

8 – 14 May 2016

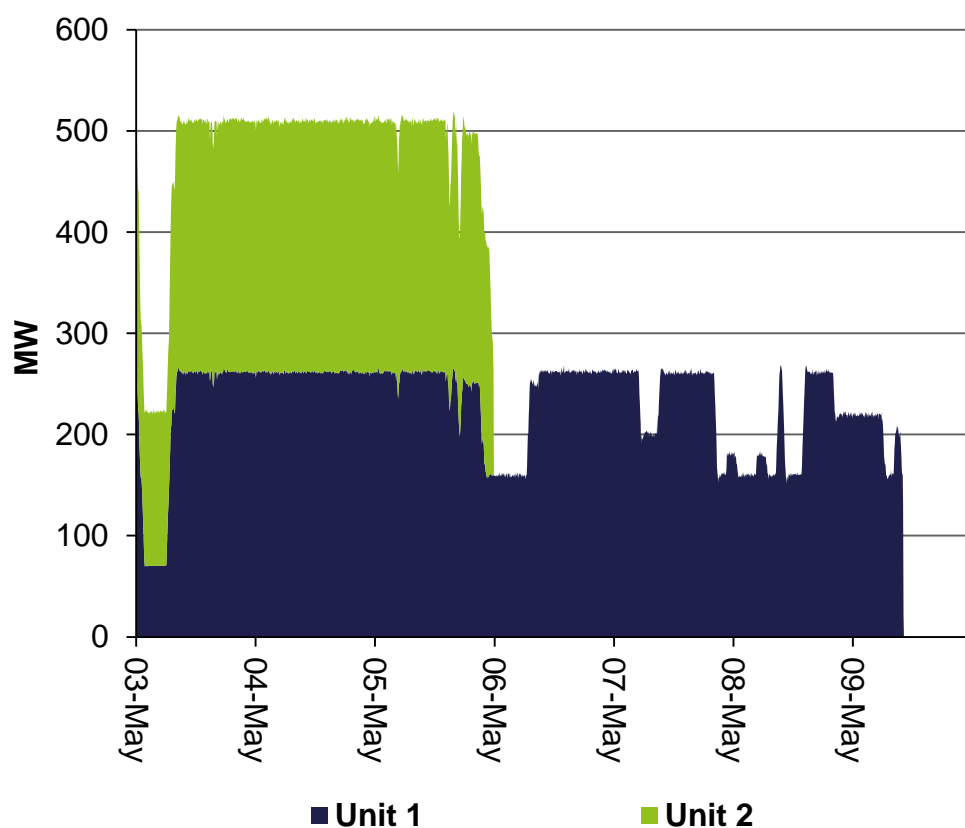
Introduction

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.

Spotlight

On 9 May 2016, Alinta’s Northern Power Station generated for the last time, marking the end of coal-fired electricity generation in South Australia. The station was commissioned in 1985 and provided 546 MW of capacity to the National Electricity Market through its two 273 MW units. Unit 2 and Unit 1 stopped generating on 5 May at 11.50 pm and 9 May at 10.15 am, respectively. Spotlight Figure 1 shows Northern Power Station generation dispatch by unit from 3 to 9 May 2016 and illustrates these closures. We note the final rebid by Alinta for Northern Power Station unit 1 was “0915~P~GOODBYE”.

Spotlight Figure 1: Northern Power Station generation dispatch by unit



Spot market prices

Figure 1 shows the spot prices that occurred in each region during the week 8 to 14 May 2016.

