Electricity Report

AUSTRALIAN ENERGY REGULATOR

9 – 15 December 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 9 to 15 December 2018.

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

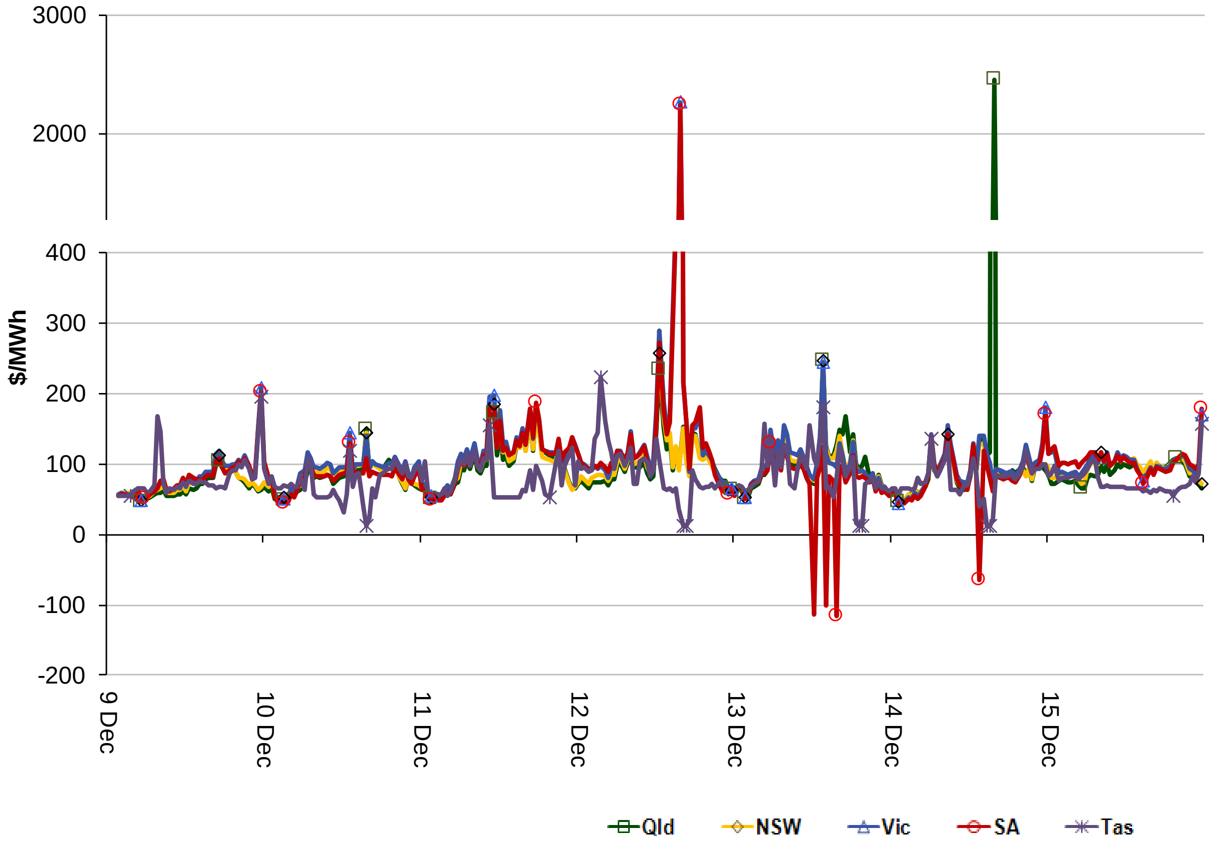


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

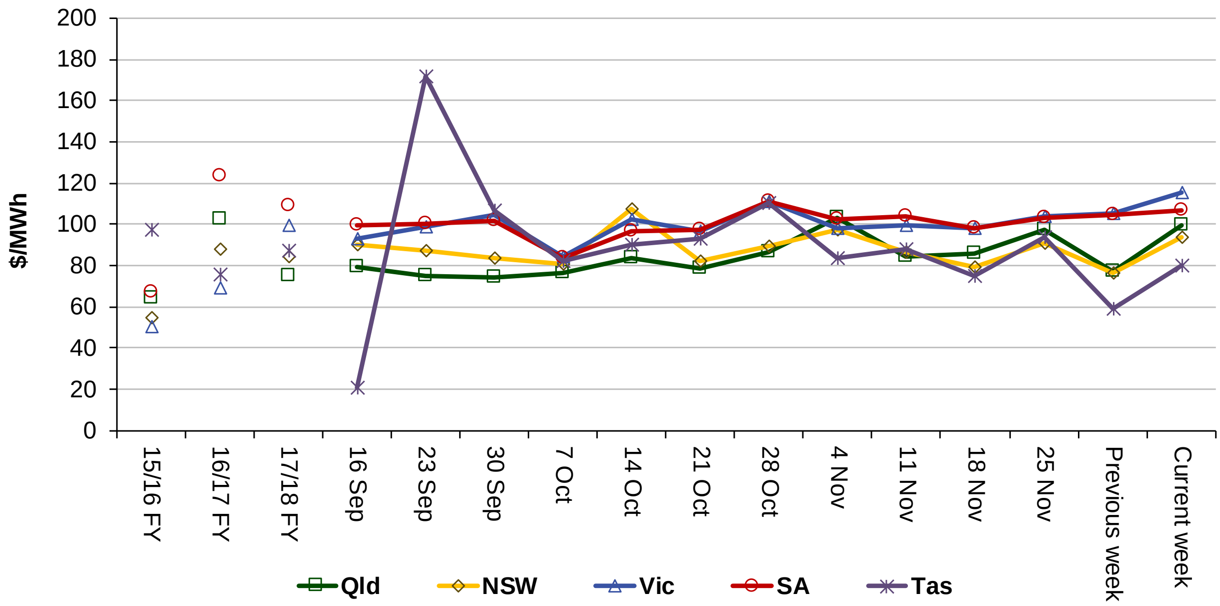


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	99	94	115	106	80
17-18 financial YTD	78	89	97	95	91
18-19 financial YTD	83	89	92	98	61

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 174 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	8	20	0	1
% of total below forecast	7	53	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

