

## 1 – 7 November 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 1 to 7 November 2015.

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

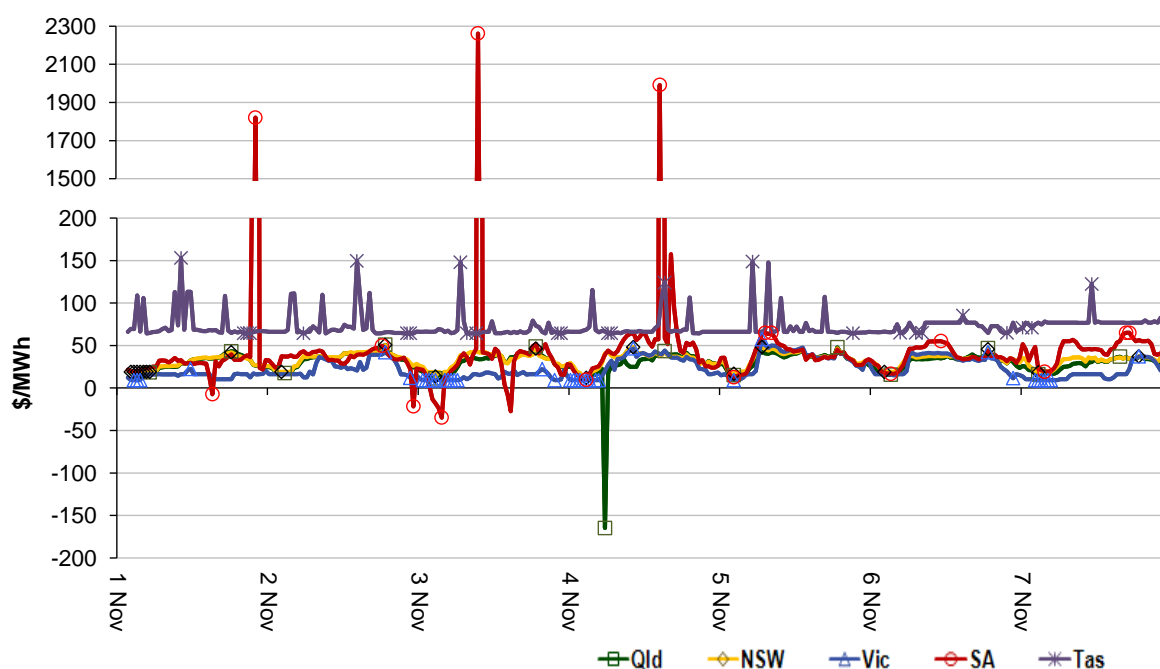
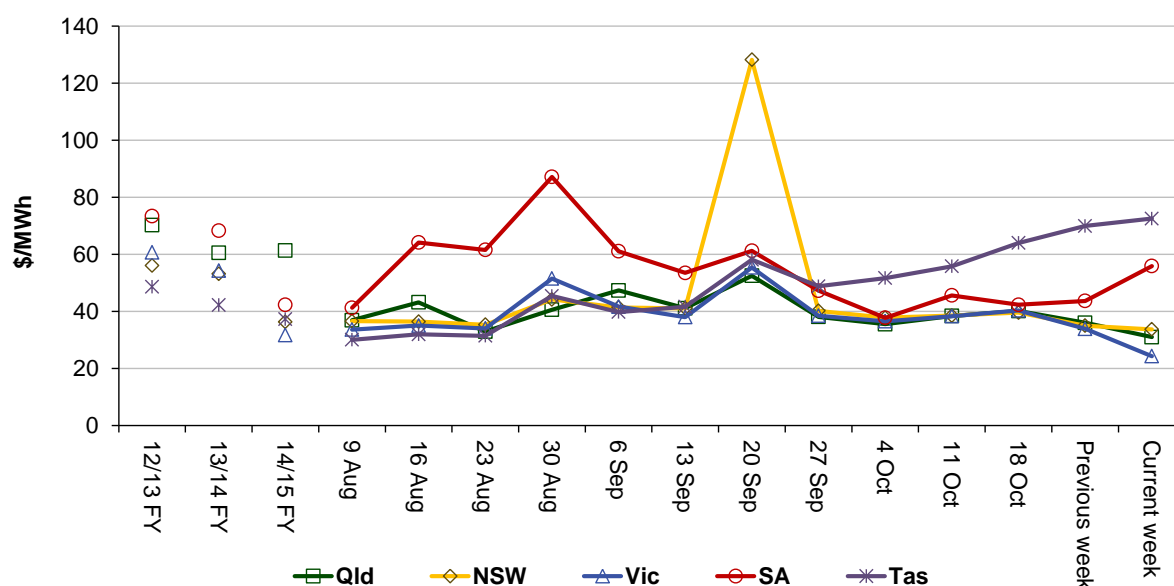


