Electricity Report

AUSTRALIAN ENERGY REGULATOR

26 March – 1 April 2017

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 26 March – 1 April 2017.

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

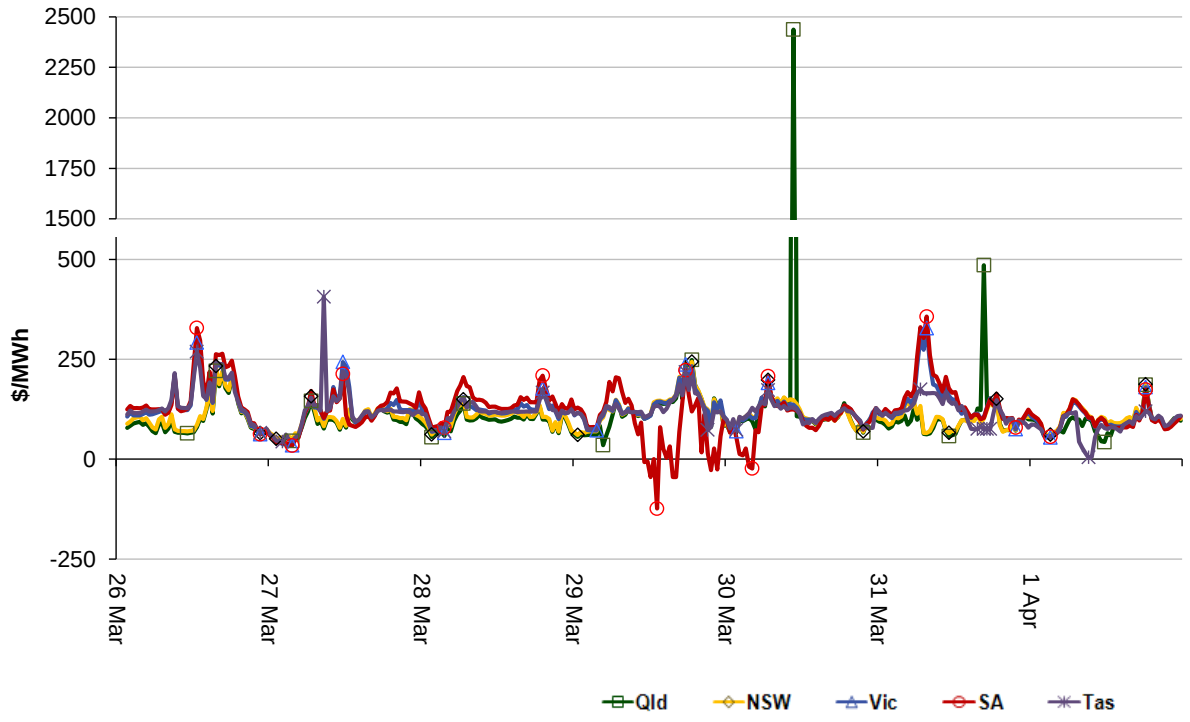


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

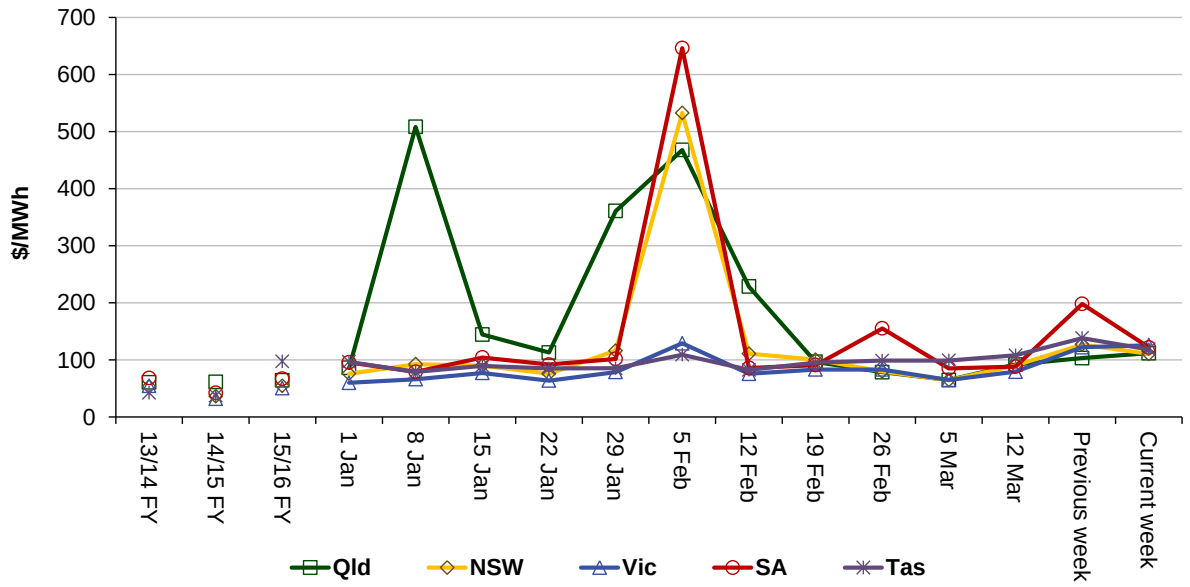


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	112	110	126	122	118
15-16 financial YTD	60	46	44	61	92
16-17 financial YTD	107	86	57	125	63

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 263 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2016 of 273 counts and the average in 2015 of 133. 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	3	19	0	1
% of total below forecast	49	26	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

