Electricity Report

AUSTRALIAN ENERGY REGULATOR

30 September – 6 October 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 30 September - 6 October 2018.

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

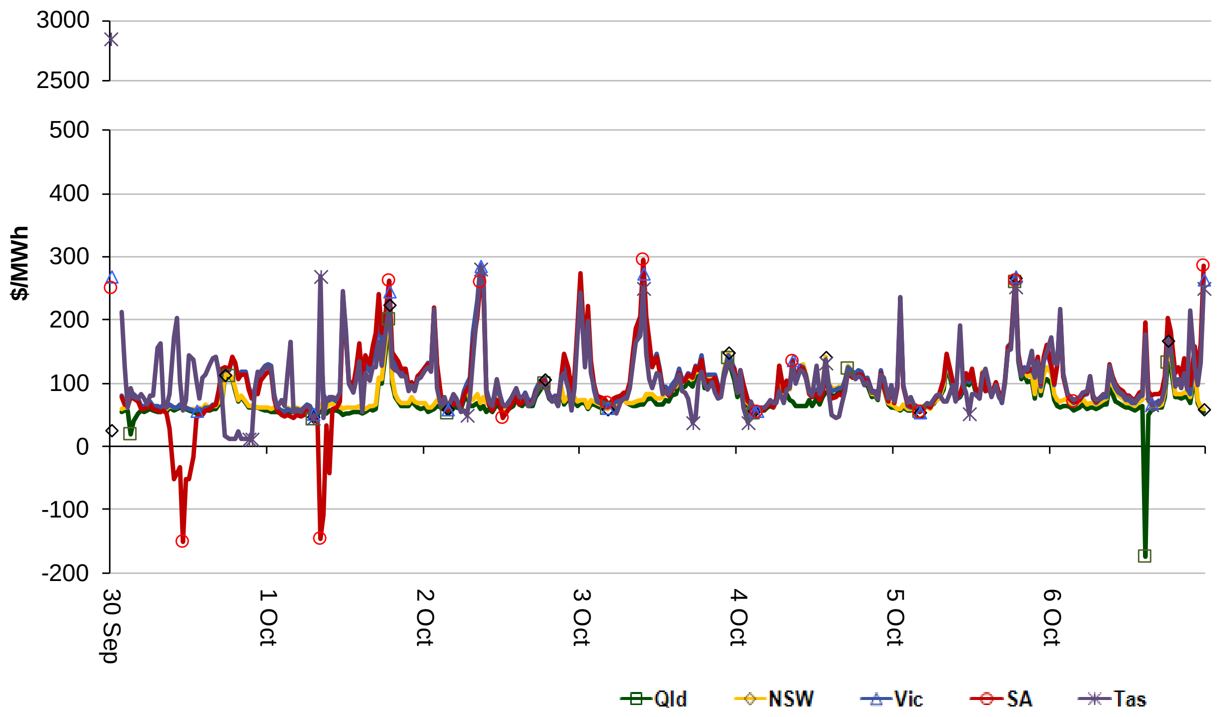


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

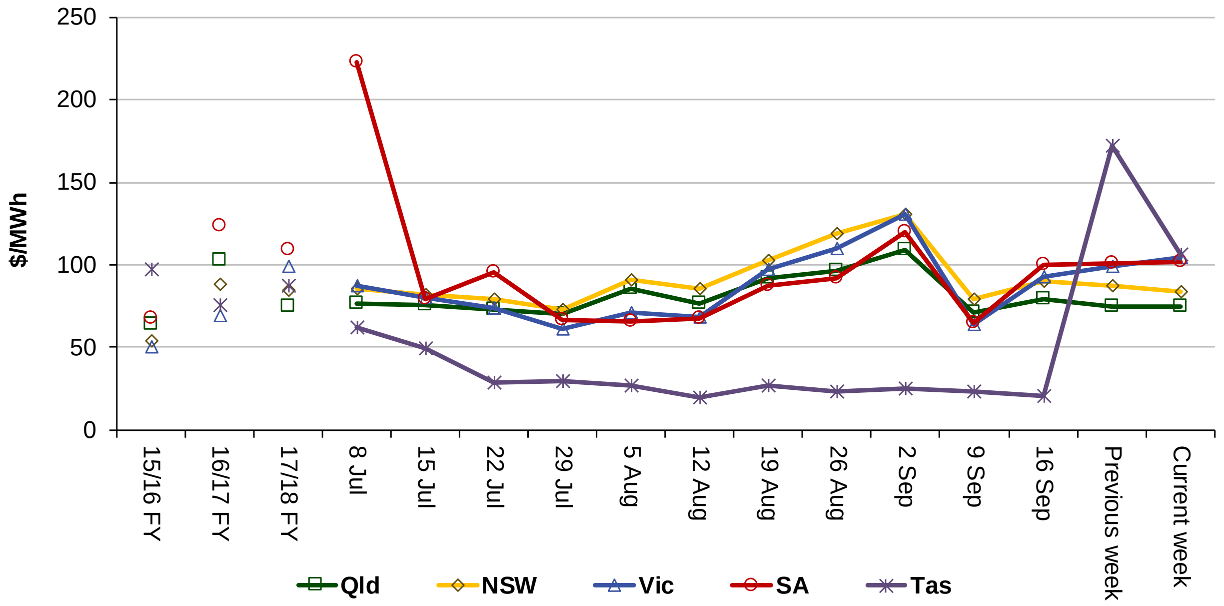


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	74	84	105	102	107
17-18 financial YTD	82	95	101	101	95
18-19 financial YTD	80	90	86	95	47

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 232 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	12	26	0	2
% of total below forecast	12	39	0	8