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

**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	31	34	24	56	72
14-15 financial YTD	30	38	35	43	36
15-16 financial YTD	43	44	38	63	44

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 245 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**

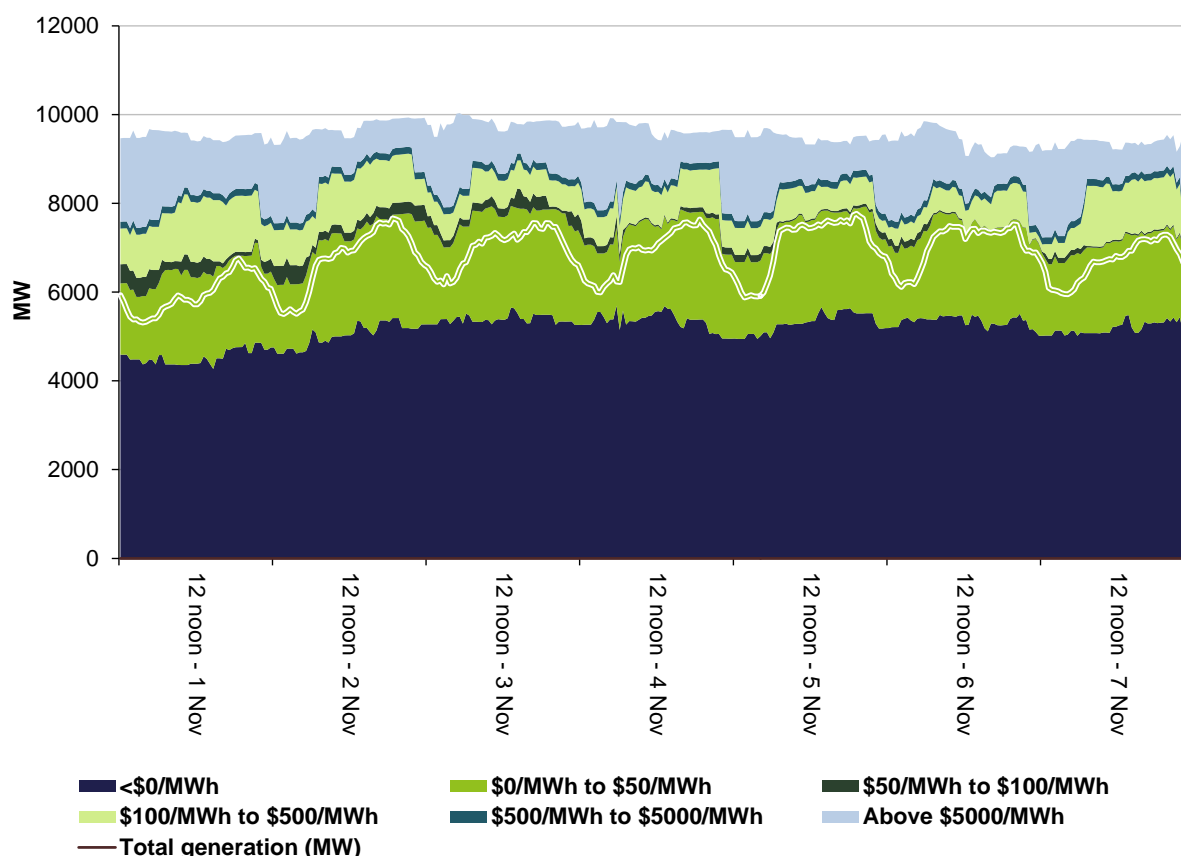
	Availability	Demand	Network	Combination
% of total above forecast	2	15	1	0
% of total below forecast	75	6	0	0

