

## 24 – 30 July 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 24 to 30 July 2016.

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

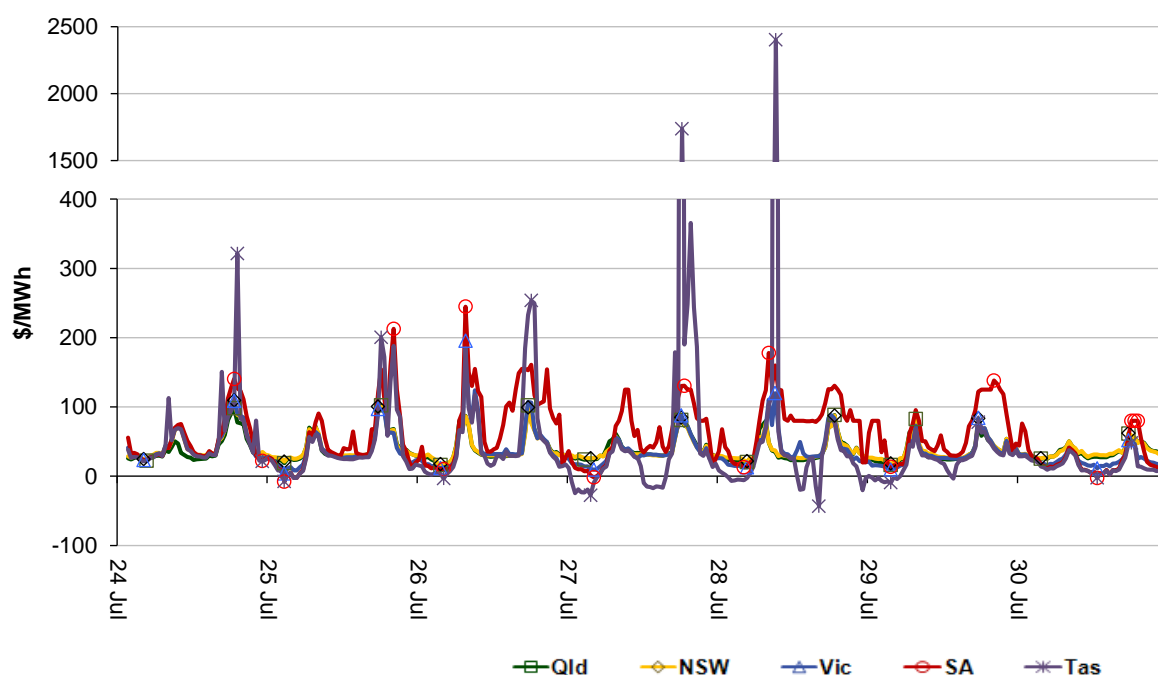
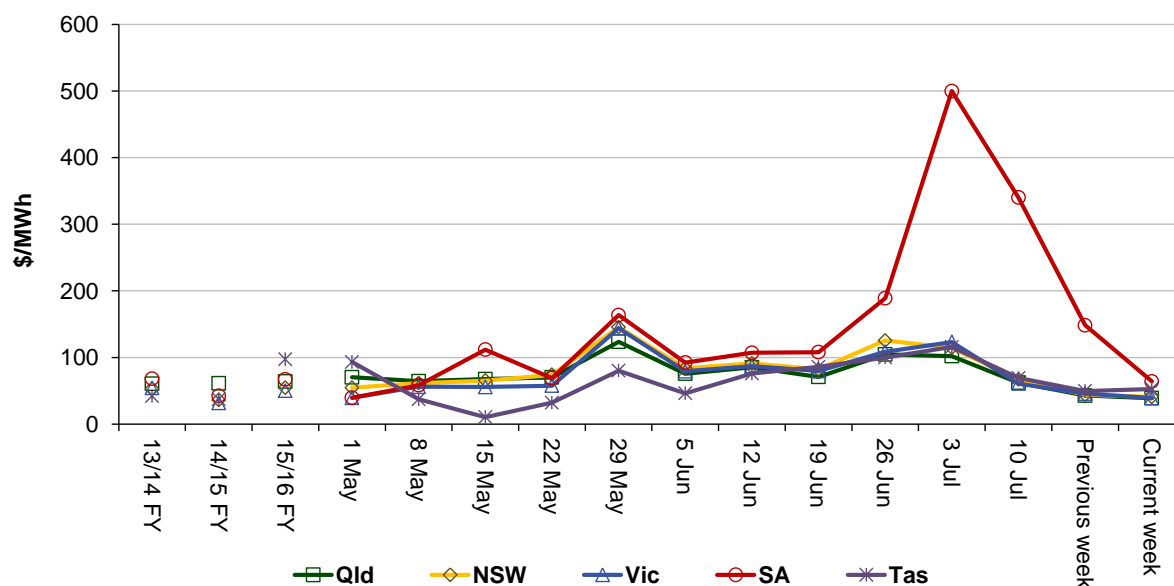