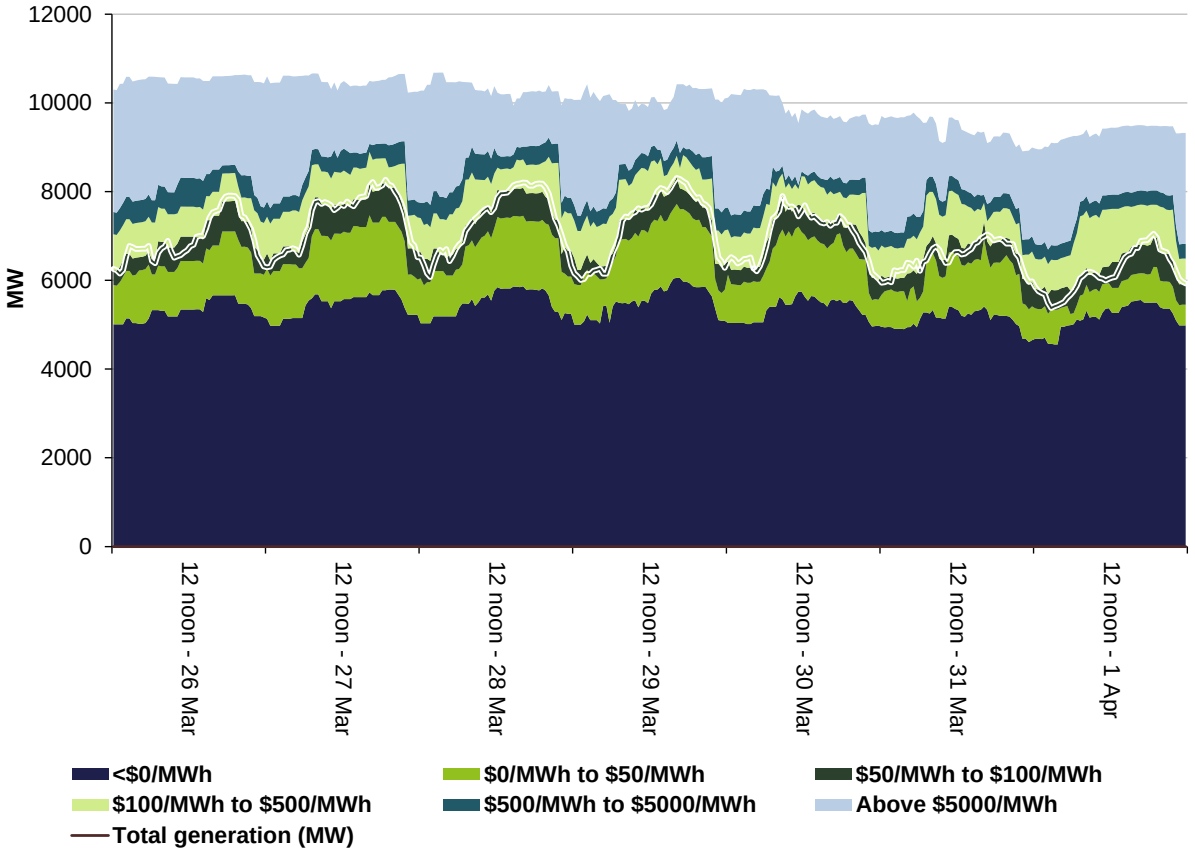


Figure 4: New South Wales generation and bidding patterns

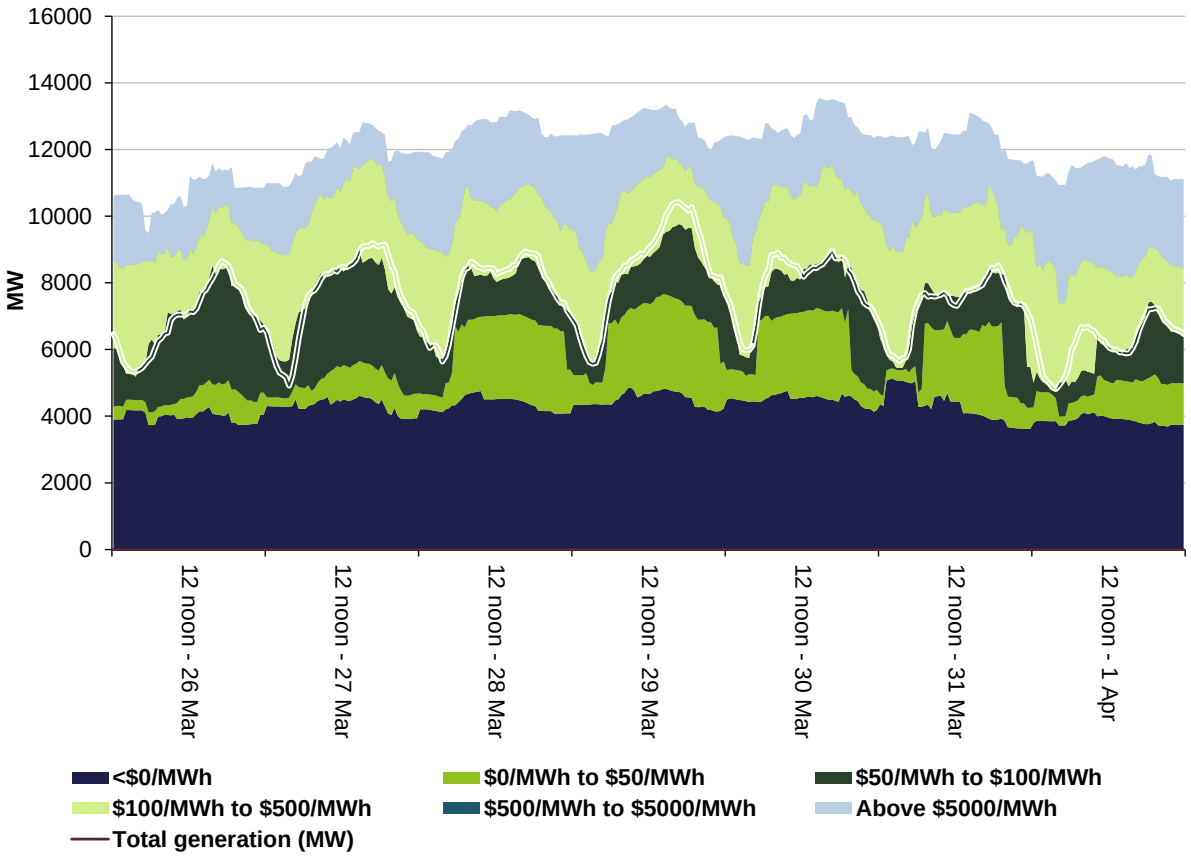


