Electricity Report

AUSTRALIAN ENERGY REGULATOR

18 – 24 October 2020

Weekly Summary

Weekly volume weighted average (VWA) prices ranged between $36/MWh in Queensland and $80/MWh in New South Wales. The higher weekly VWA price in New South Wales was in part driven by prices above $2300/MWh on 23 October. On that day there were planned and unplanned outages across most large coal plants in NSW including Eraring, Liddell, Mt Piper, and Vales Point.

Q4 2020 quarter to date average prices ranged from $35/MWh in Queensland up to $62/MWh in New South Wales; down from between $75/MWh and $133/MWh the year prior.

On 23 October, higher FCAS costs also occurred, relating to high FCAS requirements in Queensland.

Purpose

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 18 to 24 October 2020.

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

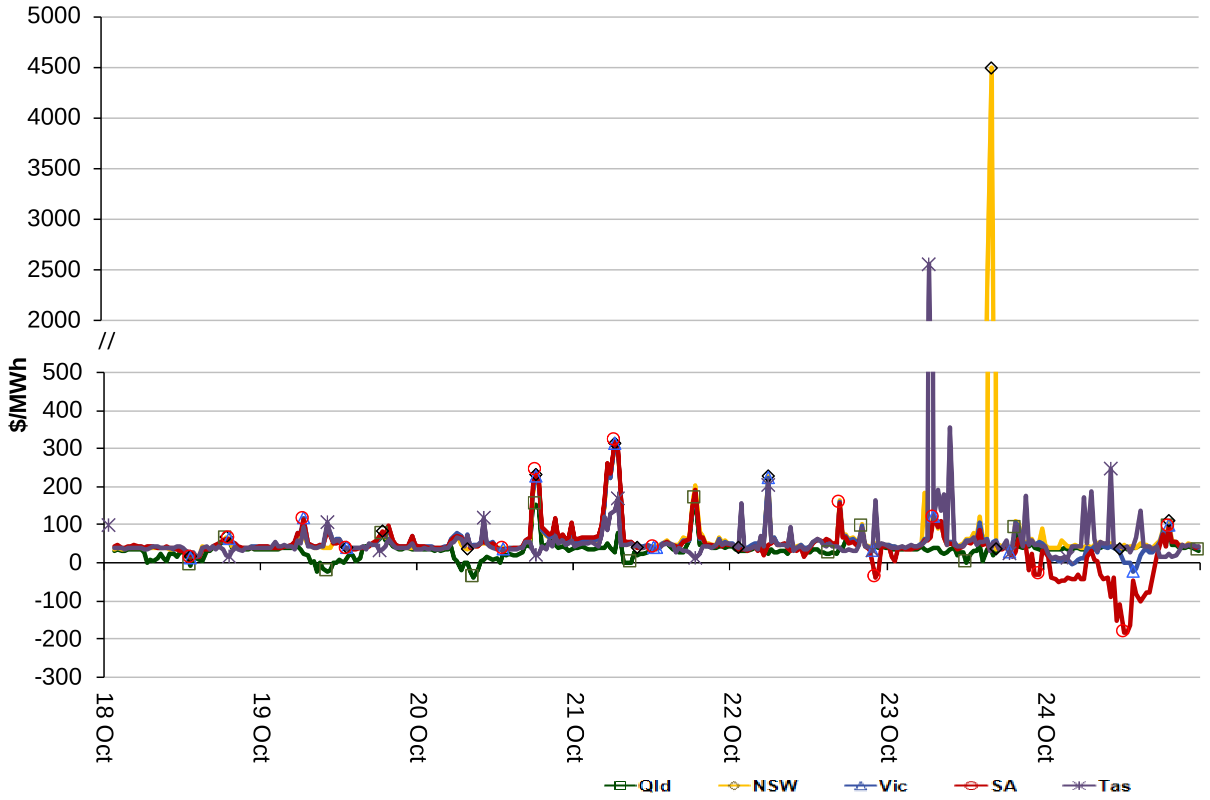


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

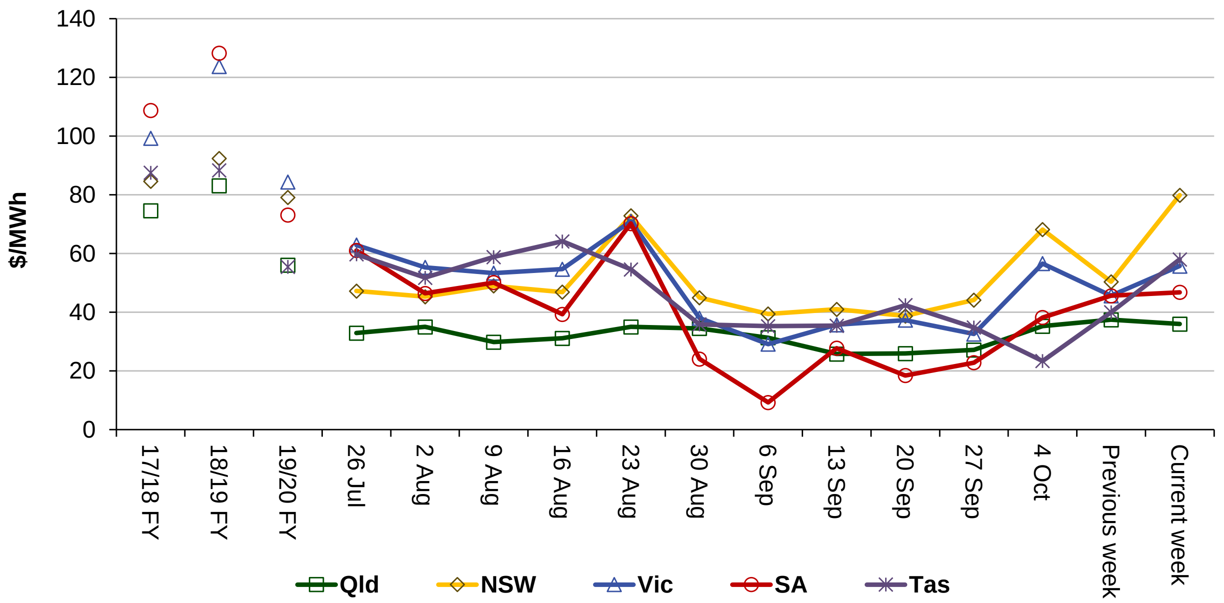


Table 1: Volume weighted average spot prices by region ($/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	36	80	56	47	58
Q4 2019 QTD	75	102	107	77	113
Q4 2020 QTD	35	62	47	38	38
19-20 financial YTD	67	89	104	81	78
20-21 financial YTD	34	51	53	45	48

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 228 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2019 of 204 counts and the average in 2018 of 199. 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	30	0	3
% of total below forecast	14	36	0	9

