

## 29 December – 4 January 2020

### Weekly Summary

Prices in the NEM ranged from \$64/MWh in Queensland and \$319/MWh New South Wales. The high average prices were mainly a result of events on 4 January when bushfires in the vicinity of the transmission network around the Snowy Mountains saw multiple outages occur in quick succession. This led to the New South Wales to Victoria interconnector being interrupted, electrically separating the two regions. As a result of the network outages and subsequent constraints on other generators to manage the security requirements, the wholesale price rose significantly to reflect the extreme and volatile conditions. The AER has written a \$5000/MWh report into these events.

It also resulted in FCAS costs on 4 January close to \$24 million.

Shortly after the network outages occurred the market operator, AEMO, declared a Lack of Reserve (LOR) level 2 in New South Wales. Later in the evening AEMO invoked the Reliability and Emergency Reserve Trader (RERT) mechanism to ensure there was enough supply to meet demand.

Unplanned network outages in New South Wales due to bushfires also resulted in prices above \$5000/MWh in Victoria on 30 January.

### 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 29 December 2019 to 4 January 2020.

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

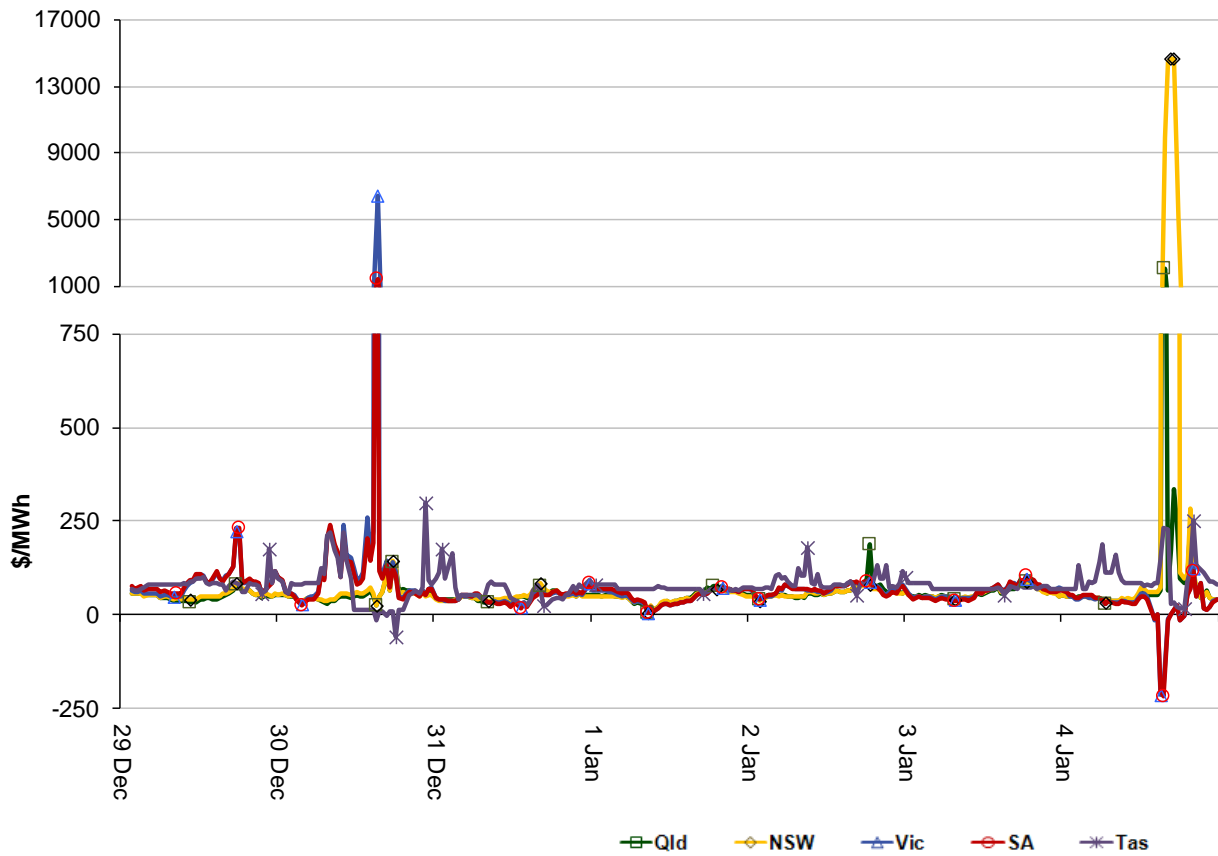
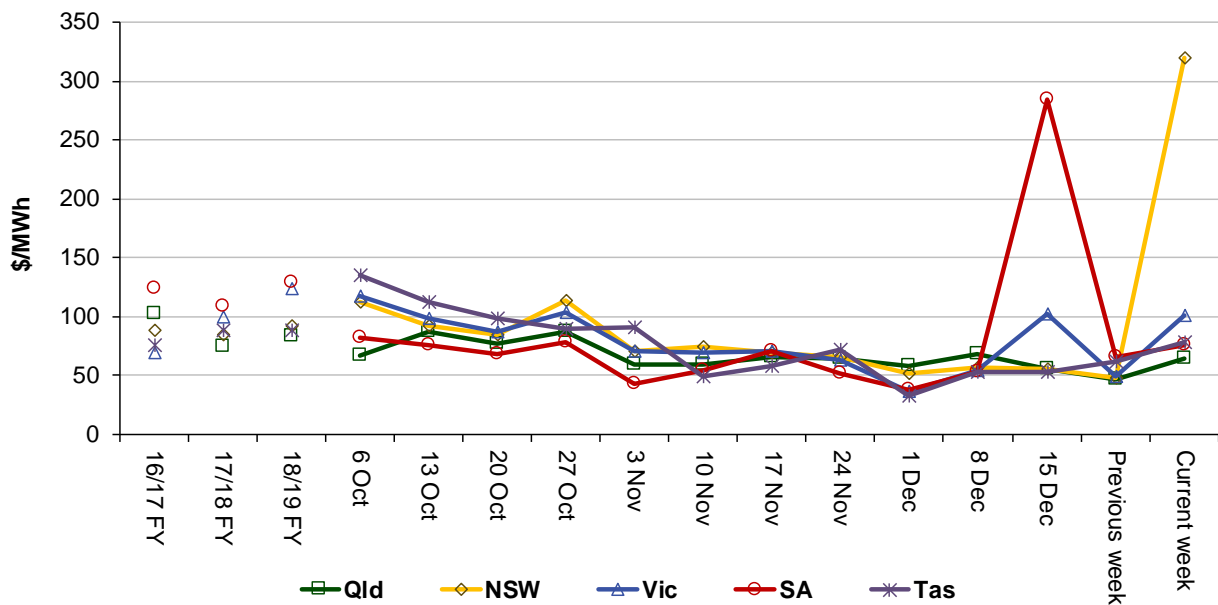


