Electricity Report

AUSTRALIAN ENERGY REGULATOR

24 - 30 April 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 April 2016.

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

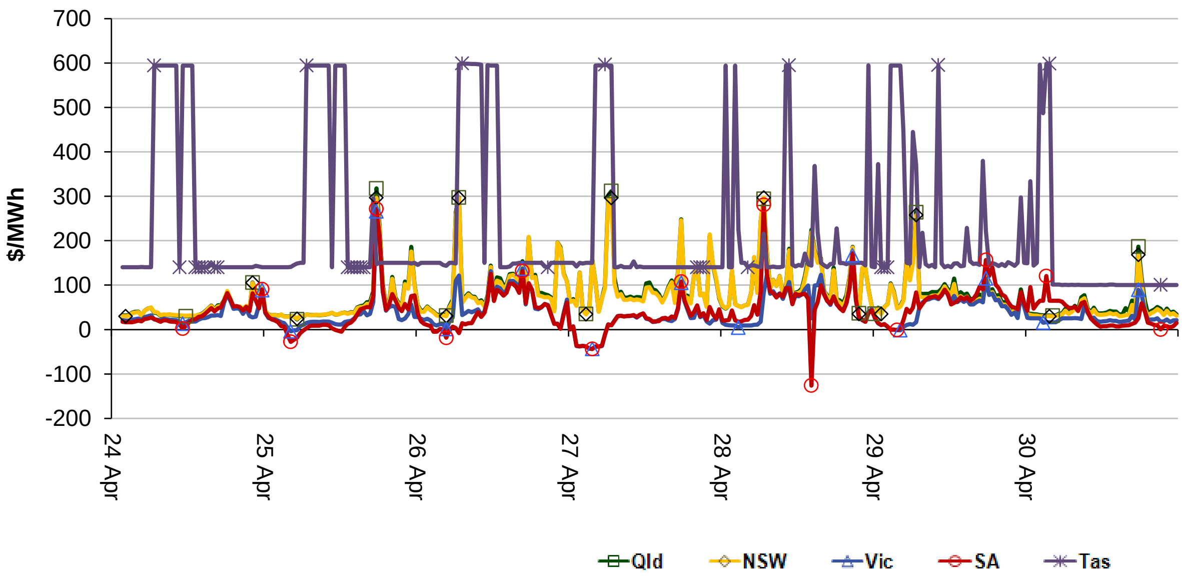


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

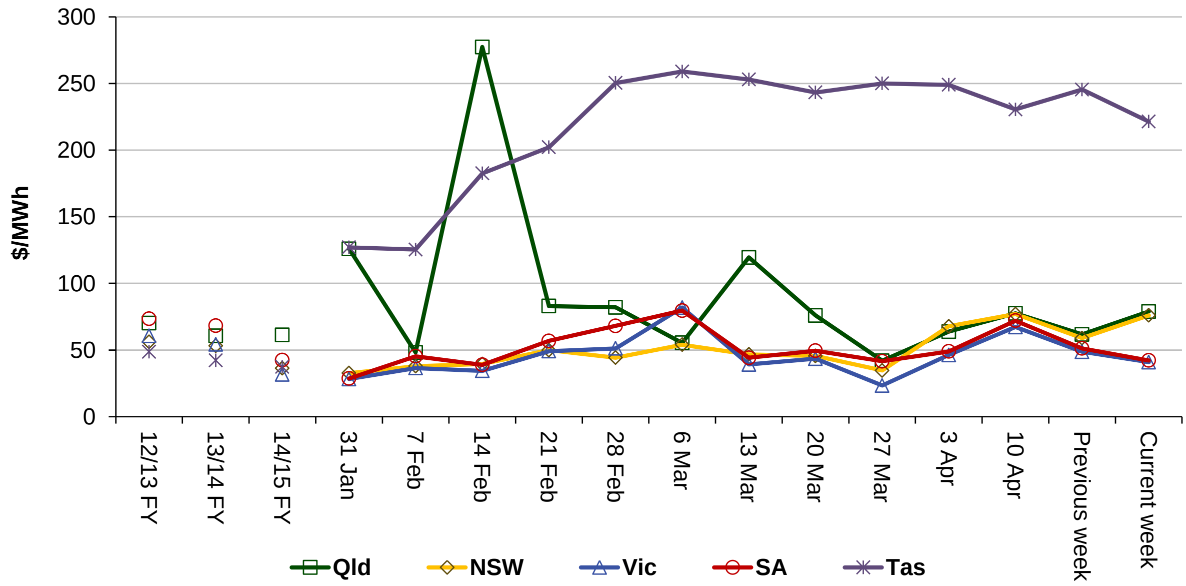


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	79	76	41	42	221
14-15 financial YTD	67	36	31	40	39
15-16 financial YTD	61	48	44	60	104

