

## 6 – 12 March 2016

### 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 6 to 12 March 2016. There were three occasions in both Victorian and South Australia where the spot price was greater than \$1900/MWh.

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

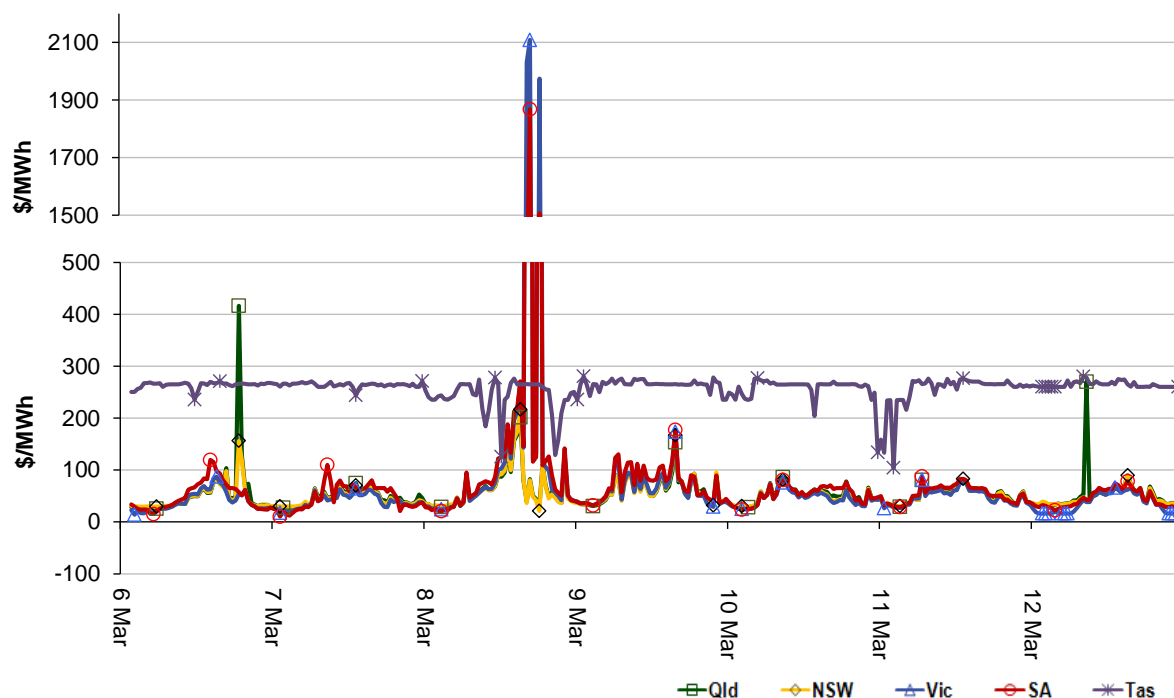
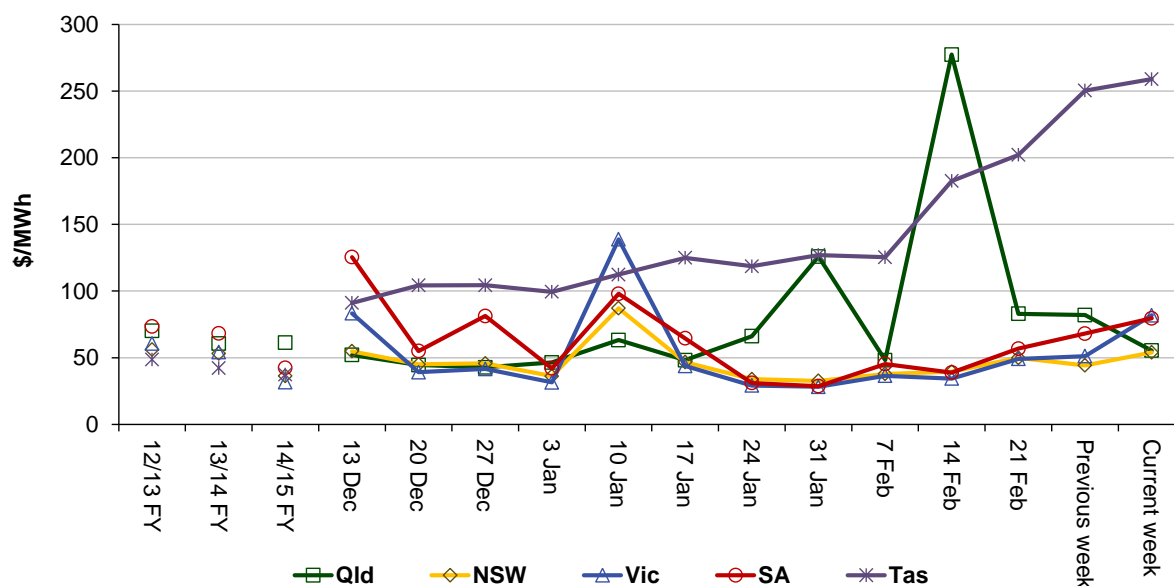


