

## 31 January – 6 February 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 31 January to 6 February 2016. There were six occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$126/MWh and above \$250/MWh. The price in Tasmania exceeded \$250/MWh on 3 February but was less than three times the average weekly price for the region.

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

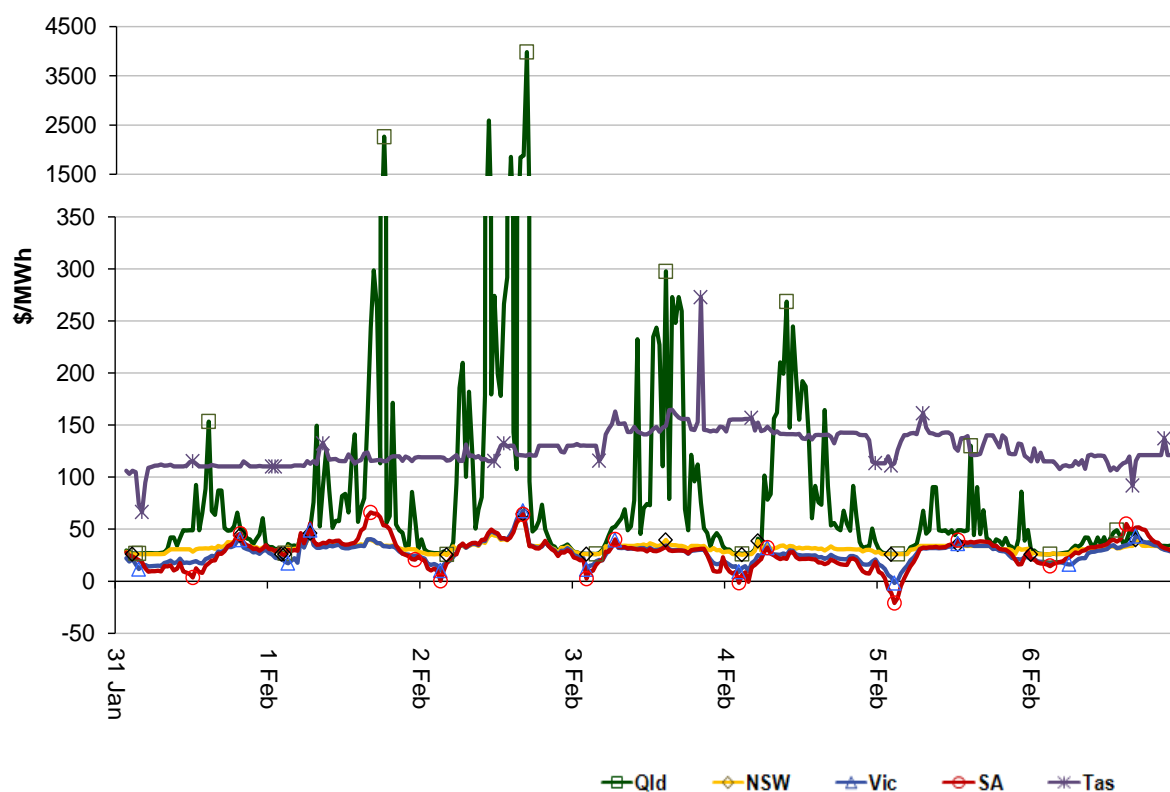
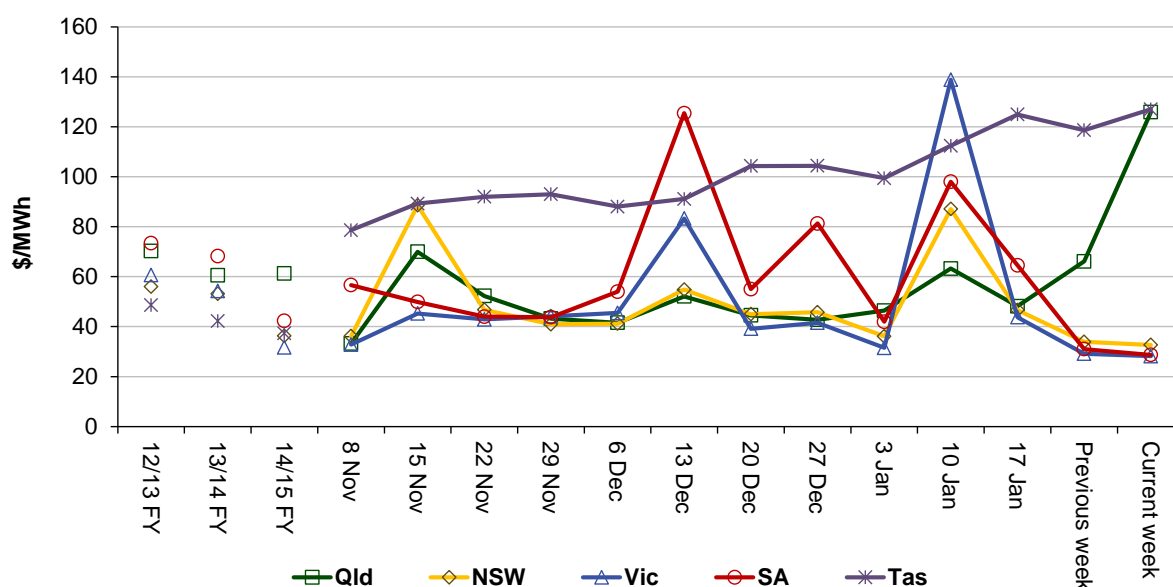