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 292 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	17	25	0	6
% of total below forecast	31	15	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

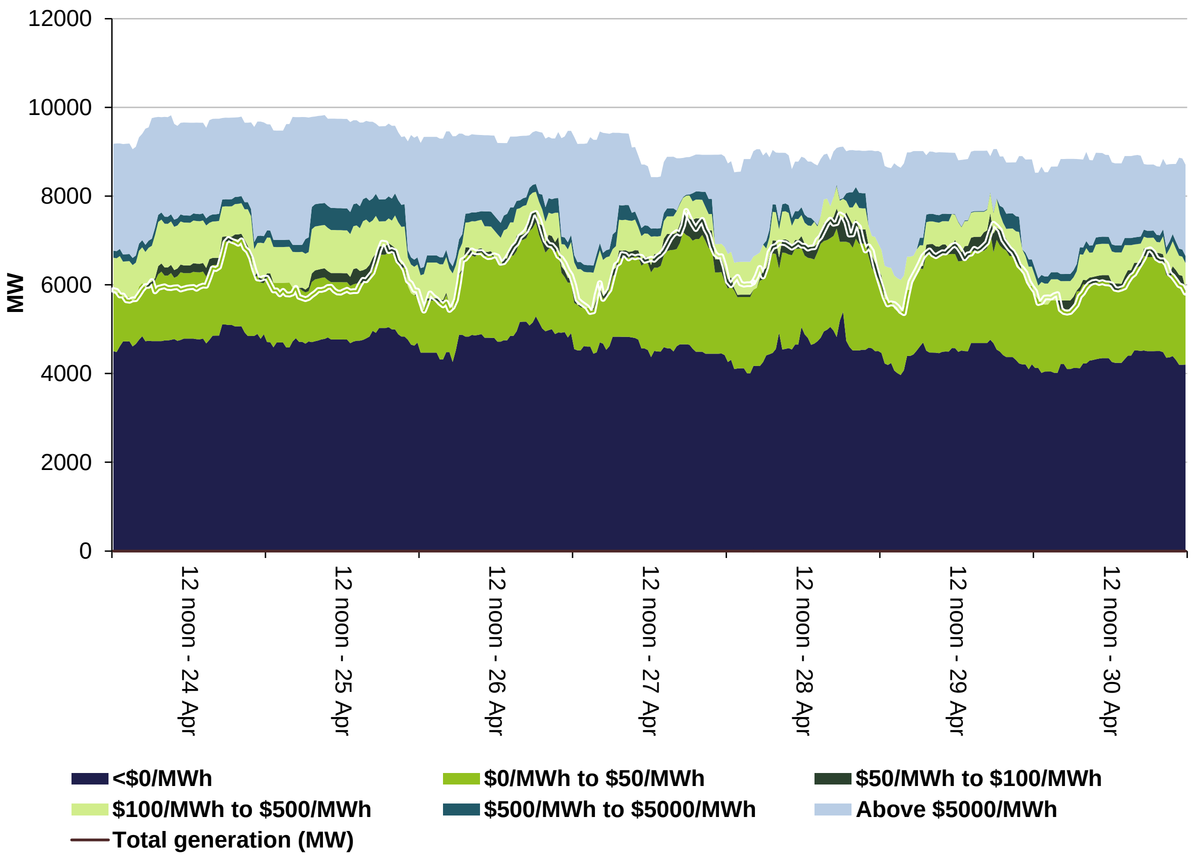


Figure 4: New South Wales generation and bidding patterns

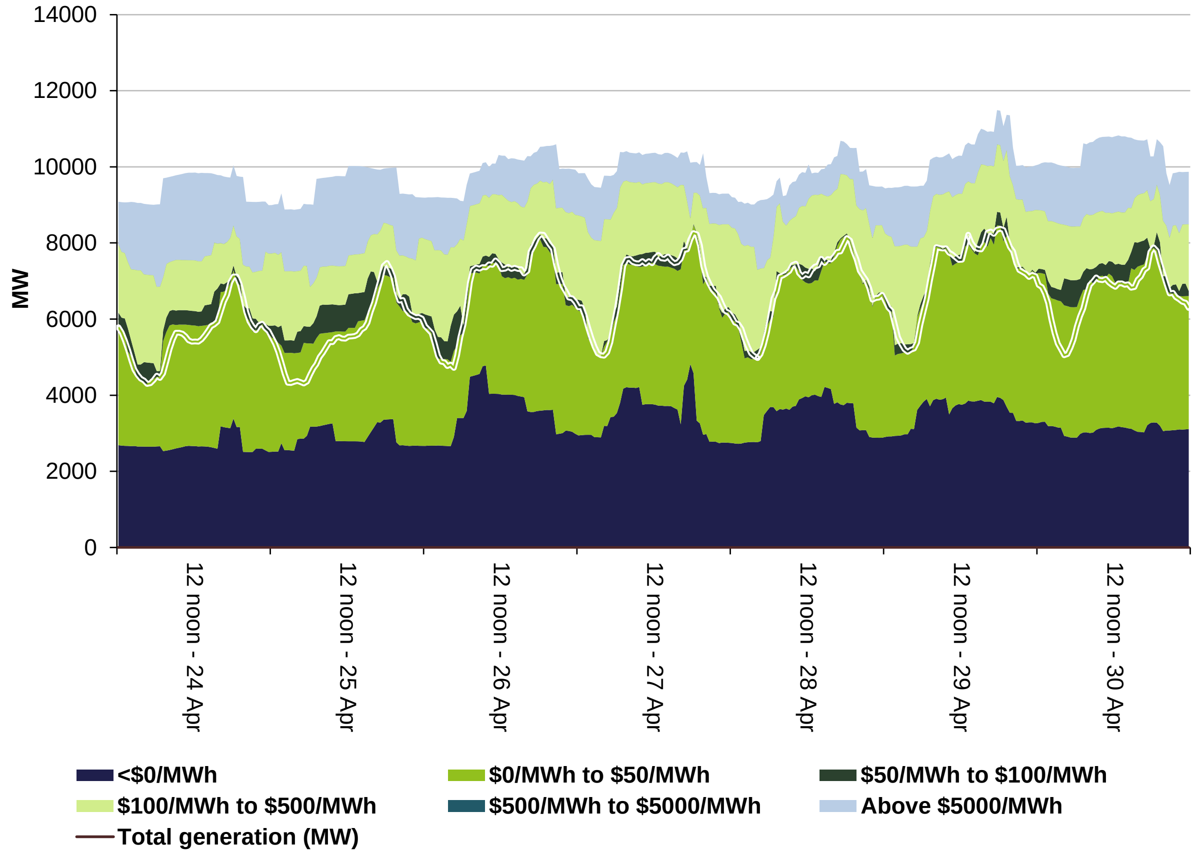


