Electricity Report

AUSTRALIAN ENERGY REGULATOR

22 - 28 April 2018

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 22 - 28 April 2018.

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

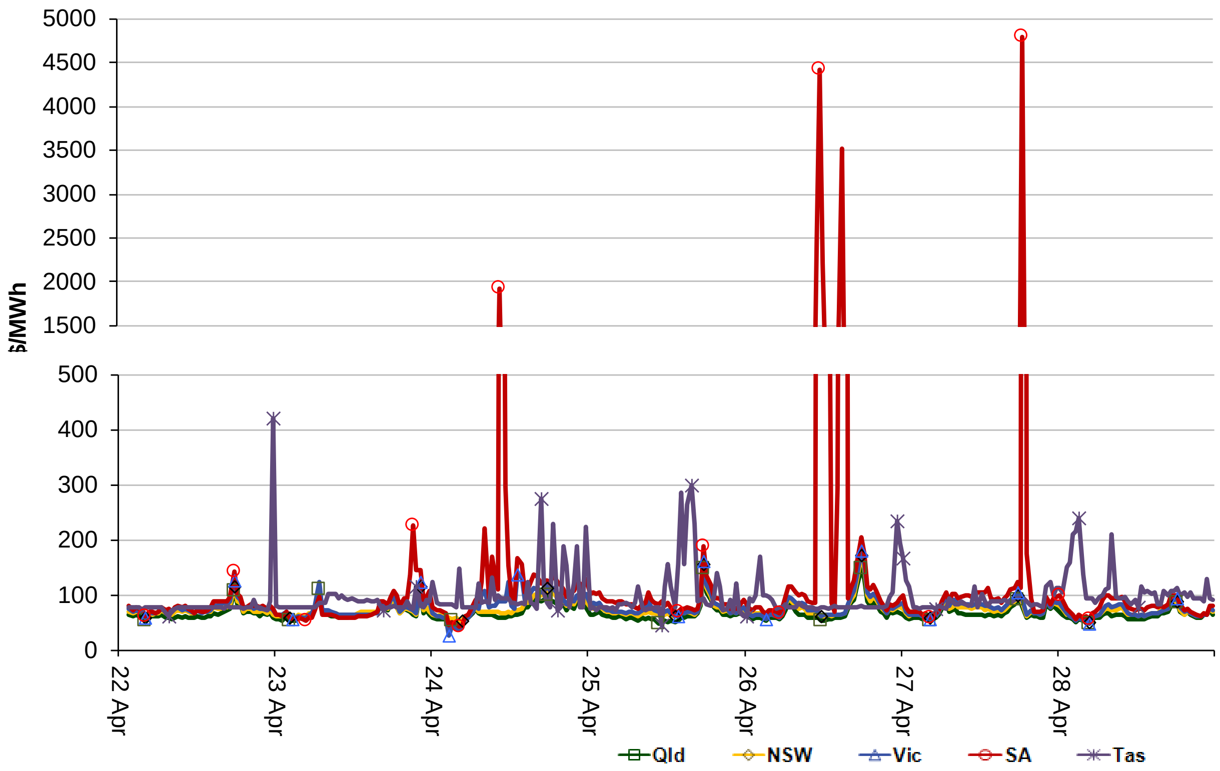


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

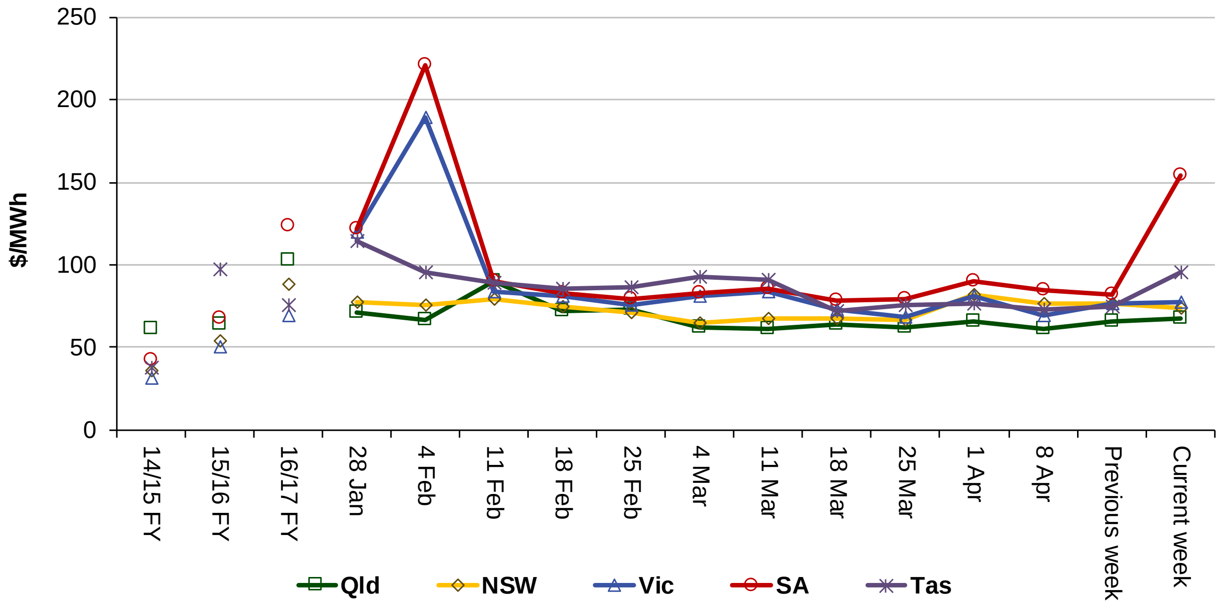


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	67	74	78	155	95
16-17 financial YTD	106	88	62	125	69
17-18 financial YTD	75	83	101	110	90

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 240 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2017 of 185 counts and the average in 2016 of 273. 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	5	3	2	0
% of total below forecast	4	76	0	10