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

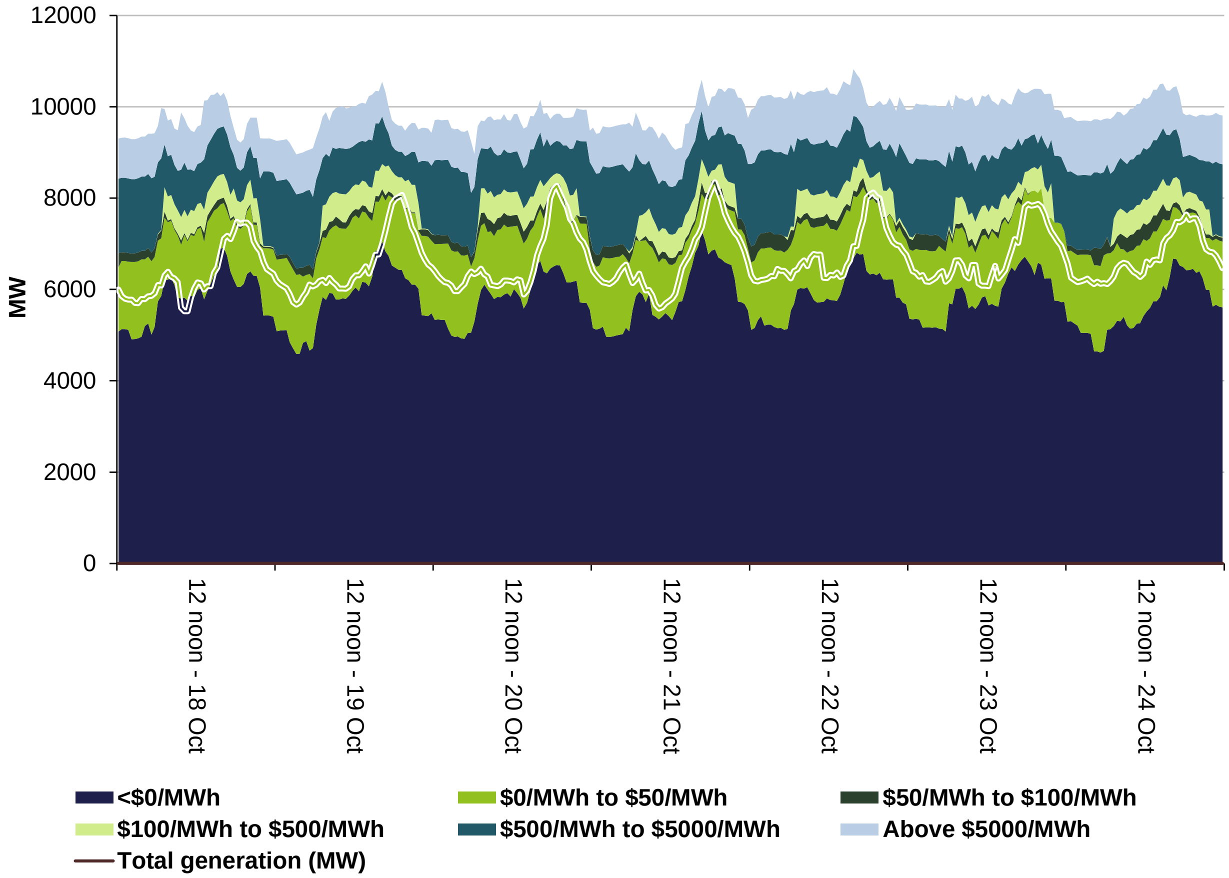


Figure 4: New South Wales generation and bidding patterns