Figure 5: Victoria generation and bidding patterns

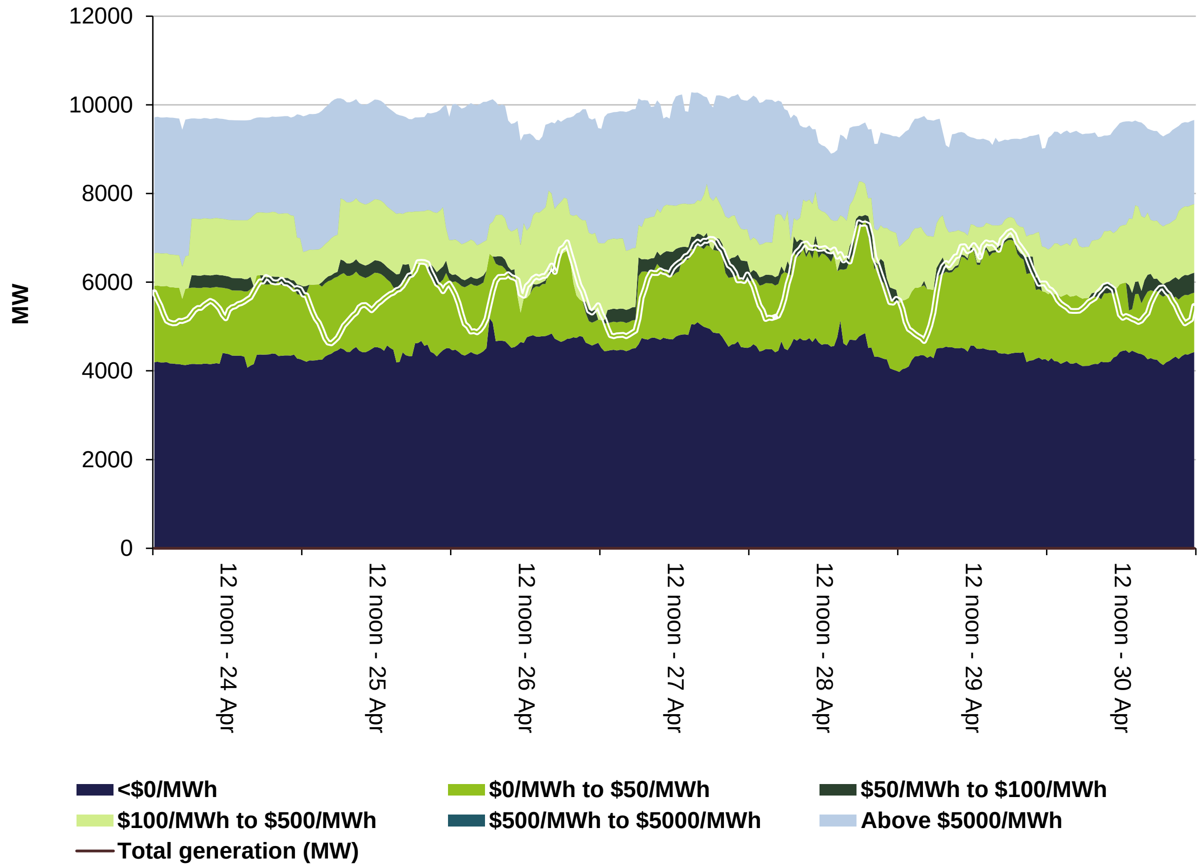
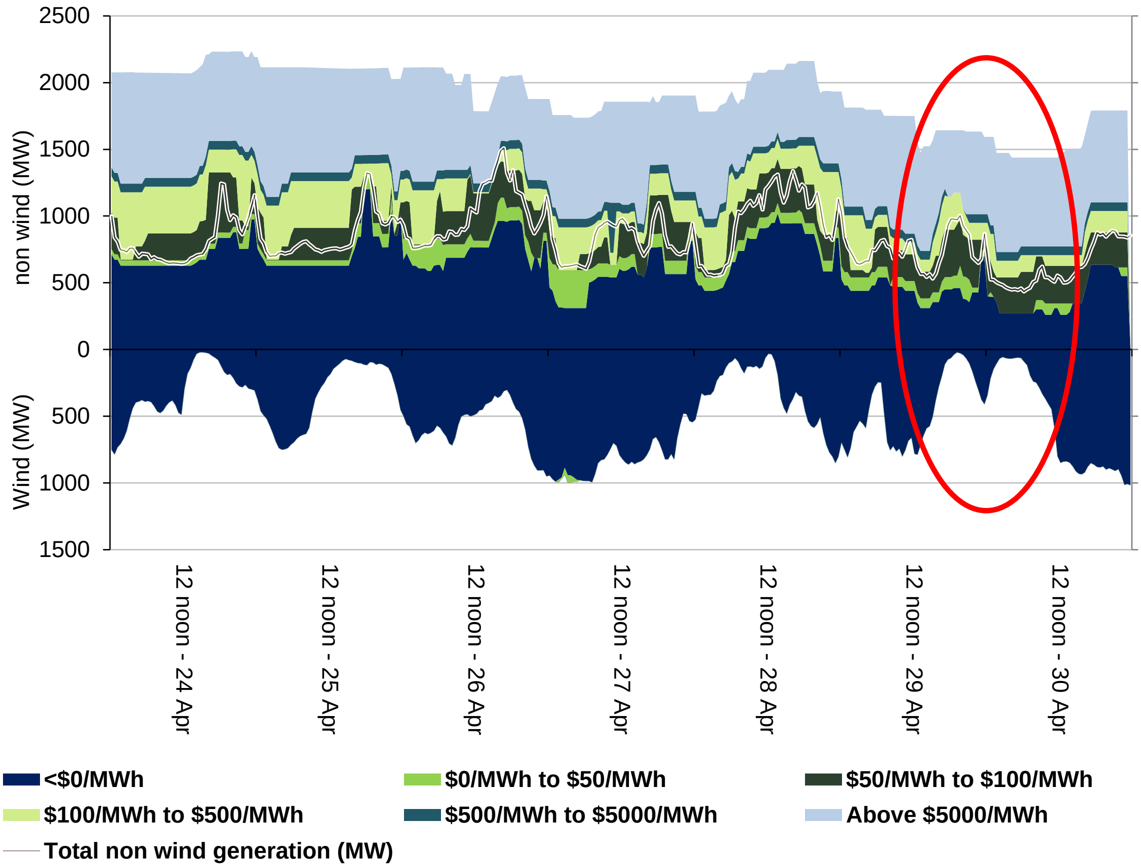
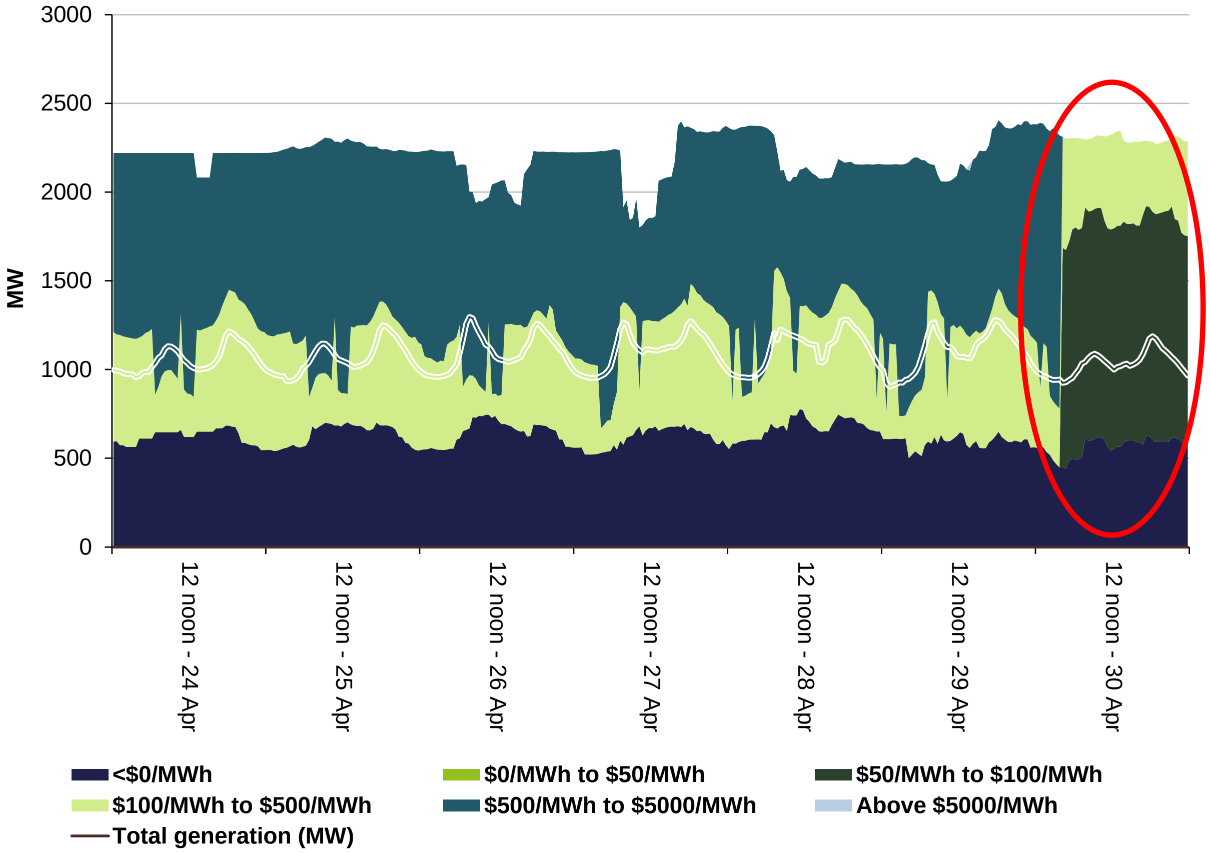