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

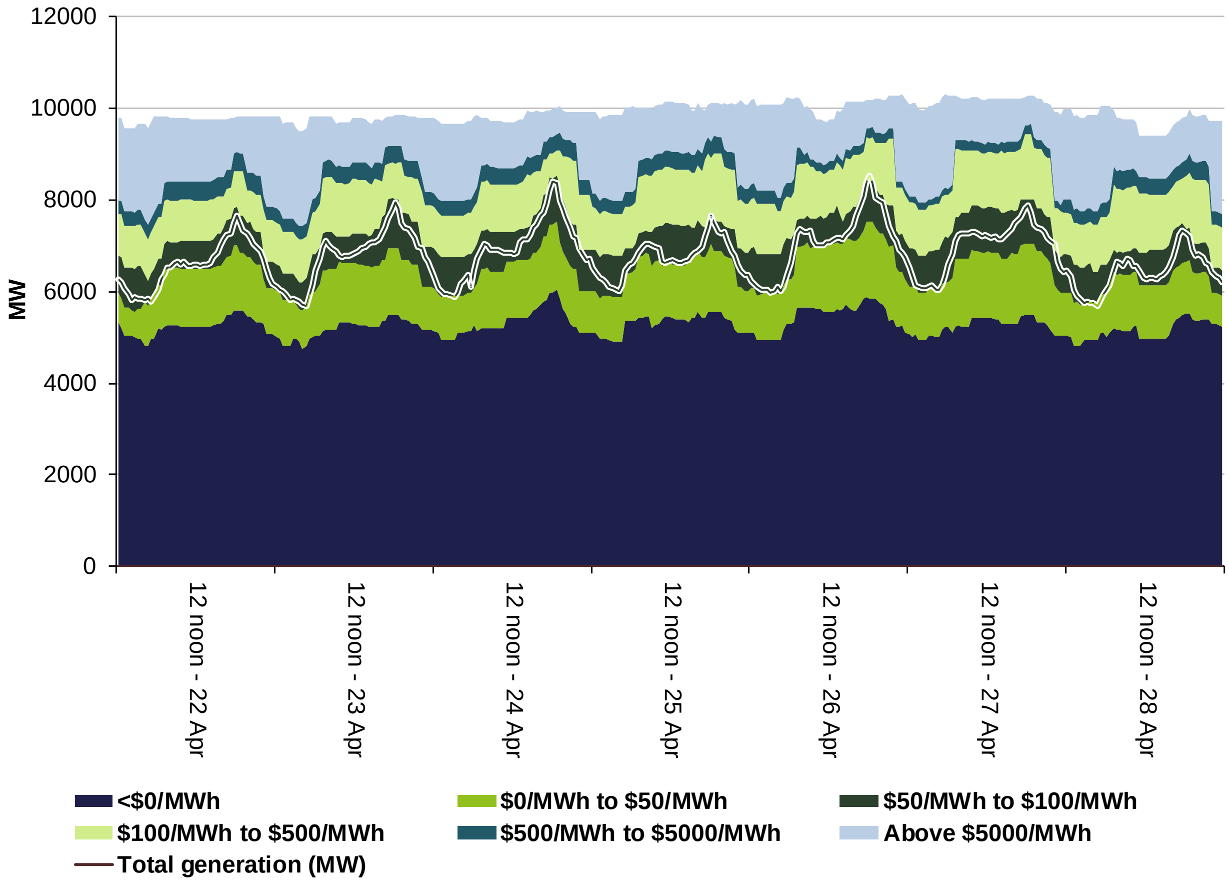


Figure 4: New South Wales generation and bidding patterns