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

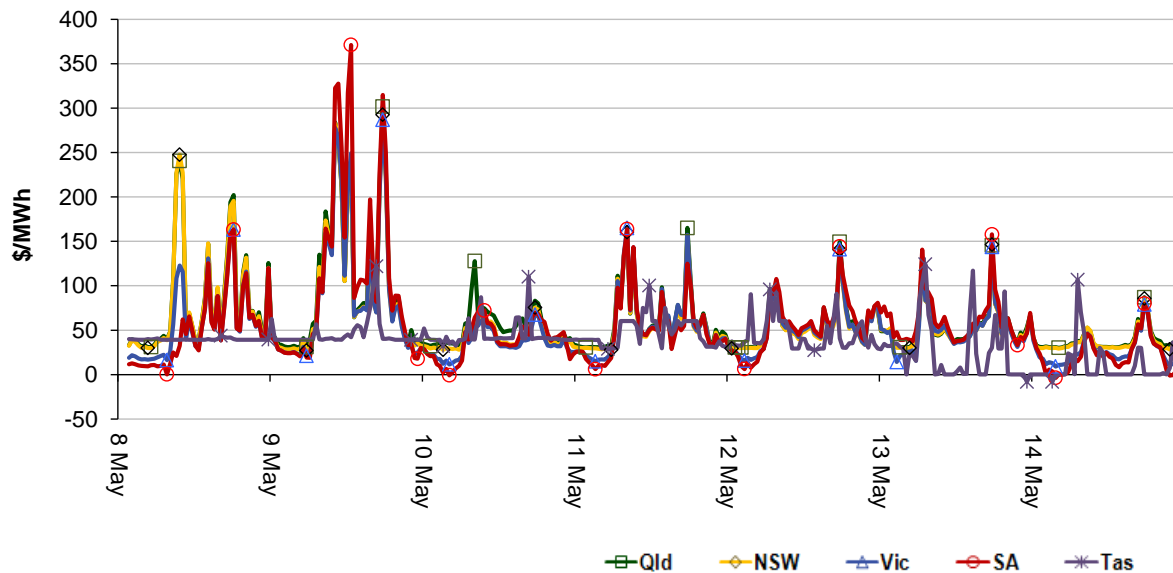


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in

Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years. Of particular note is the dramatic drop in the price of energy in Tasmania. The gas and diesel generators in the state are no longer operating as a consequence of additional hydro capability from recent rains.

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

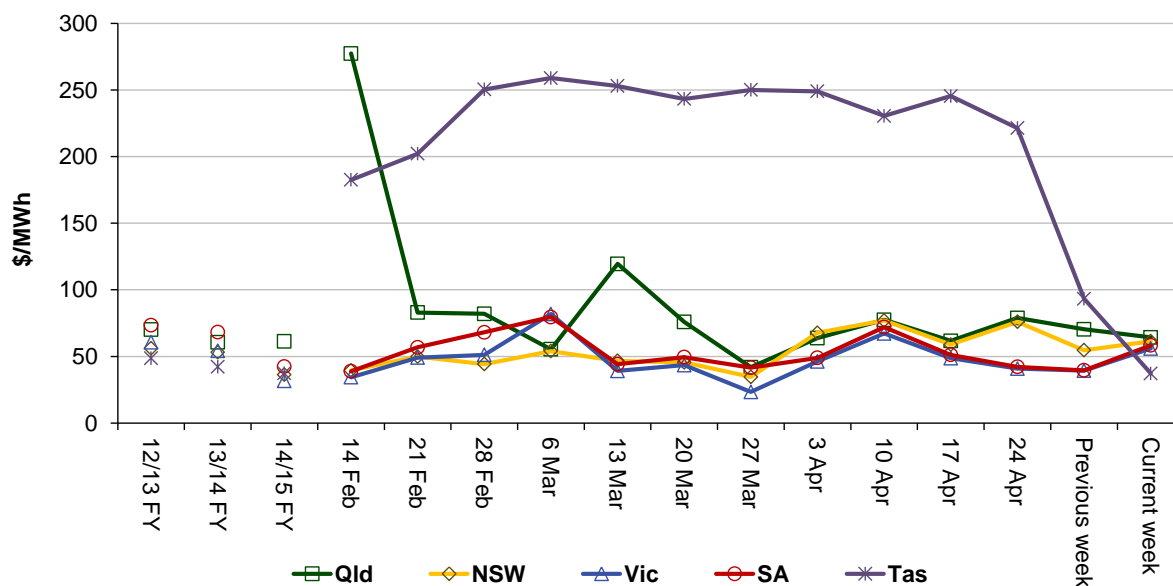


Table 1: Volume weighted average spot prices by region (\$/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	64	61	56	58	37
14-15 financial YTD	66	36	31	40	38
15-16 financial YTD	61	48	44	60	103

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 331 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2015 of 133 counts and the average in 2014 of 71. 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	22	0	9
% of total below forecast	41	13	0	3