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

**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	126	33	28	29	127
14-15 financial YTD	63	37	32	40	38
15-16 financial YTD	49	46	43	62	66

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 307 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	1	17	0	1
% of total below forecast	74	6	0	1

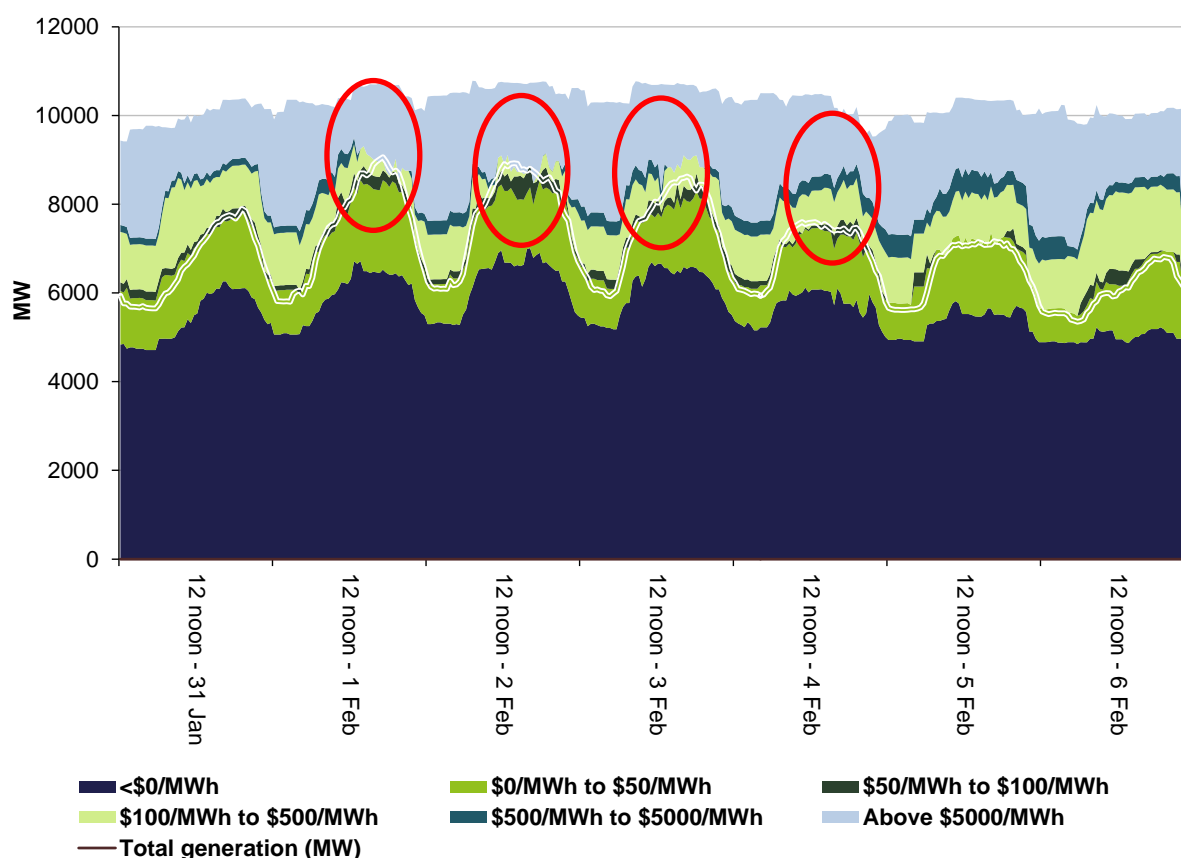
Note: Due to rounding, the total may not be 100 per cent.