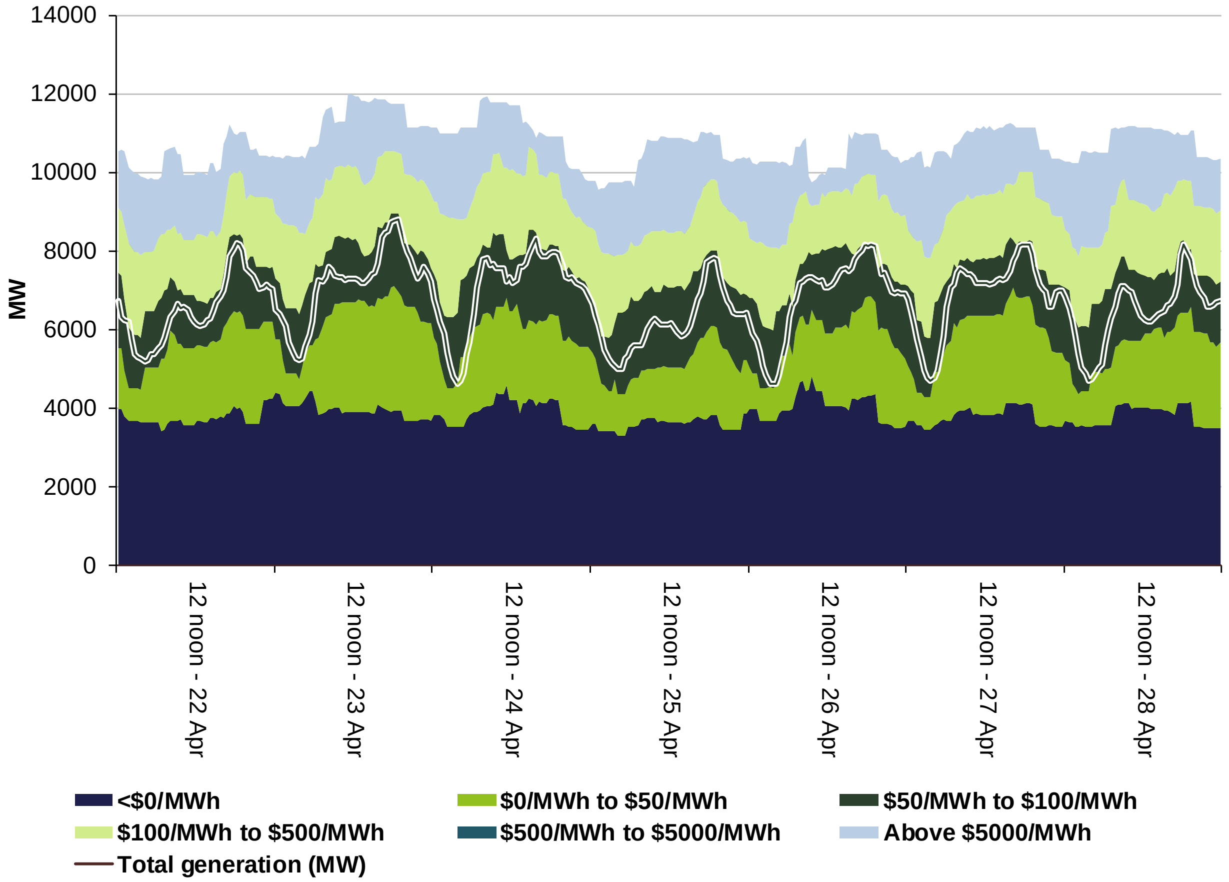


Figure 5: Victoria generation and bidding patterns

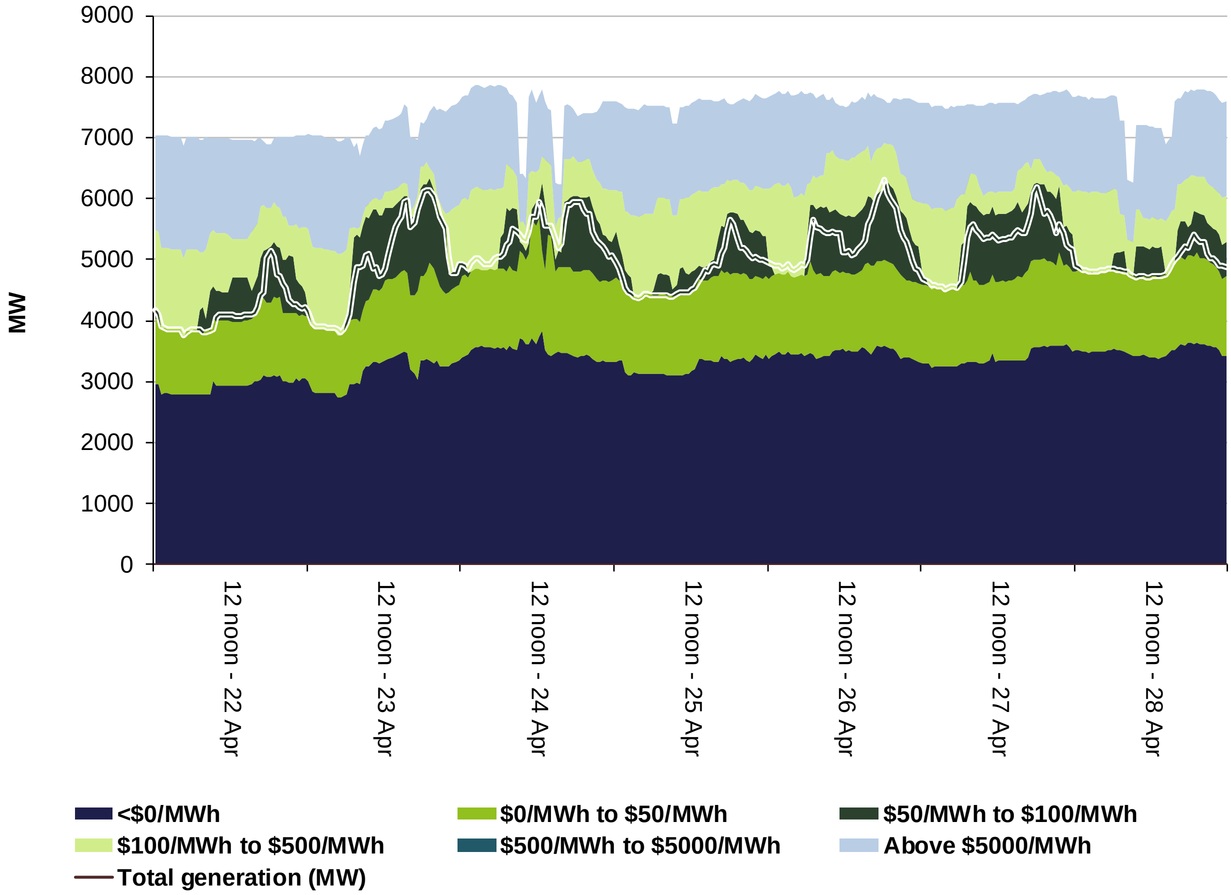