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

**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	55	54	82	80	259
14-15 financial YTD	72	37	32	41	38
15-16 financial YTD	58	46	44	62	82

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 183 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2015 of 133 counts and the average in 2014 of 71. 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**

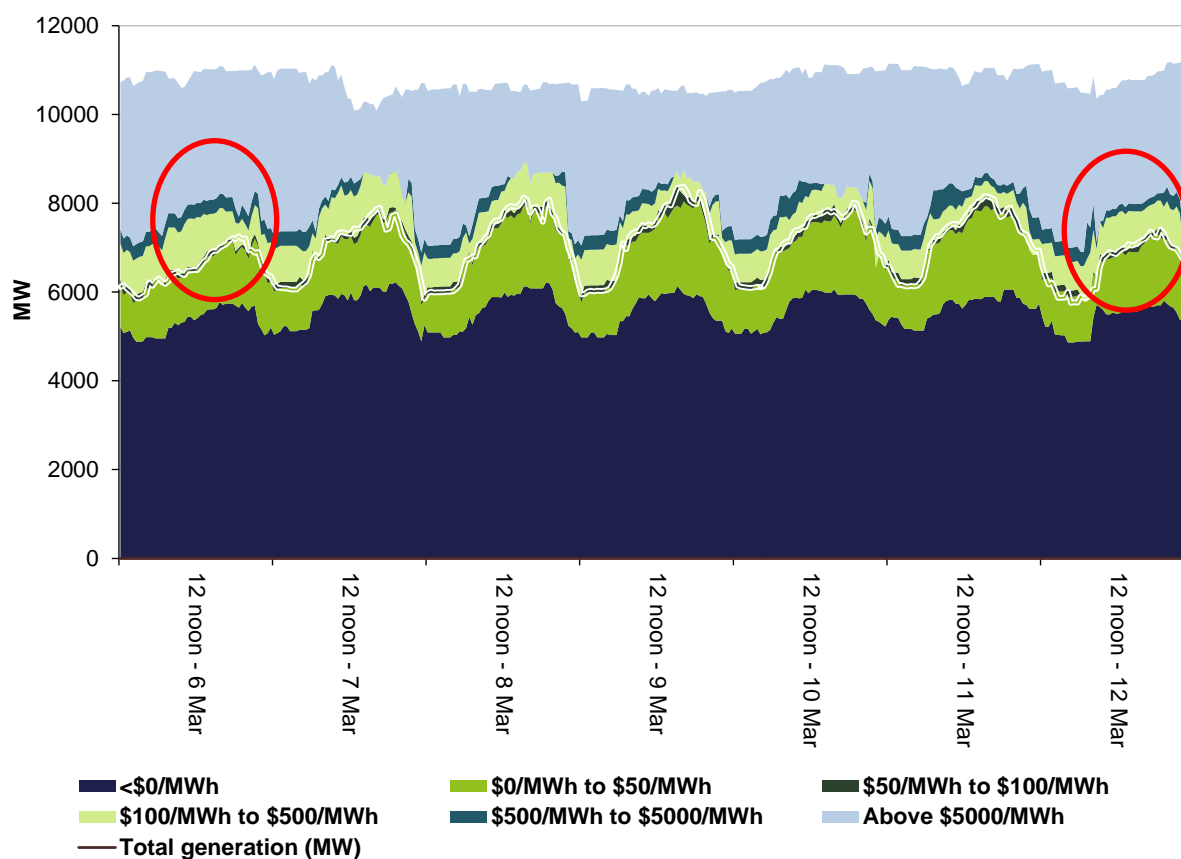
	Availability	Demand	Network	Combination
% of total above forecast	5	26	0	5
% of total below forecast	4	53	0	7