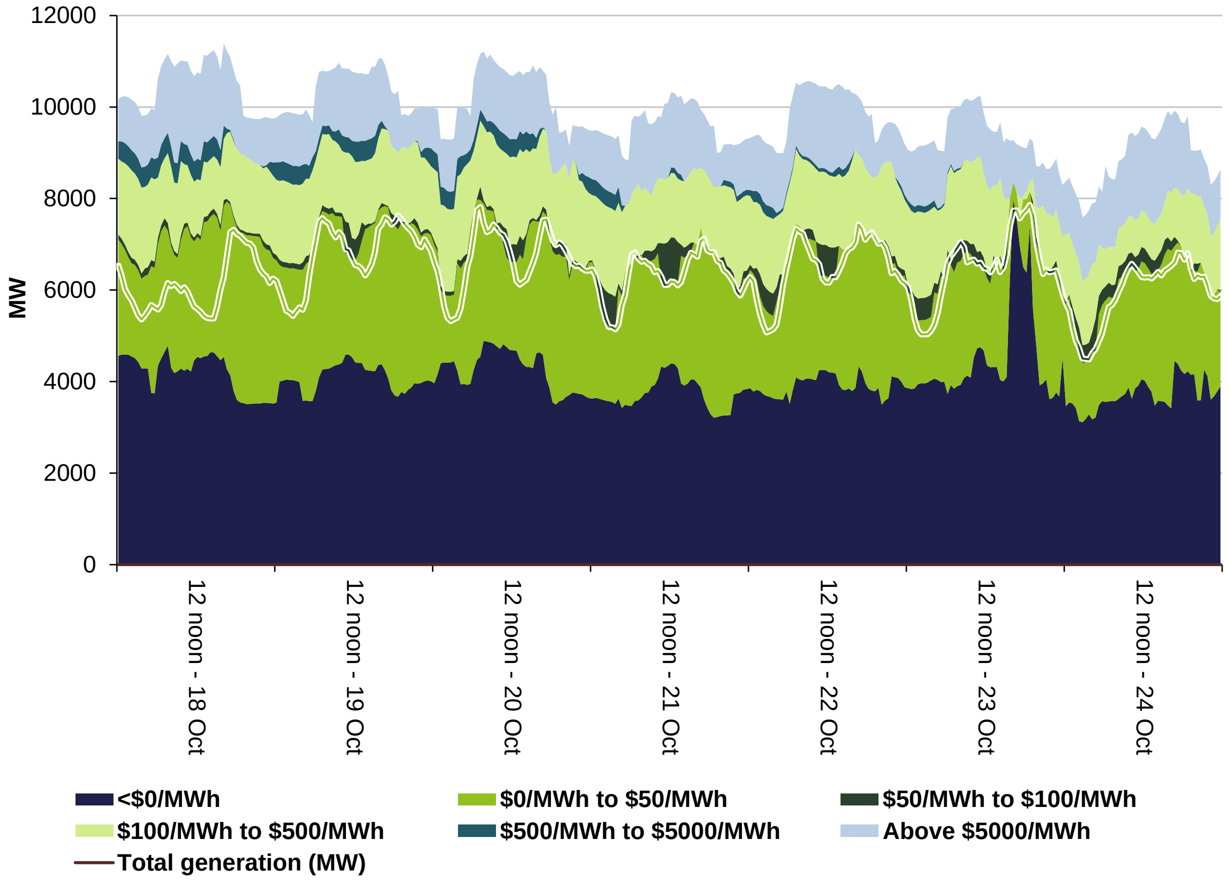


Figure 5: Victoria generation and bidding patterns

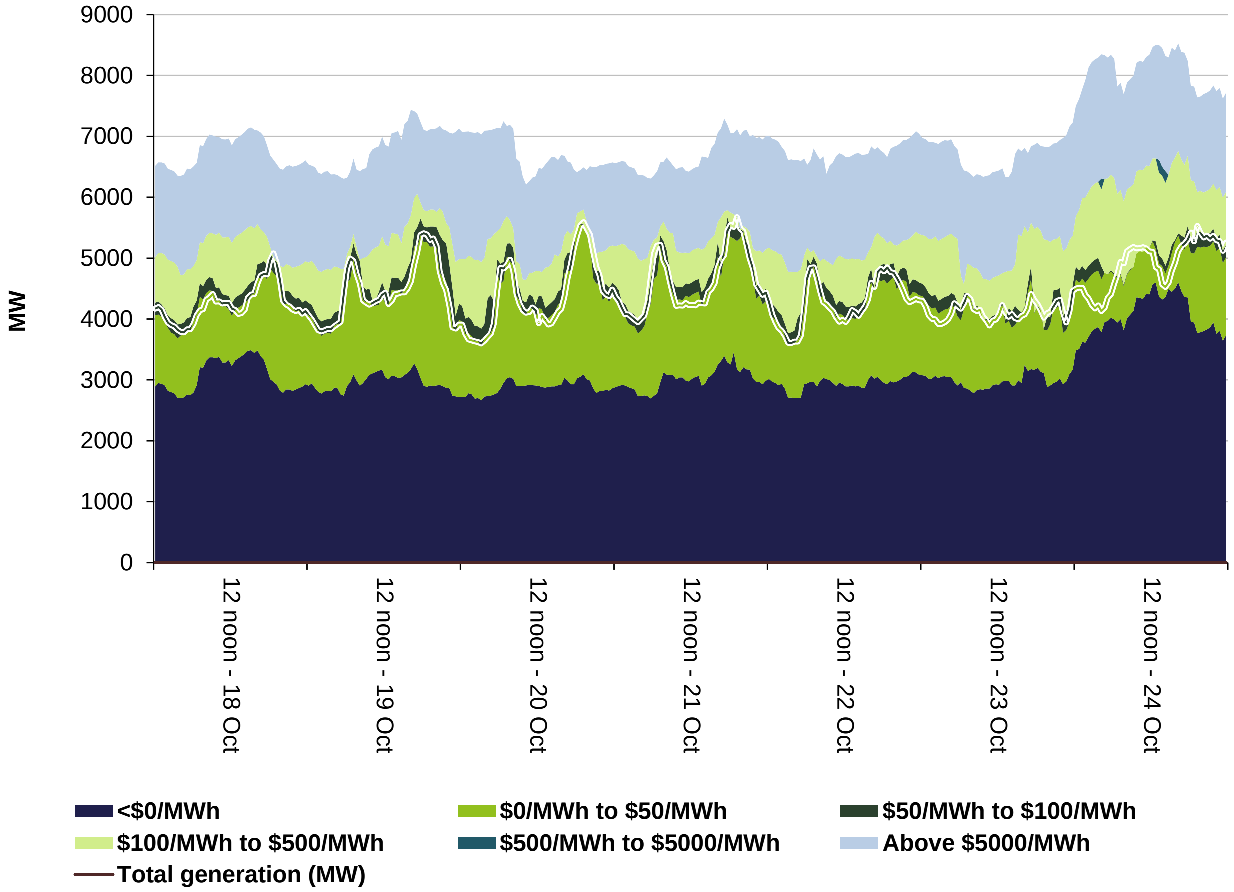