Figure 5: Victoria generation and bidding patterns

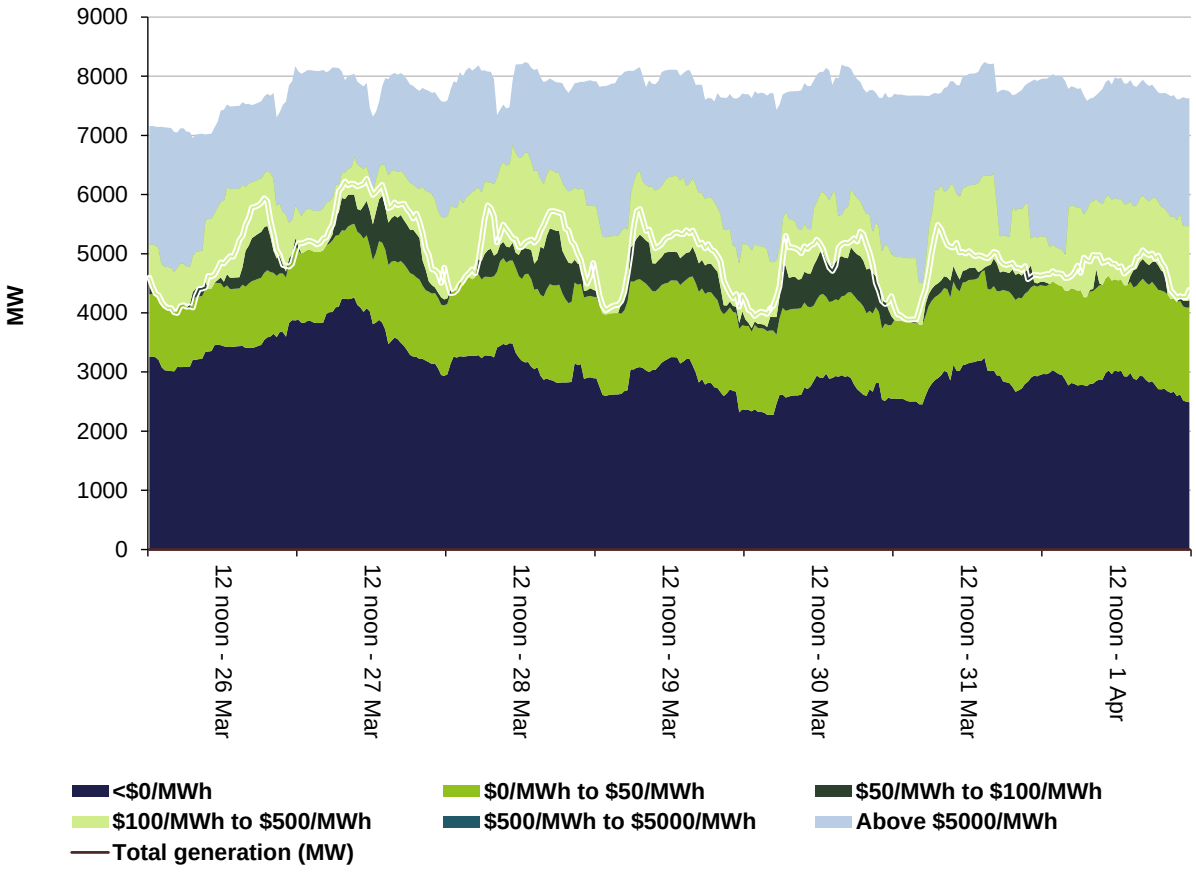


Figure 6: South Australia generation and bidding patterns