Figure 6: South Australia generation and bidding patterns

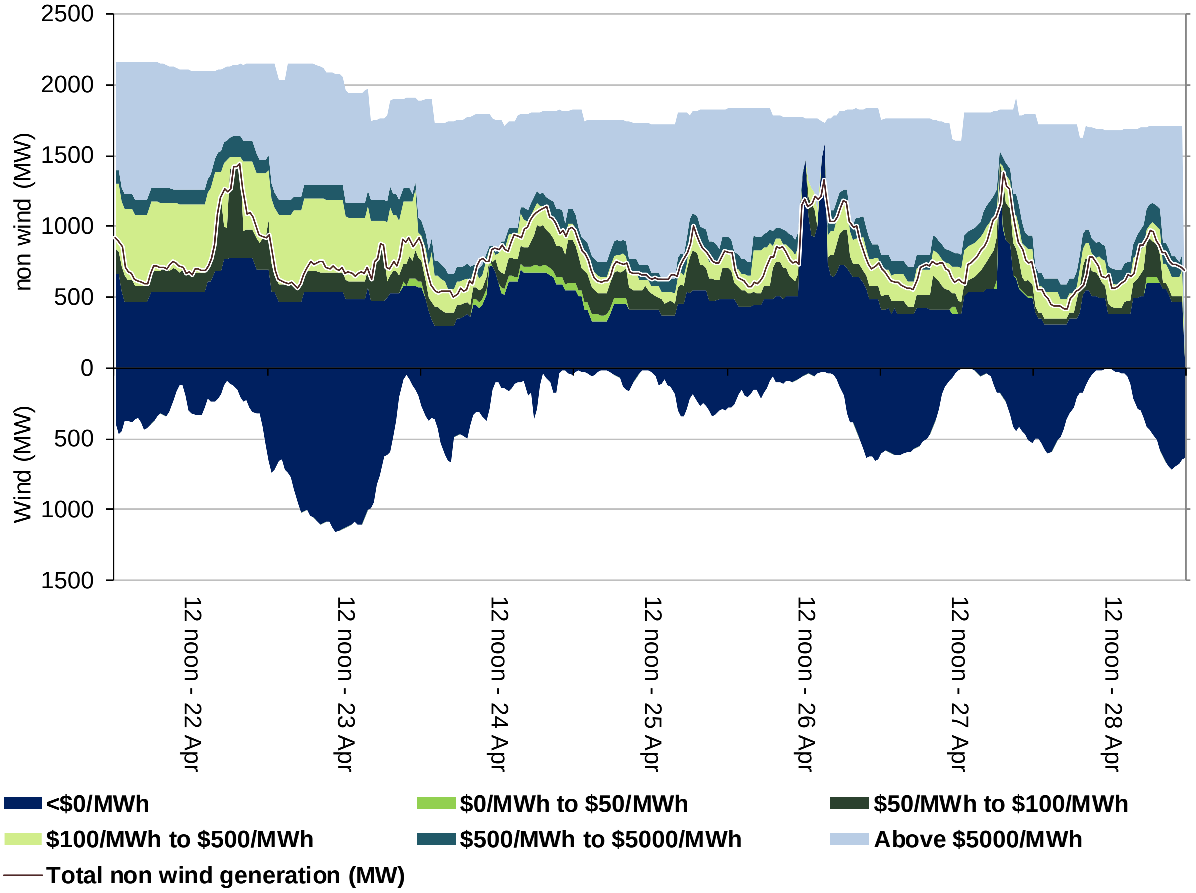