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

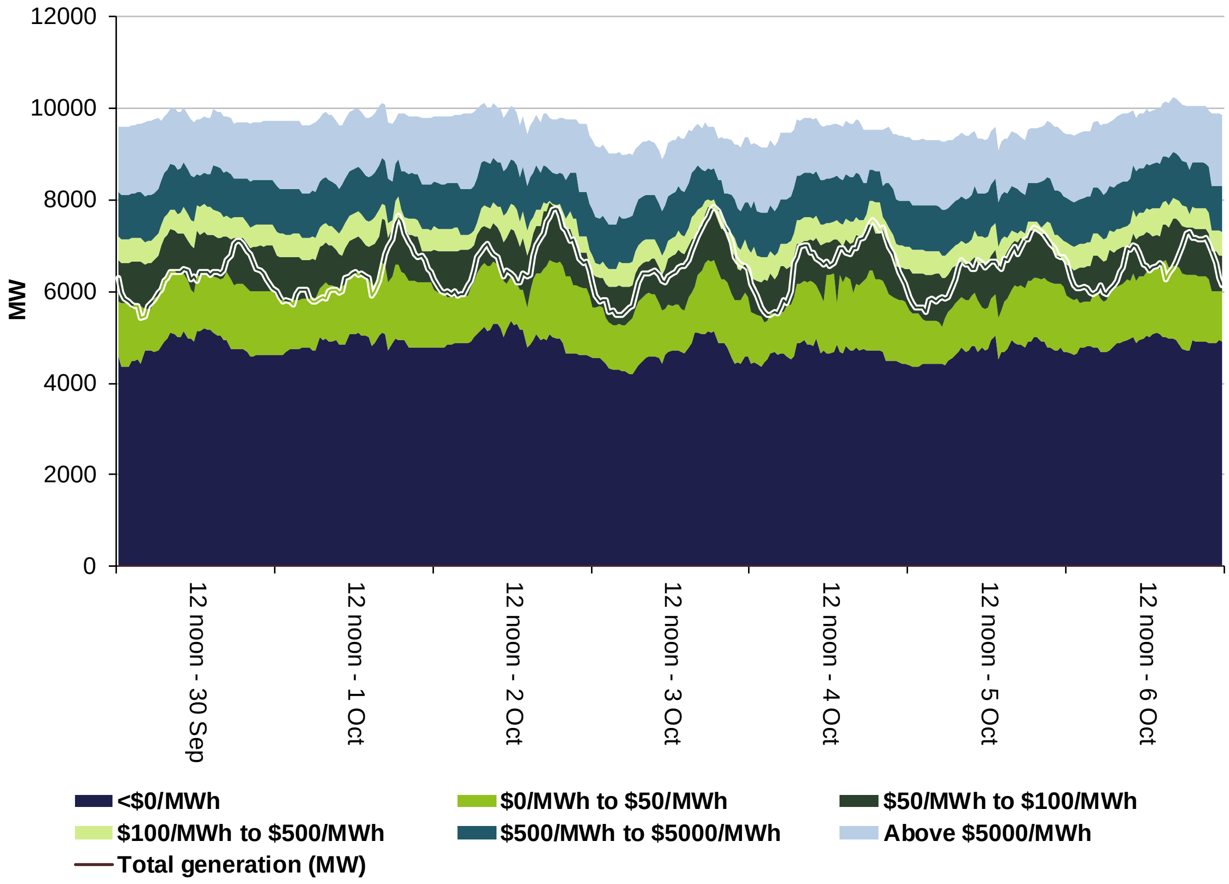


Figure 4: New South Wales generation and bidding patterns