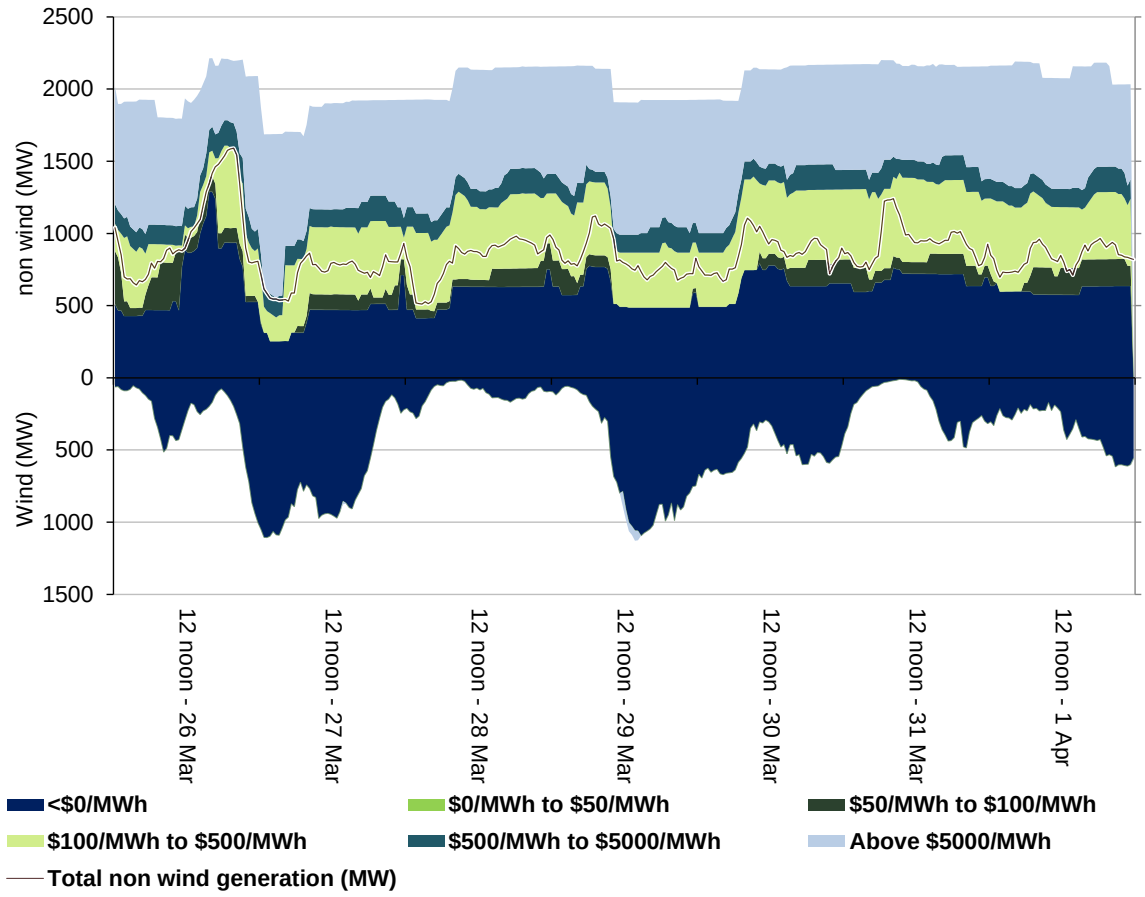
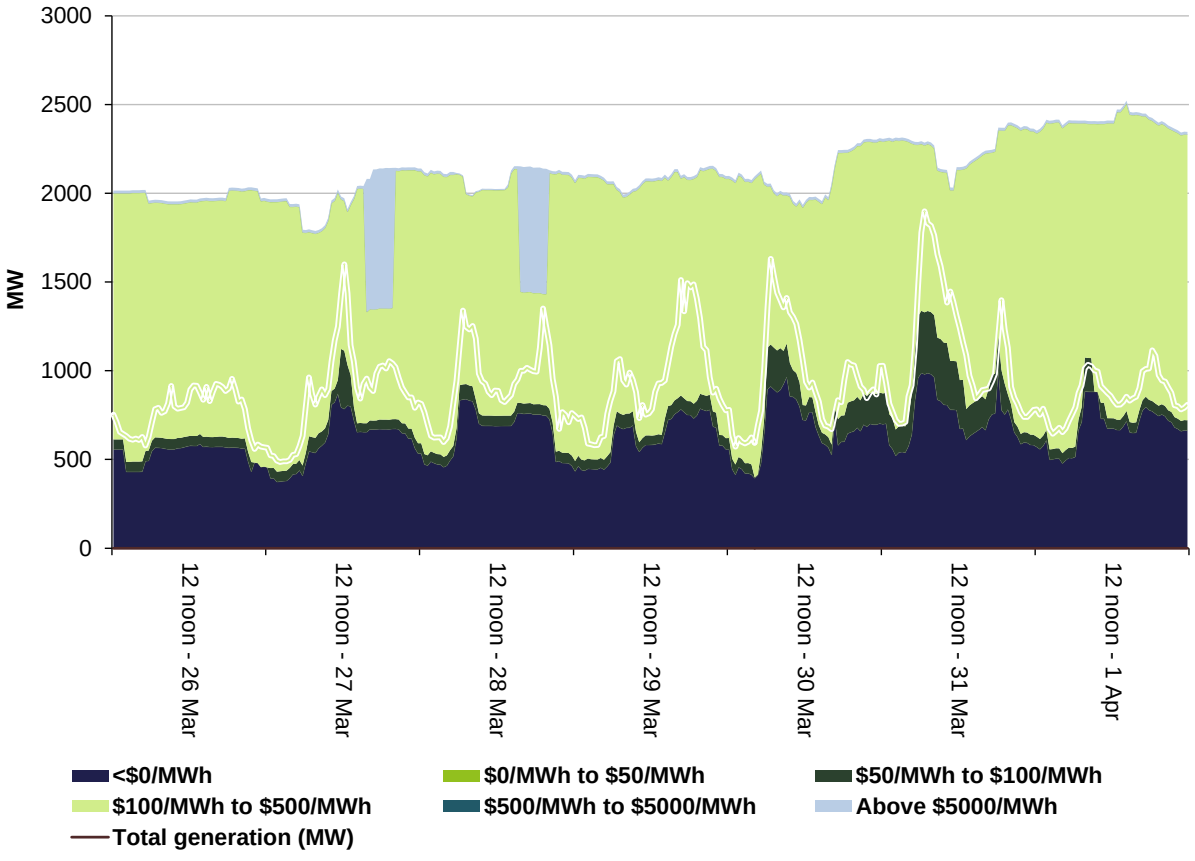


Figure 7: Tasmania generation and bidding patterns



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 five minutes (raise and lower 5 minute) at which time the five minute dispatch process will take effect.