Figure 6: South Australia generation and bidding patterns



The red ellipse in Figure 5 highlights the period during the week where the spot price was less than -$100/MWh. This event is covered in detail in “Detailed market analysis of significant price events”.

Figure 7: Tasmania generation and bidding patterns



The red ellipse in Figure 7 shows that there was a change in Hydro Tasmania's bidding strategy on 30 April, where a significant amount of capacity was priced at less than $100/MWh, compared to $1000/MWh on others days during the week.

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.

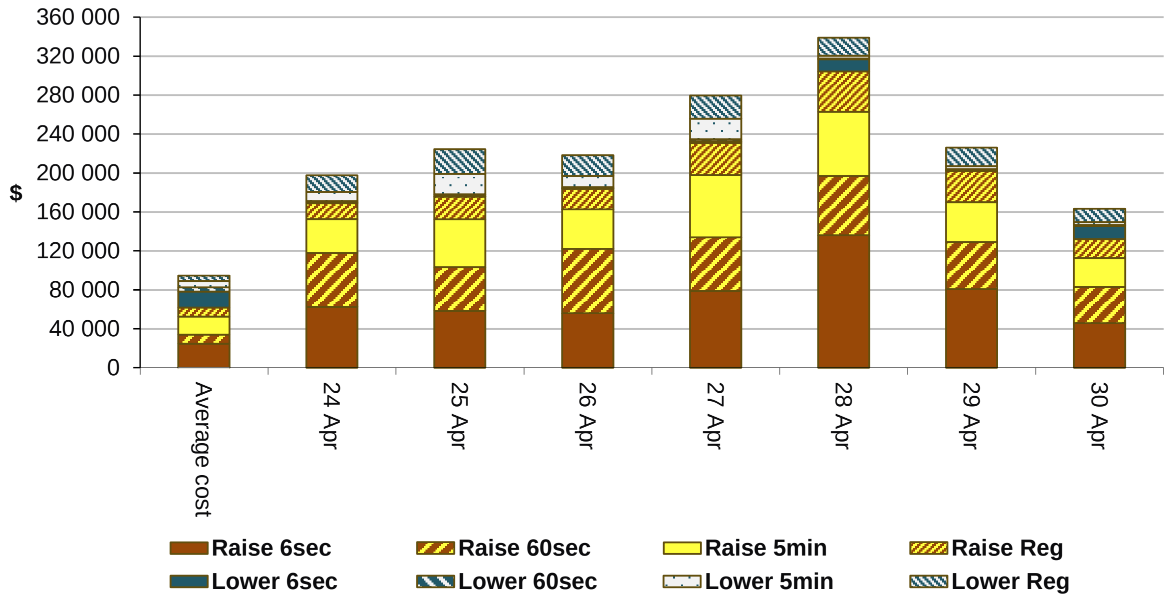
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a "causer pays" basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $1 541 500 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $106 000 or around 0.3 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.

