Regulator
October 2015