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

**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	64	319	101	76	78
18-19 financial YTD	83	89	92	98	63
19-20 financial YTD	65	91	92	84	73

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 259 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2018 of 199 counts and the average in 2017 of 185. 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**

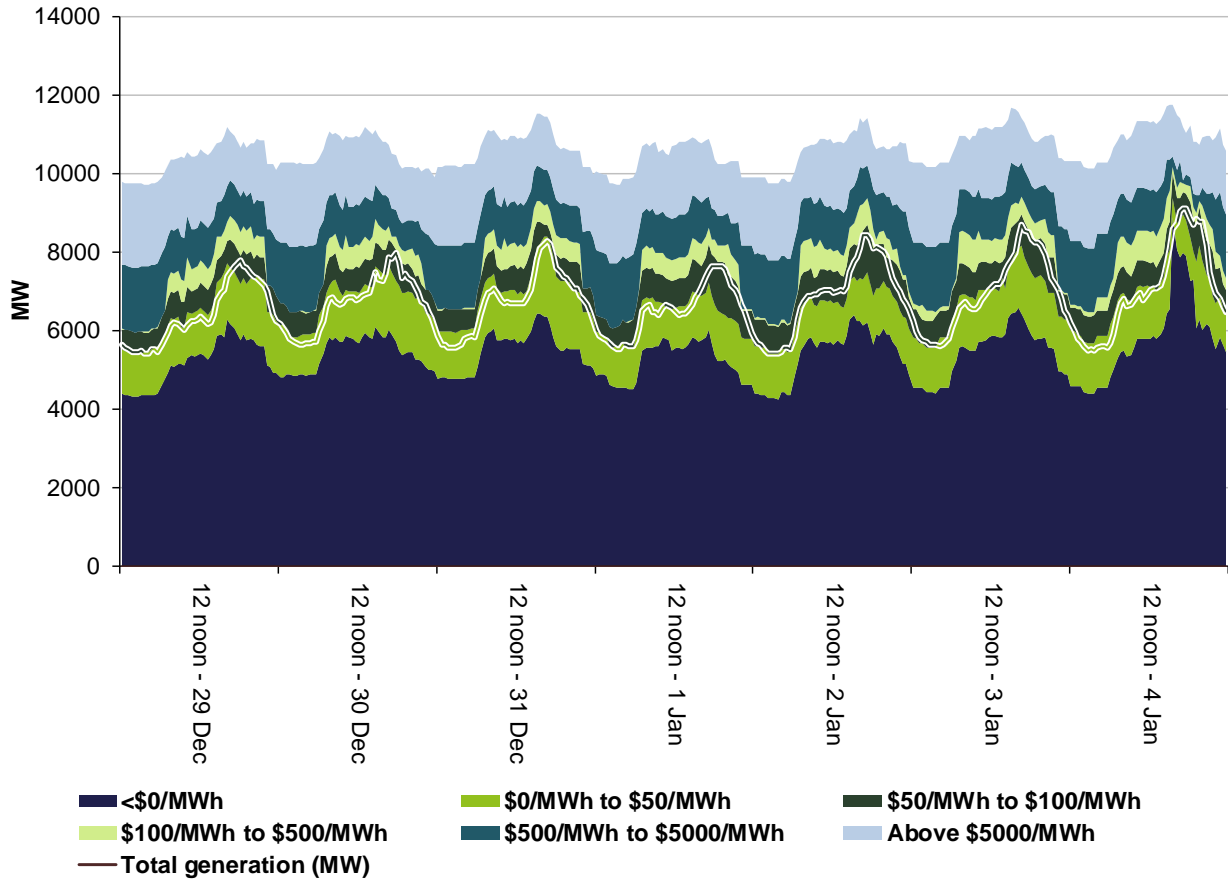
	Availability	Demand	Network	Combination
% of total above forecast	7	20	9	0
% of total below forecast	8	47	0	10

Note: Due to rounding, the total may not be 100 per cent.