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

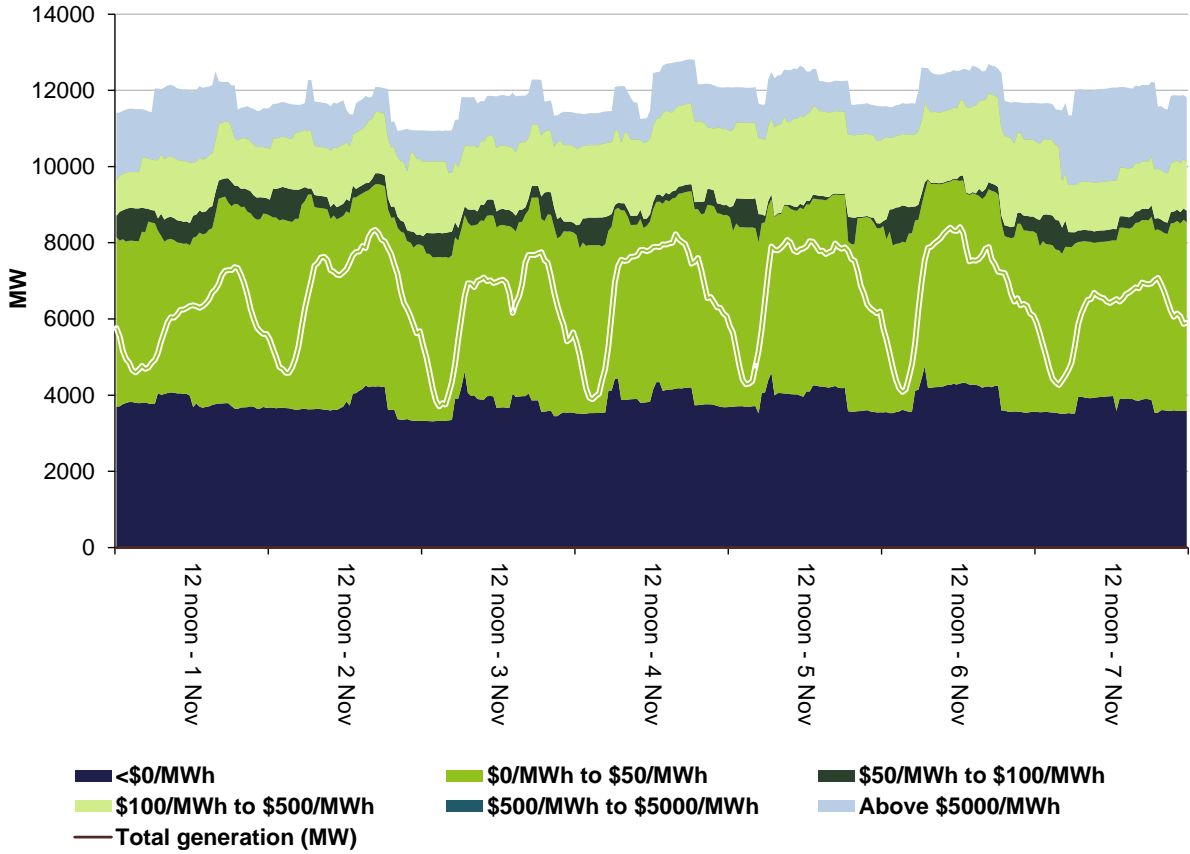
## Generation and bidding patterns

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.