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

**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	39	41	39	64	53
15-16 financial YTD	49	41	36	80	36
16-17 financial YTD	64	71	69	258	73

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 260 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**

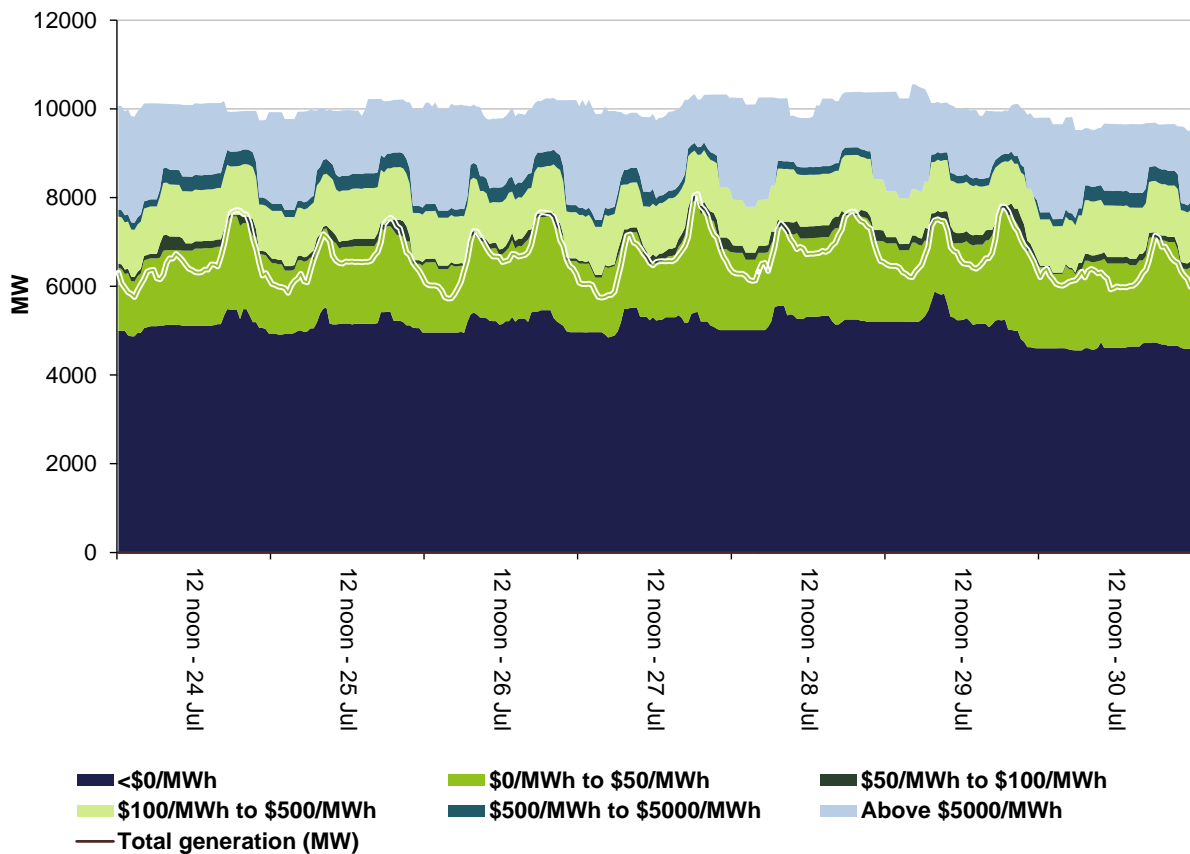
	Availability	Demand	Network	Combination
% of total above forecast	1	51	0	1
% of total below forecast	34	12	0	2