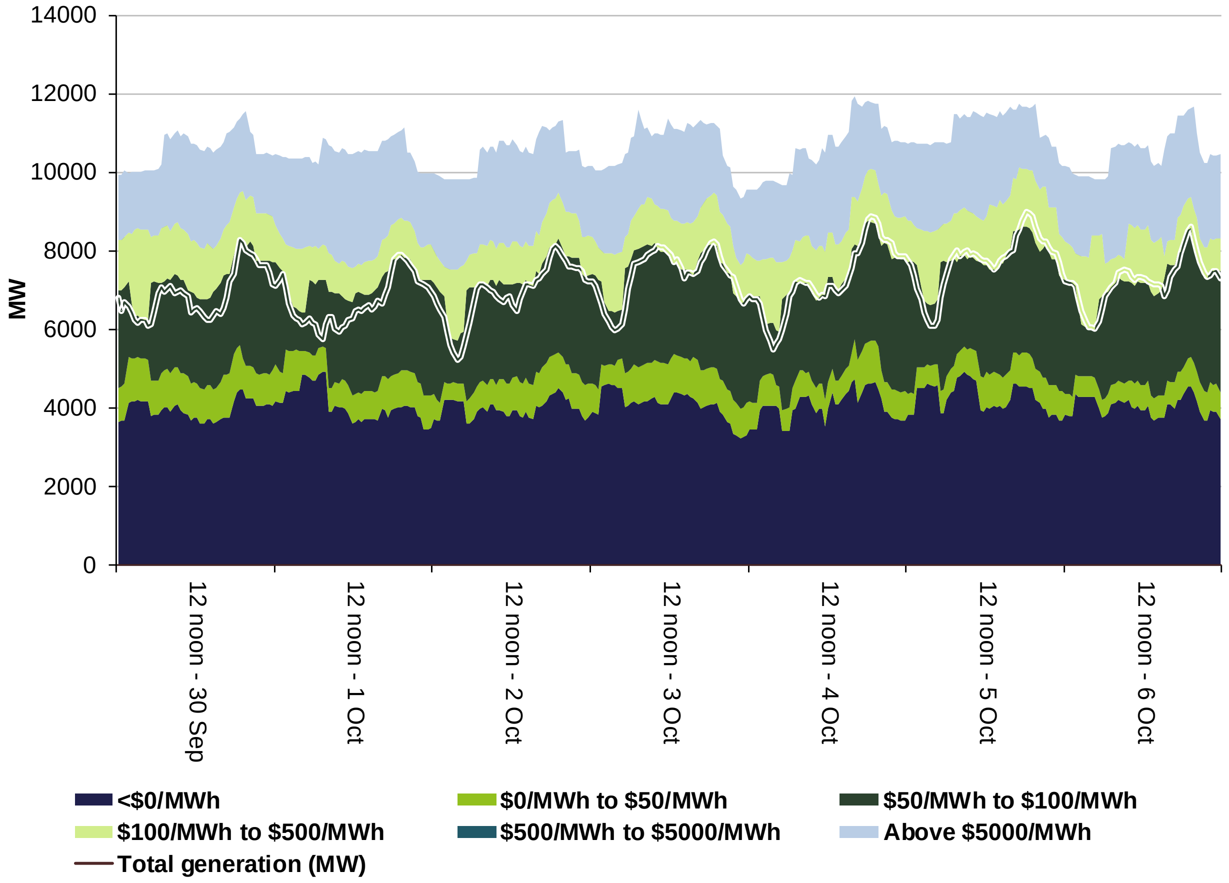


Figure 5: Victoria generation and bidding patterns

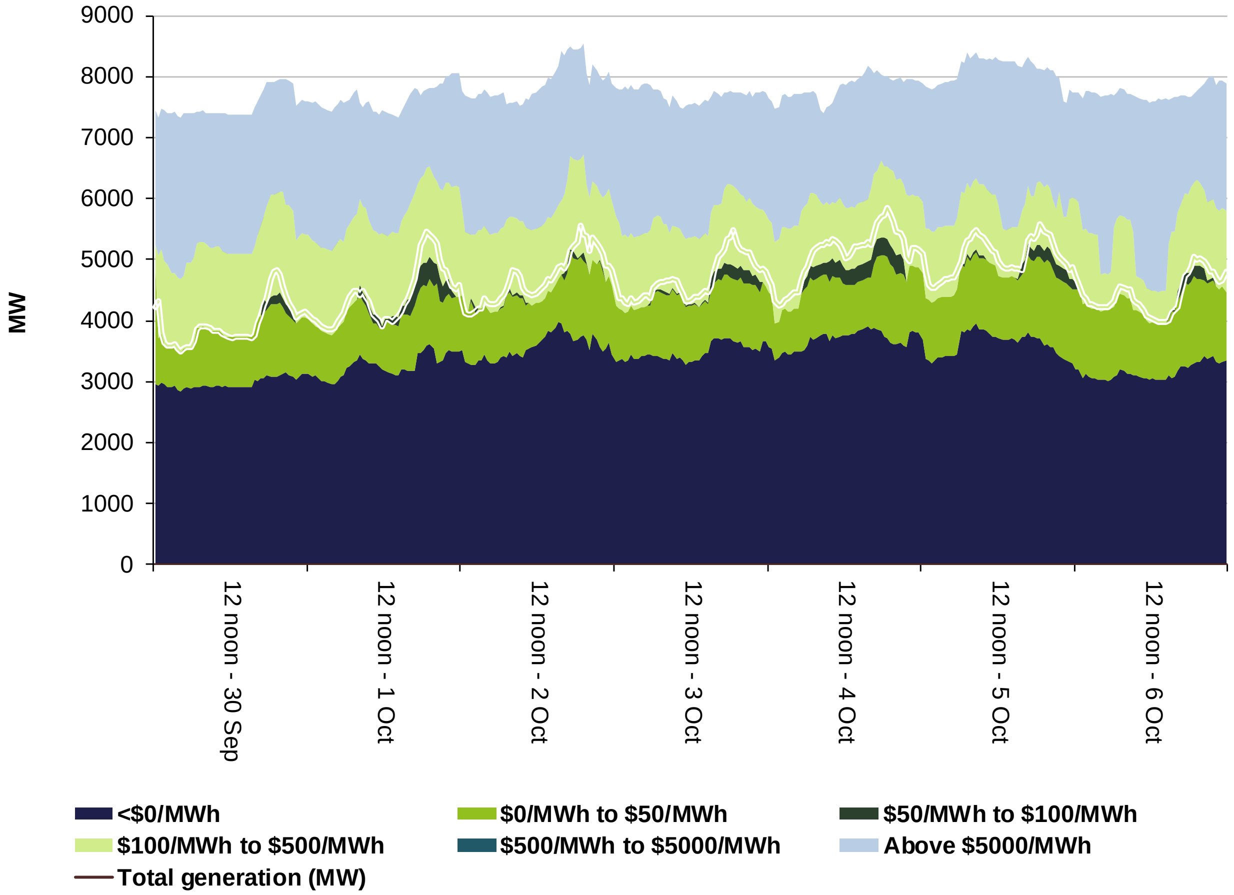