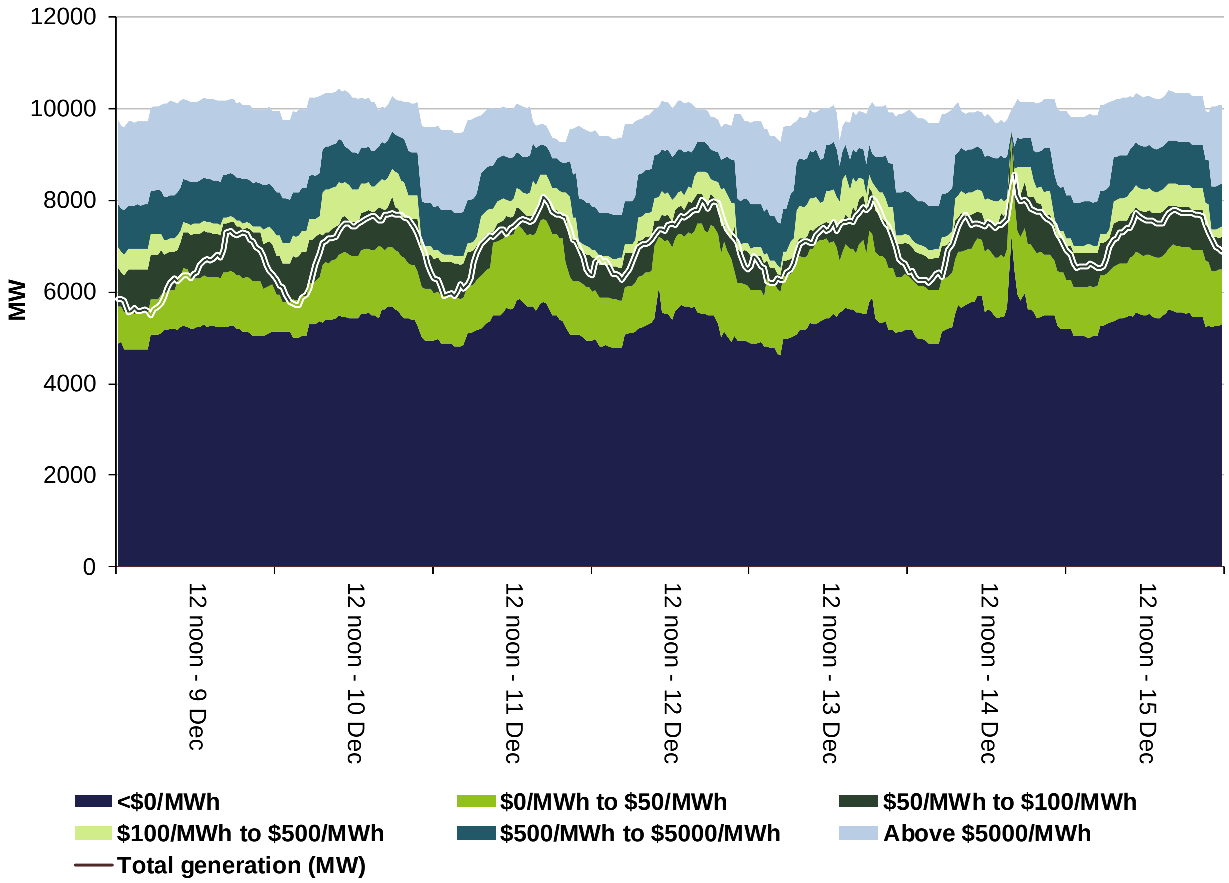


Figure 4: New South Wales generation and bidding patterns

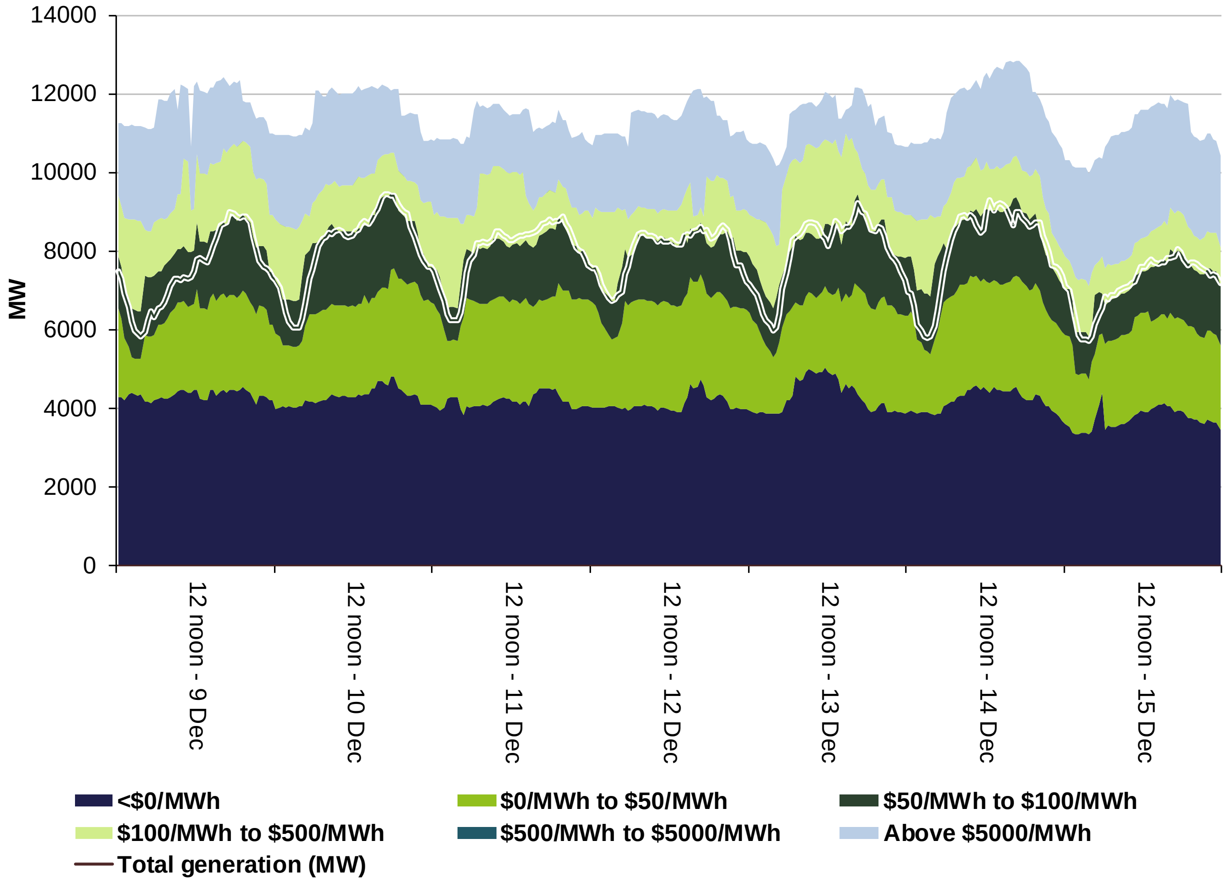