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

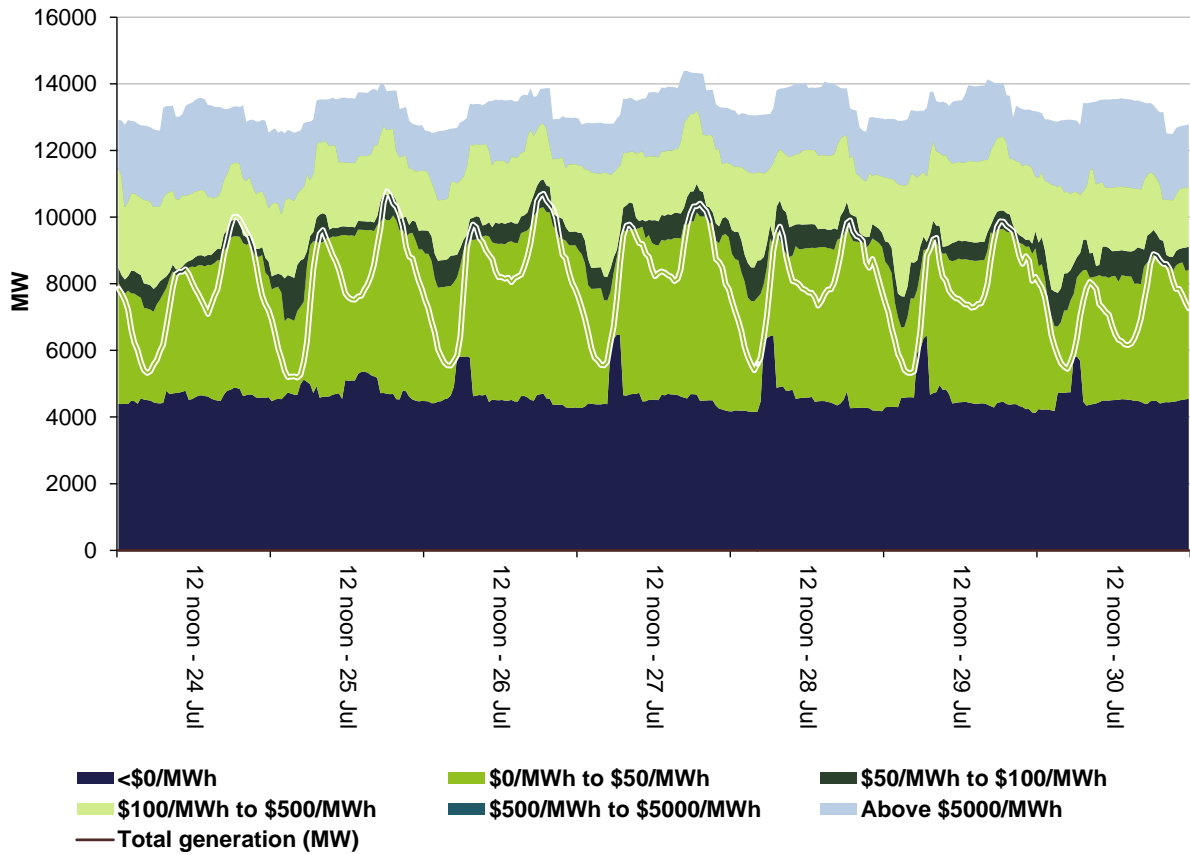
## Generation and bidding patterns

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.