Figure 6: South Australia generation and bidding patterns

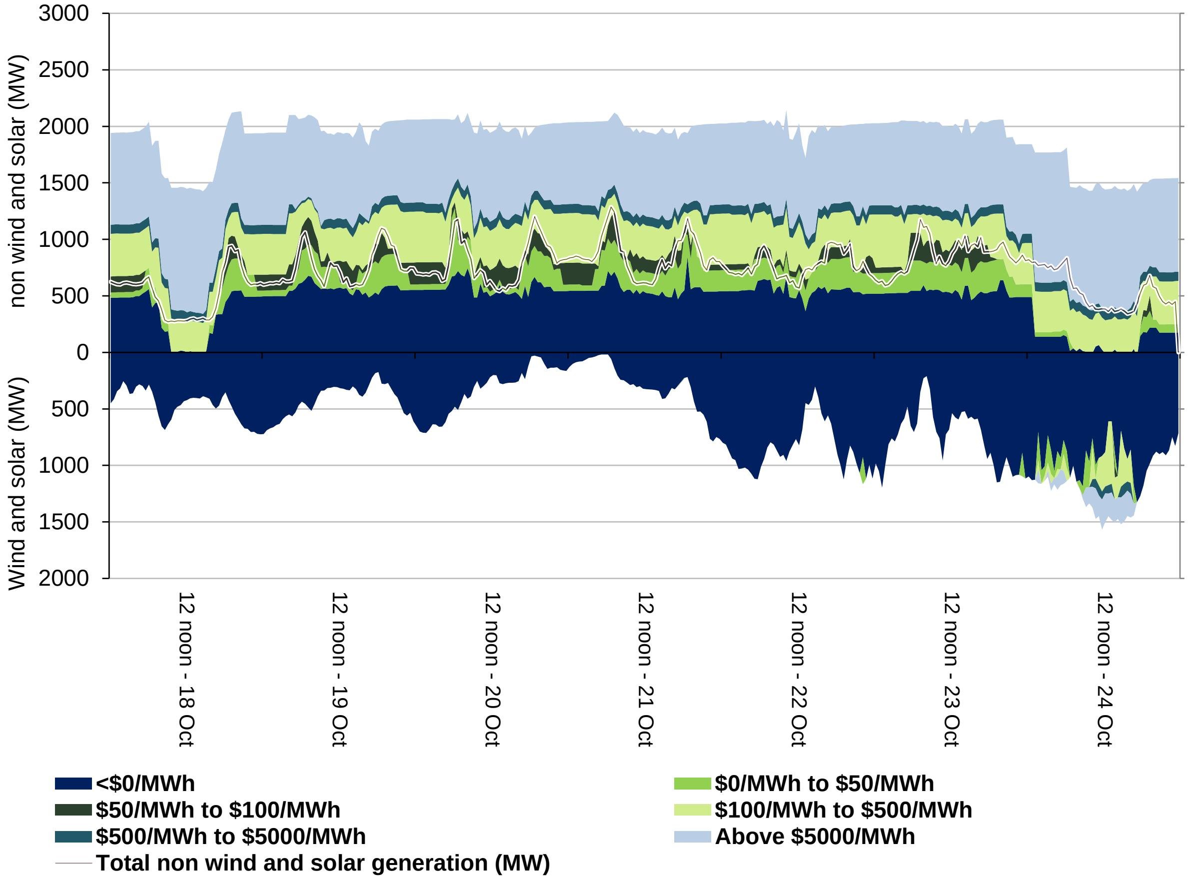
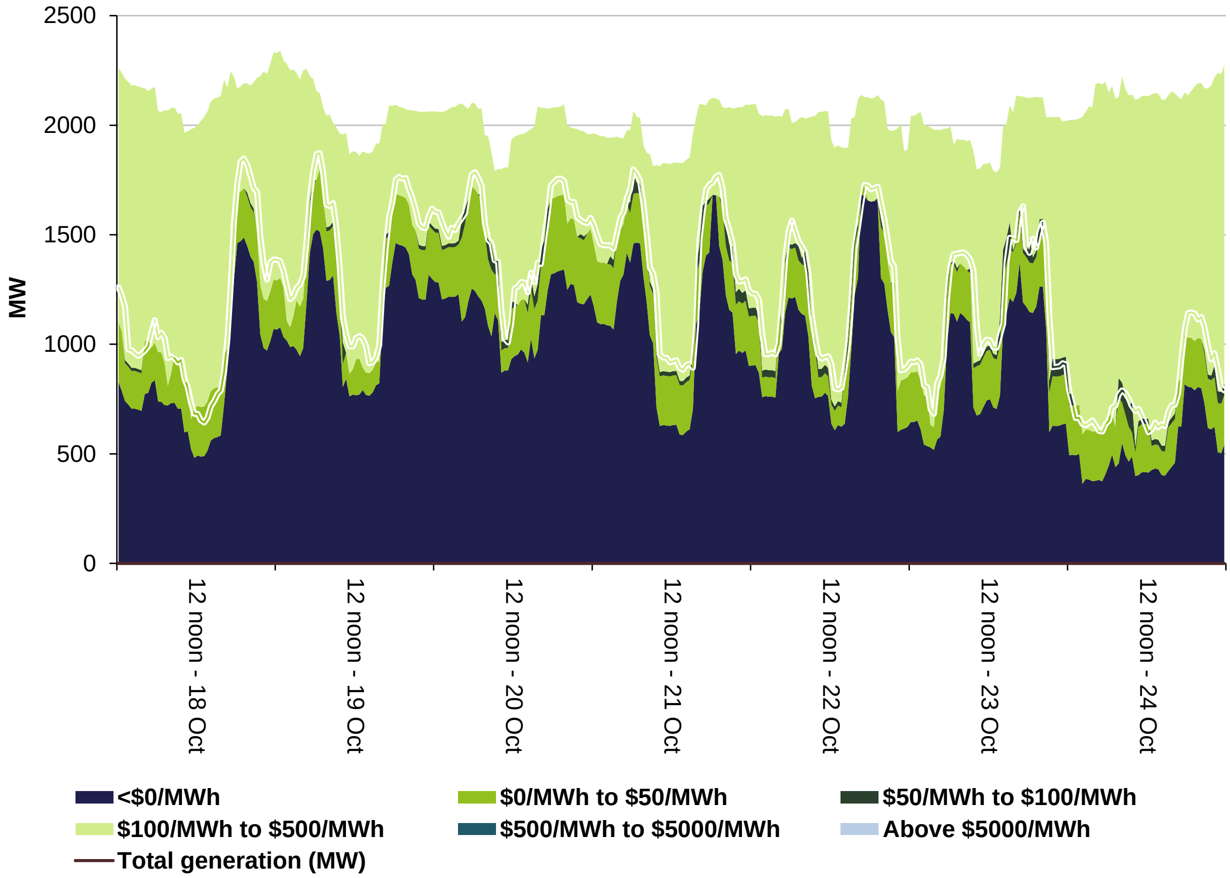