Figure 5: Victoria generation and bidding patterns

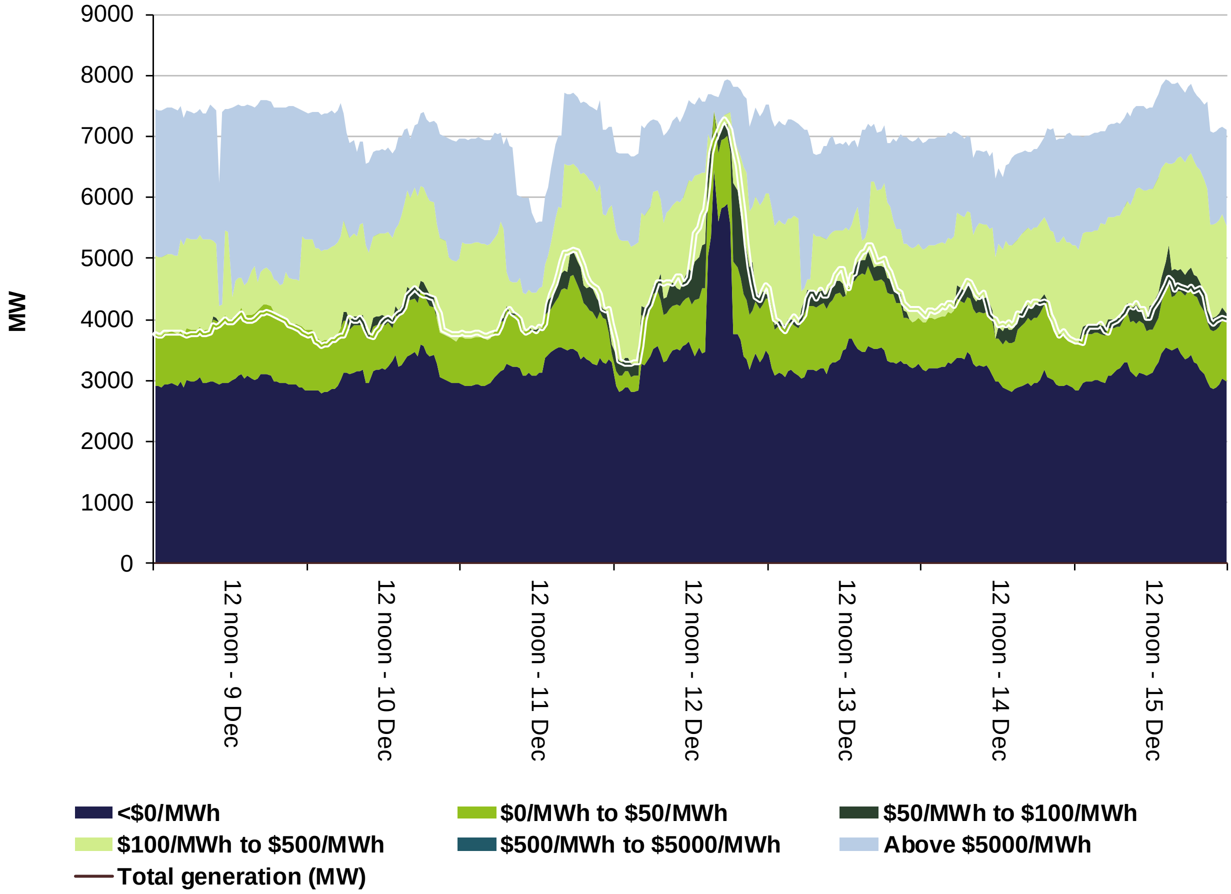