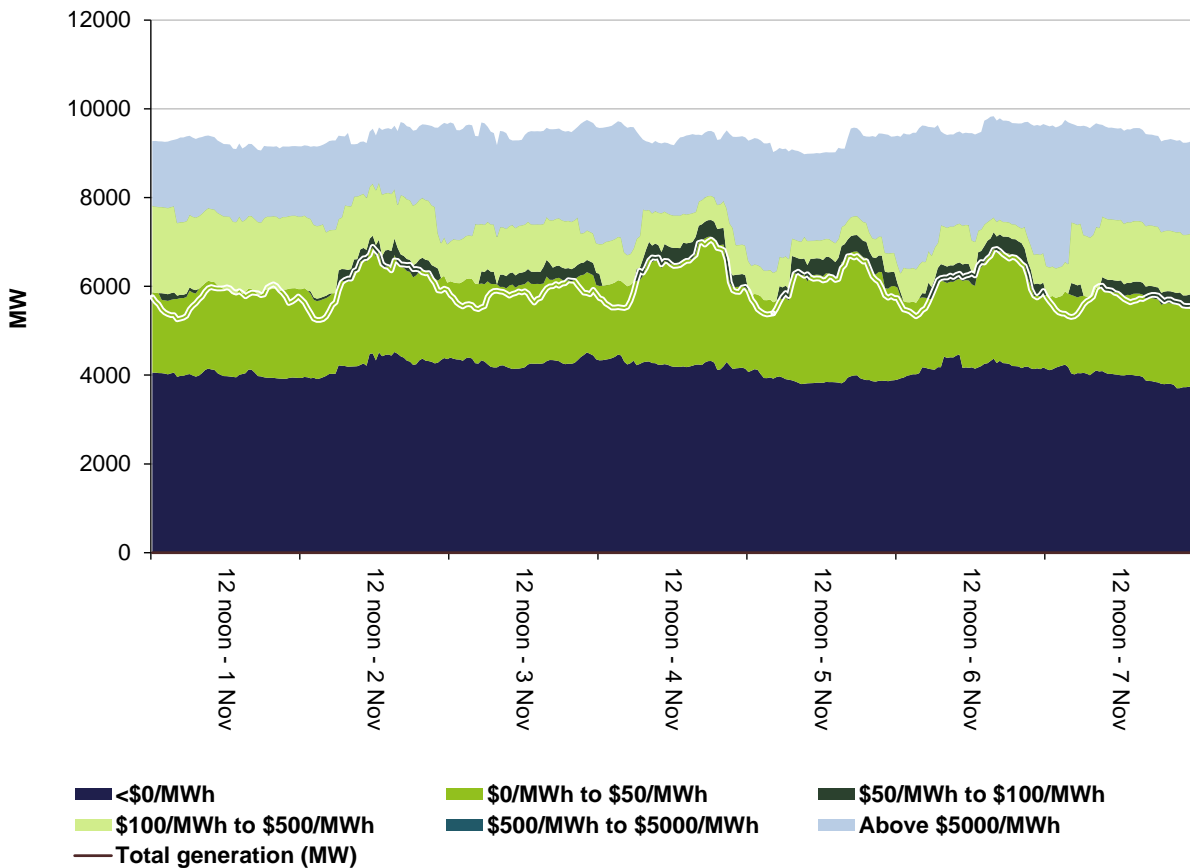
**Figure 3: Queensland generation and bidding patterns**