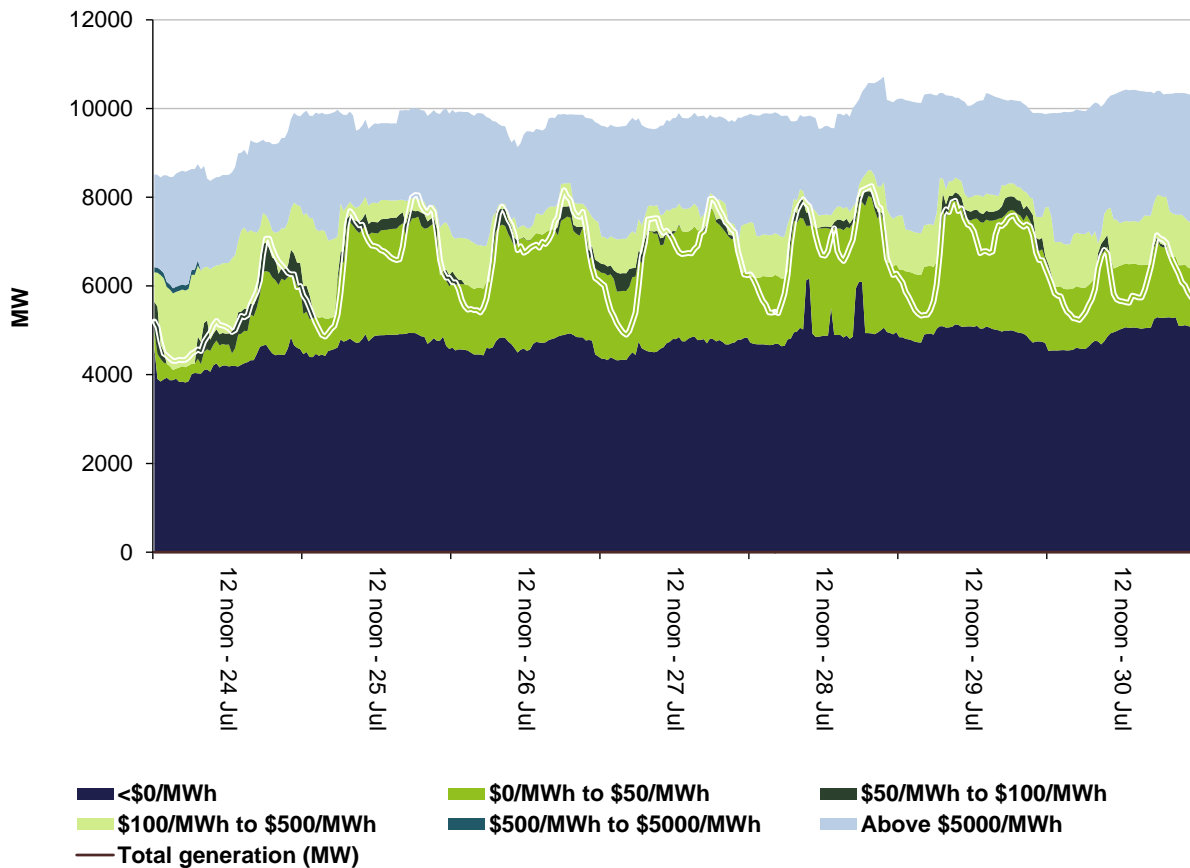
**Figure 3: Queensland generation and bidding patterns**



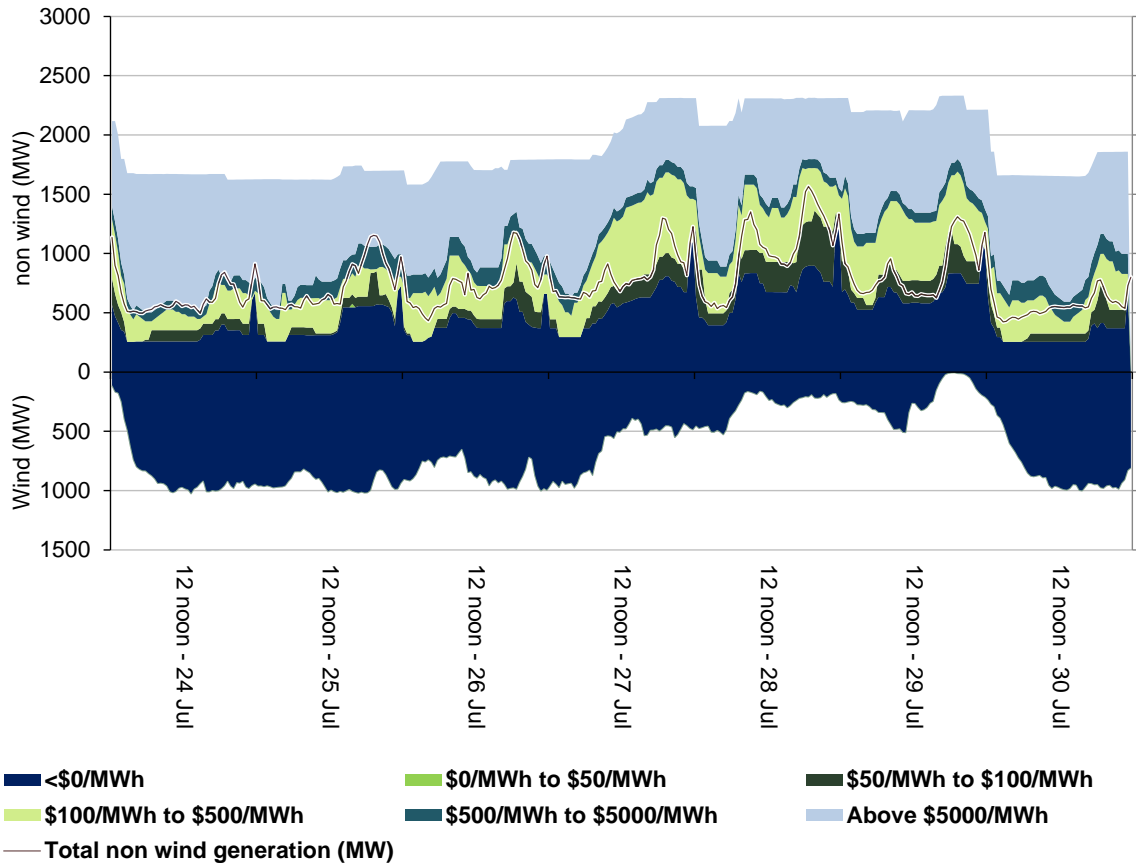
**Figure 4: New South Wales generation and bidding patterns**