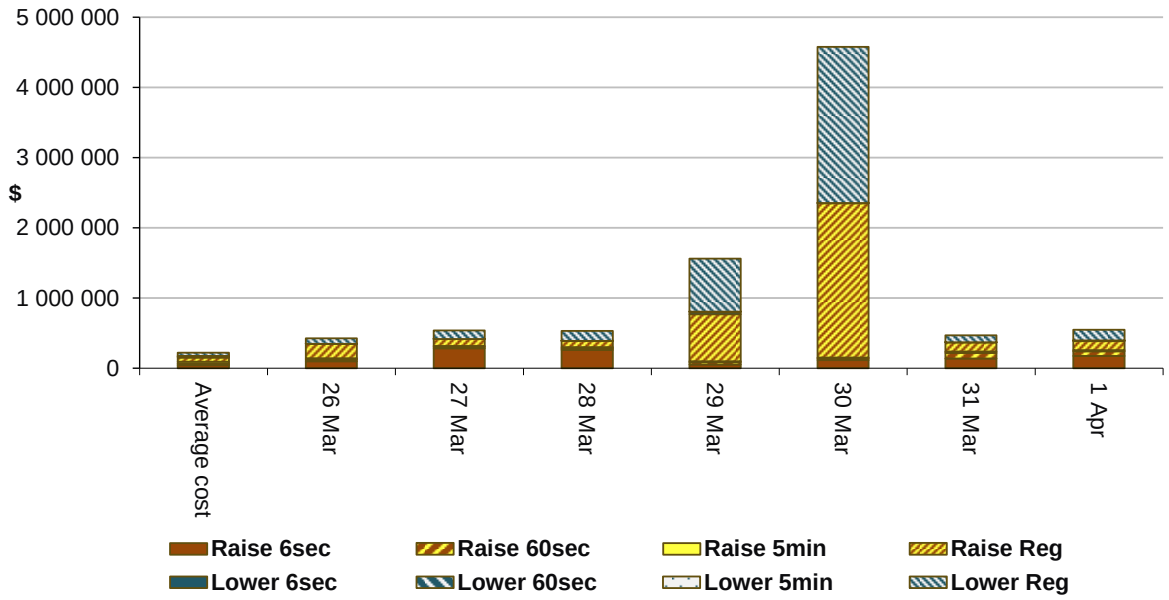
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a "causer pays" basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $7 628 000 or around two per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $1 023 500 or around five 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



The high FCAS costs for 29 and 30 March are the result of a planned outage on the Heywood 2 500 kV busbar in Victoria. The outage put South Australia on a single contingency. In response to the outage AEMO invoked the 35 MW local regulation services requirement in South Australia. Prices above $5000/MW occurred on 30 March and in accordance with the Electricity Rules, the AER has issued a separate report into the circumstances that led to these high prices.

Detailed market analysis of significant price events

Queensland

There were two occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $112/MWh and above $250/MWh.

Thursday, 30 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
11 am	2437.19	249.00	198.63	7183	7441	7222	9802	10 128	10 368

Conditions at the time saw demand around 260 MW lower than forecast and availability around 330 MW lower than forecast four hours ahead.

While demand was lower than forecast across the morning, an increase of 231 MW for the 11 am dispatch interval saw the price increase from $144/MWh to $13 900/MWh. The spike in demand resulted in a number of cheaper priced units being ramped up at their limits and unable to set price, and as a result generation priced near the cap was required and set price.

Friday, 31 March

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
5 pm	485.76	104.76	198.63	6789	6856	7534	9212	9724	9636

Conditions at the time saw demand around 70 MW lower than forecast and availability around 510 MW lower than forecast four hours ahead.

From 4.35 pm to 4.45 pm around 500 MW of capacity priced less than $40/MWh was removed from the market at the Millmerran power station (unit tripped), Callide B power station (mill limit) and Gladstone power station (revised return to service).