Figure 7: Tasmania generation and bidding patterns



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.

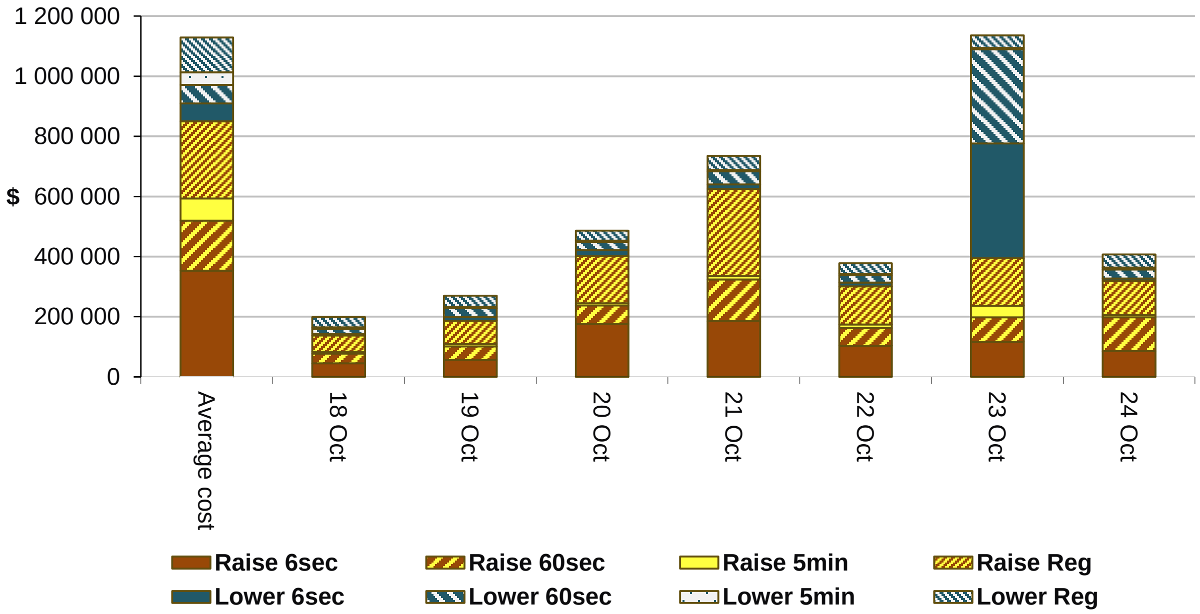
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $3 282 000 or less than 2 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $328 500 or around 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