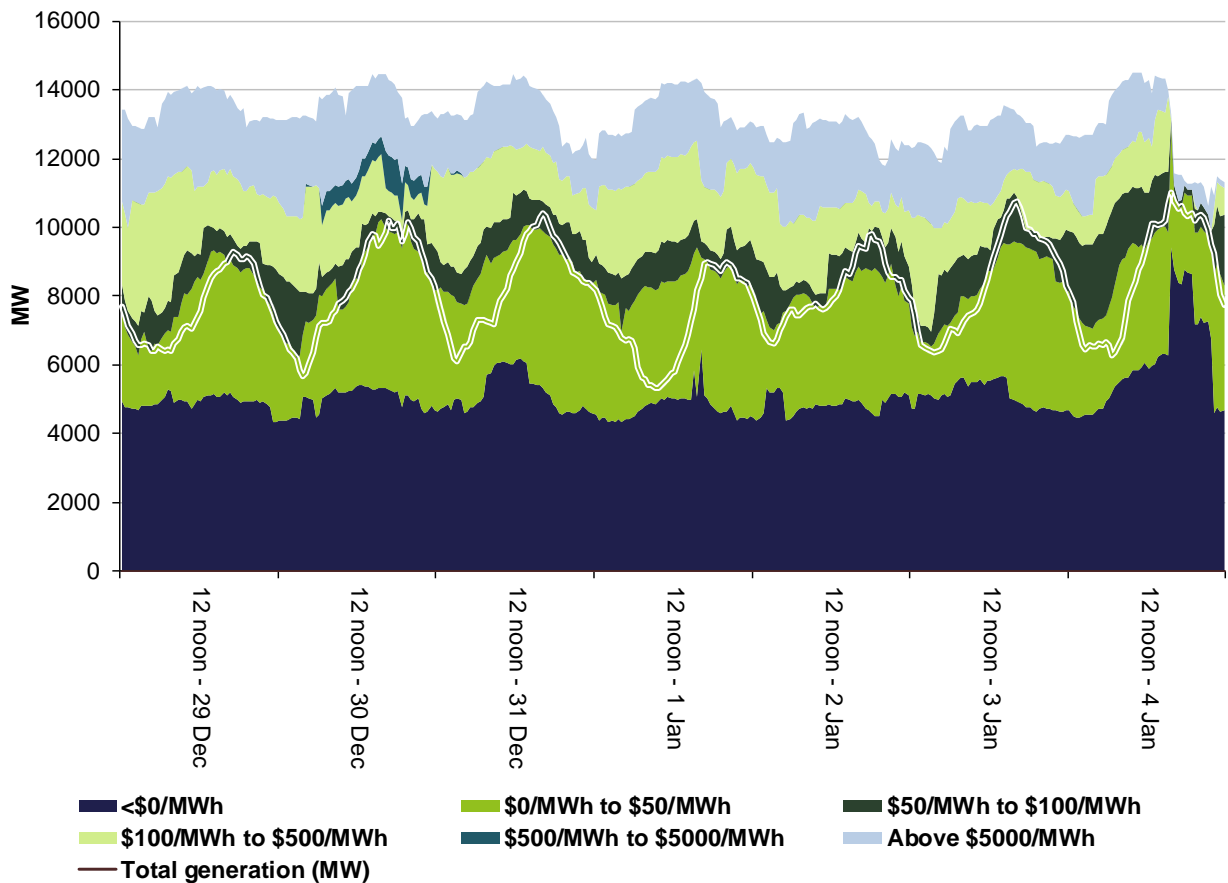
## Generation and bidding patterns

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.