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

## Generation and bidding patterns

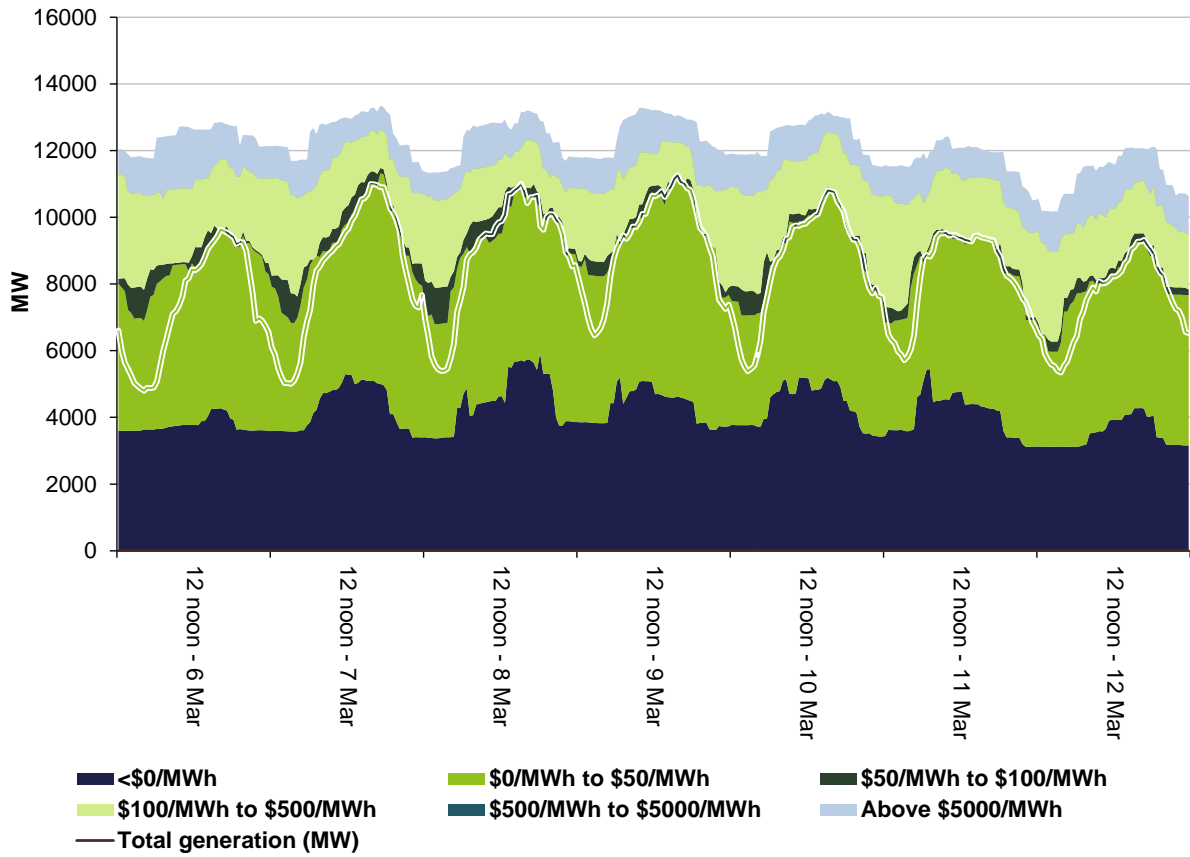
The AER reviews generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figure 3 to Figure 7 show, the total generation dispatched and the amounts of capacity offered within certain price bands for each 30 minute trading interval in each region.