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

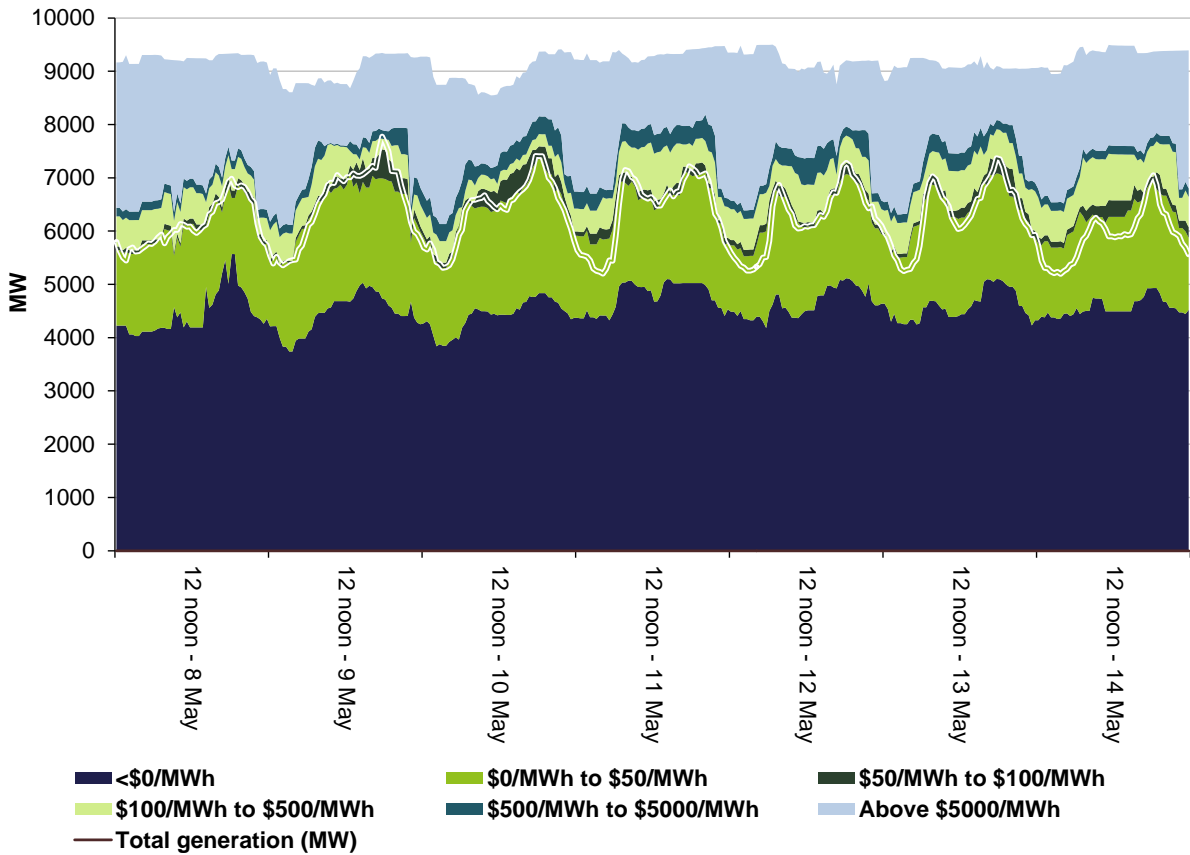


Figure 4: New South Wales generation and bidding patterns