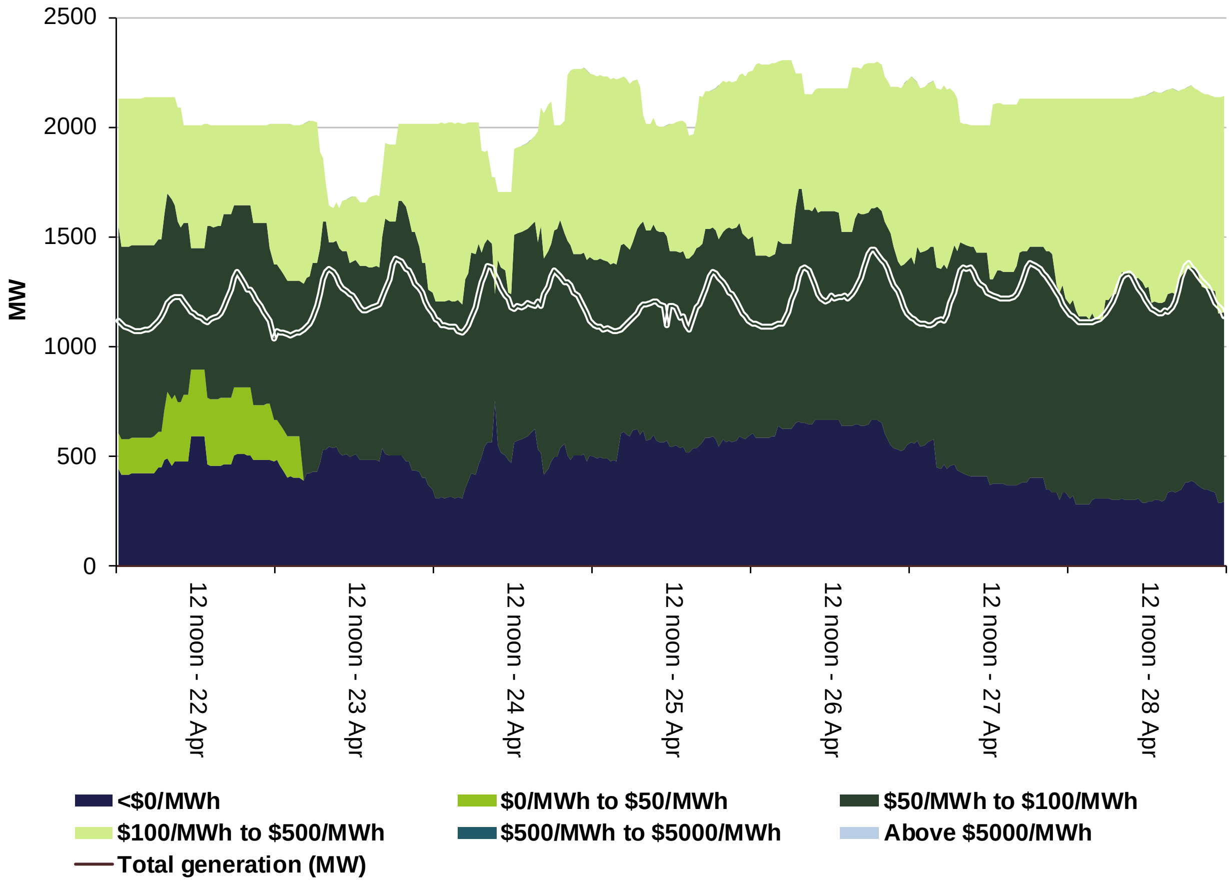


Figure 7: Tasmania generation and bidding patterns



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.