There were prices of around $12 800/MW for Queensland local lower 6 second and lower 60 second services between 4 pm to 4.10 pm on 23 October. At 4 pm the requirement for lower services increased by more than 400 MW and effective availability decreased at the same time. With only a similar level of local effective availability for each service, the price increased for some of the dispatch intervals from 4 pm to 4.10 pm.

Detailed market analysis of significant price events

New South Wales

There were four occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $80/MWh and above $250/MWh.

Wednesday, 21 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
6.30 am	313.39	291.64	299.60	7381	7365	7364	9709	10 030	9549
7 am	298.90	209.77	299.60	7411	7425	7443	9809	10 170	9683

Prices were aligned across New South Wales, Victoria and South Australia and analysed as one region. For the 6.30 am trading interval, prices were close to forecast.

For the 7 am trading interval, demand was collectively close to forecast and availability was 601 MW lower than forecast, four hours prior. Lower than forecast availability was due to rebids by AGL Energy for technical reasons that removed 330 MW of low priced capacity at Liddell and Loy Yang A, and lower than forecast wind and solar generation in NSW, Victoria and South Australia. The lower than forecast availability resulted in price being set around $300/MWh for the majority of the trading interval.

Friday, 23 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
4 pm	2302.95	299.60	299.60	7950	8079	7986	9229	9879	10 532
4.30 pm	4502.26	299.60	299.60	7976	8302	8215	9246	10 187	10 805

A planned outage of the Muswellbrook to Tamworth lines and unplanned outages of the Marulan to Yass and Canberra to Lower and Upper Tumut lines limited flows of lower priced generation from Queensland and Victoria into New South Wales.

For the 4 pm and 4.30 pm trading intervals, demand was between 129 MW and 326 MW lower than forecast and availability was between 650 MW and 941 MW lower than forecast, four hours prior. Lower than forecast availability was due to lower than forecast wind generation and rebids that removed more than 800 MW of capacity priced below $38/MWh for technical reasons:

- Over 1000 MW by Origin Energy at Eraring effective for both trading intervals.
- 92 MW by AGL Energy at Silverton Wind Farm effective for both trading intervals.
- 300 MW by AGL Energy at Bayswater effective for the 4.30 pm trading interval.

In the four hours to dispatch, Energy Australia rebid 218 MW of capacity at Tallawarra from the price floor to above $13 400/MWh in response to changes in forecast prices. With little to no capacity priced between $40/MWh and $13 400/MWh, small changes in demand or availability could cause large changes in price.

At 4 pm demand increased by 115 MW and with a number of generators trapped/stranded in FCAS and unable to set price, 13 MW of high priced generation was needed and the price was set by EnergyAustralia at Tallawarra at $13 400/MWh for the last five minutes of the trading interval.

For the first 10 minutes of the 4.30 pm trading interval, between up to 15 MW of high priced generation was needed and the price continued to be set by EnergyAustralia at Tallawarra. At 4.15 pm, demand fell by 110 MW and lower-priced generators were no longer ramp constrained or trapped or stranded in FCAS and the price fell below $70/MWh for the remainder of the trading interval.

Victoria

There were two occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of $56/MWh and above $250/MWh.

Wednesday, 21 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
6.30 am	311.33	299.50	299.50	5246	5244	5277	6353	6440	6496
7 am	301.80	370.37	306.51	5384	5426	5477	6401	6493	6555

Prices were aligned across New South Wales, Victoria and South Australia and analysed as one region. See the New South Wales section for analysis.

South Australia

There were three occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $47/MWh and above $250/MWh and there were six occasions where the spot price was below -$100/MWh.

Wednesday, 21 October

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
5.30 am	262.10	130.56	129.40	1180	1197	1183	2061	2189	2183
6.30 am	322.17	312.39	312.51	1308	1330	1323	2064	2206	2190
7 am	307.99	379.95	319.83	1371	1372	1364	2103	2251	2229

For the 5.30 am trading interval, prices were aligned across New South Wales, Victoria and South Australia but only South Australia breached our reporting thresholds. Collectively, demand was close to forecast and availability was around 470 MW lower than forecast, four hours prior.

Lower than forecast availability was due to one of AGL's Liddell units tripping, removing 280 MW of capacity and lower than forecast wind generation in Victoria.

There was little capacity offered between $70/MWh and $300/MWh, so small changes in demand or availability could cause large fluctuations in price. From 5.10 am, demand increased by nearly 200 MW and continued to increase throughout the trading interval. This resulted in prices around $300/MWh for the rest of the trading interval.

For the 6.30 am and 7 am trading intervals, prices were aligned across New South Wales, Victoria and South Australia and analysed as one region. See the New South Wales section for analysis.