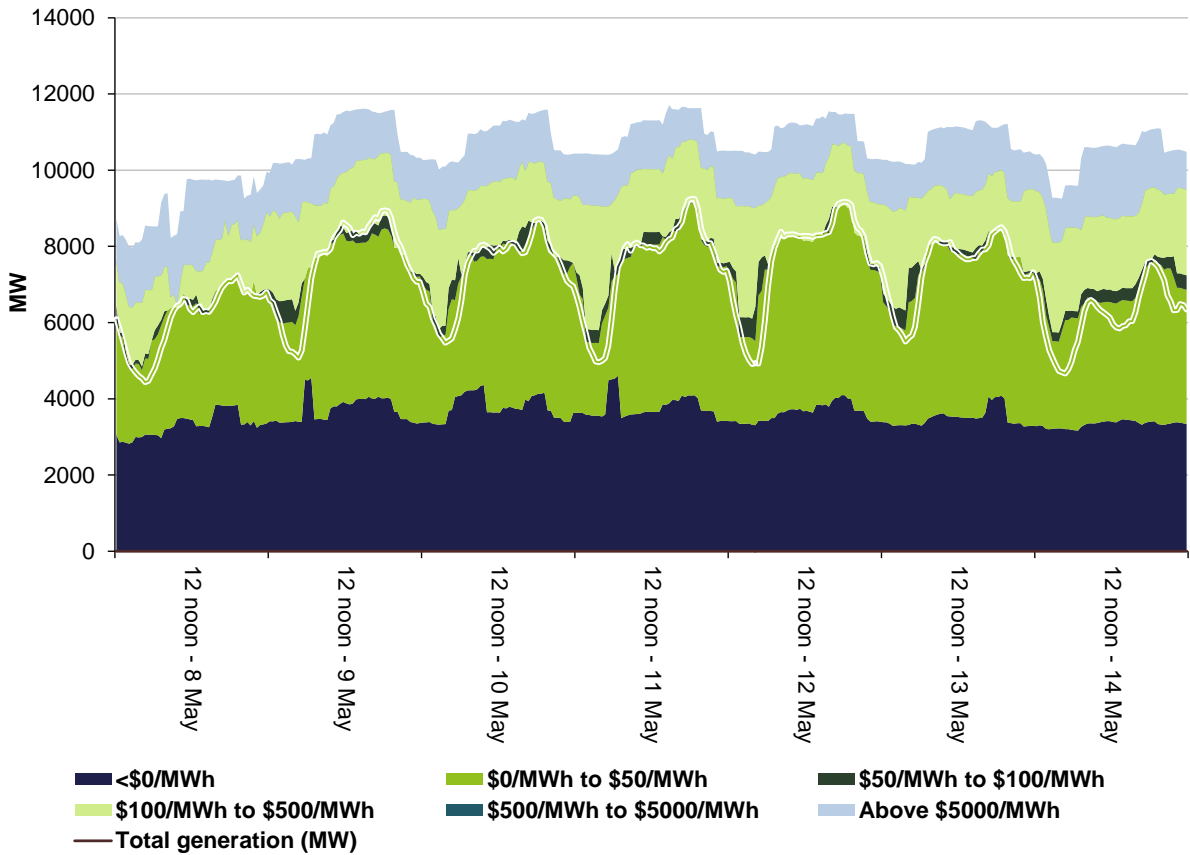


Figure 5: Victoria generation and bidding patterns

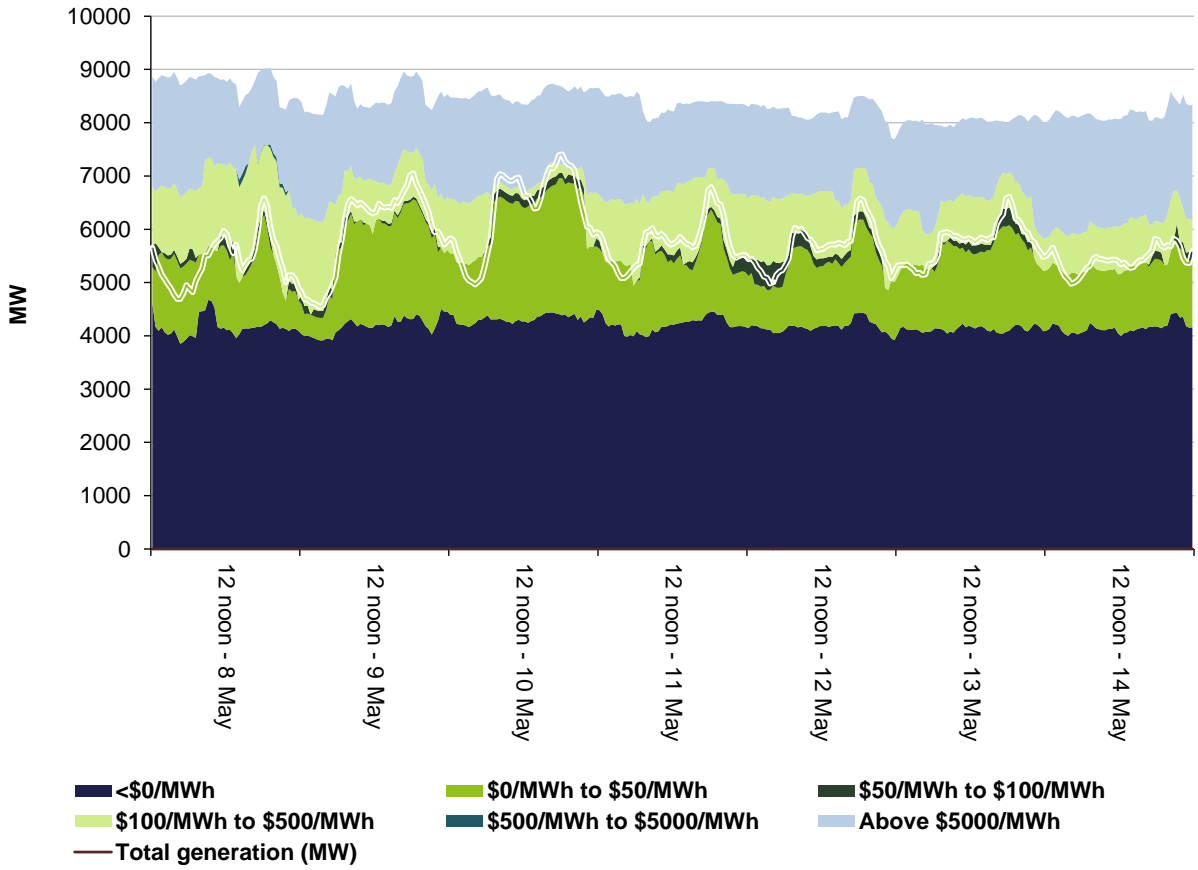


Figure 6: South Australia generation and bidding patterns