**Figure 3: Queensland generation and bidding patterns**

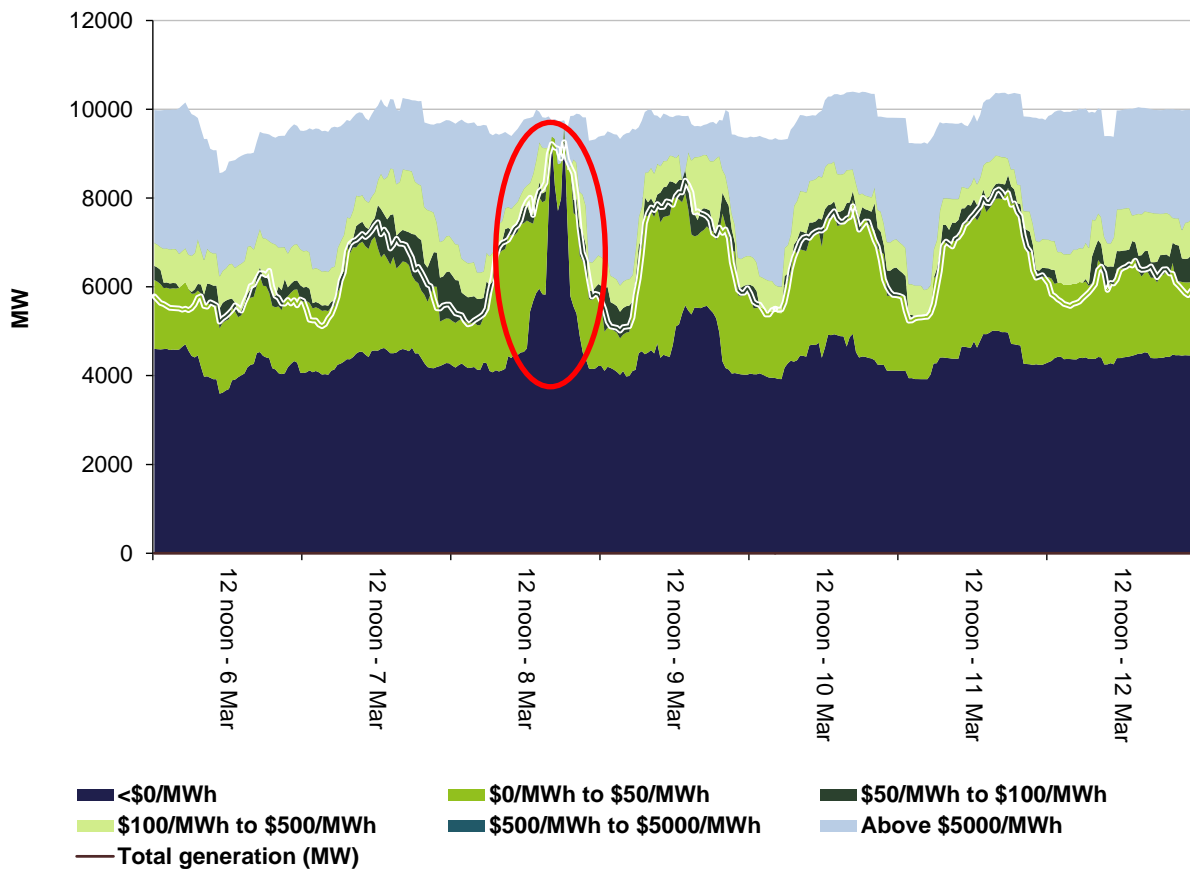


The red ellipses on Figure 3 highlight the period during the week where rebidding by participants led to high prices. This event is covered in detail in the section below.