Saturday, 24 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
11.30 am	-151.78	-200	-1000	733	543	525	2887	2688	2804
Midday	-109.92	-649.33	-1000	721	465	430	3004	2691	2792
12.30 pm	-184.13	-1000	-1000	712	432	393	2953	2728	2802
1 pm	-182.16	-649.33	-1000	623	411	370	2897	2741	2789
1.30 pm	-165.64	-1000	-1000	620	385	337	2933	2752	2791
3 pm	-103.43	-514.83	-553	675	476	464	2971	2744	2788

Demand was between 190 MW to 280 MW higher than forecast and availability was between 156 MW to 313 MW higher than forecast, four hours prior. Higher than forecast availability was mainly due to higher than forecast wind and solar generation, most of which was priced below $0/MWh, and rebids by AGL Energy at Torrens Island that added 80 MW of high priced capacity due to 'AEMO direction'.

From around 8 am, rebids shifted more than 95 MW of capacity from prices below -$200/MWh to prices above $156/MWh in response to changes in forecast prices.

For the 11.30 am and 12.30 pm trading intervals, the rebids resulted in price settling higher than forecast for most of the trading intervals.

For the other trading intervals, the price dropped below -$514/MWh once in each trading interval as forecast. In response, participants rebid over 160 MW of capacity from prices below -$649/MWh to prices above -$27/MWh resulting in higher than forecast prices.

Tasmania

There were two occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of $58/MWh and above $250/MWh.

Friday, 23 October

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
7 am	2557.01	98.57	268.03	1163	1282	1284	1917	1944	1935
10 am	356.01	52.75	52.03	1205	1170	1150	1906	1944	1923

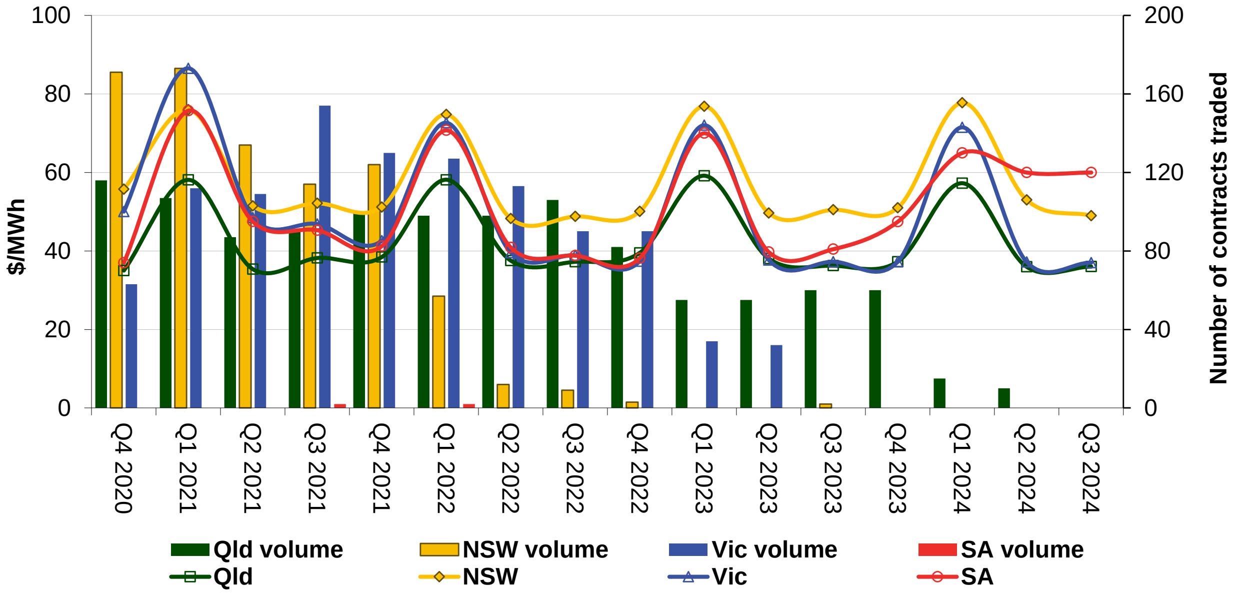
For the 7 am trading interval demand was 119 MW lower than forecast and availability was close to forecast, four hours prior. At 6.35 am, the requirement for raise services increased by about 95 MW within five minutes and caused the FCAS and Energy markets to co-optimise. As a result, the price increased to $15 000/MWh for five minutes.

For the 10 am trading interval demand and availability were both close to forecast, four hours prior. In the four hours to dispatch Hydro Tasmania rebid around 150 MW of capacity from prices below $13/MWh to $399/MWh. In addition, there was no generation offered between $80/MWh and $390/MWh so small changes in demand or availability could result in large changes in price. From 9.40 am, with cheaper priced generation either ramp constrained or trapped or stranded in FCAS, price were set above $399/MWh for most of the trading interval.

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.