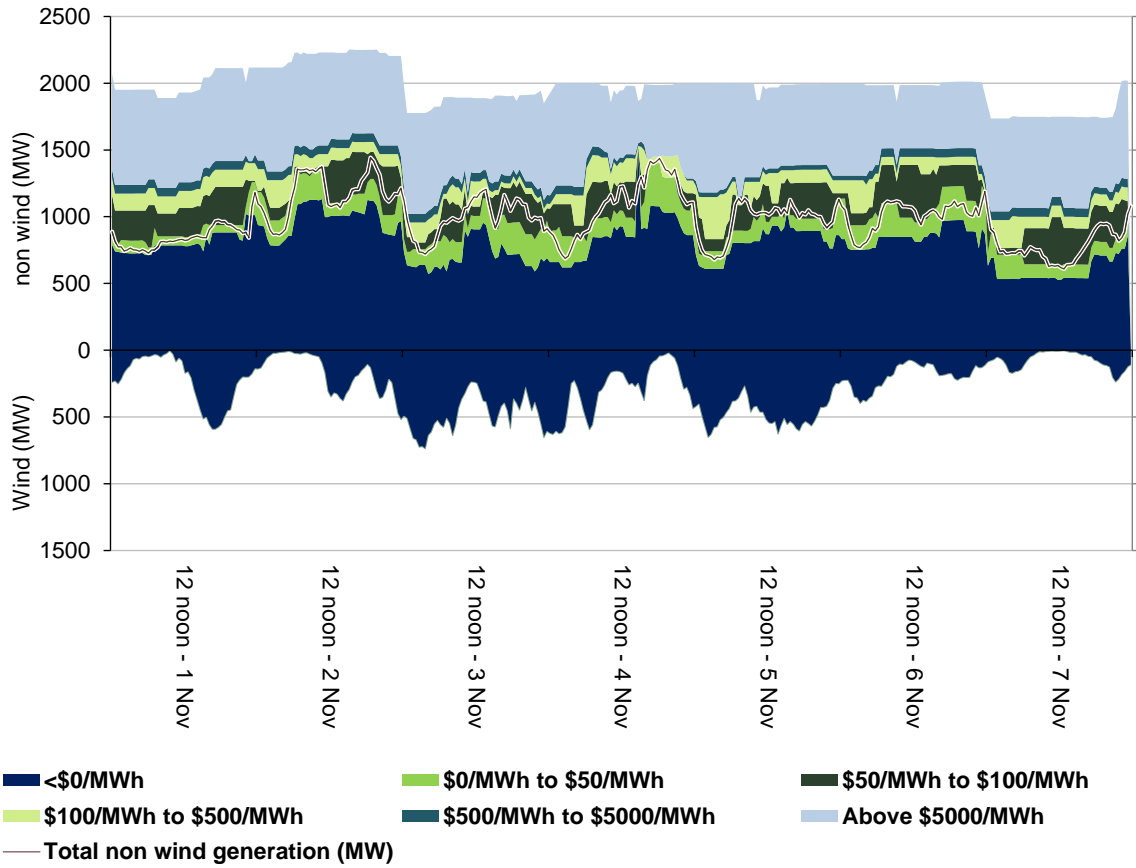
**Figure 4: New South Wales generation and bidding patterns**



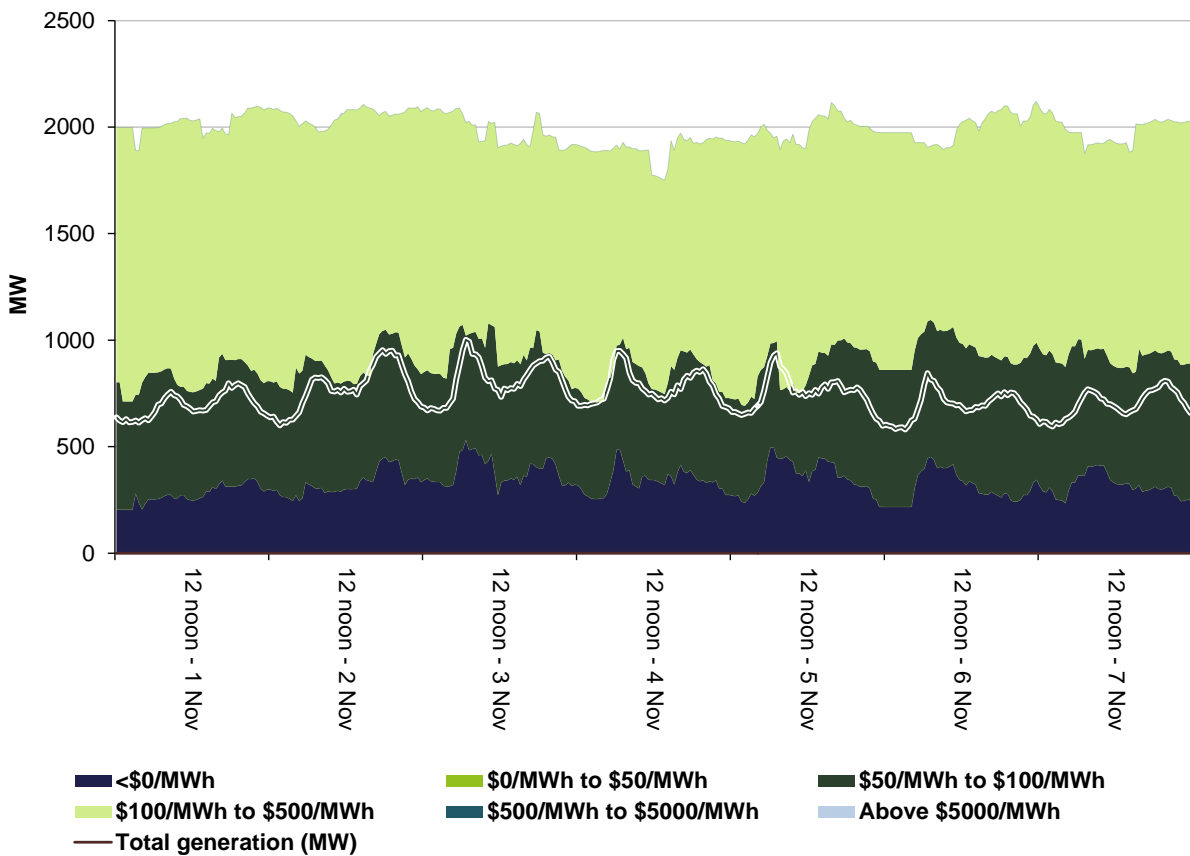
**Figure 5: Victoria generation and bidding patterns**