At 4.46 pm, effective from 4.55 pm, CS Energy rebid 210 MW at its Wivenhoe power station from $310/MWh to $1410/MWh with the reason given ‘1646P TECHNICAL ISSUES-AVOID PARTIAL TARGET-SL’. The dispatch price then increased to $1406/MWh and resulted in the higher than forecast price.

South Australia

There was one occasion where the spot price in South Australia was below -$100/MWh.

Wednesday, 29 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
1.30 pm	-123.49	-45.53	-45.53	1294	1019	1111	2996	2836	2915

Conditions at the time demand 275 MW higher than forecast four hours ahead. Availability was 160 MW higher than forecast four hours ahead, due to higher than forecast semi-scheduled wind generation.

From 1.05 pm to 1.10 pm the dispatch price was -$45/MWh, as forecast. At 1.15 pm the dispatch price decreased to the floor due to a 43 MW decrease in demand. For the remainder of the trading interval the price increased to around $120/MWh due to demand increasing by around 200 MW.

Tasmania

There was one occasion where the spot price in Tasmania was greater than three times the Tasmania weekly average price of $118/MWh and above $250/MWh.

Monday, 27 March

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
9 am	406.19	144.23	123.01	939	1031	1065	1803	1816	1924

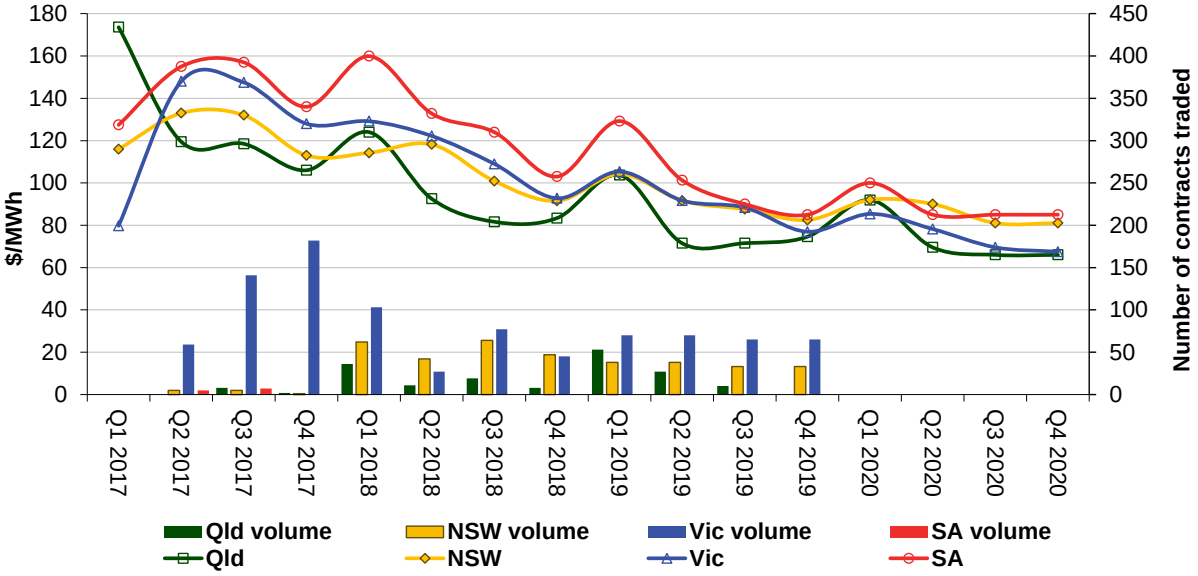
Conditions at the time saw demand around 90 MW lower than forecast while availability was close to that forecast four hours ahead.

At 8.45 am imports from Victoria across Basslink reduced by around 60 MW due to a network system control protection scheme constraint binding. The price then increased to $1791/MWh due to the co-optimisation of Energy and FCAS markets, which caused the higher than forecast price.

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.