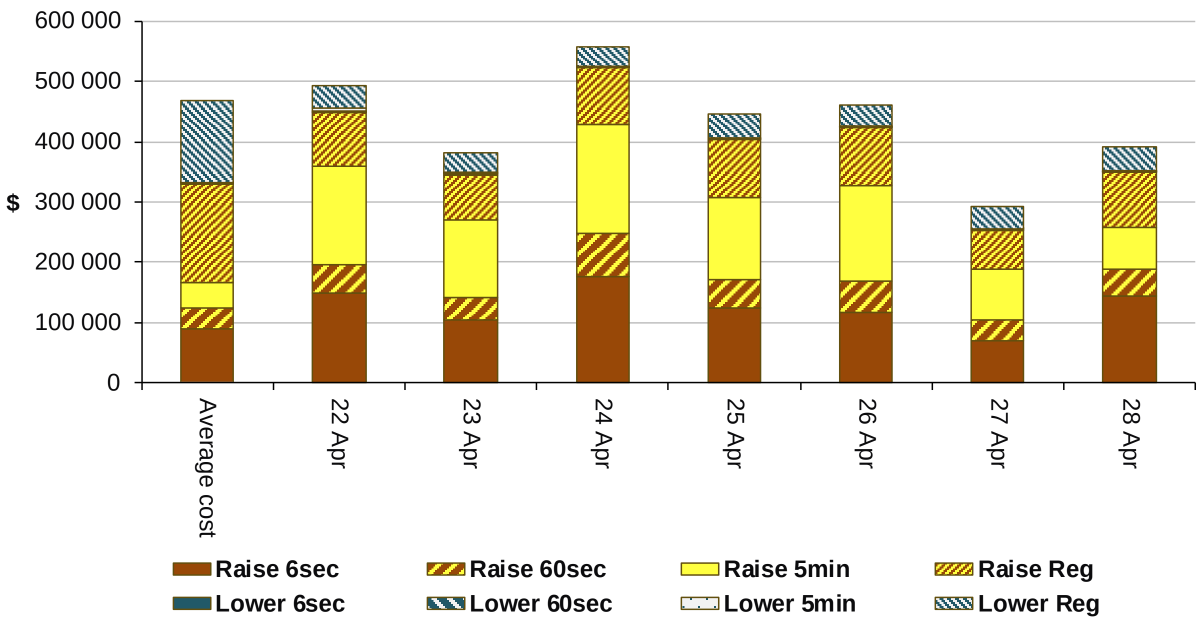
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a "causer pays" basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $2 285 500 or around one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $737 500 or around four 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

South Australia

There were eight occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $155/MWh and above $250/MWh.

Tuesday, 24 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
11 am	1916.18	305.82	315.01	1457	1257	1227	2091	2067	1981

At times, AEMO may need to override the normal dispatch process to maintain system security. On this day AEMO directed gas plant in South Australia triggering an intervention event. Special pricing arrangements apply in all regions following an intervention in the market.

Conditions at the time saw demand 200 MW higher than forecast and availability close to forecast, both four hours prior. At 10.55 pm local wind generation and imports from Victoria collectively reduced by around 70 MW. With no available capacity priced between $350/MWh and $10 000/MWh, the price reached $10 100/MWh for one dispatch interval. In response to the high price Snowy Hydro rebid 55 MW of capacity from the price cap to the price floor and the dispatch price fell to $203/MWh at 11 am.

Thursday, 26 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
11.30 am	2457.09	210.00	135.00	1180	1081	1073	1848	1844	1860
Midday	4424.42	210.00	210.00	1173	1075	1076	1835	1831	1846
12.30 pm	2208.50	210.00	210.00	1127	1096	1079	1821	1822	1833
1 pm	931.31	85.49	210.00	1108	1078	1082	1808	1815	1824
3 pm	1689.00	90.13	348.91	1136	1129	1150	1788	1797	1814
3.30 pm	3526.62	90.67	348.91	1173	1161	1182	1768	1796	1815

At times, AEMO may need to override the normal dispatch process to maintain system security. On this day AEMO directed gas plant in South Australia triggering an intervention event. Special pricing arrangements apply in all regions following an intervention in the market.

Demand was up to 100 MW greater than forecast and availability was close to forecast, both four hours prior. Murraylink was not operating, so the Heywood interconnector was the only link between South Australia and the rest of the NEM.

At around 11.15 am the No.1 275kV line connecting South East substation and Tailem Bend substation tripped. At 11.25 am AEMO invoke constraints managing the outage which forced flows across Heywood from importing into South Australia at around 450 MW to exporting into Victoria at up to around 200 MW by 11.50 am (counter-price). With cheaper priced generation ramp up constrained and little or no generation available priced between $135/MWh and $13 100/MWh the dispatch price increased from $135/MWh at 11.25 am to the price cap between 11.30 am and 11.40 am inclusive. In response to the high prices participants rebid capacity from the cap to the floor and the dispatch price fell to the price floor. This same pattern occurred several times throughout the afternoon with prices ranging from $14 000/MWh to the price floor until the line and substation were returned to service at around 3.15 pm.