Figure 6: South Australia generation and bidding patterns

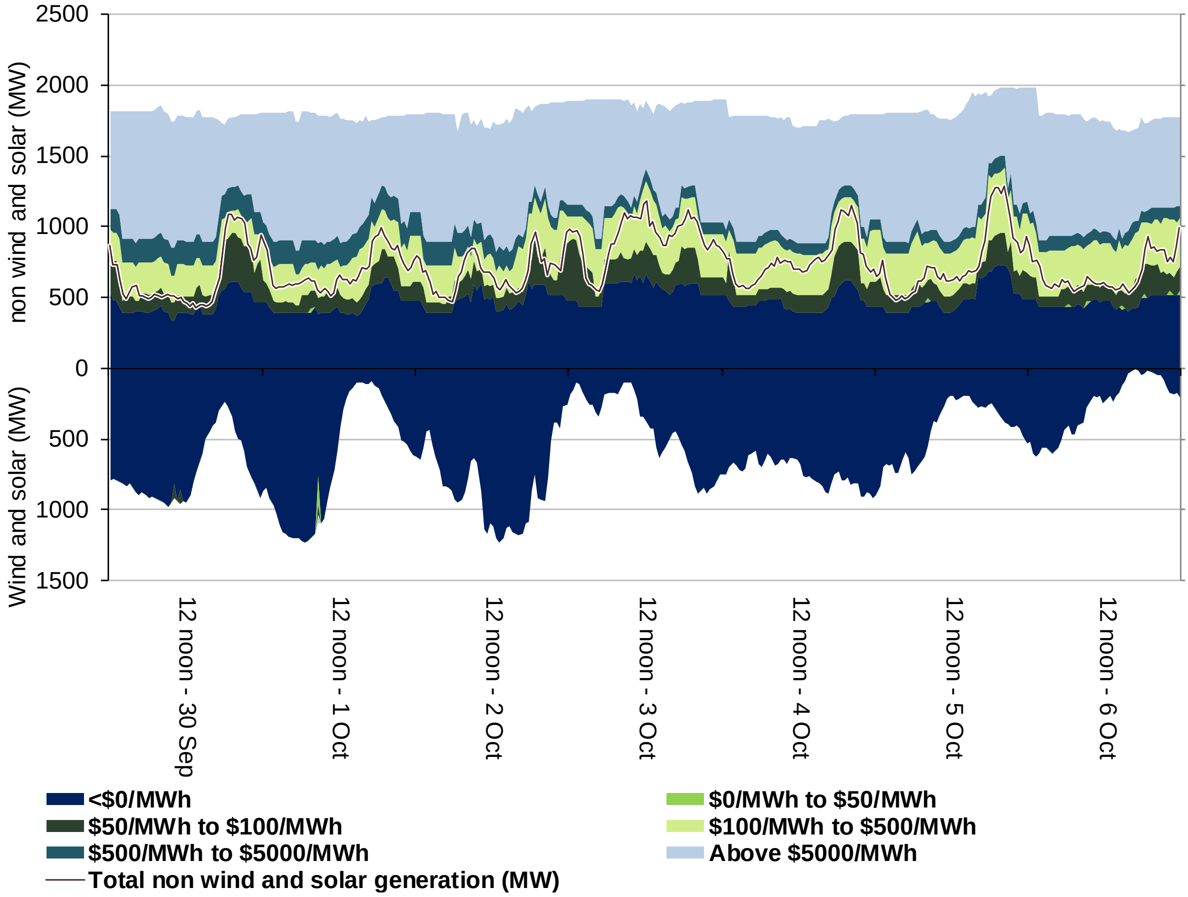