## Generation and bidding patterns

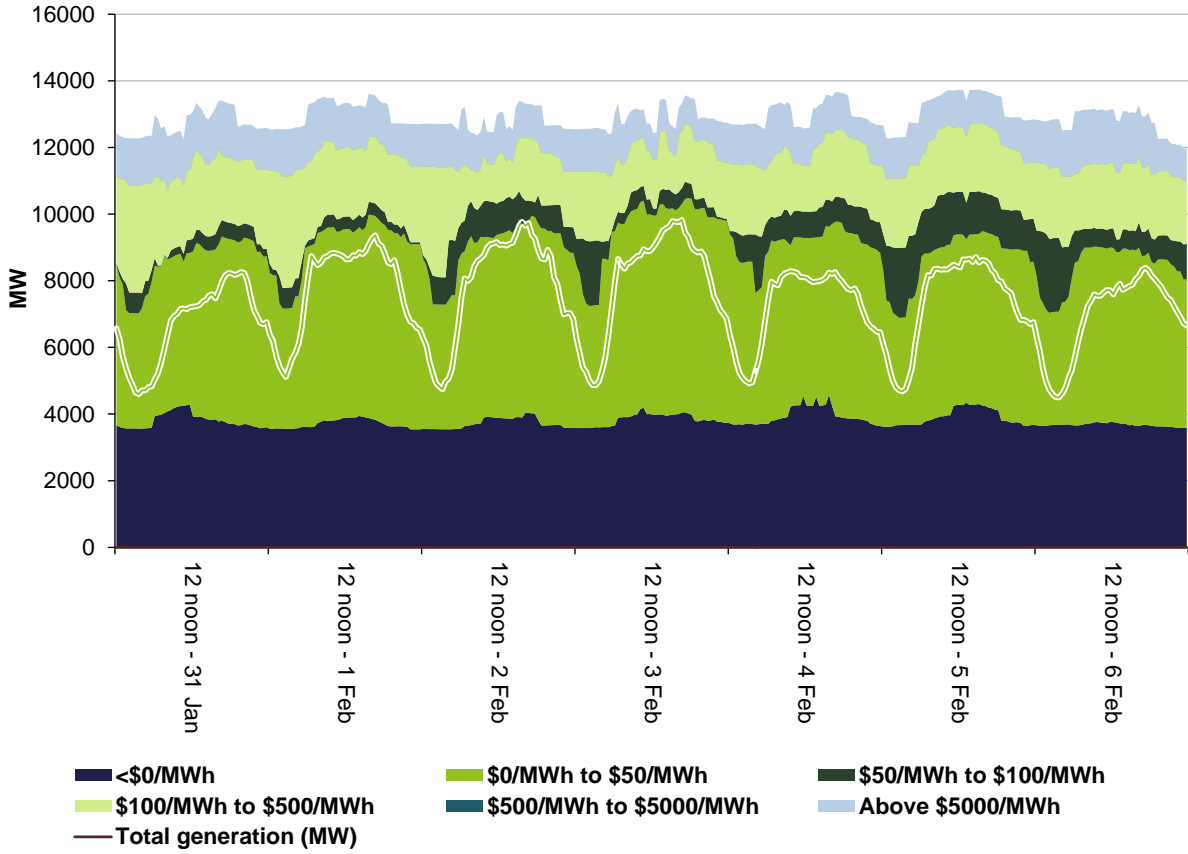
The AER reviews generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figure 3 to Figure 7 show, the total generation dispatched and the amounts of capacity offered within certain price bands for each 30 minute trading interval in each region.

The red ellipses in Figure 3 highlights when participants in Queensland rebid capacity from low to high prices. The effect on prices is detailed in the “Detailed market analysis of significant price events” section below.