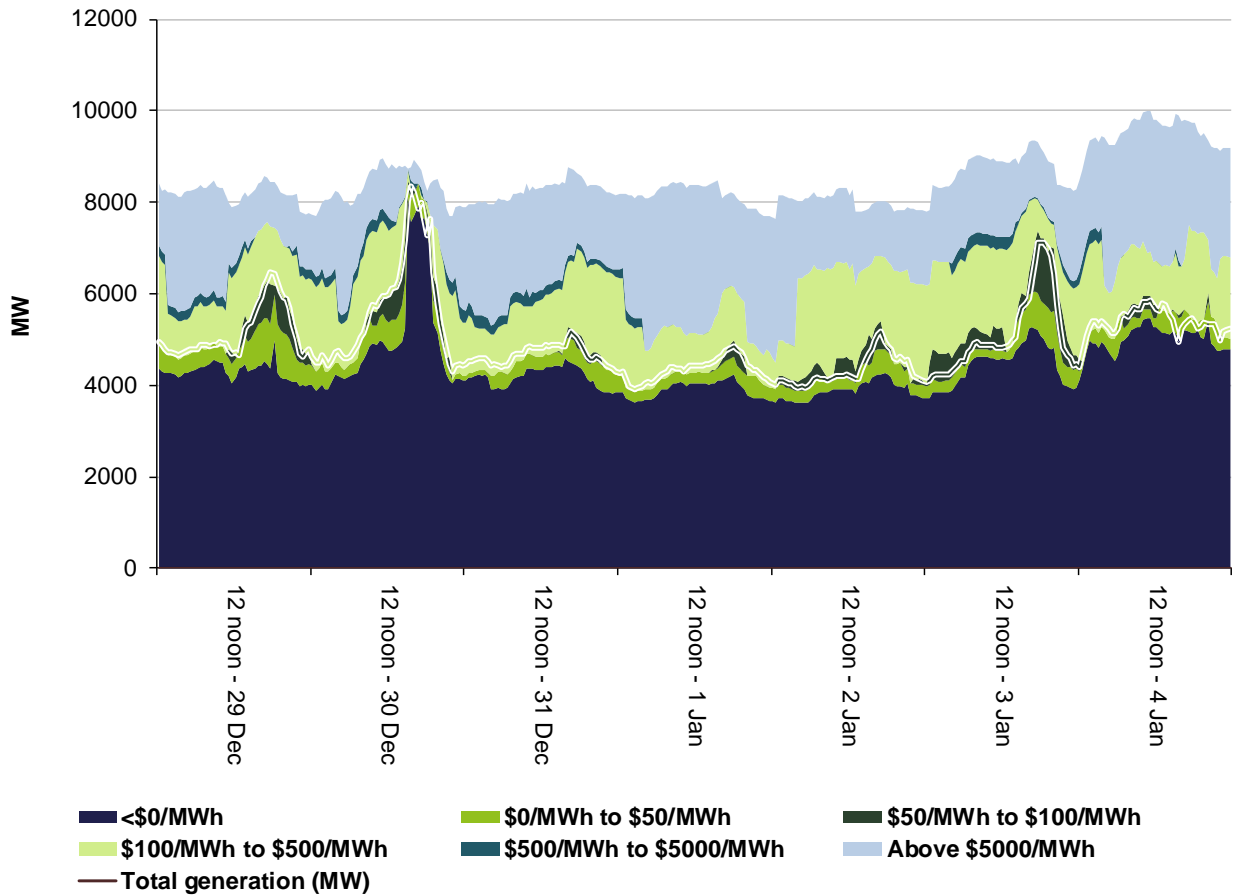
**Figure 3: Queensland generation and bidding patterns**



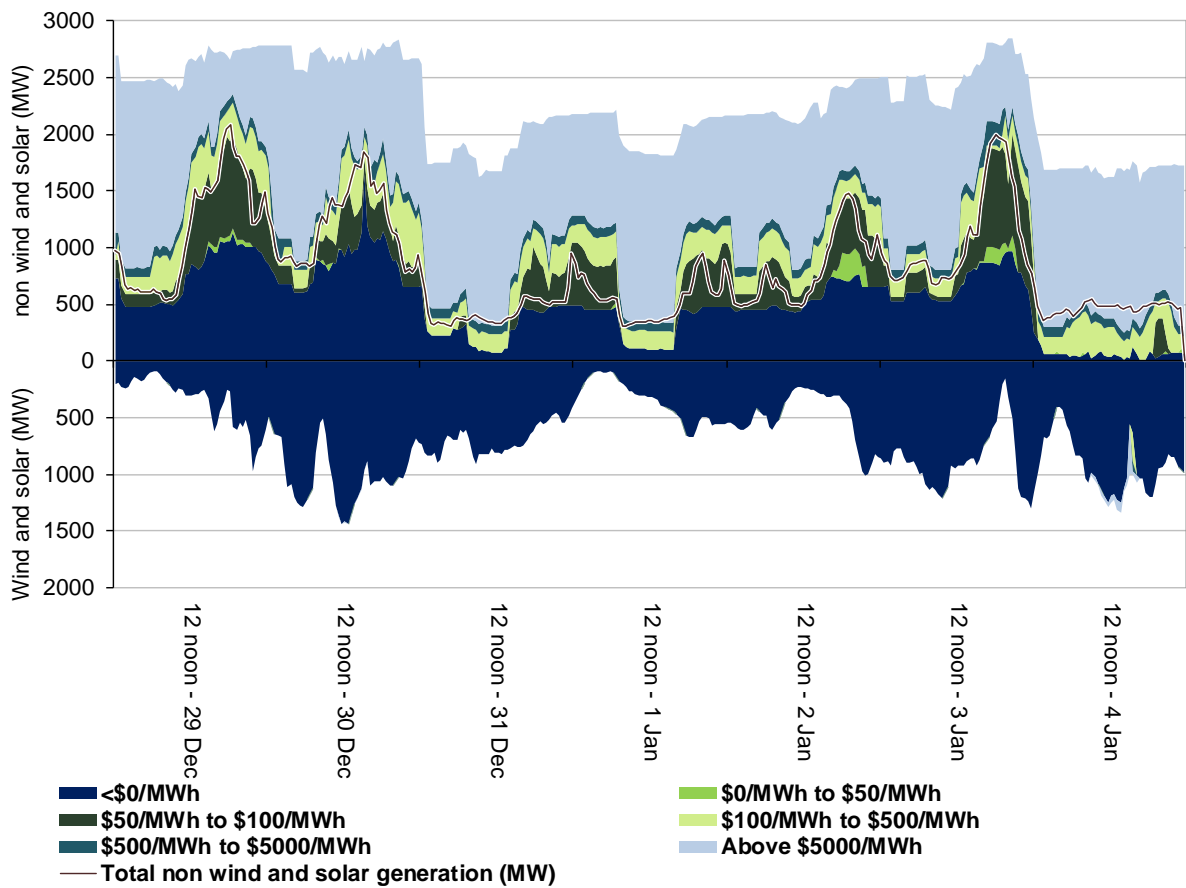
**Figure 4: New South Wales generation and bidding patterns**