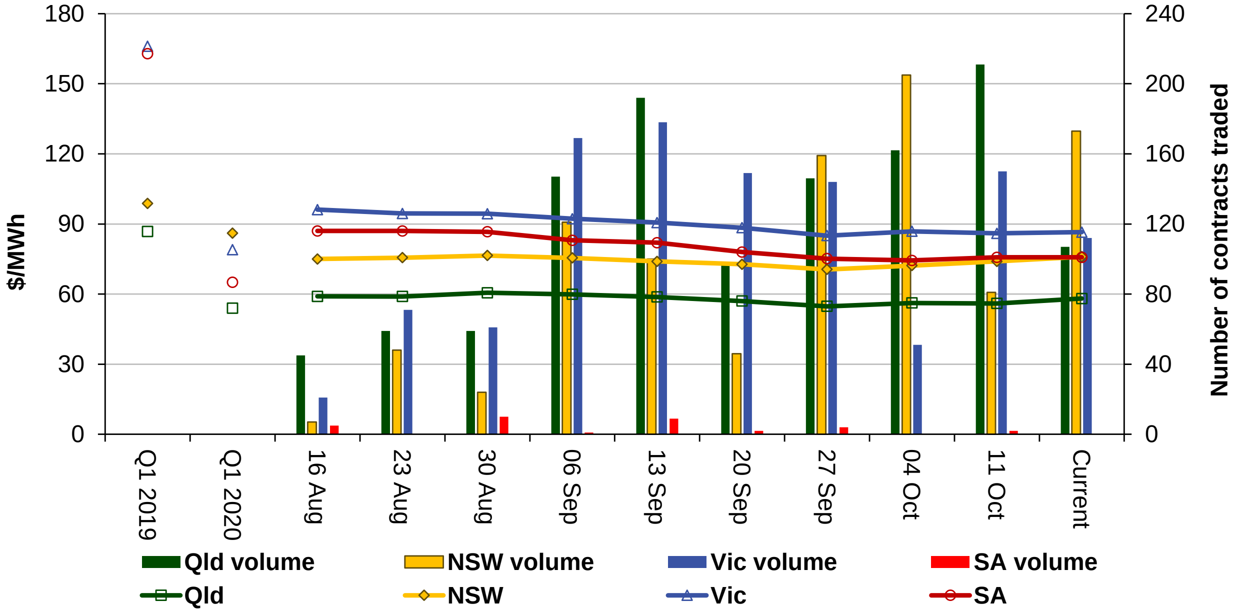
Figure 9: Quarterly base future prices Q4 2020 – Q3 2024



Source. ASXEnergy.com.au

Figure 10 shows how the price for each regional Q1 2021 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing Q1 2019 and Q1 2020 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 2020 base contracts over the past 10 weeks (and the past 2 years)

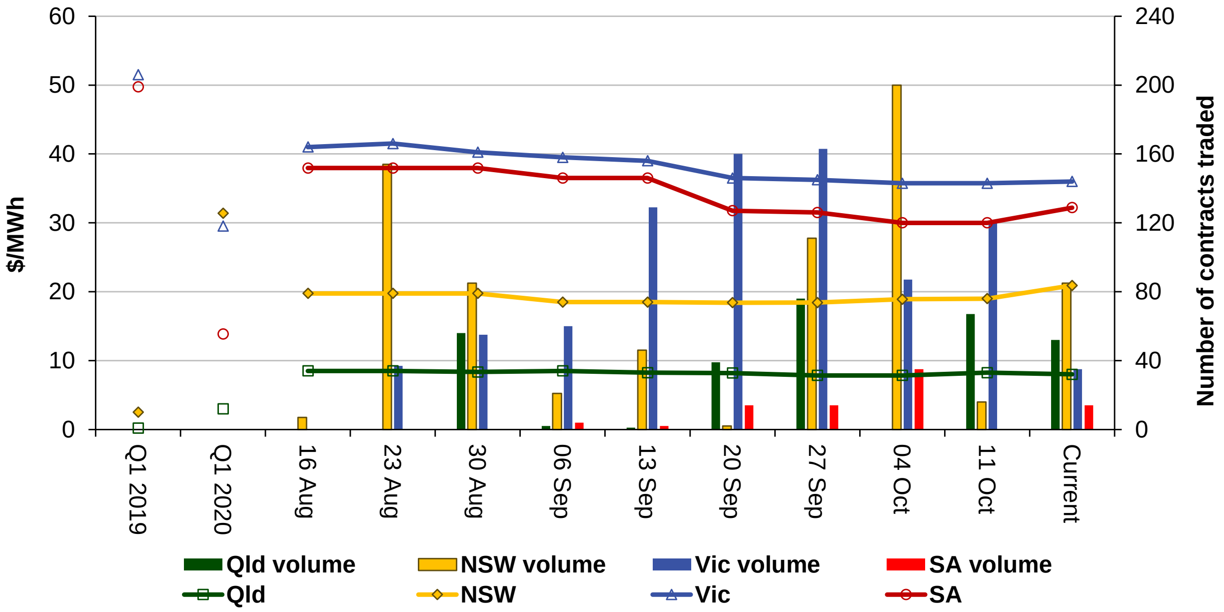


Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

Source. ASXEnergy.com.au

Figure 11 shows how the price for each regional Q1 2021 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing Q1 2019 and Q1 2020 prices are also shown.

Figure 11: Price of Q1 2020 cap contracts over the past 10 weeks (and the past 2 years)



Source. ASXEnergy.com.au

Prices of other financial products (including longer-term price trends) are available in the [Industry Statistics](#) section of our website.

Australian Energy Regulator
November 2020