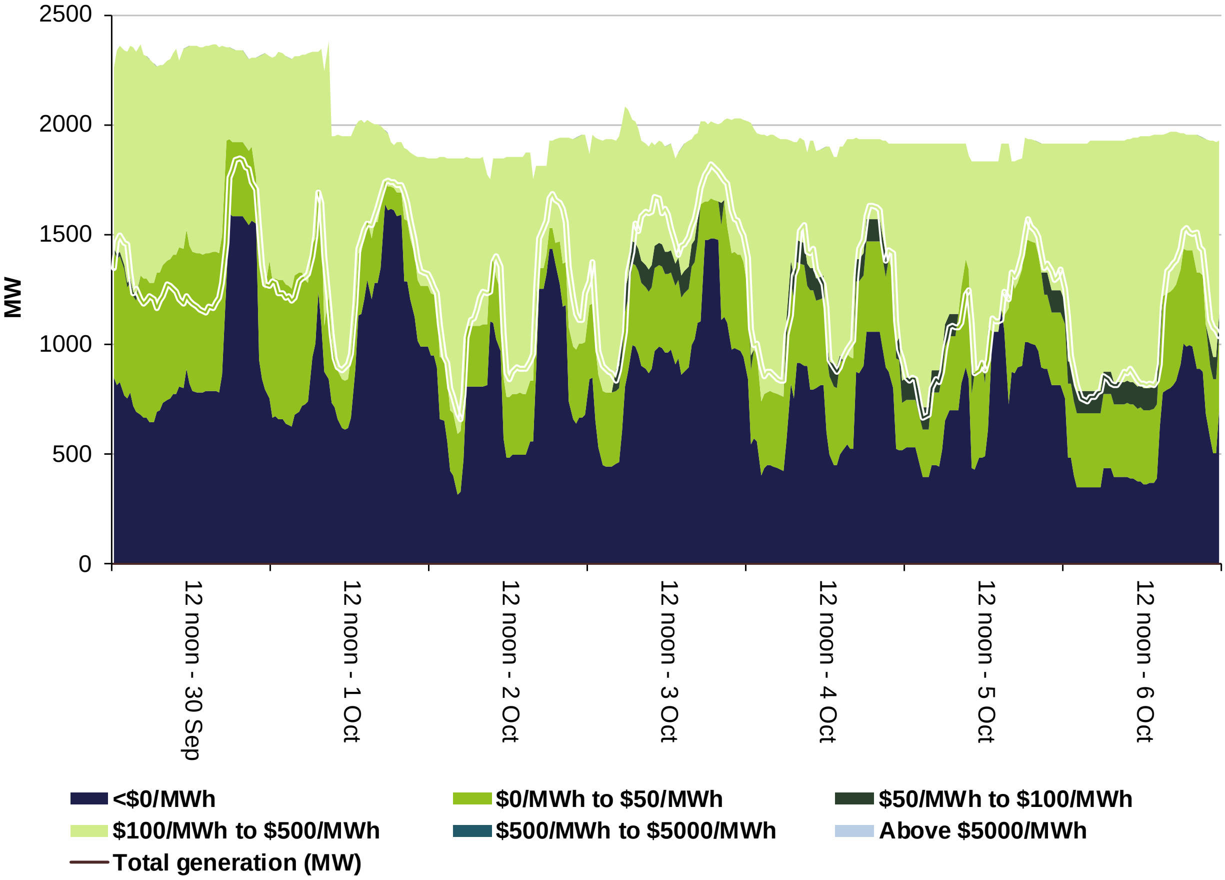


Figure 7: Tasmania generation and bidding patterns



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.