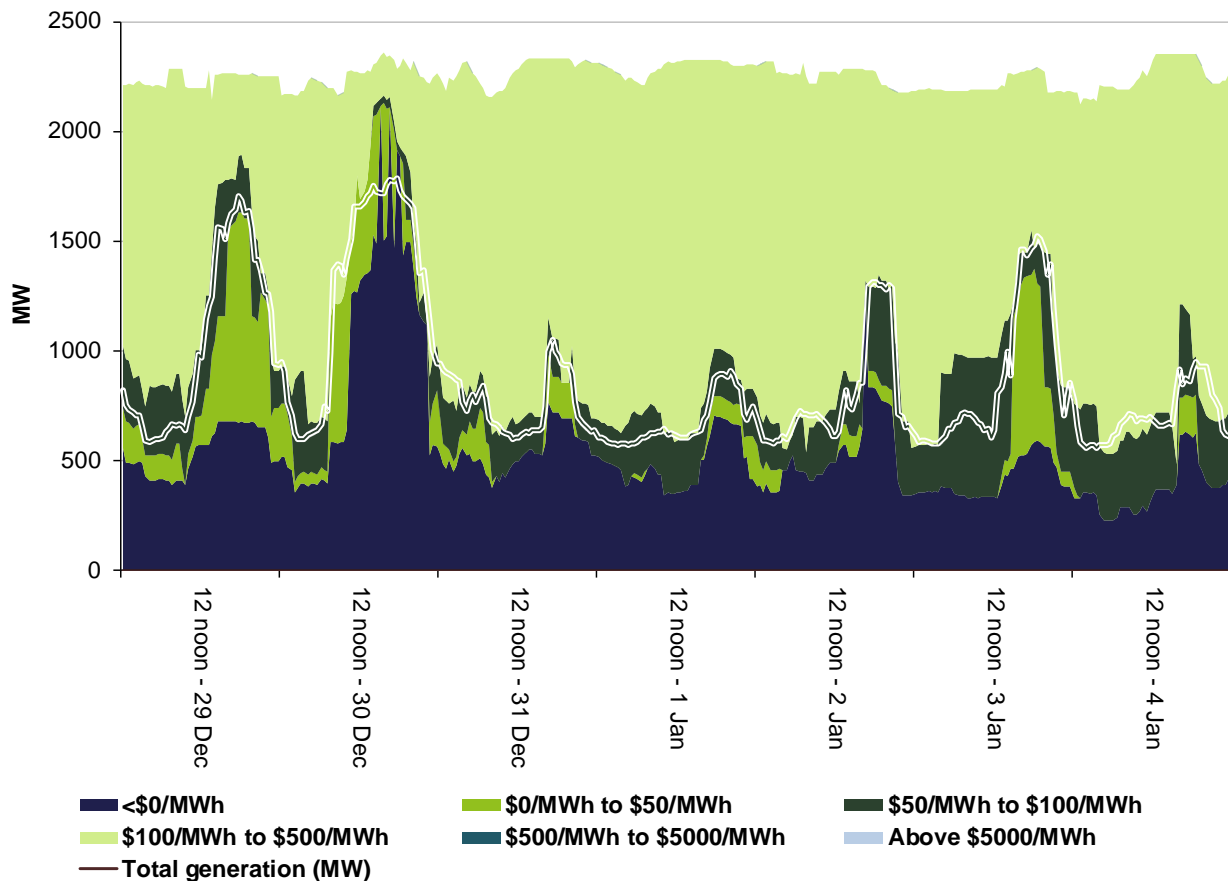
**Figure 5: Victoria generation and bidding patterns**