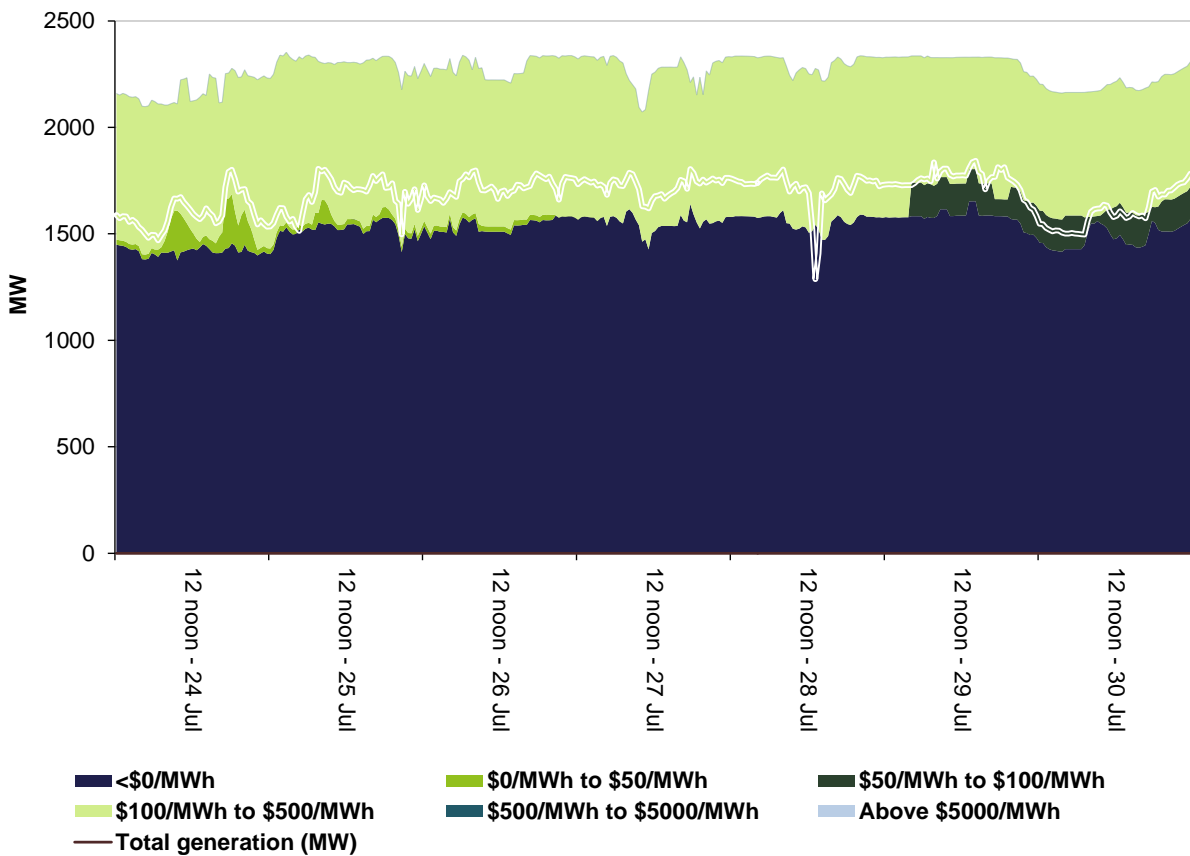
**Figure 5: Victoria generation and bidding patterns**