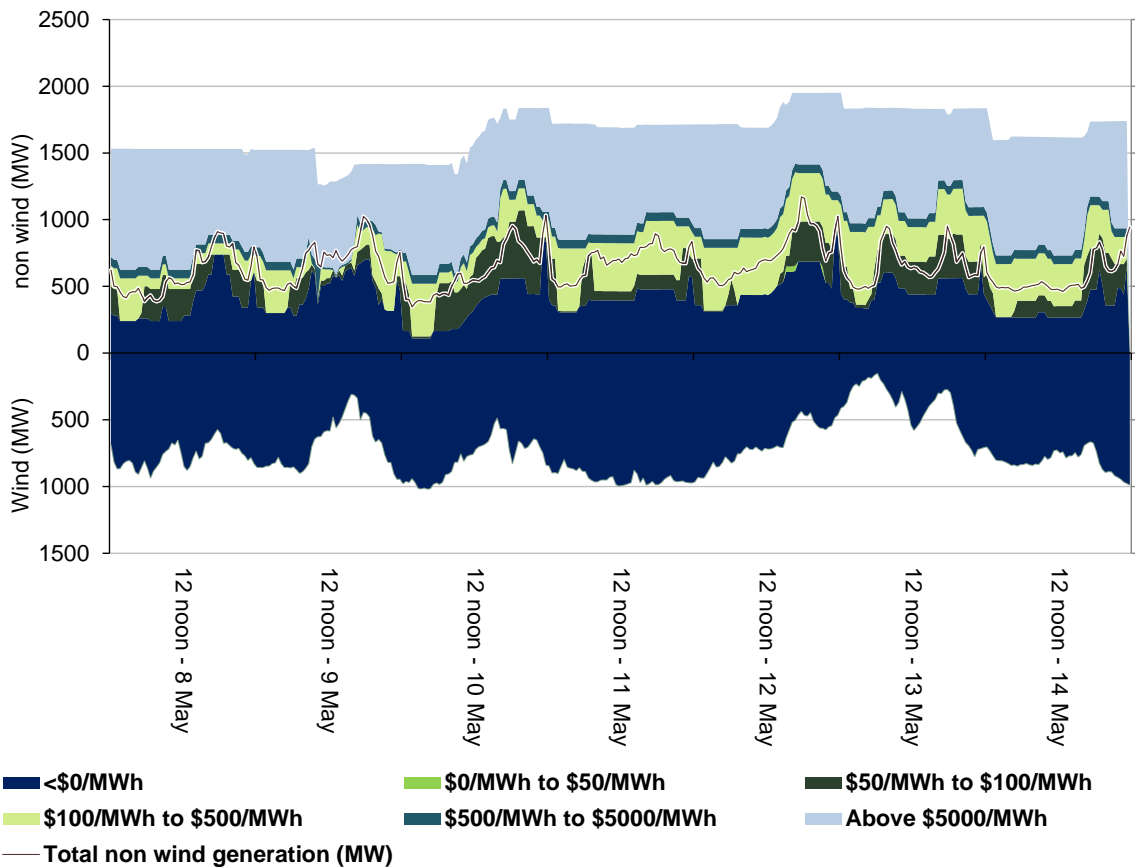
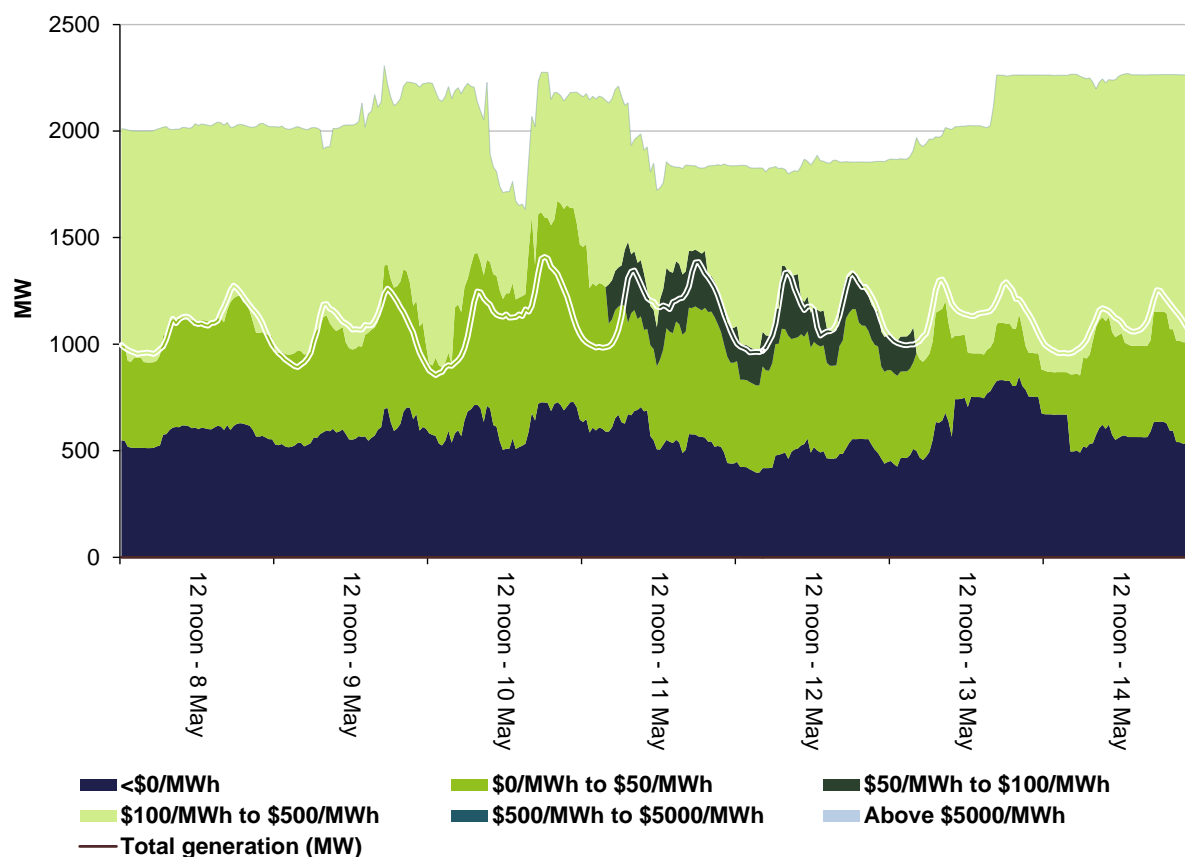


Figure 7: Tasmania generation and bidding patterns



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 \$2 288 500 or around 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$116 000 or around 2 per cent of energy turnover in Tasmania.