NEM Mainland

Monday, 25 April

There was one occasion when the spot price was aligned across the mainland and the New South Wales price was greater than three times the New South Wales weekly average price of $76/MWh and above $250/MWh.

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 pm	296.47	196.03	97.59	22 737	22 613	22 482	33 675	33 742	33 810

Conditions at the time saw demand 77 MW more than forecast four hours ahead and availability 114 MW more than forecast four hours ahead. At 5.35 pm, demand in New South Wales increased by 96 MW. This resulted in the dispatch price increasing from $187/MWh at 5.30 pm to $290/MW at 5.35 pm. Demand continued to increase and the dispatch price remained between $290/MWh and $300/MWh for the remainder of the trading interval.

Queensland

There were seven occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $79/MWh and above $250/MWh. One of these occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section. The remaining six occasions prices were aligned with those in New South Wales.

Tuesday, 26 April

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 am	263.38	305.81	63.75	5908	5831	5900	9370	9409	9529
7 am	297.05	321.94	295.00	6245	6143	6171	9406	9386	9526

Conditions at the time saw demand, available capacity and price close to forecast four hours ahead.

Wednesday, 27 April

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 am	301.92	100.54	63.27	6063	5940	5861	9424	9373	9468
7 am	311.57	302.12	288.61	6376	6217	6124	9425	9330	9345

For the 6.30 am trading interval, conditions at the time saw demand 123 MW more than forecast four hours ahead and available capacity close to forecast.

From 5.55 am to 6 am, demand increased by 132 MW. This led to the dispatch price increasing from $65/MWh at 5.55 am to $295/MWh at 6 am. Demand continued to gradually increase throughout the 6.30 am trading interval and the dispatch price remained between $290/MWh and $311/MWh.

For the 7 am trading interval, the forecast price was close to forecast four hours ahead. In both trading intervals prices were aligned with those in New South Wales. There was no significant rebidding.

Thursday, 28 April

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
7 am	293.99	279.76	87.08	6401	6275	6146	9009	9036	9083

Conditions at the time saw demand, available capacity and price close to forecast four hours ahead.

Friday, 29 April

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
7 am	263.95	144.64	36	6443	6289	6210	9014	8994	8994

Conditions at the time saw demand 154 MW more than forecast four hours ahead and available capacity close to forecast four hours ahead.

Table 7: Rebids for the 7 am trading interval

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from ($/MWh)	Price to ($/MWh)	Rebid reason
6.49 am	7 am	CS Energy	Gladstone	150	<99	13 800	0648A DISPATCH PRICE HIGHER THAN 30MIN FORECAST-SL

From 6.40 am to 6.45 am, demand increased by 102 MW. As a result the dispatch price increased from $186/MWh at 6.40 am to $295/MWh at 6.45 am. The dispatch price stayed above $295/MWh for the remainder of the dispatch interval as a result of continued gradual increases in demand and the rebid by CS Energy shown above.

New South Wales

There were seven occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $76/MWh and above $250/MWh. One of these occurred when prices were generally aligned across all mainland regions and is detailed in the mainland market outcomes section. The remaining six occasions prices were aligned with those in Queensland.

Tuesday, 26 April

Table 8: 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 am	258.09	289.81	61.78	7036	7087	7029	9173	9189	9325
7 am	296.01	299.80	289.81	7581	7527	7460	9499	9277	9338

Conditions at the time saw demand available capacity and price close to forecast four hours ahead.

Wednesday, 27 April

Table 9: 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 am	292.34	97.60	61.78	7178	7154	7078	9874	9866	9855
7 am	296.18	289.81	289.81	7678	7546	7480	10 273	10 167	9856

For the 6.30 am trading interval demand and available capacity were close to forecast four hours ahead.

From 5.55 am to 6 am, demand increased by 166 MW. As a result the dispatch price increased from $62/MWh to $277/MWh. Demand continued to increase throughout the 6.30 am trading interval and the dispatch price remained between $276/MWh and $300/MWh.