**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.

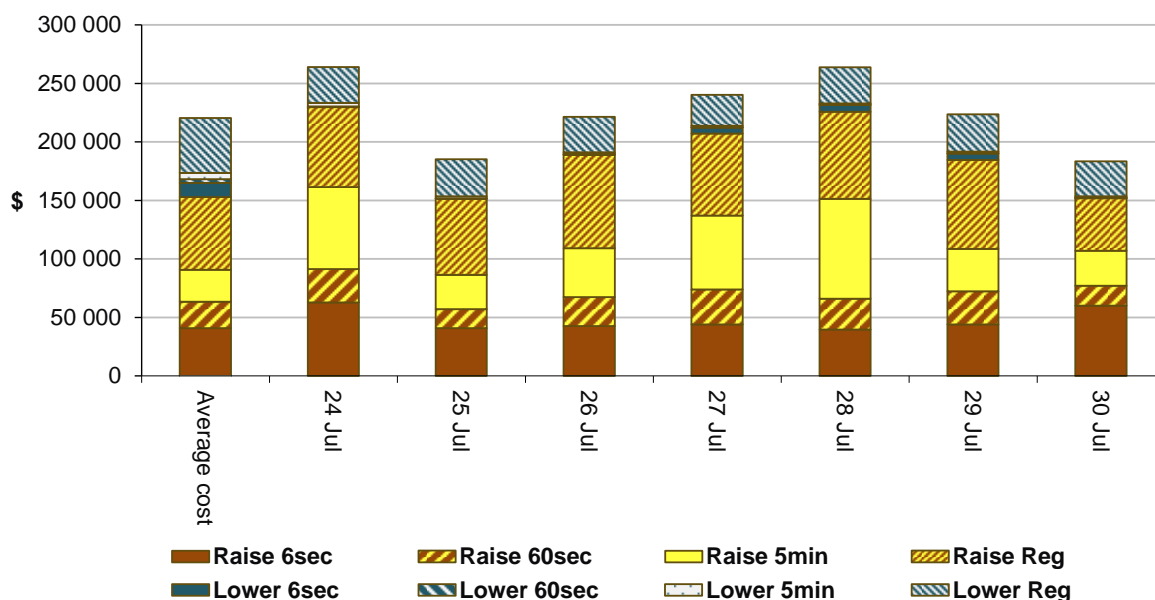
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$1 439 500 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$142 000 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**



## Detailed market analysis of significant price events

### Tasmania

There were five occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of \$53/MWh and above \$250/MWh.

#### Sunday, 24 July

**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
7.30 pm	321.49	93.97	58.54	1461	1491	1483	2234	2262	2270

Conditions at the time saw demand and availability slightly lower than forecast.

At this time there was no capacity priced between \$2/MWh and \$252/MWh. At 6.32 pm Hydro Tasmania rebid 95 MW of capacity at Poatina from \$1/MWh to \$260/MWh. The reason given was “1831P Wind gen in Tas different from forecast”. Wind generation was 79 MW lower than forecast four hours ahead. This rebid shifted the supply curve to the left and in combination with the lower than forecast wind output resulted in dispatch prices at around \$330/MWh for the majority of the trading interval.

#### Tuesday, 26 July

**Table 4: 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	253.67	314.99	316.82	1513	1415	1415	2326	2317	2307

The spot price was close to forecast four hours ahead.

#### Wednesday, 27 July

**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
6.30 pm	1736.90	80.19	318.54	1466	1361	1468	2237	2327	2324

There was a significant reduction in demand forecast from 12 to four hours ahead, lowering the forecast prices but actual demand was around 100 MW higher than forecast four hours ahead and availability was 90 MW lower than forecast four hours ahead.

At 6.30 pm the local Tasmanian requirement for raise 6 and 60 second FCAS increase from 0 to 28 MW and 45 MW respectively as a network constraint designed to control Basslink,

which forms part of the network control special protection scheme, violated. The co-optimisation of these services with the energy market caused the price to increase from \$367/MWh at 6.25 pm to \$9215/MWh at 6.30 pm as the output of some units decreased.