**Figure 4: New South Wales generation and bidding patterns**

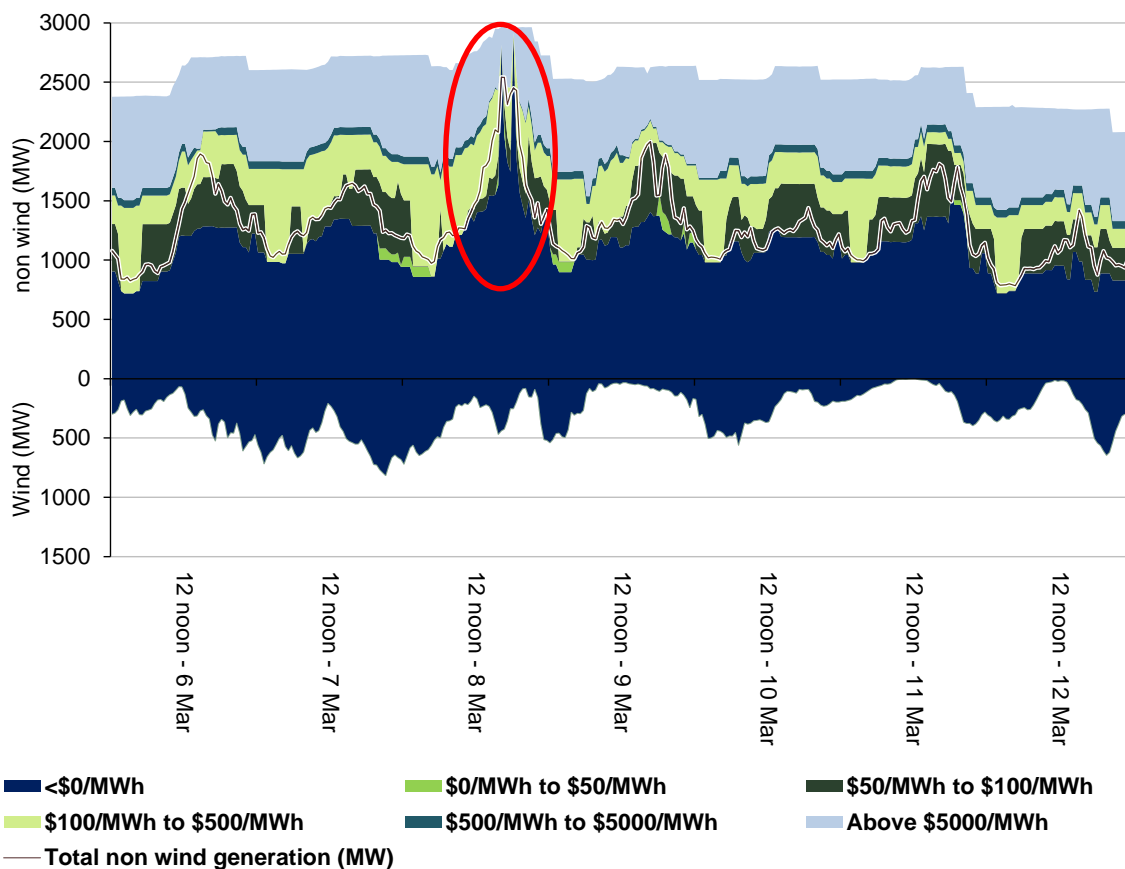


**Figure 5: Victoria generation and bidding patterns**



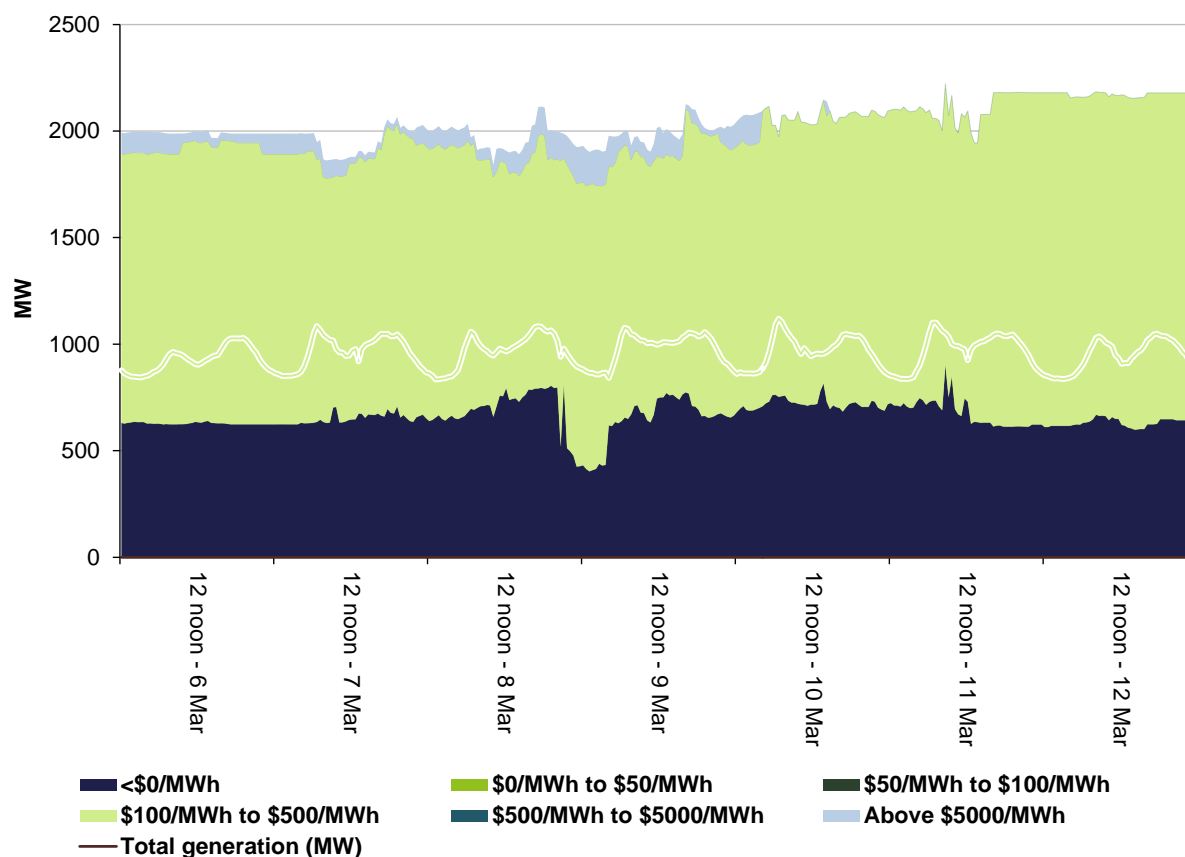
The red ellipse on Figure 5 highlights the period during the week where the price was high. This event is covered in detail in the section below.

**Figure 6: South Australia generation and bidding patterns**



The red ellipse on Figure 6 highlights the period during the week where the price was high. This event is covered in detail in the section below.

**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.

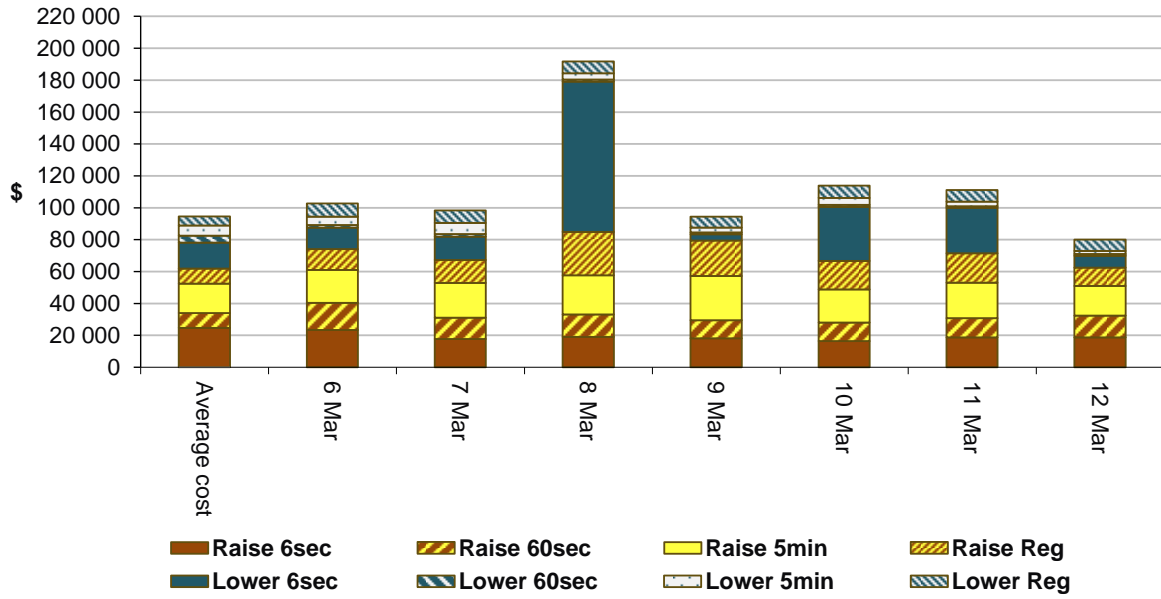
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$506 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$286 000 or less than 1 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**



## 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.

### Queensland

There were two occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$55/MWh and above \$250/MWh.