Figure 6: South Australia generation and bidding patterns

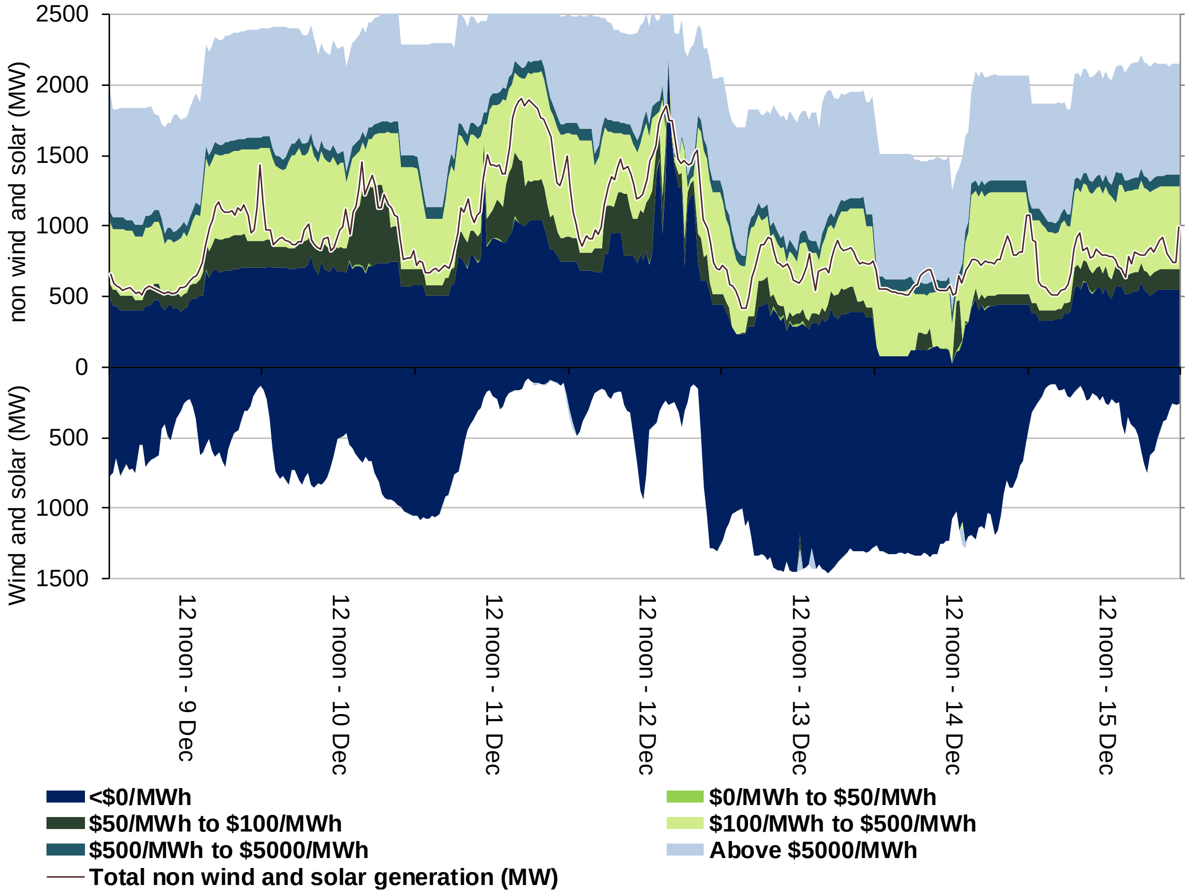
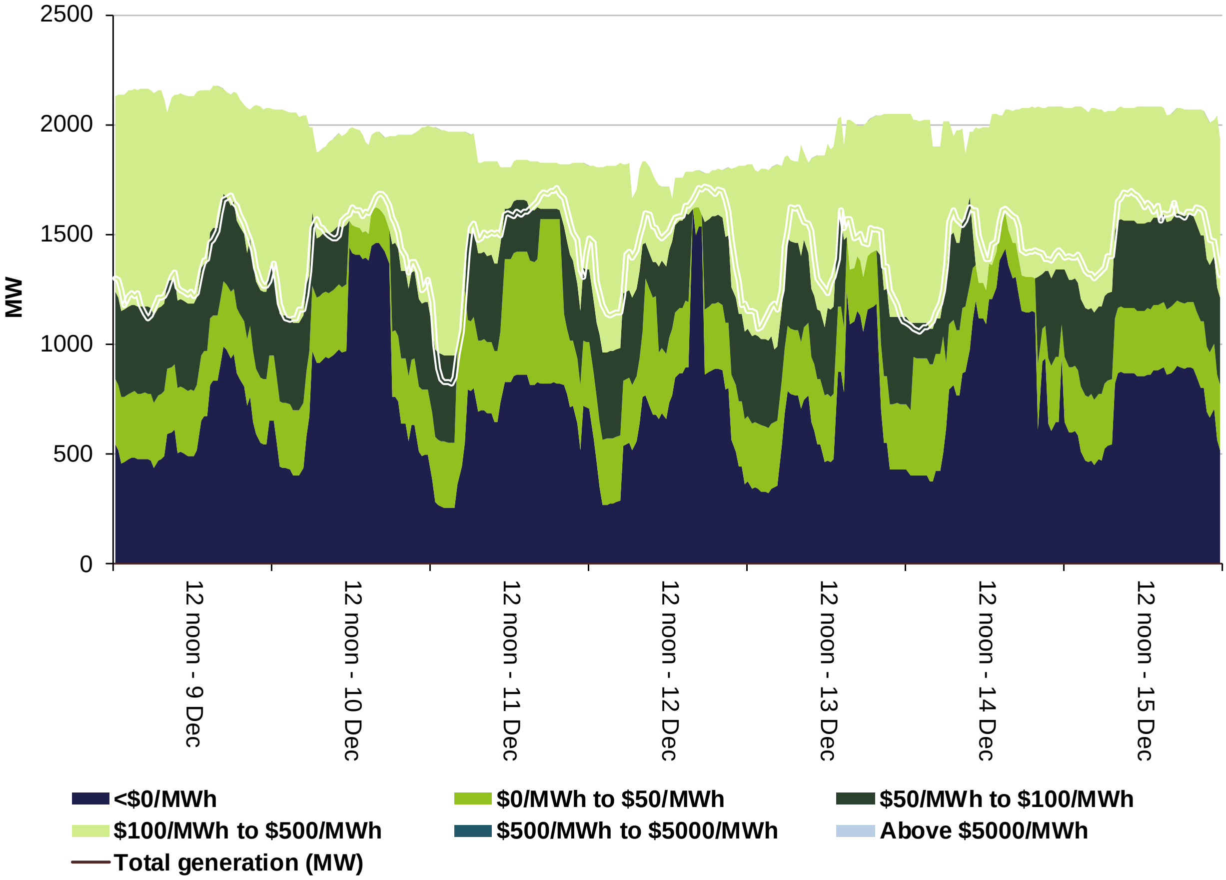


Figure 7: Tasmania generation and bidding patterns



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.