For the 7 am trading interval, the forecast price was close to forecast four hours ahead.

Thursday, 28 April

Table 10: 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 am	296.87	282.81	89.44	7550	7532	7480	9256	9304	9521

Conditions at the time saw demand available capacity and price close to forecast four hours ahead.

Friday, 29 April

Table 11: 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 am	257.56	135.61	34.01	7546	7493	7452	9626	9828	9998

Conditions at the time saw demand 53 MW more than forecast four hours ahead and availability capacity 202 MW more than forecast four hours ahead. From 6.40 am to 6.45 am, demand increased by 217 MW. As a result the dispatch price increased from $181/MWh to $291/MWh. The dispatch price stayed above $290/MWh for the remainder of the dispatch interval as a result of continued gradual increases in demand.

South Australia

There were two occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $42/MWh and above $250/MWh. One of these occurred when prices were aligned across the mainland and is detailed in the mainland outcomes section. The remaining occasion is presented below. There was also one occasion where the spot price was below -$100/MWh.

Thursday, 28 April

Table 12: 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 am	280.72	133.09	77.96	1369	1368	1359	1944	2091	2125
2.30 pm	-126.12	79.99	79.99	1467	1604	1460	2464	2470	2376

For the 7 am trading interval demand was close to forecast four hours ahead and available capacity was 147 MW less than forecast four hours ahead. For the 2.30 pm trading interval demand was 137 MW less than forecast four hours ahead and available capacity was close to forecast four hours ahead.

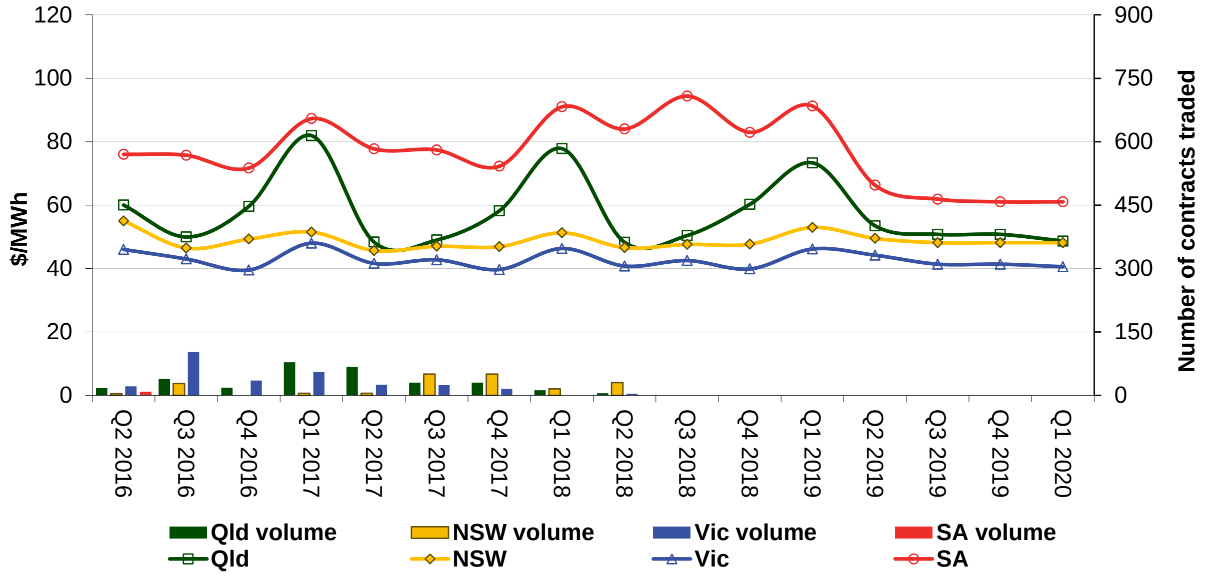
During the trading interval, a system normal constraint reduced flows to New South Wales across the Victoria to South Australia interconnector and increased flows to South Australia on the Victoria to South Australia (Heywood) interconnector to prevent the overload of a South Morang transformer.

At 2.15 pm, flows into South Australia across the Heywood interconnector increased by 405 MW. With all local generators either ramp rate down limited or trapped, the dispatch price fell from $60/MWh at 2.10 pm to -$1000/MWh at 2.15 pm. The dispatch price increased to $36/MWh in the following dispatch interval following a 49 MW increase in demand and a 280 MW reduction in flows to South Australia on the Heywood interconnector.

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. No trades were recorded for the week for base Q2 contracts probably due to the proximity of the end of the quarter.