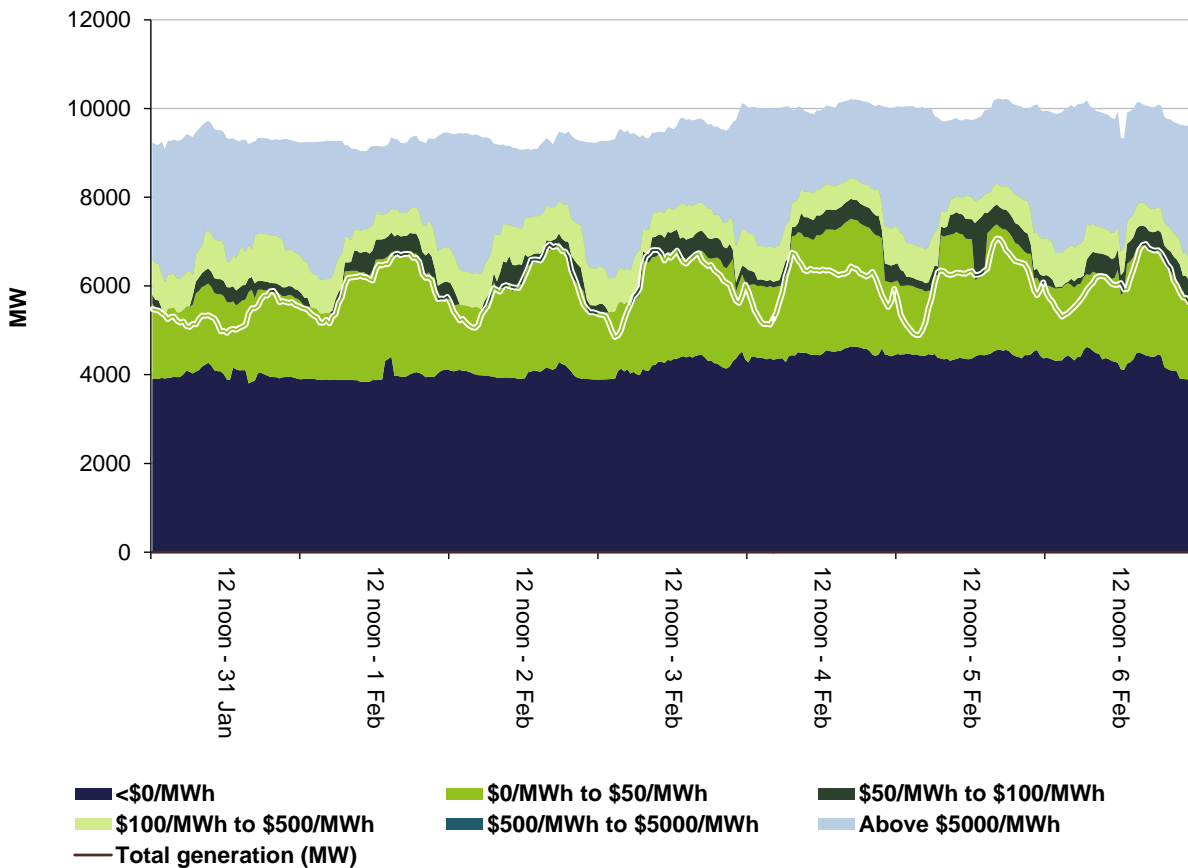
**Figure 3: Queensland generation and bidding patterns**



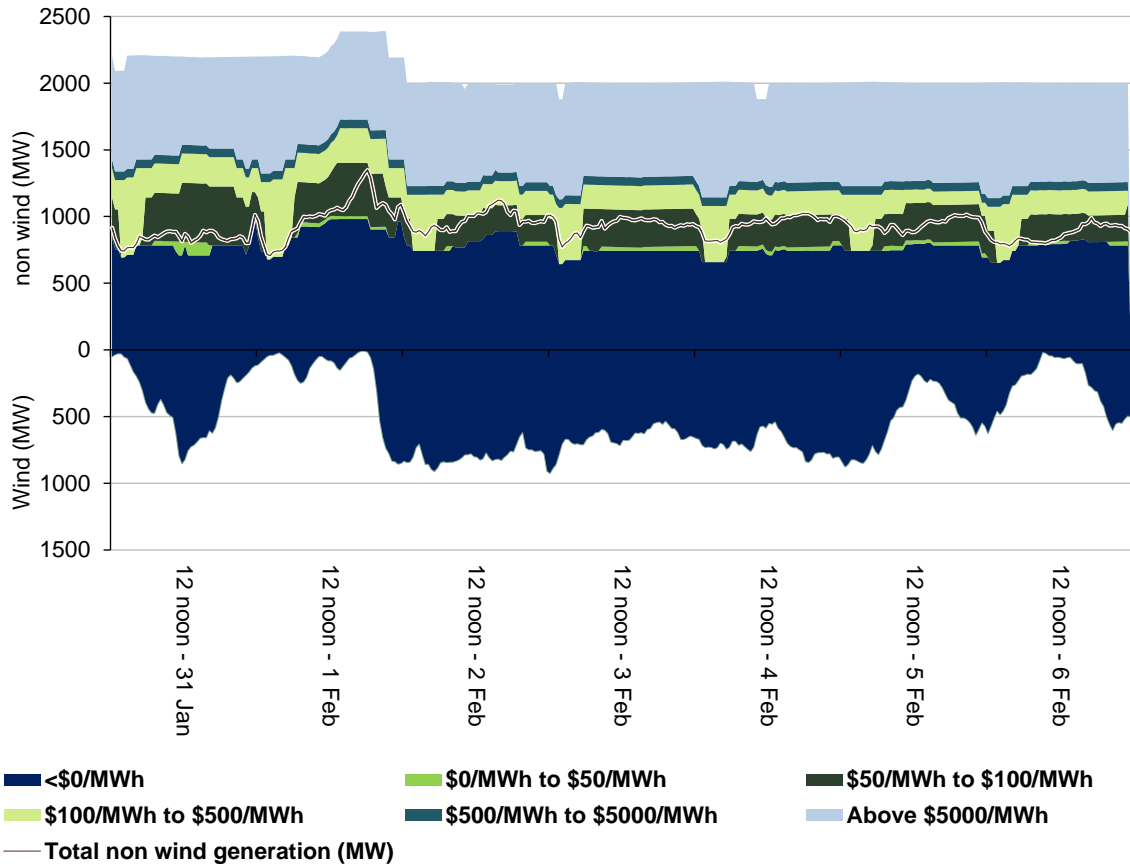
**Figure 4: New South Wales generation and bidding patterns**