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



**Figure 7: Tasmania generation and bidding patterns**



The bidding pattern of Hydro Tasmania has changed over recent weeks with less capacity being offered at lower prices than has been the case in the past. This has driven the increase in spot price over the last couple of weeks.

## 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.

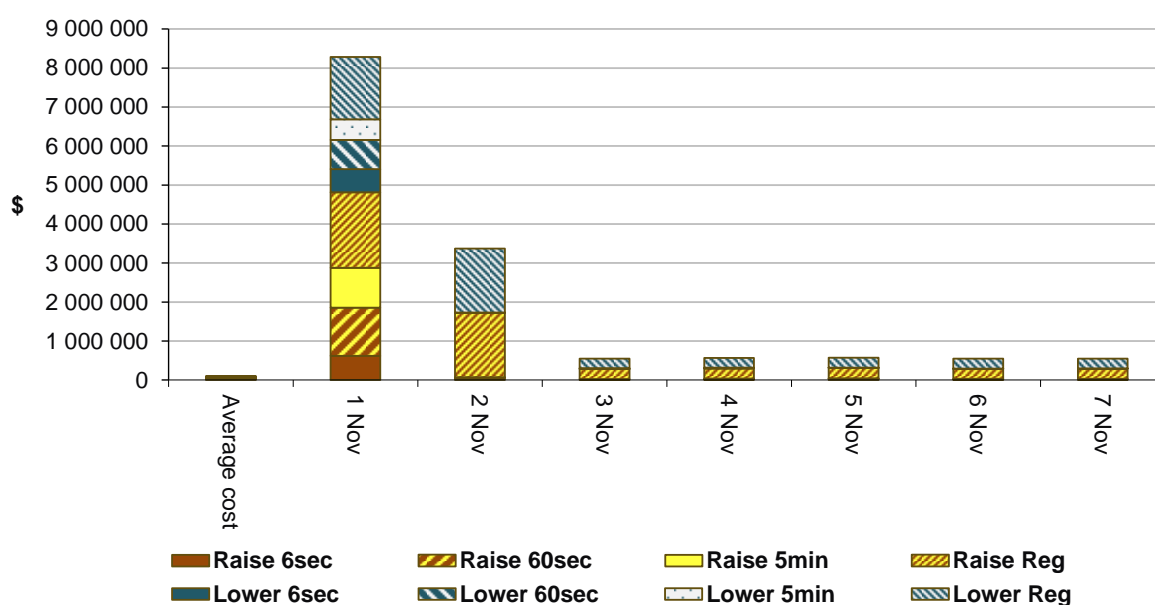
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$14 239 500 or around 14 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$179 500 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 1 November the price for all local FCAS in South Australia reached the price cap for at least six dispatch intervals. A constraint managing an outage for the Heywood interconnector

upgrade saw one transformer out meaning there was only one left. The remaining transformer unexpectedly tripped and, consequently, all of the FCAS for South Australia had to be sourced locally. These prices will be the subject of \$5000 report as required by the National Electricity Rules.