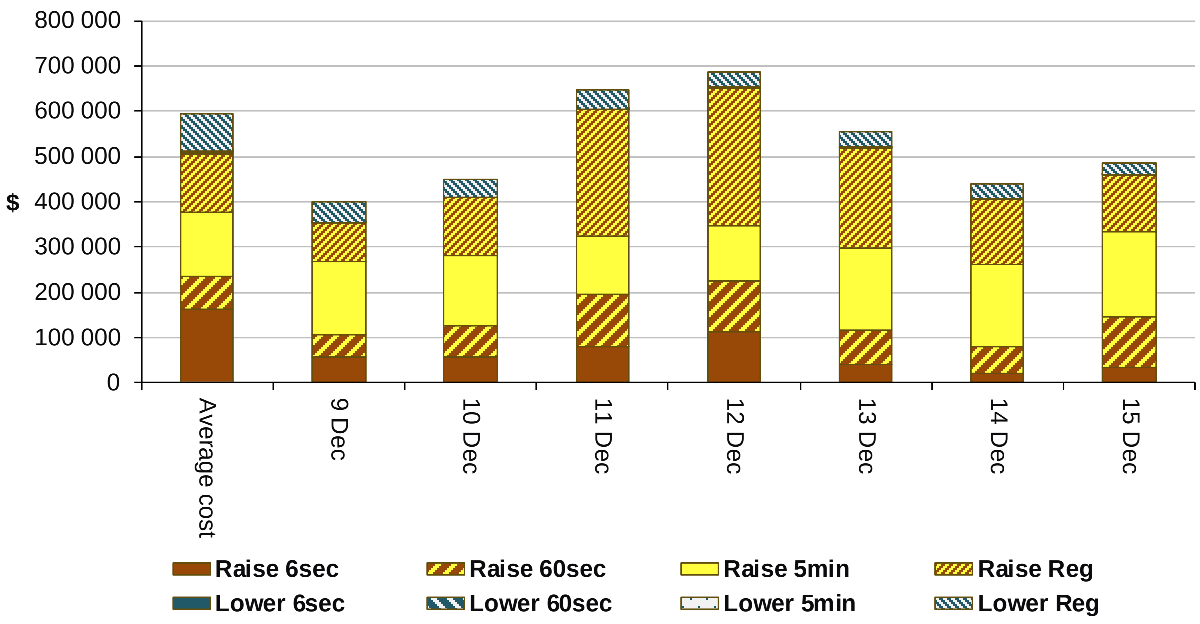
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a "causer pays" basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $3 369 500 or around one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $293 500 or around two 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 $99/MWh and above $250/MWh.

Friday, 14 December

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
4 pm	2461.08	90.76	279.50	7904	7528	7773	9917	10 238	10 261

Demand was 376 MW higher than forecast and availability was 321 MW lower than forecast, four hours prior.

At 3:40 pm, demand increased by 78 MW and a constraint managing an outage of transmission equipment at Lismore violated. This caused imports through the Queensland to New South Wales interconnector and exports across Directlink to violate. With cheaper priced energy either fully dispatched, ramp rate constrained, trapped in FCAS or taking longer than 5 minutes to start the price reached the cap for one dispatch interval.

Prices then decreased to $60/MWh at 3.45 pm when demand decreased by 104 MW and participants rebid around 865 MW of capacity from more than $500/MWh to less than $0/MWh. Prices then remained between $10/MWh and $65/MWh for the remainder of the trading interval as more capacity was rebid to the floor.

Victoria

There were two occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of $115/MWh and above $250/MWh.

Wednesday, 12 December

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
3.30 pm	449.92	144.99	225.25	7158	7037	7076	7545	7486	7552
4 pm	2274.64	151.53	287.99	7232	7113	7189	7550	7476	7536

Prices were aligned with South Australia and will be discussed as one region.

For the 3:30 pm trading interval, across both regions net demand was 387 MW higher than forecast and net availability was 284 MW lower than forecast, four hours prior.

The lower than forecast availability is mainly attributed to lower than forecast wind generation. This combined with the higher than forecast demand saw dispatch prices range between $399/MWh and $524/MWh in Victoria, and between $380/MWh and $507/MWh in South Australia, for the entire trading interval.

For the 4 pm trading interval, across both regions net demand was 312 MW higher than forecast and net availability was 204 MW lower than forecast, four hours prior.

The lower than forecast availability is mainly attributed to lower than forecast wind generation.

The first two dispatch prices were around $380/MWh due to the higher than forecast demand and lower than forecast availability.