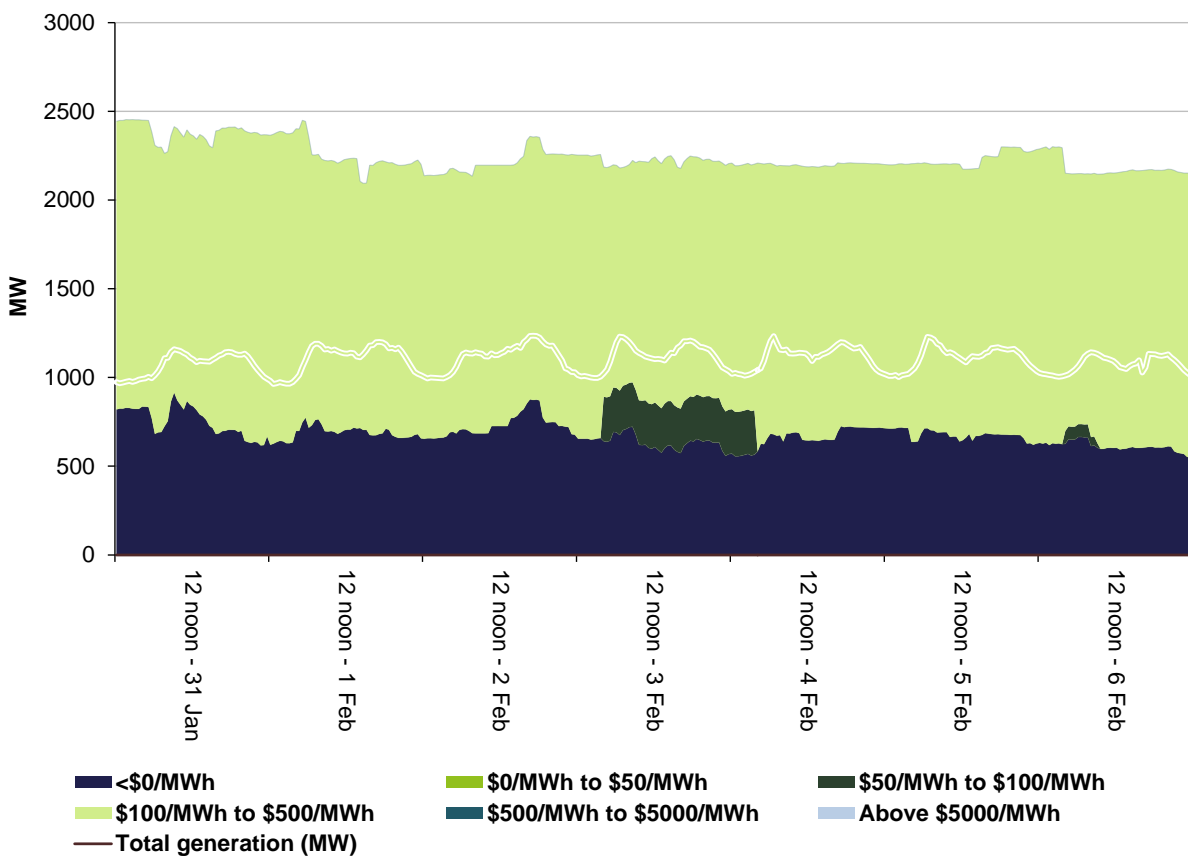
**Figure 5: Victoria generation and bidding patterns**