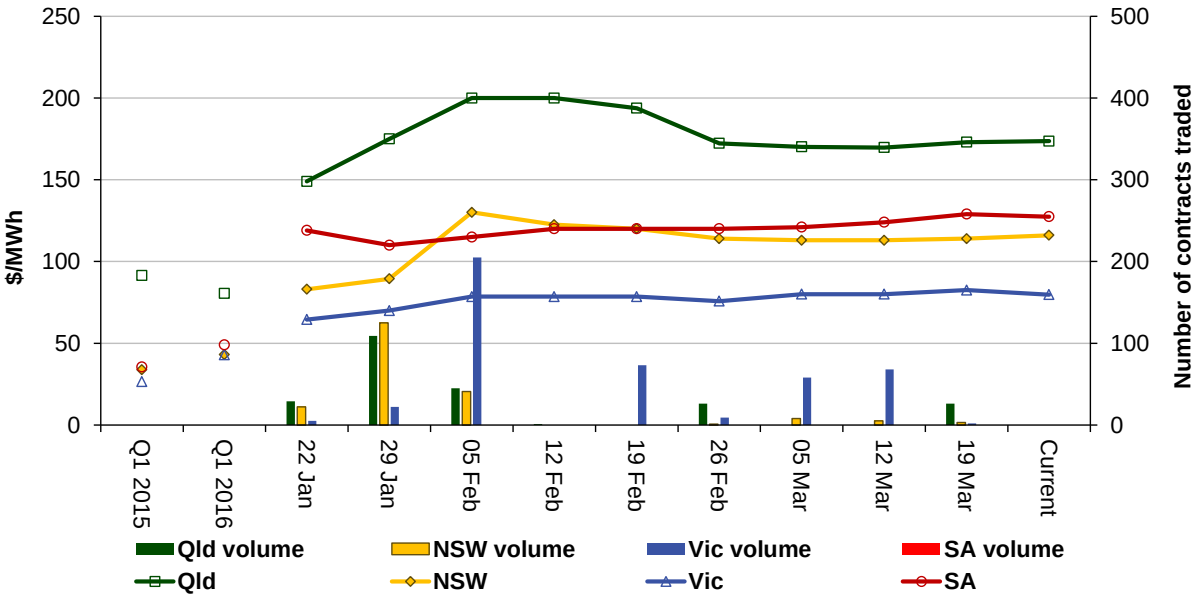
Figure 9: Quarterly base future prices Q1 2017 – Q4 2020



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.

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



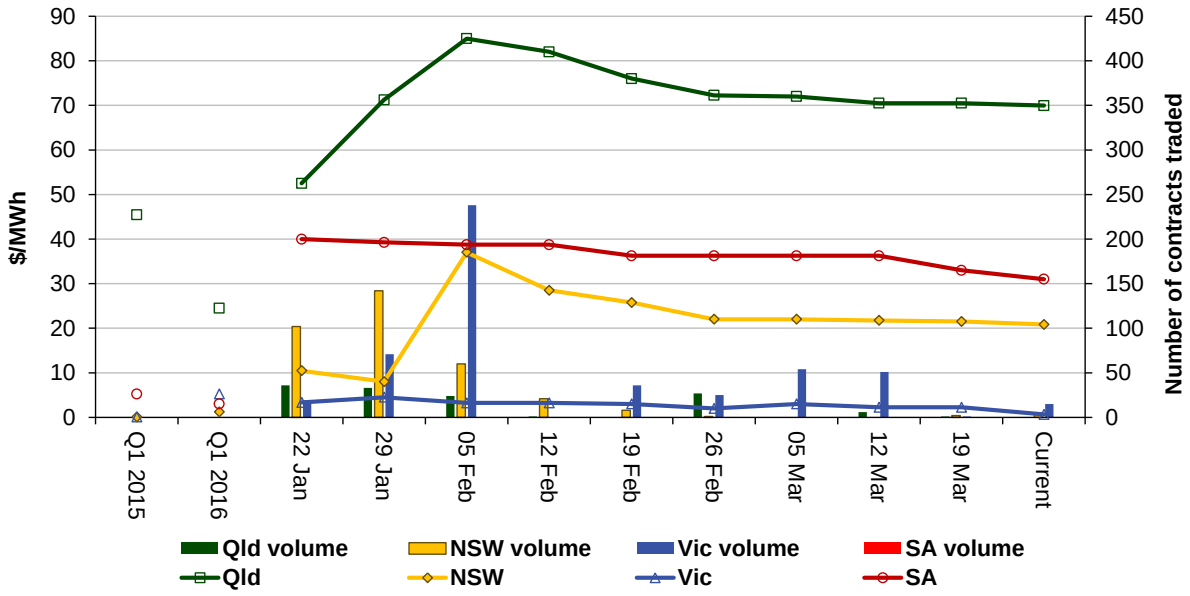
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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