**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.

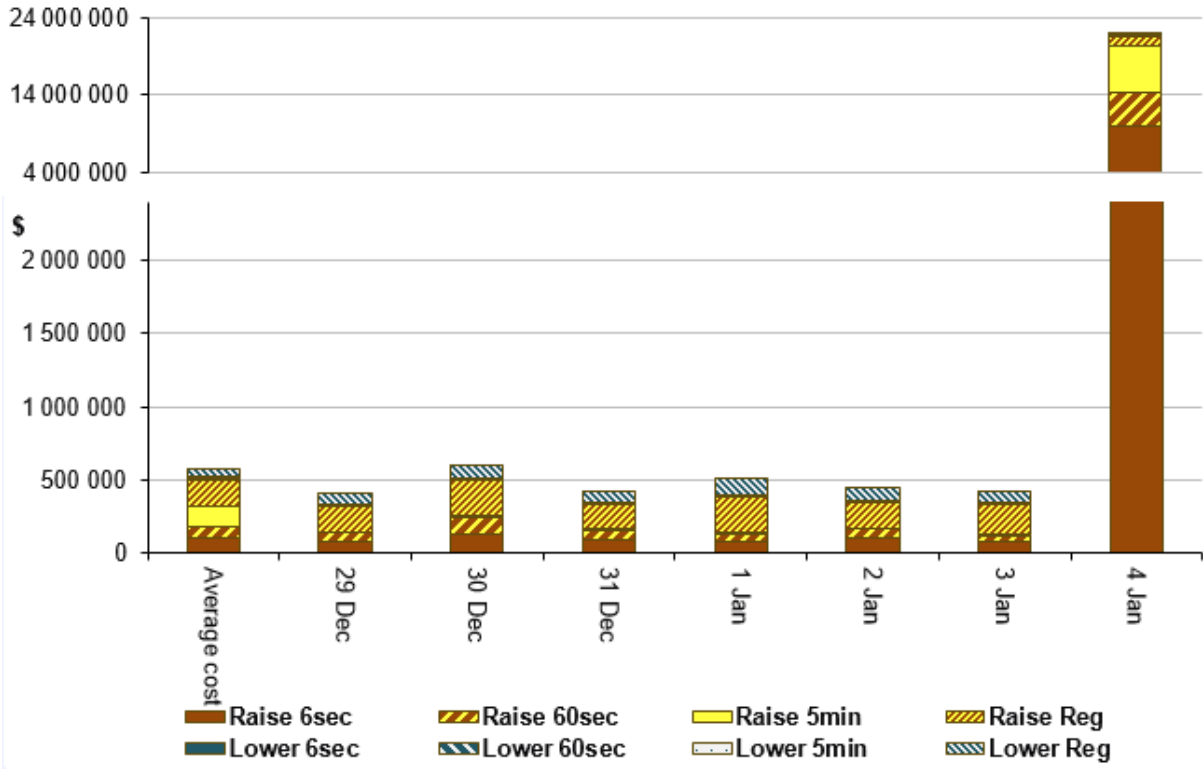
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$24 016 500 or 4 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$836 000 or around 6 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**



Should you require a description of the data for the week under review, please email us at [AERInquiry@aer.gov.au](mailto:AERInquiry@aer.gov.au).

The events on 4 January resulted in FCAS costs close to \$24 million with the majority of that occurring in raise 6 second services.

## Detailed market analysis of significant price events

### Queensland

There were two occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$64/MWh and above \$250/MWh.

**Saturday, 4 January**

**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	2017.52	52.96	58.76	7168	7127	7093	11 749	11 688	11 686
5.30 pm	334.08	76.80	76.75	7659	7738	7664	11 346	11 324	11 322

Conditions at the time saw demand and availability close to forecast.

The loss of the New South Wales to Victoria interconnector meant that Queensland was exporting more than forecast into New South Wales and resulted in higher than forecast prices as higher priced generation was required to be dispatched.

### New South Wales

There were five occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$319/MWh and above \$250/MWh.

**Saturday, 4 January**

**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	9899.85	59.89	66.69	12 177	12 420	12 094	13 559	14 364	14 147
4.30 pm	14 525.59	73.64	59.89	12 334	12 513	12 064	12 704	14 246	14 182
5 pm	14 700.00	94.85	69.64	12 148	12 528	12 038	11 530	14 134	14 132
5.30 pm	14 700.00	82.89	79.61	12 154	12 526	11 895	11 536	14 007	14 024
6 pm	5148.89	95.46	79.59	11 977	12 372	11 868	11 362	13 888	13 935

Bushfires in the Snowy Mountains resulted in the loss of the New South Wales to Victoria interconnector and generation being unable to get to market. The AER has written a [\\$5000/MWh report](#) detailing events on this day.

### Victoria

There was one occasion where the spot price in Victoria was greater than three times the Victoria weekly average price of \$101/MWh and above \$250/MWh and there were two occasions where the spot price was below -\$100/MWh.



## Monday, 30 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	6442.90	136.28	331.73	8204	8254	8051	8735	8827	8940

The spot price was significantly higher than forecast due to an unplanned network outage of the Lower Tumut to Wagga 330 kV line in New South Wales which was caused by bushfires in the area. Before the network outage occurred Victoria was importing around 210 MW of electricity from New South Wales across the Vic-NSW interconnector. Constraints used to manage the outage resulted in flows across the interconnector being reversed to around 370 MW (exports into New South Wales). As a result, high priced generation (greater than \$5000/MWh) was dispatched to meet demand in Victoria. The AER has written a [\\$5000/MWh report](#) detailing events on the day.