**Table 6: 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
8 pm	365.63	36.34	339.23	1405	1354	1404	2163	2327	2324

Actual demand was close to that forecast 12 hours ahead but higher than that forecast four hours ahead. As a result the spot price was close to that forecast 12 hours ahead but higher than that forecast four hours ahead.

### Thursday, 28 July

**Table 7: 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
9.30 am	2402.02	328.07	81.58	1296	1347	1350	2244	2323	2317

The spot price was higher than forecast four hours ahead. Demand and availability were both lower than forecast four hours ahead.

At 9.10 am the local Tasmanian requirement for raise 6 and 60 second FCAS increase from 0 to 22 MW and 37 MW respectively as a network constraint designed to control Basslink, which forms part of the network control special protection scheme, violated. The co-optimisation of these services with the energy market caused the price to increase from \$120/MWh at 9.05 am to \$14 000/MWh at 9.10 am

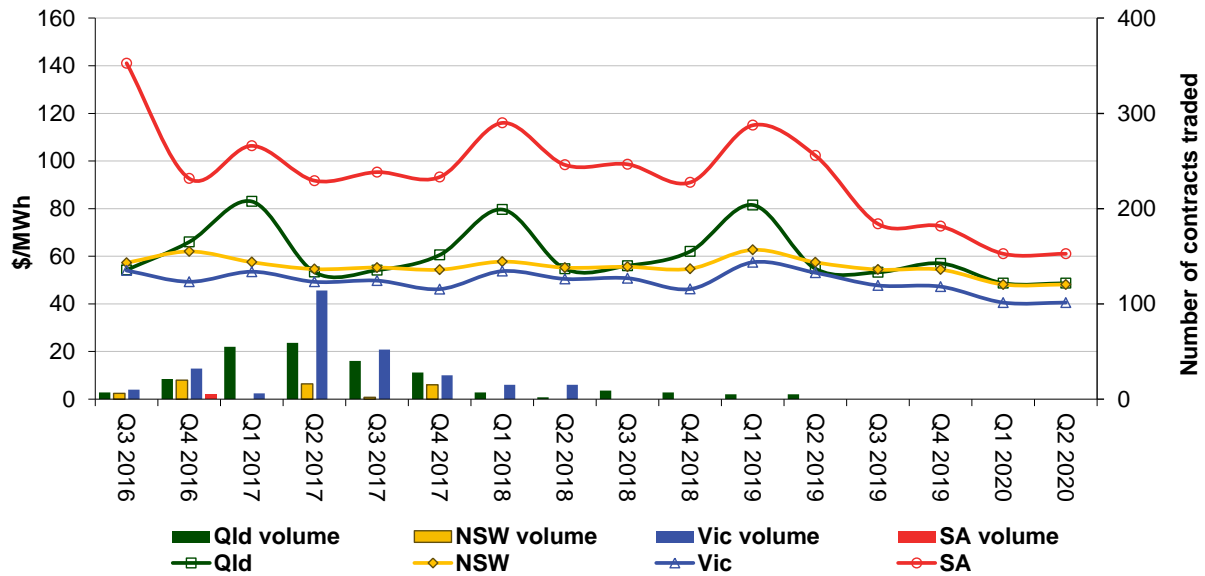
At 9.15 am, demand decreased by 96 MW and FCAS requirement fell to 0 MW, resulting in the dispatch price falling to \$77/MWh and staying low for the rest of the trading interval.

### 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. Only 4 trades were recorded for South Australia during the week and these were for Q4 2016 contracts.