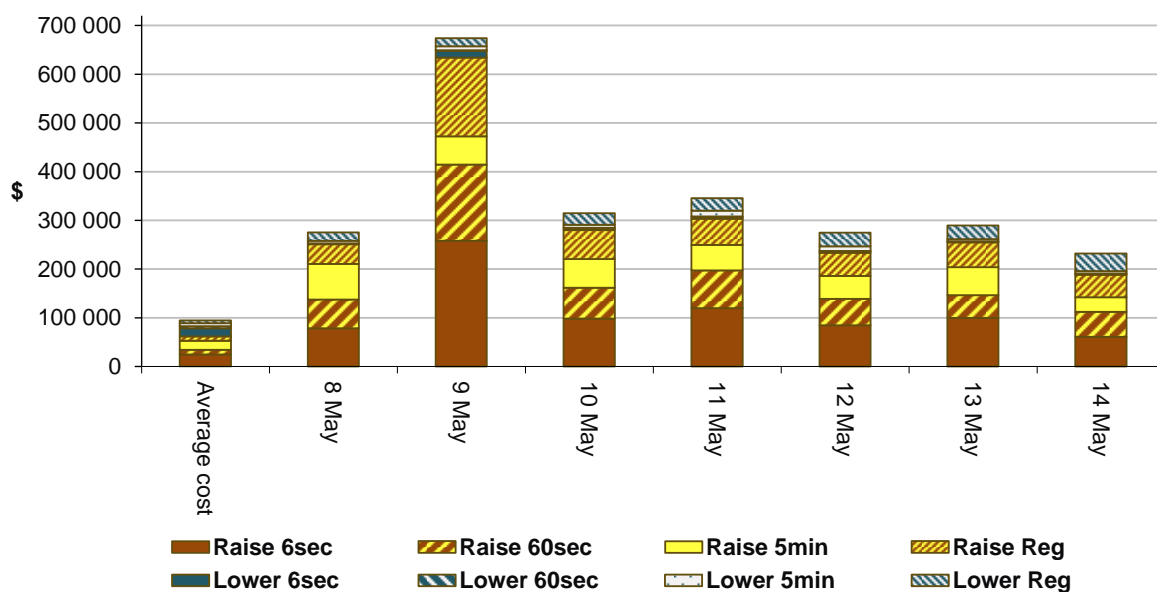
On 9 May, global raise 6 seconds service was above \$100/MW for 31 dispatch intervals, raise regulations service was above \$100/MW for 33 dispatch intervals and raise 60 second

service was above \$100/MW for eight dispatch intervals, contributing to around \$570 000 in FCAS services on the day. There was a reduction in the availability of raise contingency services as generators available for these services reduced their availability because of unplanned plant issues.

Furthermore, large wind forecast error increased the requirement of raise regulation in South Australia, contributing to the high cost of FCAS on 9 May.

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

We provide more detailed analysis of events where the spot price was greater than three times the weekly average price in a region and above \$250/MWh or was below -\$100/MWh.

NEM Mainland

There were two occasions where the spot price aligned nationally and the New South Wales price was greater than three times the New South Wales weekly average price of \$61/MWh and above \$250/MWh.

Monday, 9 May

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
10.30 am	282.43	76.84	39.17	23 191	23 018	22 697	32 203	33 148	33 663
11 am	266.90	73.26	34.64	23 320	22 936	22 617	32 260	33 176	33 680

Conditions at the time saw demand was close to that forecast four hours ahead and availability was around 1000 MW less than forecast four hours ahead.

Table 4: Rebids for the 10.30 am and 11 am trading intervals

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
8.23 am		GDF Suez	Loy Yang B	-535	<11	N/A	0822P UPDATE AVAIL: UNIT GOING OOS - TUBE LEAK
9.18 am		Alinta Energy	Northern	-200	-1000	N/A	0915~P~GOODBYE~

The 5-minute price in New South Wales reached \$255.63/MWh at 10.05 am and remained above \$260/MWh for the remainder of the 10.30 am and 11 am trading intervals, due to over 800 MW of low-priced capacity being removed from the market.

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 PM	292.68	193.31	85.93	25 860	25 563	25 055	33 781	34 480	34 350

Conditions at the time saw demand close to forecast. Available capacity was around 700 MW lower than forecast four hours ahead and all this capacity was priced below -\$30/MWh. Reductions in output from semi-scheduled wind generation are reported as a reduction in regional available capacity. Forecast four hours ahead for wind in South Australia and Victoria were around 500 MW and 150 MW higher than actual.