## Saturday, 4 January

**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
3.30 pm	-213.70	-140.18	-969.28	4093	3897	3932	9946	9723	9722
4 pm	-195.04	-40.01	-209.16	4092	3972	3994	9905	9300	9307

As a result of the network outages around the Snowy area, Victorian exports to New South Wales dropped from the forecast 900 MW to 0 MW from 3.30 pm onwards. This left Victoria only needing to dispatch lower than forecast priced generation.

## South Australia

There was one occasion where the spot price in South Australia was greater than three times the South Australia weekly average price of \$76/MWh and above \$250/MWh and there were two occasions where the spot price was below -\$100/MWh.

## Monday, 30 December

**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
3.30 pm	1455.96	119.01	286.31	2048	1818	1842	3689	3850	3870

Prices were a result of a network outage in New South Wales, see the Victoria section for details.

## Saturday, 4 January

**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
3.30 pm	-200.74	-129.09	-900.00	829	805	873	2704	2791	2814
4 pm	-217.00	-36.84	-192.38	998	819	900	2697	2791	2813

Prices were aligned with those in Victoria see the Victorian section for details.

## Tasmania

There were two occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of \$78/MWh and above \$250/MWh.

## Monday, 30 December

**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
11 pm	298.37	402.18	62.01	1005	969	957	2220	2294	2305

Conditions at the time saw demand higher and availability close to forecast.

At 7.04 pm Hydro Tasmania rebid net 558 MW of capacity from prices above \$400/MWh to the prices floor across its portfolio because of a change in the forecast Victorian price. While later rebids shifted some capacity to higher prices the price was below forecast.

## Saturday, 4 January

**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
8.30 pm	252.55	98.89	97.44	1063	1041	1026	2245	2272	2279

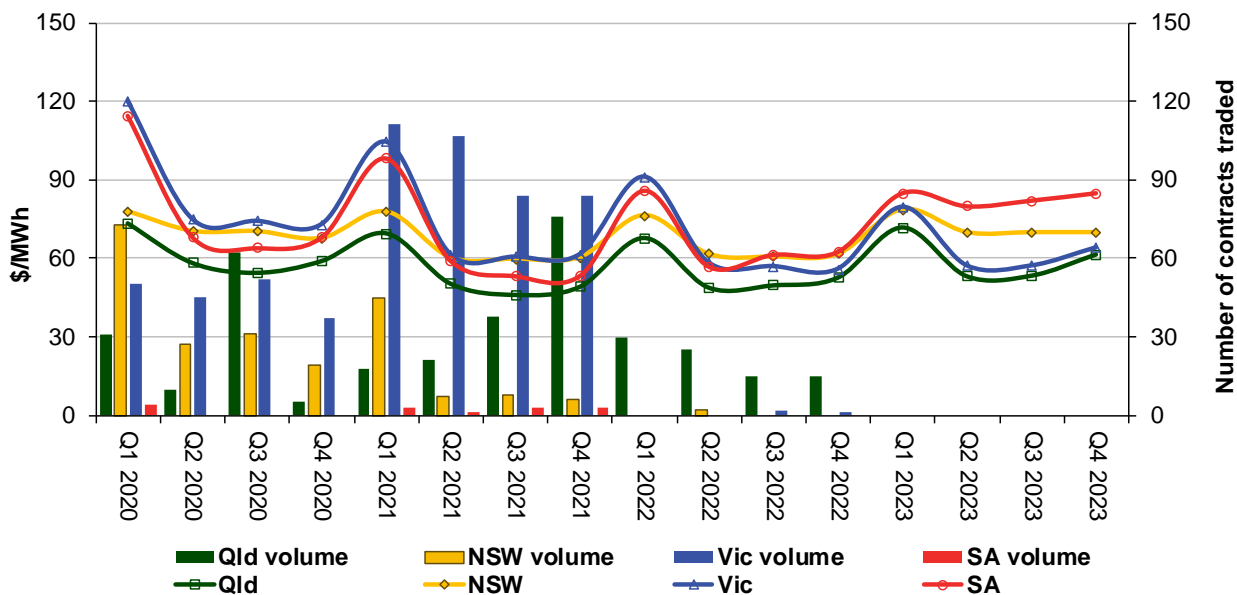
Conditions at the time saw demand and availability close to forecast.