For the majority of the week, the continued local raise and lower regulation services requirements for South Australia resulted in prices for these services at around \$300/MW. There were a few occasions where prices increased to just below \$5000/MW in both regulation services as was forecast.

## 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 was one occasion where the spot price in Queensland was below -\$100/MWh.

#### Wednesday, 4 November

**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>6 am</b>	-164.75	20.88	26.02	5469	5432	5553	9832	9887	10 022

Demand and available capacity were close to forecast four hours ahead.

At 5.52 am CS Energy rebid 440 MW of capacity at Gladstone from the price cap to the price floor. The reason given was “0536A dispatch price lower than 5min forecast-SL”. This resulted in the price dropping from -\$0.05/MWh at 5.50 pm to the price floor at 5.55 pm. The dispatch price increased to \$12/MWh at 6 pm when capacity was rebid to higher prices and there was a 143 MW increase in demand.

### South Australia

There were four occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$56/MWh and above \$250/MWh.

#### Sunday, 1 November

**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
<b>10 pm</b>	388.33	26.13	32.81	1290	1256	1249	2313	2354	2296
<b>10.30 pm</b>	1820.80	22.06	27.46	1113	1224	1219	2231	2334	2267

Demand and available capacity were close to forecast four hours ahead.

One Heywood transformer was out of service for a planned outage as part of the upgrade to the Heywood interconnector. At around 10 pm the remaining Heywood transformer tripped resulting in the loss of the Heywood interconnector (Electranet are still investigating the cause). It was importing at around 210 MW before the trip. This resulted in all FCAS having to be locally sourced in South Australia and under frequency load shedding in South Australia with around 160 MW of load shed. The interaction of the Energy and FCAS markets saw the dispatch price for energy reach \$2174/MWh at 10 pm. FCAS prices reached the price cap at the same and events will be detailed in a \$5000 FCAS report the AER is obliged to write.

## Tuesday, 3 November

**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>10 am</b>	2261.59	25.37	45.99	1238	1361	1407	2259	2446	2430

Demand and available capacity were lower than forecast four hours ahead. Murraylink was on a planned outage between 8.25 am and 3 pm. Heywood was being limited to 50 MW into South Australia by a constraint invoked by AEMO to manage an outage of one of the Heywood transformers as part of the Heywood interconnector upgrade.

There was little capacity available within five minutes that was priced between \$65/MWh and \$13 000/MWh. At 10 am there was a 53 MW increase in demand and with low-priced generation ramp up limited the price reached \$13 276/MWh.

## Wednesday, 4 November

**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
<b>3 pm</b>	1991.58	60.85	64.99	1499	1449	1500	2170	2069	2114

Demand and available capacity were both slightly higher than forecast four hours ahead. Flows on the Heywood interconnector were still limited to 50 MW into South Australia. Murraylink was being limited by a constraint managing the unplanned outage of the North West Bend 132kV circuit breakers.