At 3.42 pm Snowy Hydro rebid 121 MW from around $380/MWh to around $14 500/MWh across its Angaston, Lonsdale and Port Stanvac plants in South Australia. At the same time they also rebid 120 MW from the cap to the floor at its Valley power station in Victoria. While both these rebids were effective from 3.50 pm, the Valley power station takes longer than five minutes to start and did not contribute any low priced generation for the 3.50 pm dispatch interval.

At 3:50 pm there was also a net 32 MW drop in wind generation and a net 14 MW increase in demand. With cheaper priced generation trapped in FCAS or taking longer than five minutes to start the dispatch price increased to $12 290/MWh in Victoria and $12 161/MWh in South Australia.

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 $106/MWh and above $250/MWh and there were three occasions where the spot price was below -$100/MWh.

Wednesday, 12 December

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
3.30 pm	437.51	122.49	185.00	1980	1714	1622	2811	3154	3277
4 pm	2249.06	127.15	243.60	1939	1746	1679	2923	3201	3299

Prices were aligned with Victoria, see analysis from Victorian section.

Thursday, 13 December

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
12.30 pm	-112.96	73.85	78.11	925	813	886	3232	3038	3069
2.30 pm	-101.61	91.66	85.80	870	956	903	3136	3061	3035
4 pm	-114.74	98.84	185.00	834	1031	1014	3273	3124	3111

For the 12.30 pm trading interval demand was 112 MW greater than that forecast and 86 MW and 197 MW less than forecast for the 2.30 pm and 4pm trading intervals respectively, four hours ahead.

Availability was between 75 MW and 194 MW greater than forecast four hours prior, this was mainly due to higher than forecast wind generation.

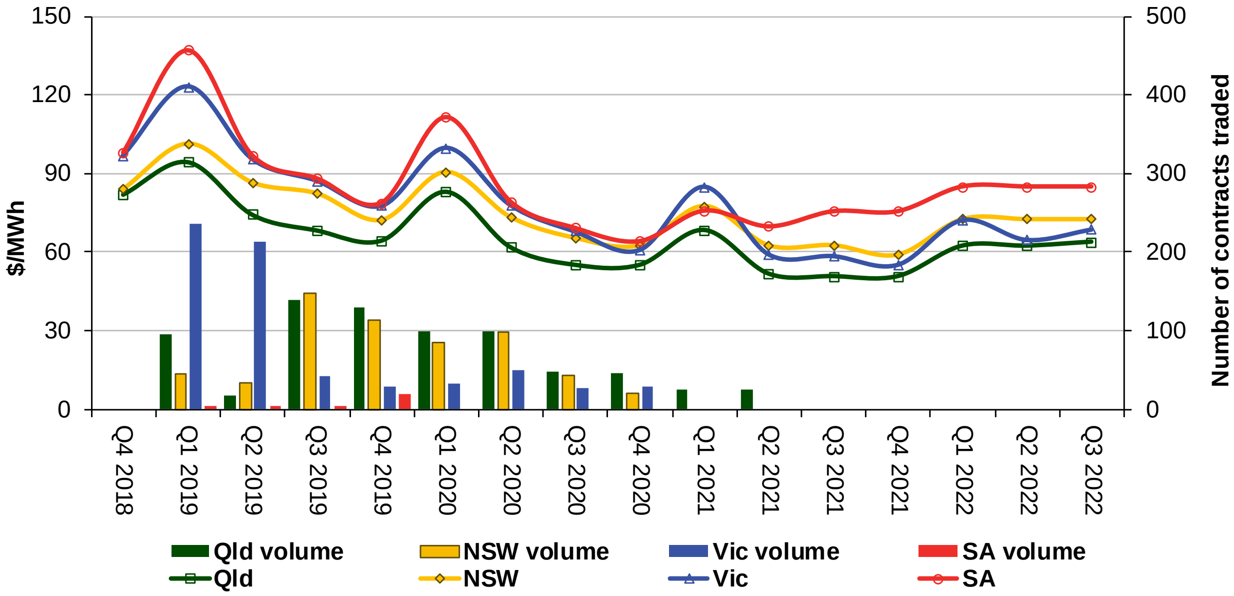
There were little capacity priced between the price floor and $90/MWh, hence small changes in demand and wind generation resulted in large changes in price.

The three negative spot prices were driven by a single negative price during the respective interval. Specifically, at 12.10 pm, 2.20 pm and 4 pm, there was a small decrease in demand and an increase in wind generation and the dispatch price dropped to -$1000/MWh.

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.