A series of constraints were managing FCAS across Victoria, South Australia and Tasmania as the New South Wales to Victoria interconnector was still being limited as a result of bushfires. This saw the co-optimisation of the energy and FCAS markets and prices above \$300/MWh for three of the dispatch 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 Q1 2020 – Q4 2023**

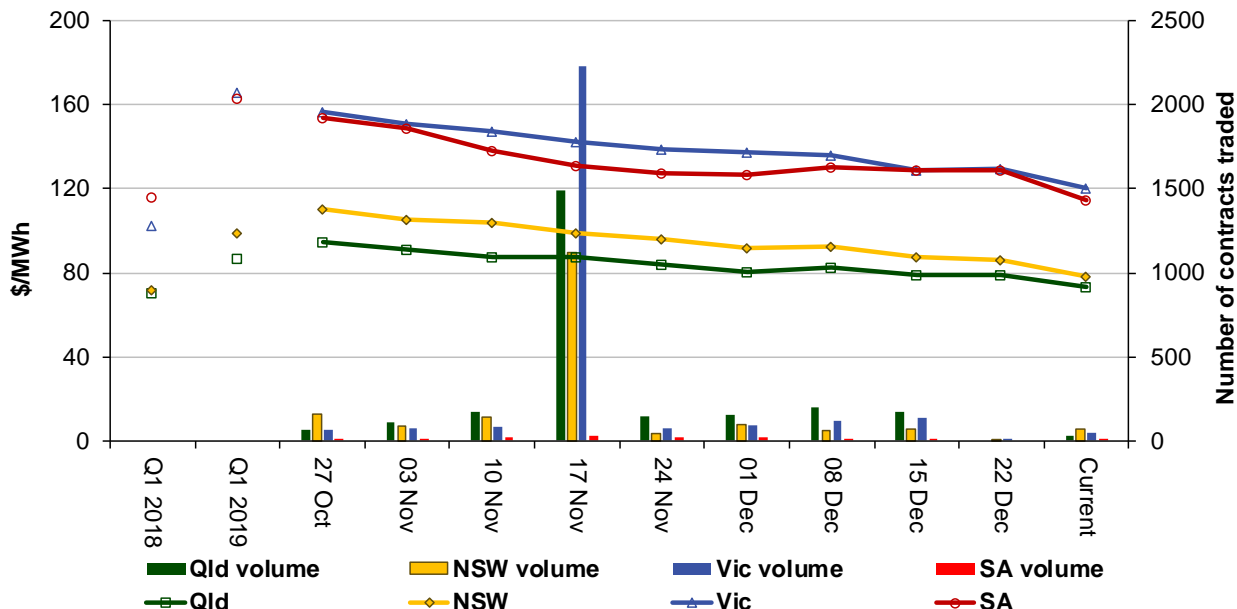


Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional Q1 2020 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing Q1 2018 and Q1 2019 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades.

The high volume of trades in Figure 10 is a result of the conversion of base load options to base future contracts on 19 November 2019.

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

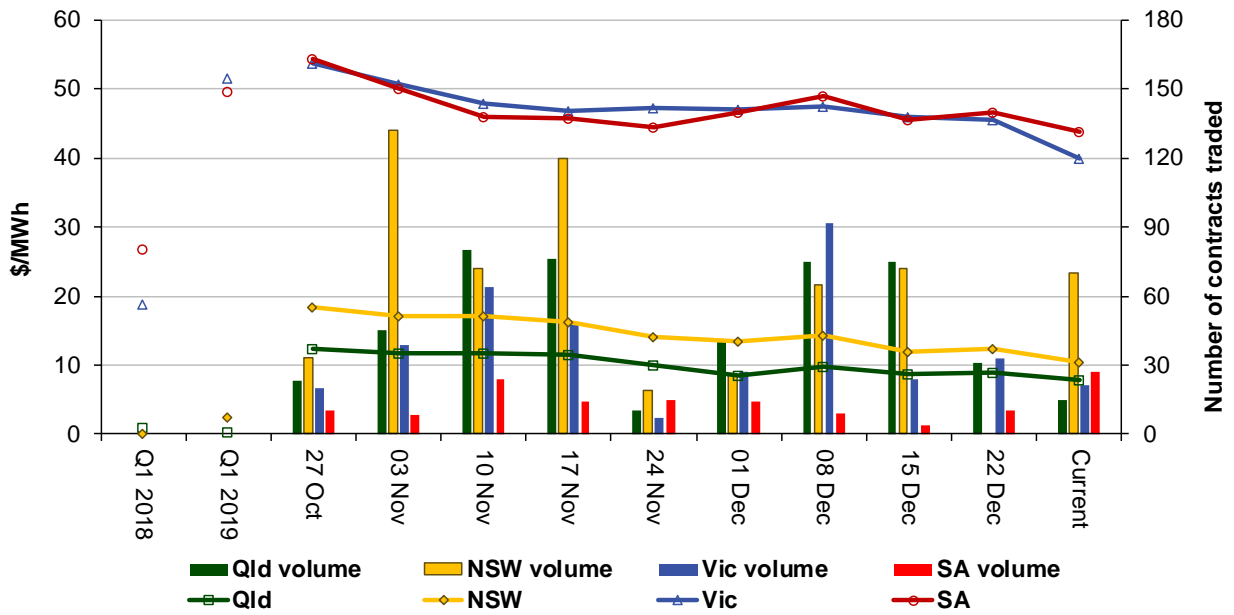


Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

Source. ASXEnergy.com.au

Figure 11 shows how the price for each regional quarter 1 2020 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2018 and quarter 1 2019 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  
October 2020**