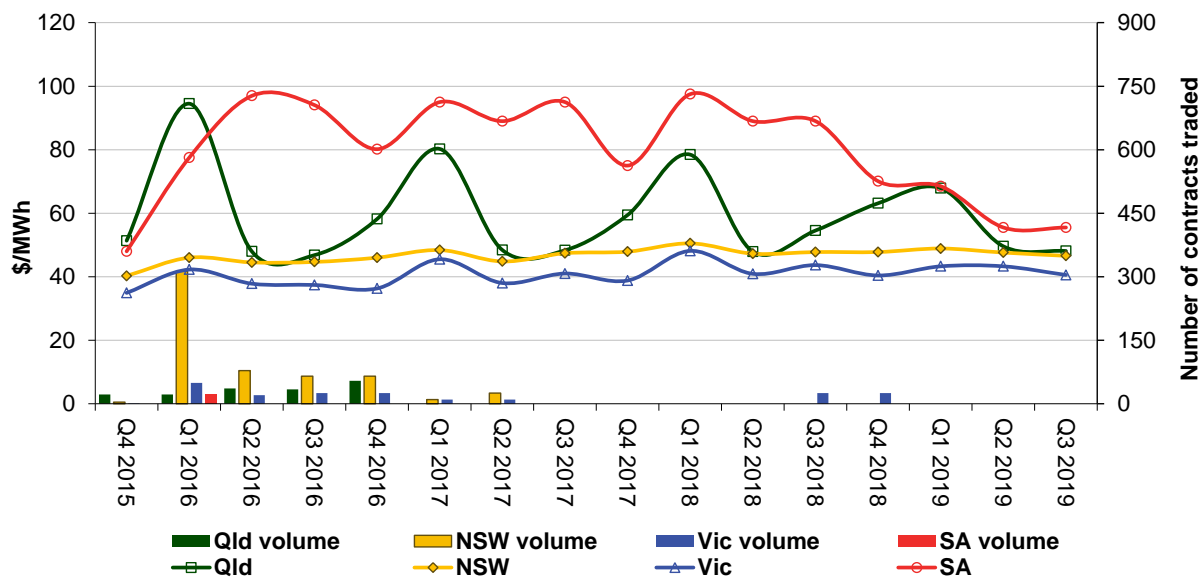
Murraylink was importing into South Australia at 153 MW at 2.35 pm then at 2.40 pm AEMO invoked the constraint to manage the unplanned outage and imports dropped to 56 MW. With low-priced capacity ramp up limited or trapped in FCAS the dispatch price rose from \$65/MWh at 2.35 pm to \$13 331/MWh at 2.40 pm.



## 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. The price of contracts offered in South Australia for the majority of future quarters appears to have stabilised or fallen slightly this week compared to the previous week. Prices in other regions have also fallen slightly.

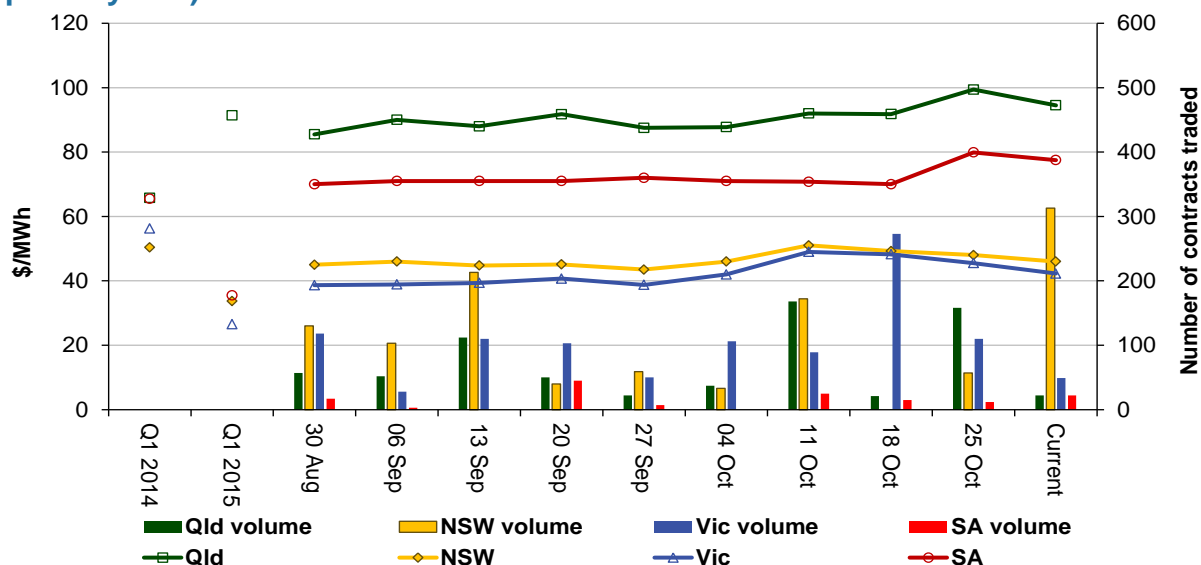
**Figure 9: Quarterly base future prices Q4 2015 – Q3 2019**



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. All Q1 2016 contracts fell slightly this week after an increase in Queensland and South Australia last week.

**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.

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)**