### Sunday, 6 March

**Table 3: 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
<b>7 pm</b>	416.29	63.27	50.01	7277	7069	7205	10 989	11 096	11 197

Conditions at the time saw demand 200 MW higher than that forecast four hours ahead and availability close to forecast.

**Table 4: Rebids for the 7 pm trading interval**

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
6.27 pm	6.35 pm	CS Energy	Gladstone	40	<36	>300	1826A INTERCONNECTOR CONSTRAINT-QNI CLOSE TO BINDING-SL
6.39 pm	6.45 pm	Millmerran Energy Trader	Millmerran	55	7	13 800	18:38 A 61MW CHANGE Q P5M DEMAND DI 1845 RUN 1840/1835
6.39 pm	6.50 pm	CS Energy	Gladstone	25	0	13 800	1839P PROVIDE STEAM FOR OTHER UNITS-COMPLETE-SL
6.43 pm	6.50 pm	Callide Power Trading	Callide C	106	-1000	13 800	1841A RRP ABOVE 5MIN PD FOR DI 1845
6.46 pm	6.55 pm	Stanwell Corporation	Stanwell	50	60	>346	1841A P5MIN RRP ABOVE P30MIN FORECAST \$300 V \$90; SL
6.46 pm	6.55 pm	Millmerran Energy Trader	Millmerran	100	7	13 800	18:46 A RRP ABOVE 5MIN PD FOR DI 1850

As a result of the above rebidding the dispatch price increased from \$113/MWh at 6.40 pm to \$300/MWh at 6.45 pm, then to \$1400/MWh at 6.50 pm. There was also 106 MW increase in demand at 6.45 pm. The price dropped to \$300/MWh at 6.55 pm when demand dropped by around 185 MW.



Saturday, 12 March

**Table 5: 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
<b>9 am</b>	270.19	48.90	45.14	6214	6289	6256	10 456	10 957	10 897

Conditions at the time saw demand close to forecast and availability 500 MW lower than forecast four hours ahead.

**Table 6: Rebids for the 9 am trading interval**

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
7.26 am		Millmerran Energy Trader	Millmerran	154	7	13 800	07:25 A CALLIDE UNIT TRIP NOT IN PD
8.31 am	8.40 am	Callide Power Trading	Callide C	-406	-1000	N/A	0830P RESTART DELAYED
8.34 am	8.45 am	Stanwell Corporation	Stanwell	40	49	12 889	0835A MATERIAL CHANGE IN QNI FLOW DI0835
8.34 am	8.45 am	Stanwell Corporation	Tarong	240	<61	12 889	0835A MATERIAL CHANGE IN QNI FLOW DI0835

There was no capacity priced between \$50/MWh and \$270/MWh and as a result the rebids by Callide Power Trading and Stanwell the price increased from \$57/MWh at 8.40 am to \$1400/MWh at 8.45 am. The price then decreased to \$41/MWh at 8.50 am, following rebidding of capacity from high to low prices.

### Victoria and South Australia

There were four occasions where the spot price in both Victoria and South Australia were aligned and greater above \$250/MWh. At the time of high prices, imports into Victoria across the Vic-NSW interconnector were limited by system normal constraints, avoiding the overload of lines and the transformer at Dederang.

Tuesday, 8 March

**Table 7: Price, Demand and Availability - Victoria**

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
<b>3.30 pm</b>	267.75	315.89	325.26	8887	8009	8306	9811	9824	10 175

**Table 8: Price, Demand and Availability – South Australia**

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
<b>3.30 pm</b>	270.87	325.00	341.89	2441	2413	2403	3324	3135	3115

Prices were close to forecast in both South Australia and Victoria.

**Table 9: Price, Demand and Availability - Victoria**

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
<b>4.30 pm</b>	2031.00	10 751.81	336.85	9165	8540	8481	9800	9814	10 178
<b>5 pm</b>	2108.55	10 592.13	334.09	9213	8599	8441	9763	9831	10 134

**Table 10: Price, Demand and Availability – South Australia**

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
<b>4.30 pm</b>	1215.77	10 759.20	362.69	2401	2528	2524	3406	3110	3104
<b>5 pm</b>	1867.72	10 758.59	378.49	2378	2576	2577	3378	3113	3105

Conditions at the time saw demand up to 625 MW higher than forecast four hours ahead in Victoria and availability was close to forecast.