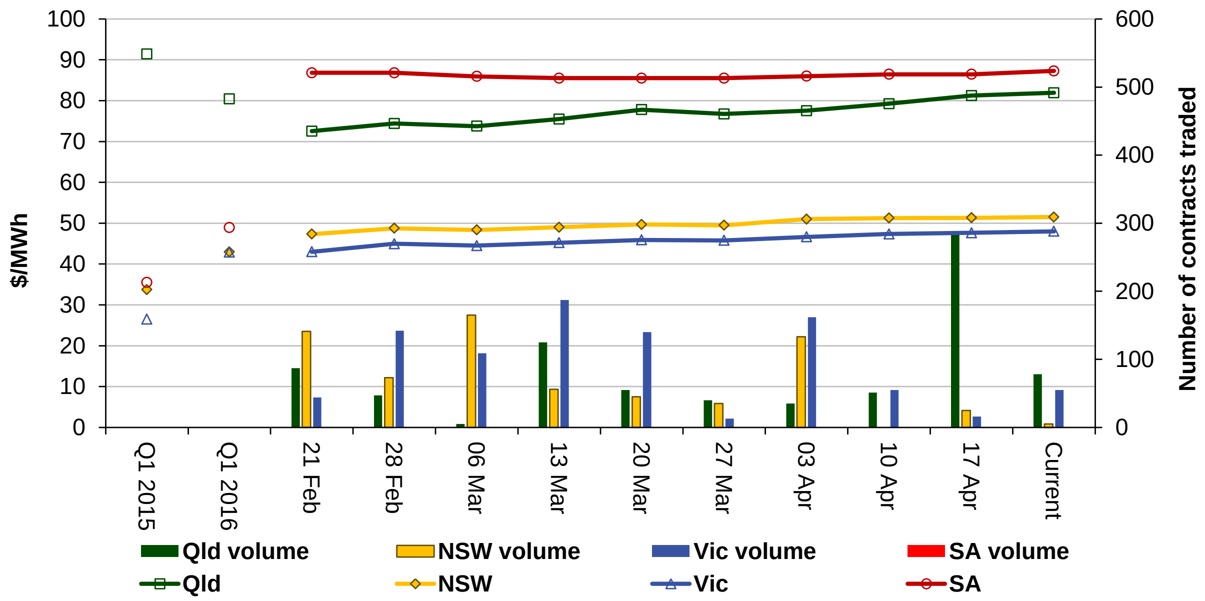
Figure 9: Quarterly base future prices Q2 2016 – Q1 2020



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)



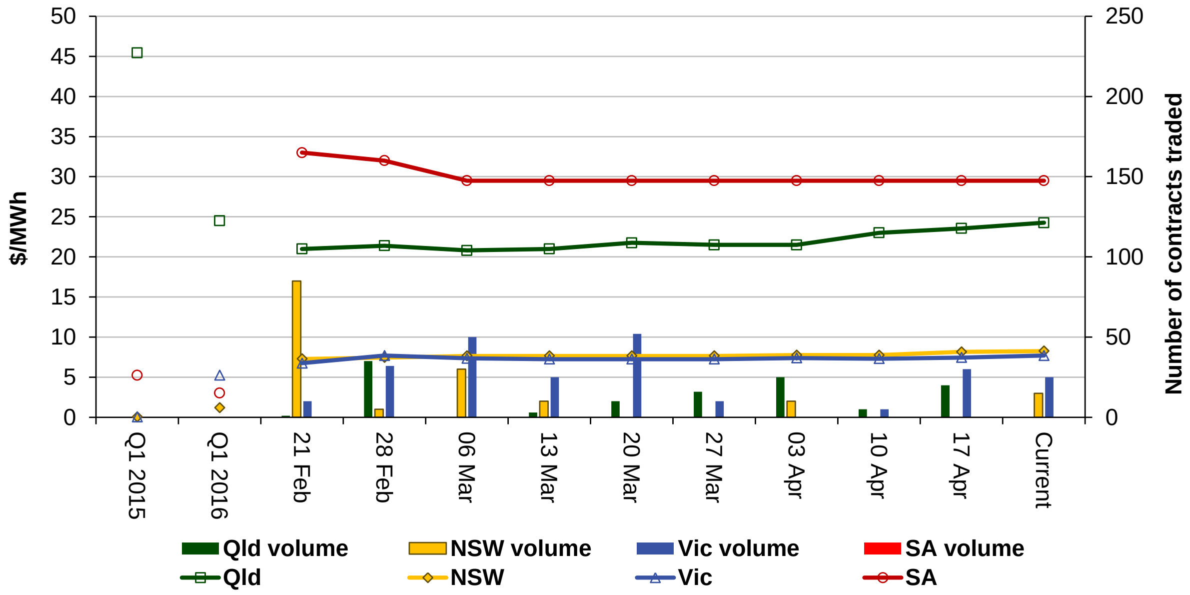
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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

Australian Energy Regulator
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