**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.

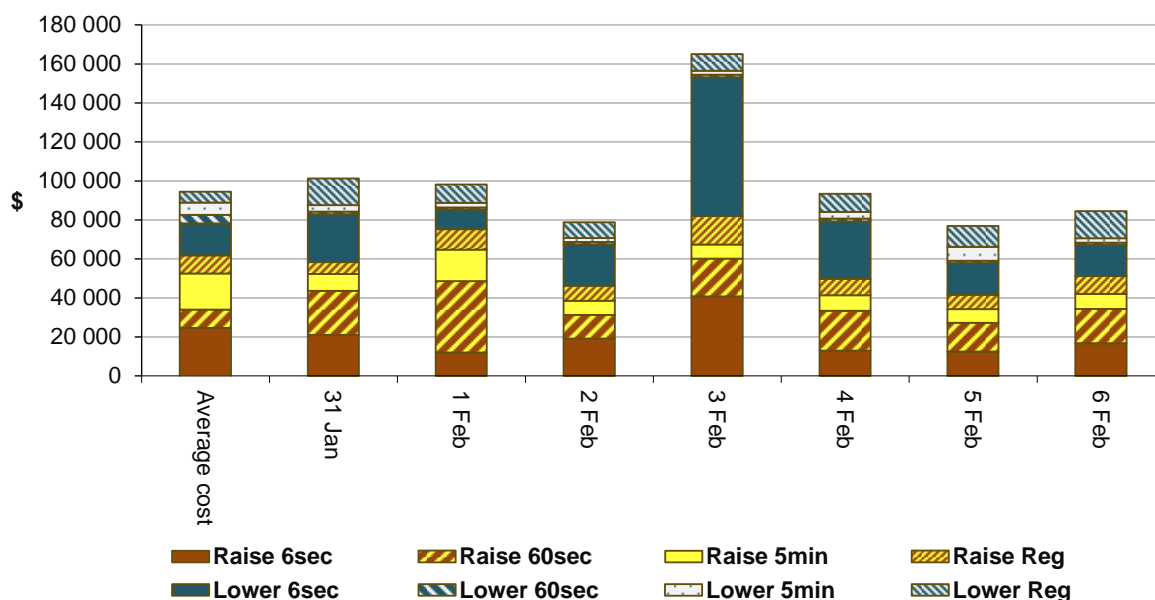
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$383 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$314 500 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**



On 3 February the price of lower 6 second services averaged \$14/MWh as a result of the co-optimisation of that service and the energy market at a cost of around \$70 000/MW (the daily average for the rest of the week was \$20 000/MW).

## 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 six occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$126/MWh and above \$250/MWh. Demand was at or around record levels on 1 and 2 February.

### Monday, 1 February

**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
6.30 pm	2264.21	59.83	297.60	8854	8805	8853	10 697	10 665	10 725

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

The QNI interconnector was limited by a system normal constraint importing around 180 MW into Queensland and the Terranora interconnector was unavailable throughout the 6.30 pm trading interval.

**Table 4: 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
4.32 pm		CS Energy	Gladstone	250	<300	13 800	1631A REVIEWED SENSITIVITIES-SL
6.16 pm	6.25 pm	Stanwell	Barron Kareeya Stanwell Tarong	383	<260	13 800	1815A MATERIAL CHANGE IN QLD GENERATION: MT STUART DI1815
6.22 pm	6.30 pm	CS Energy	Callide B Gladstone	90	<50	13 800	1821A DISPATCH PRICE HIGHER THAN 5MIN FORECAST-SL

The dispatch price rose to \$400/MWh at 6.25 pm from \$60/MWh at 6.20 pm following the above rebidding by Stanwell. The dispatch price rose to \$12 948/MWh at 6.30 pm following CS Energy's rebid effective at that time. This resulted in the trading interval price of \$2264/MWh.

### Tuesday, 2 February

**Table 5: Price, Demand and Availability**

Time	Price (\$/MWh)	Demand (MW)	Availability (MW)
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	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
<b>11 am</b>	2591.46	78.00	199.49	8657	8052	8224	10 617	10 433	10 463

Conditions for 11 am trading interval saw demand 605 MW above forecast. Demand was 169 MW below forecast for the 2.30 pm trading interval, and over 700 MW below forecast for each of the 4 pm, 4.30 pm and 5 pm trading intervals. Available capacity was close to forecast.

The Terranora interconnector was unable to provide more than 10 MW of capacity into Queensland for any of the high priced trading intervals.

**Table 6: Rebids for the 11 am trading interval**

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
8.53 am		Stanwell	Stanwell Tarong	185	<298	13 800	0849E CORRECT PREVIOUS BID TO COVER 1100 TI-SL
10.12 am		CS Energy	Gladstone	350	<78	>300*	1011P PORTFOLIO REARRANGEMENT DUE TO-CALLIDE C MILL ISSUES-SL
10.48 am	10.55 am	CS Energy	Gladstone	100	300	13 800	1047A DISPATCH PRICE HIGHER THAN 30MIN FORECAST-SL
10.53 am	11 am	Millmerran	Millmerran	55	7	13 800	10:52 A RRP ABOVE PD
10.54 am	11 am	Callide	Callide C	38	-1000	13 800	1052A RRP ABOVE PD

\*150 MW was rebid to \$300/MWh and 200 MW was rebid to \$13 800/MWh.