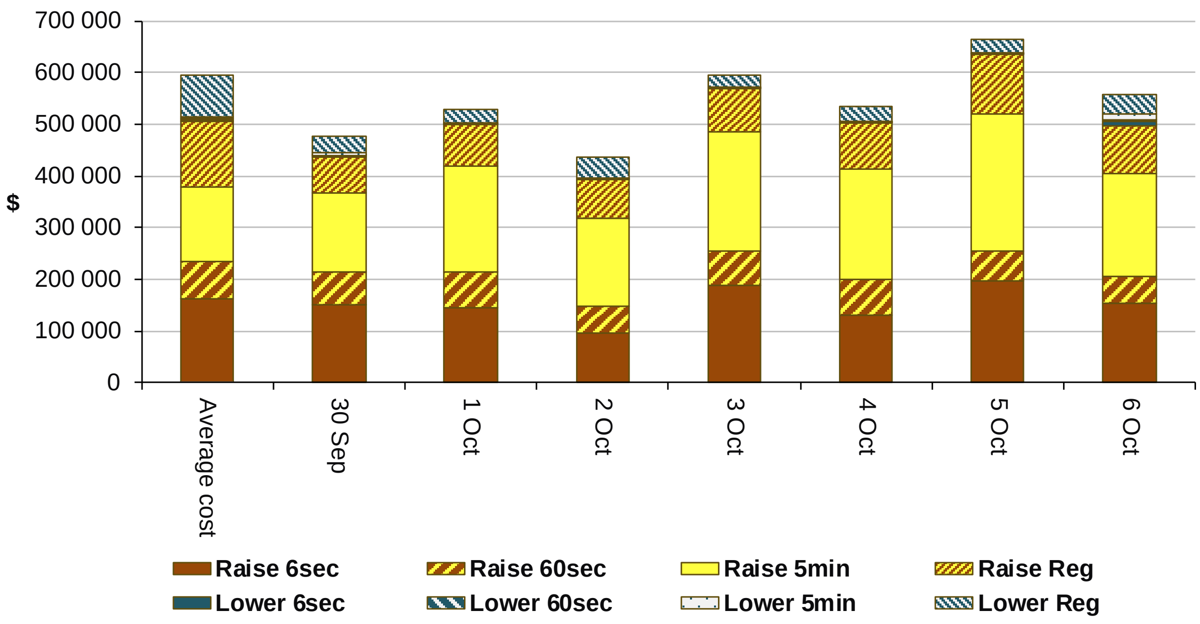
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $3 148 500 or around one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $647 000 or around three 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

Queensland

There was one occasion where the spot price in Queensland was greater than three times the Queensland weekly average price of $74/MWh and above $250/MWh and there was one occasion where the spot price was below -$100/MWh.

Friday, 5 October

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 pm	260.14	266.56	290.40	6923	6953	7056	9572	9771	9700

The price was close to that forecast four hours ahead.

Saturday, 6 October

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
3 pm	-174.83	61.00	53.73	5699	5651	5450	10 073	9852	9883

Demand was 48 MW greater than forecast and availability was 221 MW greater than forecast, four hours prior.

At 2.40 pm, a constraint used to manage the reclassification of the Bulli Creek to Dumaresq lines reduced exports from Queensland by 418 MW, on the QNI interconnector. The sudden drop of exports meant a number of high priced generators were ramp down constrained and unable to set price. As a result the 2.40 pm and 2.45 pm dispatch prices fell to -$1000/MWh and -$240/MWh respectively, leading to the negative spot price.

New South Wales

There was one occasion where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $84/MWh and above $250/MWh.

Friday, 5 October

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	267.18	286.17	299.60	9442	9314	9162	11 652	11 723	11 807

The price was close to that forecast four hours ahead.

South Australia

There were three occasions where the spot price in South Australia was below -$100/MWh.

Sunday, 30 September

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
11.30 am	-150.65	56.76	45.78	599	574	565	2746	2539	2480

Demand was 25 MW greater than forecast and availability was 207 MW greater than forecast, both four hours prior. This increased availability was because actual wind output was 200 MW greater than forecast.

Due to this increase of low price wind generation, the dispatch price remained between -$79/MWh and -$508/MWh for the entire trading interval and led to the lower than forecast spot price.

Monday, 1 October

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
8:30 am	-145.86	70.20	63.04	838	753	724	2971	2711	2714
9:00 am	-108.19	70.20	70.20	858	731	704	2890	2751	2690

For the 8:30 am trading interval, demand was 85 MW greater than forecast and availability was 260 MW greater than forecast, both four hours prior. Semi scheduled wind generation was 144 MW greater than forecast.