The forecast prices for the 4.30 pm and 5 pm trading intervals were revised up significantly four hours ahead, compared to 12 hours ahead. This was due to an increase in the demand forecast in Victoria. Actual prices was less than that forecast four hour ahead, due to rebidding of capacity from high to low prices in both regions.

**Table 11: Price, Demand and Availability - Victoria**

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
<b>6.30 pm</b>	1973.94	277.18	141.73	8729	8024	7860	9597	9948	10 224

**Table 12: Price, Demand and Availability – South Australia**

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
<b>6.30 pm</b>	1505.98	362.69	360.81	2260	2583	2581	3223	3113	3107

In Victoria, conditions at the time saw demand up to 700 MW greater than that forecast four hours ahead and available capacity around 400 MW less than forecast. Demand in South Australia was around 300 MW less than that forecast four hours ahead and available capacity was close to forecast.

**Table 13: Rebids for the 6.30 pm trading interval**

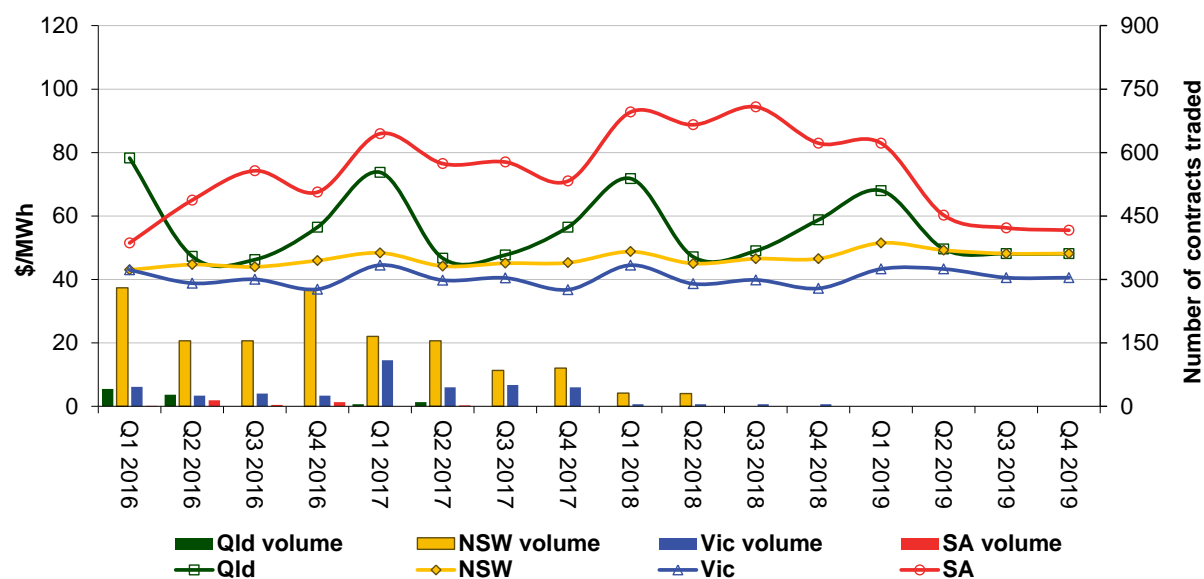
Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.22 pm		EnergyAustralia	Yallourn	-21	-1000	N/A	17:21 P AVAIL ADJ FOR REHEAT PRESSURE ISSUES
5.23 pm		EnergyAustralia	Yallourn	-40	-1000	N/A	17:23 P CAPACITY ADJ DUE TO HIGH BACKEND TEMPS
5.35 pm		AGL Energy	West Kiewa	-31	13 315	N/A	1730~A~060 UNFCAST NETWORK CONSTRAINT~61 CONSTR ON OUT OF MERIT ORDER V>>V_NIL_4A
5.43 pm		AGL Energy	West Kiewa, Dartmouth, Eildon	-228	>13 570	N/A	1740~A~050 CHG IN AEMO PD~55 5MIN PD PRICE INCREASE VIC \$2067 18:05
5.57 pm	6.05 pm	AGL Energy	Mckay	-280	13 500	N/A	1755~A~060 UNFCAST NETWORK CONSTRAINT~61 CONSTR ON OUT OF MERIT ORDER V>>V_NIL_4A

The Victorian price increased from \$130/MWh at 6 pm to \$13 800/MWh at 6.05 pm and the South Australian price increase from \$125/MWh at 6 pm to \$13 005/MWh at 6.05 pm. The withdrawal of 539 MW by AGL at 6.05 pm caused a system normal constraint, used to manage the overload of the Dederang transformer, to bind and a 38 MW counter price flow from Victoria into New South Wales. Prices then fell to around \$32/MWh at 6.10 pm due to rebidding of capacity from high to low prices, often citing price greater than forecast as the reason.