CS Energy's 10.12 am rebid saw the 10.20 am dispatch price rise to \$300/MWh. The dispatch price stayed between \$300/MWh and \$400/MWh until 11 am.

At 11 am an 88 MW increase in demand as well as the above rebidding saw the dispatch price rise to the price cap. This resulted in a trading price of \$2591/MWh for the 11 am trading interval.

A 345 MW decrease in demand (apparent demand side response) saw the dispatch price fall to \$49/MWh for the 11.05 am dispatch interval.

**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>2.30 pm</b>	1854.71	399.68	297.60	9058	9227	8853	10 730	10 694	10 759



Demand was 169 MW below forecast that forecast four hours ahead and around 200 MW higher than forecast 12 hours ahead. Available capacity was close to forecast.

**Table 7: Rebids for the 2.30 pm trading interval**

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
2.19 pm	2.30 pm	Stanwell	Stanwell, Tarong	399	<298	>12 890	1415A MATERIAL CHANGE IN QLD DEMAND PD1420

The above rebidding saw the dispatch price rise from \$96/MWh at 2.25 pm to \$10 500/MWh at 2.30 pm.

**Table 5: Price, Demand and Availability**

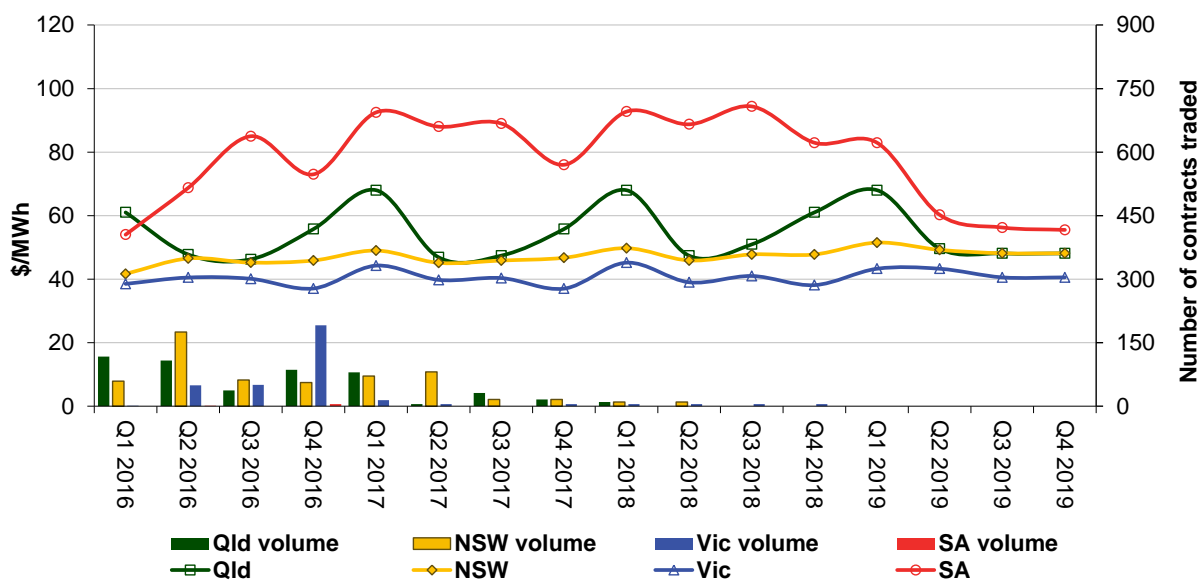
Time	Price (\$/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
<b>4 pm</b>	1845.54	10 500.30	10 500.30	8866	9581	9102	10 711	10 771	10 750
<b>4.30 pm</b>	1884.62	12 890.00	13 800.00	8889	9623	9256	10 736	10 771	10 734
<b>5 pm</b>	3982.97	13 800.00	13 800.00	8878	9653	9300	10 738	10 756	10 732

Demand was up to 775 MW lower than that forecast four hours ahead and as a result prices were significantly lower than that forecast. Available capacity was close to that forecast.