Friday, 27 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 pm	4798.86	156.76	199.70	1533	1512	1506	2003	1898	1814

At times, AEMO may need to override the normal dispatch process to maintain system security. On this day AEMO directed gas plant in South Australia triggering an intervention event. Special pricing arrangements apply in all regions following an intervention in the market.

Conditions at the time saw demand close to forecast while availability was 100 MW higher than forecast.

At around 6.40 pm the No.1 275kV line connecting South East substation and Tailem Bend substation tripped again. Constraints managing the outage caused imports in to South Australia across the Heywood interconnector to decrease by around 300 MW by 6.55 pm and caused the dispatch price to increase to the cap for both dispatch intervals. In response to the high prices around 120 MW of capacity was rebid from the price cap to the price floor.

Tasmania

There were three occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of $95/MWh and above $250/MWh.

Monday, 23 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
Midnight	419.52	78.32	78.32	969	1040	1035	2012	2009	2011

Conditions at the time saw demand around 70 MW lower than forecast while availability was close to forecast, both four hours ahead. Basslink was on a long term planned outage meaning Tasmania could not access generation or FCAS from the mainland.

For the 11.40 pm dispatch interval, there was an increase in the requirement for local raise 6 second services. To meet the requirement the energy and FCAS markets were co-optimised which led to the dispatch price for energy reaching $1915/MWh.

Wednesday, 25 April

Table 7: Price, Demand and Availability

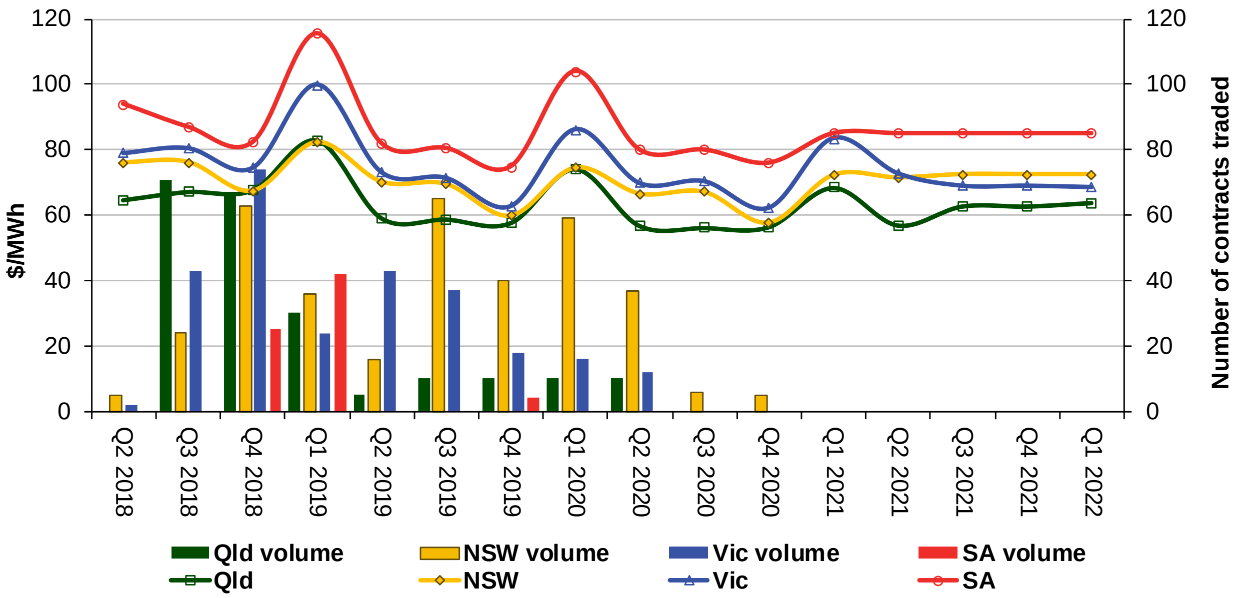
Time	Price ($/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
2.30 pm	286.52	300.04	142.94	1060	1080	1110	2017	2026	2052
4 pm	300.18	300.22	142.94	1147	1111	1127	2027	2037	2067

Prices were close to forecast four hours ahead for both trading intervals.

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.