Effective for the 8.30 am dispatch interval, Hornsdale Power Reserve rebid 30 MW of capacity at the battery from $90/MWh to the price floor. The reason related to state of charge being close to limit. This rebid combined with the higher than forecast wind generation saw Hornsdale set the price at the floor for the 8.30 am dispatch interval, resulting in a negative spot price.

For the 9:00 am trading interval, demand was 127 MW greater than forecast and availability was 139 MW greater than forecast, both four hours prior. Semi scheduled wind generation was 91 MW greater than forecast.

Effective for the 8.35 am dispatch interval, Hornsdale Power Reserve rebid 18 MW of capacity priced at $409/MWh to the price floor, the reason related to the state of charge. Demand also fell by 35 MW. This increase in capacity at the floor and reduction in demand meant the dispatch price fell to the floor for one dispatch interval and led to the negative spot price.

Tasmania

There was one occasion where the spot price in Tasmania was greater than three times the Tasmania weekly average price of $107/MWh and above $250/MWh.

Sunday, 30 September

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
12:30 am	2843.63	111.17	269.46	991	1002	1024	2285	2339	2334

Demand was close to forecast and availability was 54 WM less than forecast, four hours prior.

A planned outage on the Palmerston Sheffield line led to a constraint which limits generator output in Tasmanian forcing flows on Basslink into Victoria. Although the constraint was forecast, exports into Victoria were 162 MW greater than forecast.

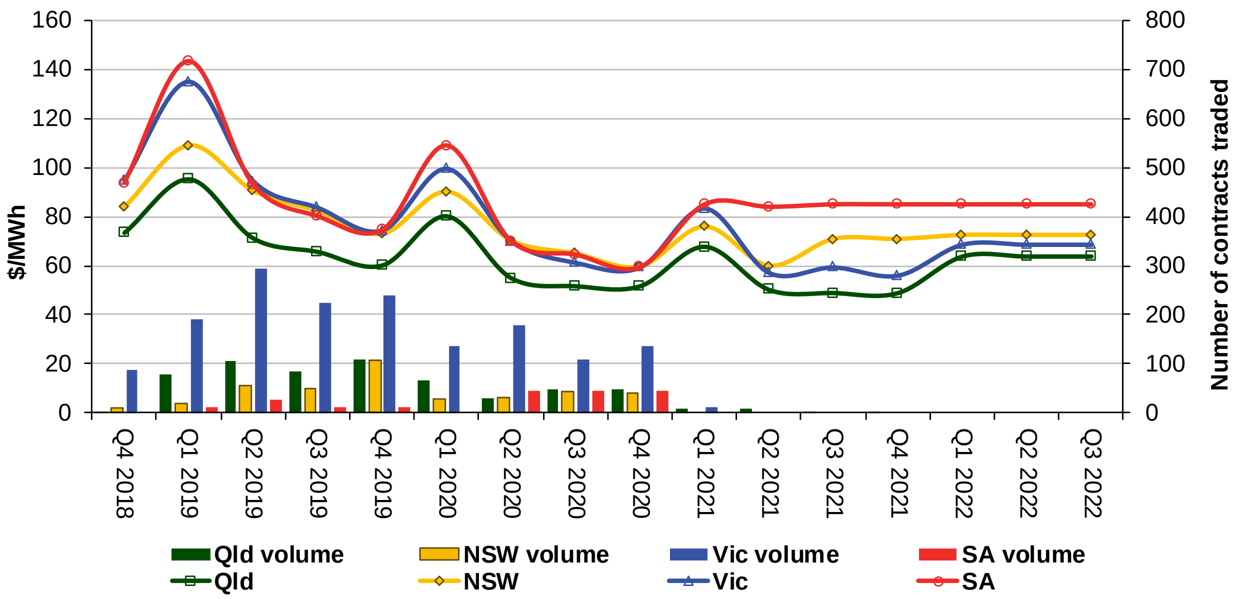
For the 12.05 am dispatch interval, the constraint caused a reduction in local generation of 81 MW. With cheaper priced generation unable to set price as it was constrained or ramp up limited the dispatch price reached $2163/MWh.

For the 12.15 am dispatch interval the constraint violated and caused a reduction in local generation of 226 MW. With cheaper priced generation ramp rate limited and unable to set price the dispatch price was set at the price cap due to co-optimisation of the FCAS and energy markets.

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.