## 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.

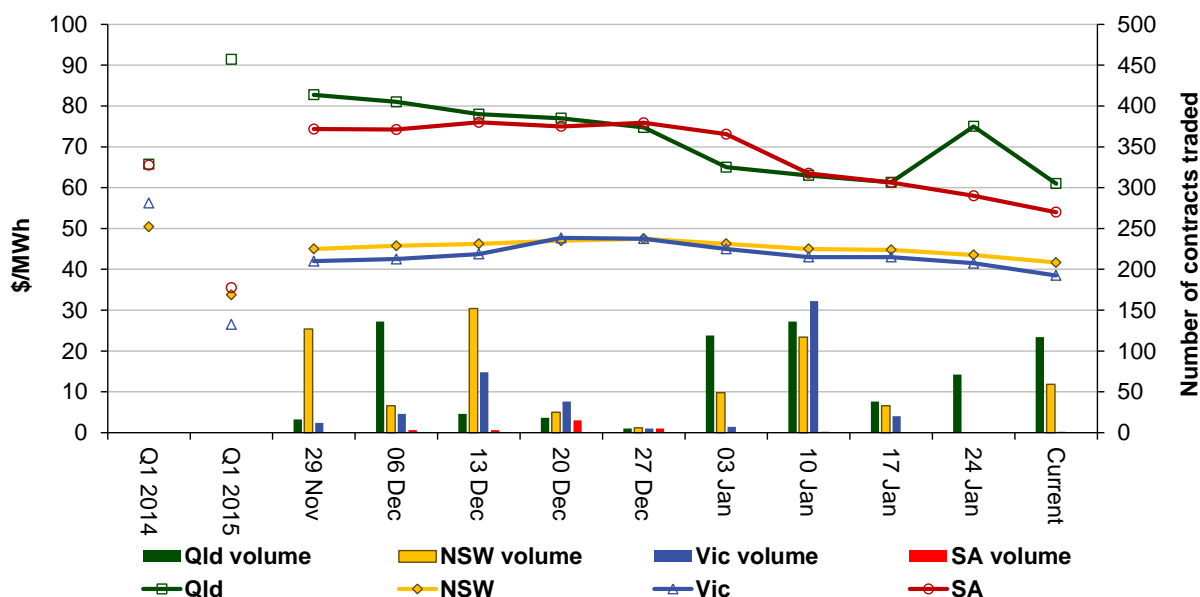
**Figure 9: Quarterly base future prices Q1 2016 – Q4 2019**



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)**



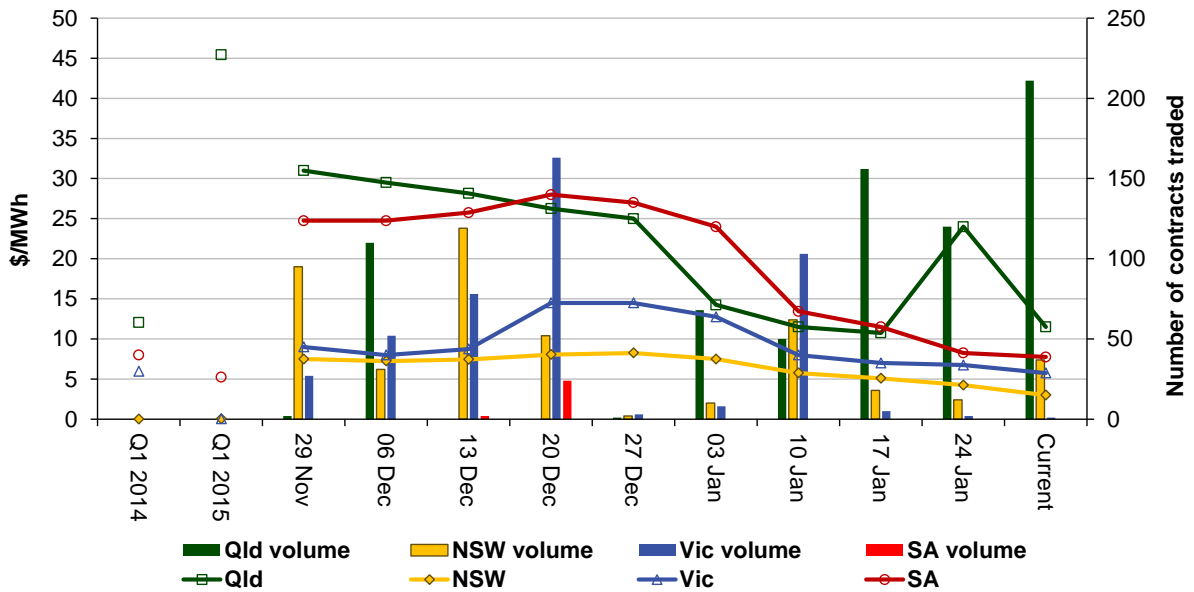
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for yearly periods 1 and 2 years prior to the current year.

Source: ASXEnergy.com.au

Prices of other financial products (including longer-term price trends) are available in the [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  
February 2016