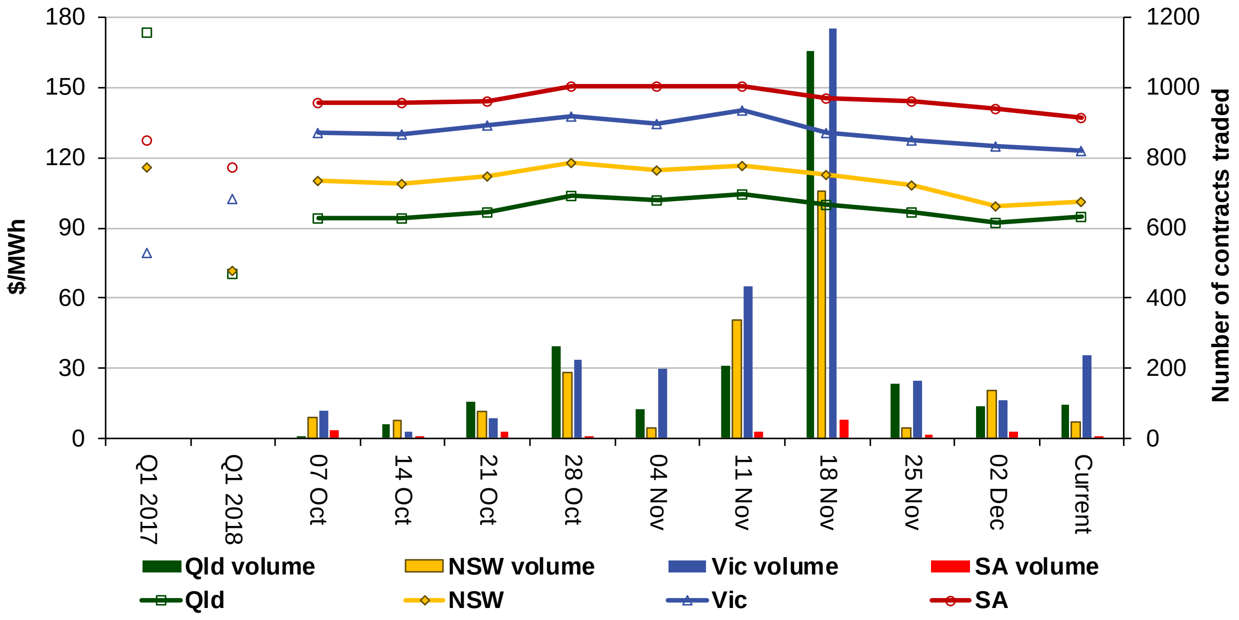
Figure 9: Quarterly base future prices Q4 2018 – Q3 2022



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)



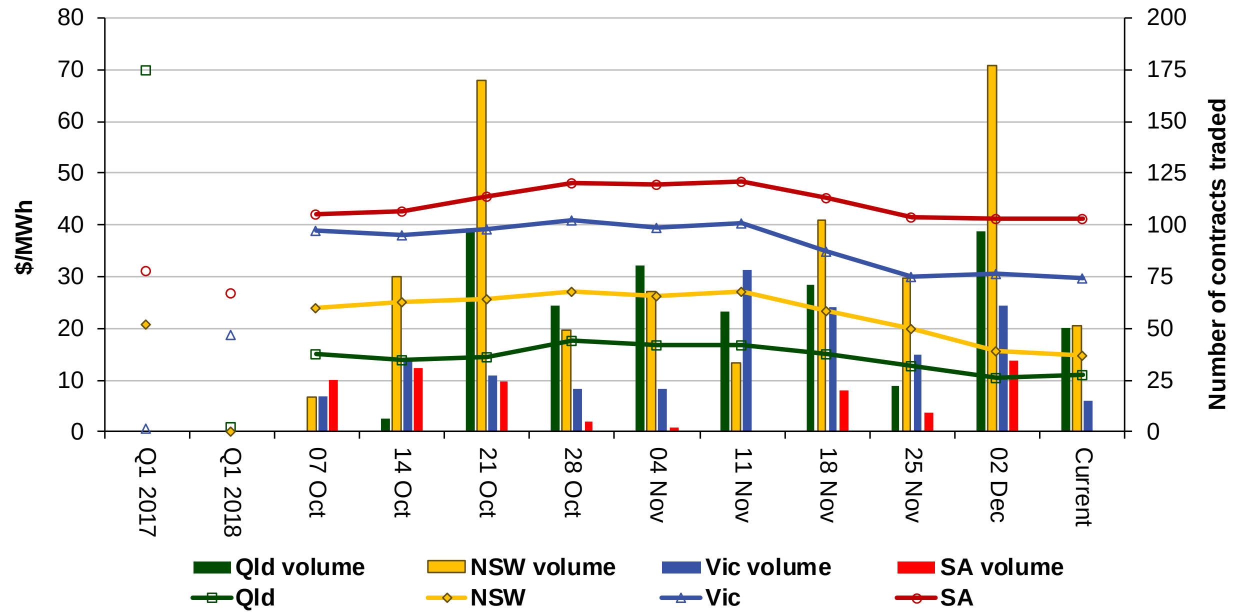
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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
January 2019