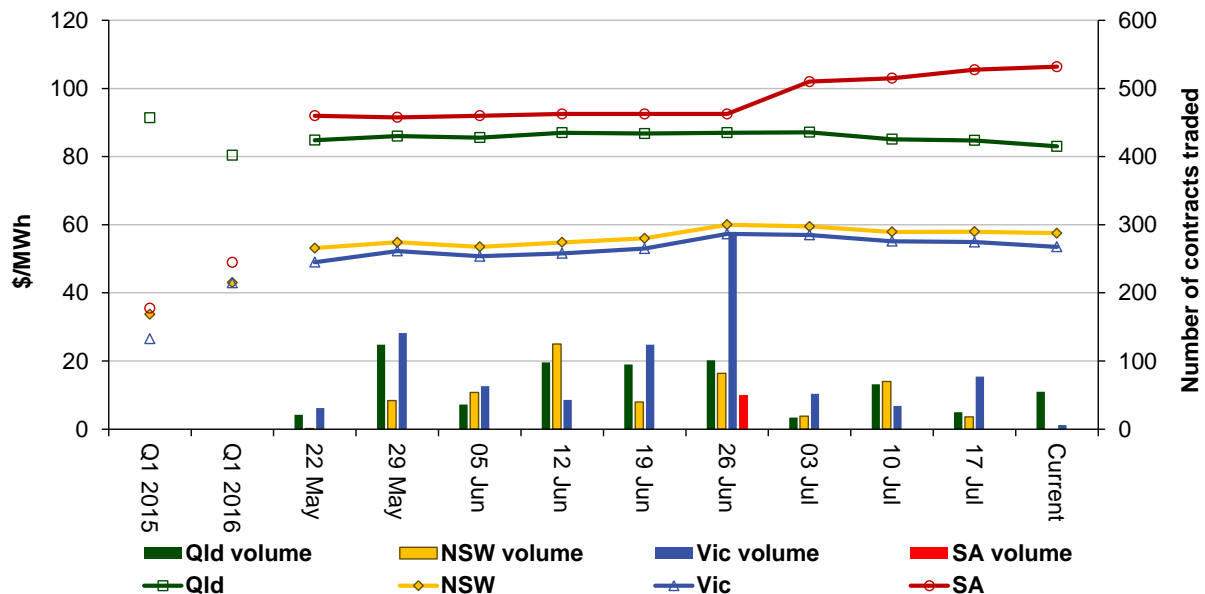
**Figure 9: Quarterly base future prices Q3 2016 – Q2 2020**



Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional quarter 1 2017 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades – no trades were recorded in South Australia for Q1 2017 base or cap contracts this week.

**Figure 10: Price of Q1 2017 base contracts over the past 10 weeks (and the past 2 years)**



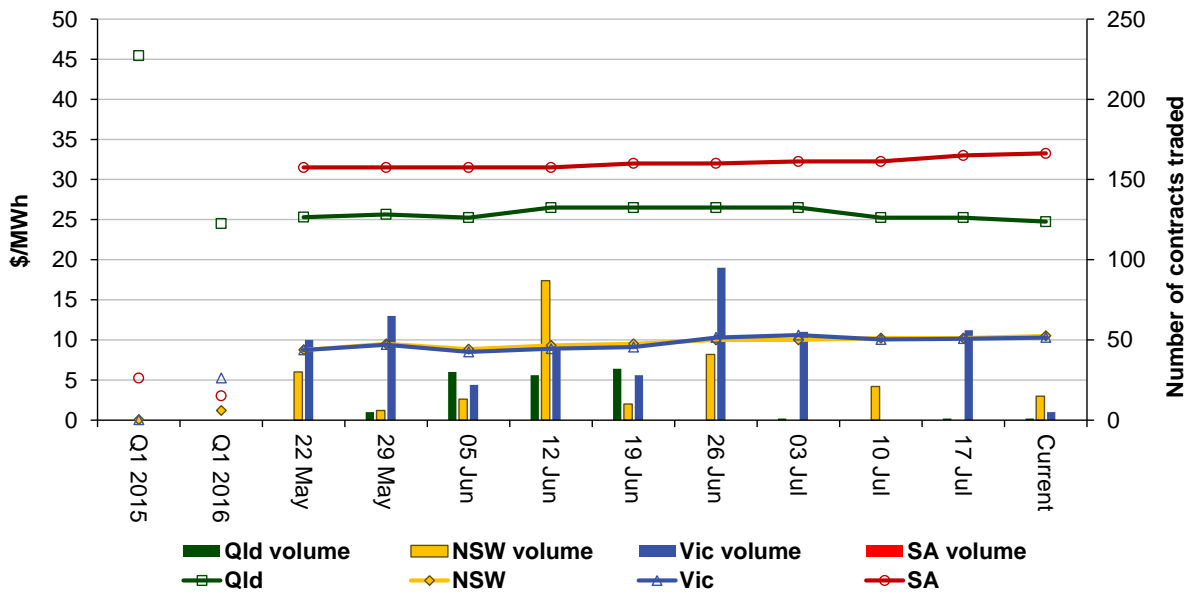
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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 2017 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown.

**Figure 11: Price of Q1 2017 cap contracts over the past 10 weeks (and the past 2 years)**



Source: ASXEnergy.com.au

**Australian Energy Regulator**  
**August 2016**