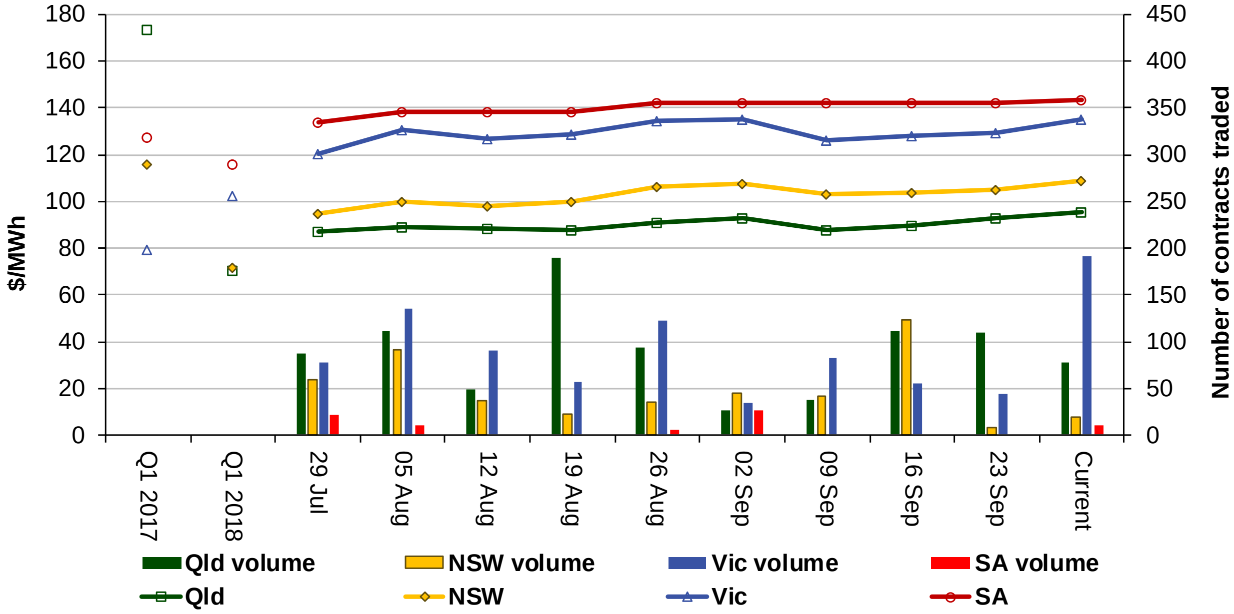
Figure 9: Quarterly base future prices Q3 2018 – Q2 2022



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)



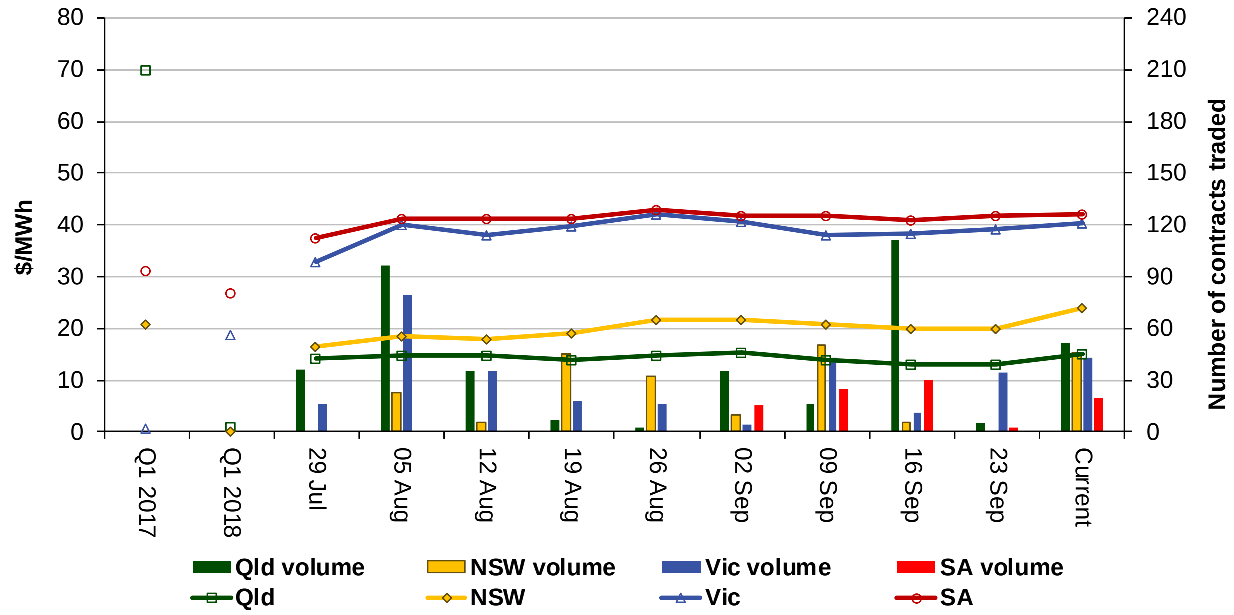
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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
November 2018