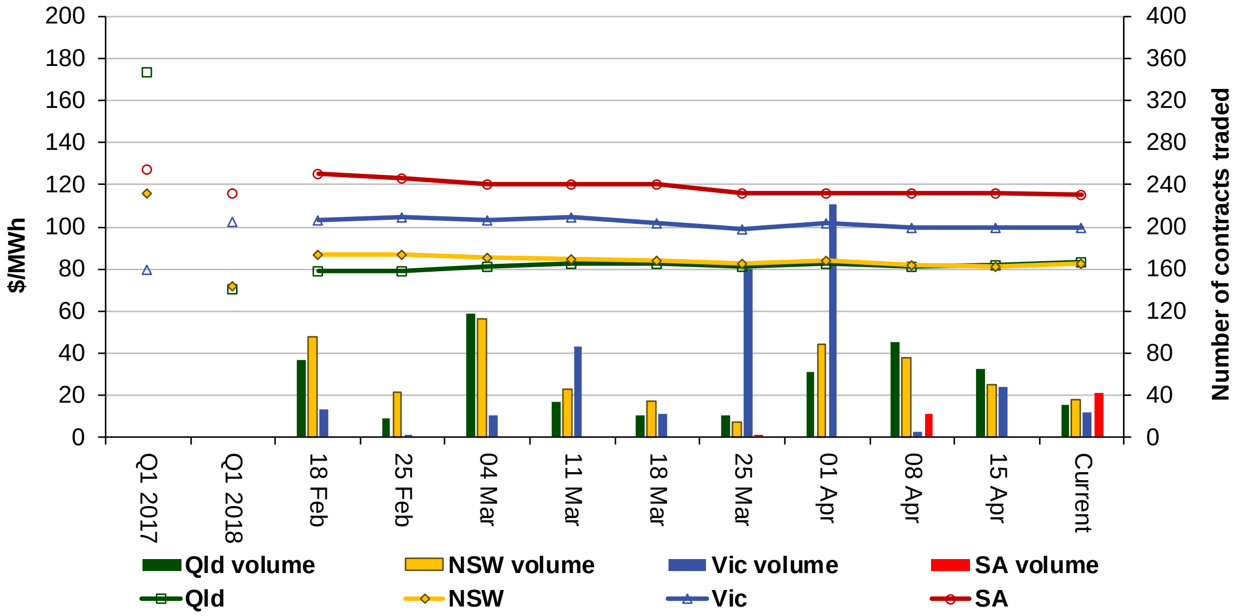
Figure 9: Quarterly base future prices Q2 2018 – Q1 2022



Source. ASXEnergy.com.au

Figure 10 shows how the price for each regional Q1 2019 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2017 and quarter 1 2018 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 2019 base contracts over the past 10 weeks (and the past 2 years)



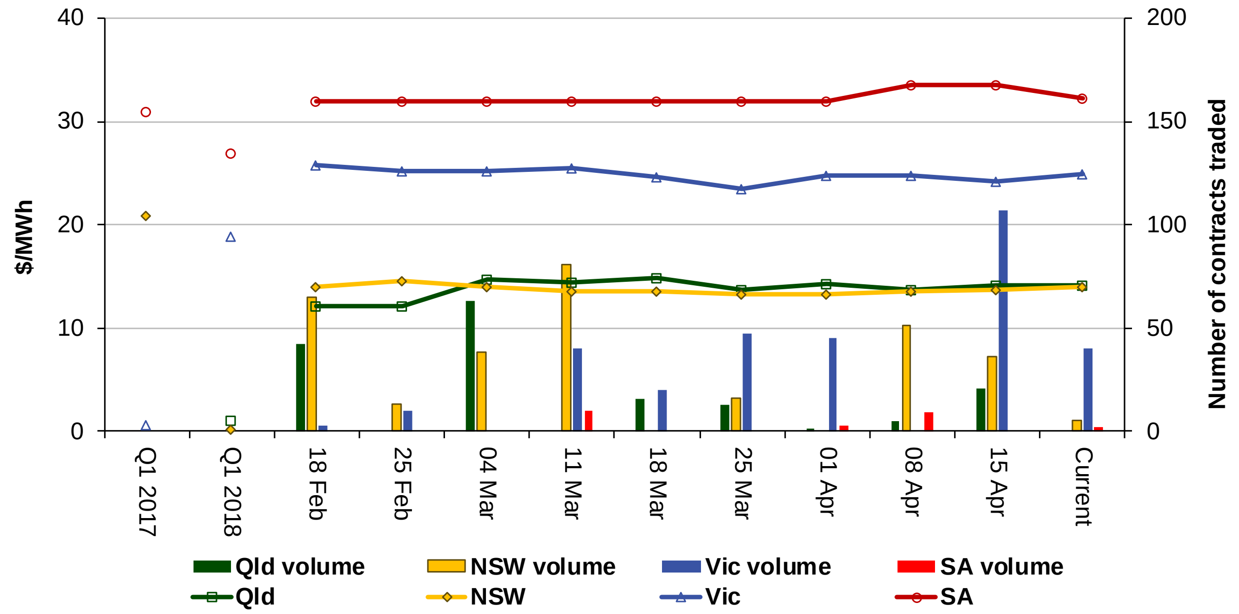
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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 2019 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2017 and quarter 1 2018 prices are also shown.

Figure 11: Price of Q1 2019 cap contracts over the past 10 weeks (and the past 2 years)



Source. ASXEnergy.com.au

Australian Energy Regulator
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