## 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.

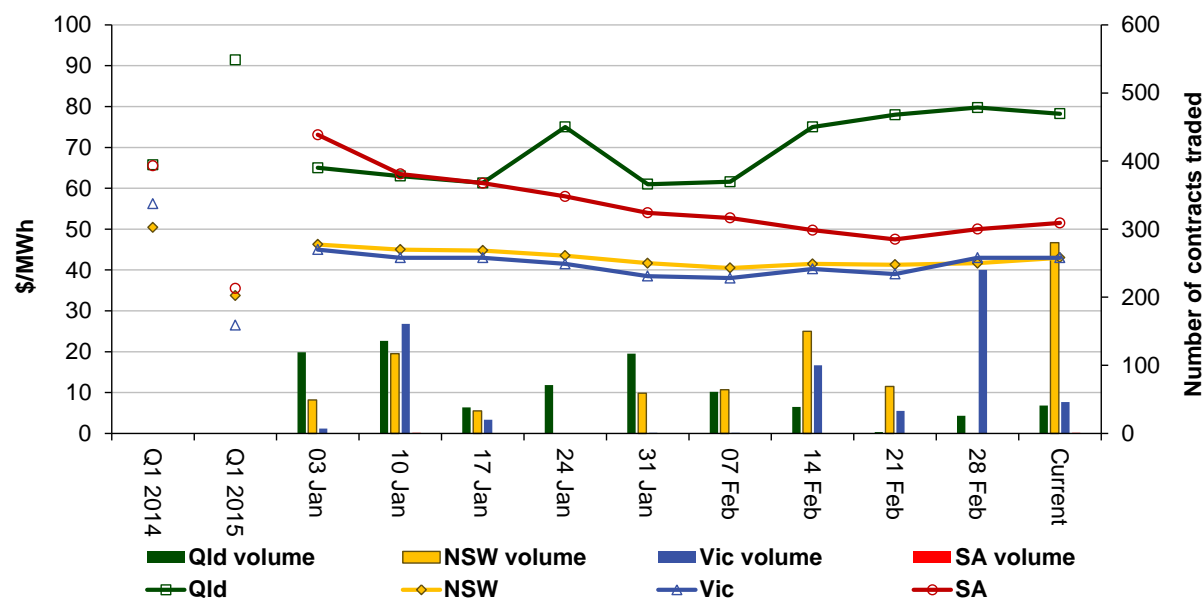
**Figure 9: Quarterly base future prices Q1 2016 – Q4 2019**



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.

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



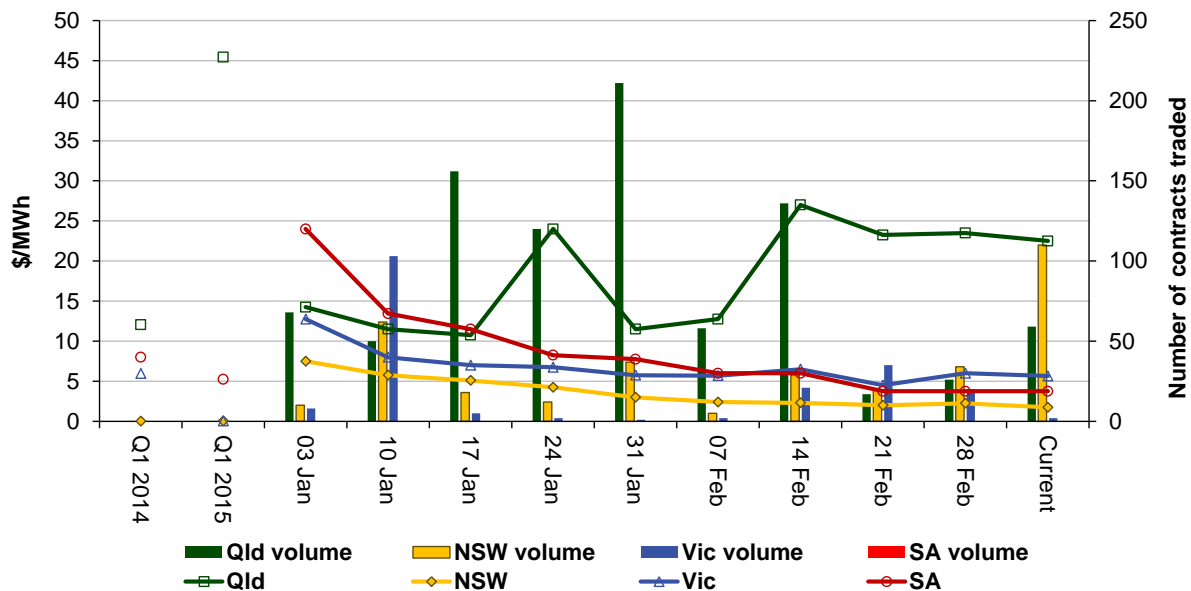
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

Source: ASXEnergy.com.au

Prices of other financial products (including longer-term price trends) are available in the [Industry Statistics](#) 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**  
**April 2016**