As demand increased for the afternoon peak, prices on the mainland went to around \$300/MWh.

South Australia

There were seven occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$58/MWh and above \$250/MWh. Two of these occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section. The remaining five occasions are presented below. On 9 May at 10.15 am, Alinta's Northern Power Station Unit 1 generated for the last time.

Monday, 9 May

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	255.78	63.90	26.35	1499	1183	1145	1845	2372	2377
12.30 pm	317.27	70.01	21.34	1555	1212	1159	1871	2362	2361
1 pm	371.04	124.89	20.00	1556	1221	1152	1764	2118	2389

Conditions at the time saw demand up to 300 MW greater than that forecast four hours ahead and available capacity up to 500 MW less than that forecast four hours ahead. Reductions in output from semi-scheduled wind generation are reported as a reduction in regional available capacity and wind output was around 320 MW lower than forecast four hours ahead. All of this capacity was priced below -\$30/MWh. Northern Power Station Unit 1 shut down earlier than expected reducing capacity by 273 MW of which 160 MW was priced at the floor for the 11.30 am and 12.30 pm trading intervals.

The reduction in available capacity at low prices saw the dispatch price between \$300/MWh and \$500/MWh for the majority of the 11.30 am, 12.30 am and 1 pm trading intervals.

Table 7: Price, Demand and Availability

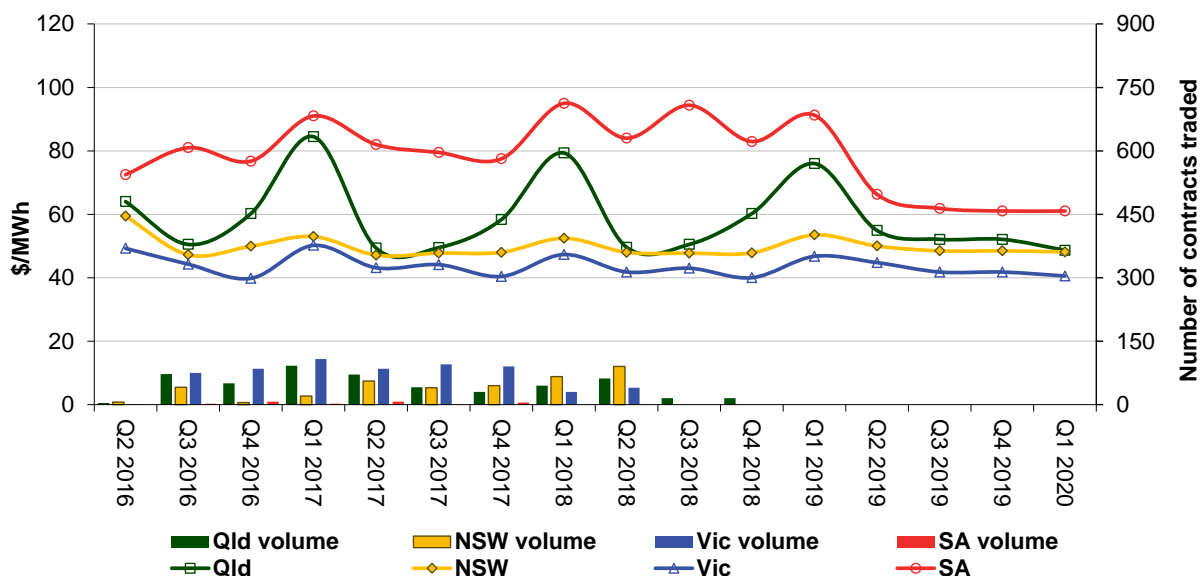
Time	Price (\$/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
6.30 pm	250.30	322.10	79.99	1675	1669	1482	1868	2243	2525

Conditions at the time saw demand close to forecast four hours ahead while available capacity was around 400 MW less than forecast over the same horizon. Reductions in output from semi-scheduled wind generation are reported as a reduction in regional available capacity and wind output was around 420 MW lower than forecast four hours ahead. At around 4.30 pm there was a 510 MW reduction in forecast wind output for 6.30 pm which saw an increase in the forecast price to \$10 759/MWh. In response to this forecast high price participants in South Australia rebid a significant amount of capacity to the price floor. This resulted in the price being slightly lower than that forecast four hours ahead.

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.

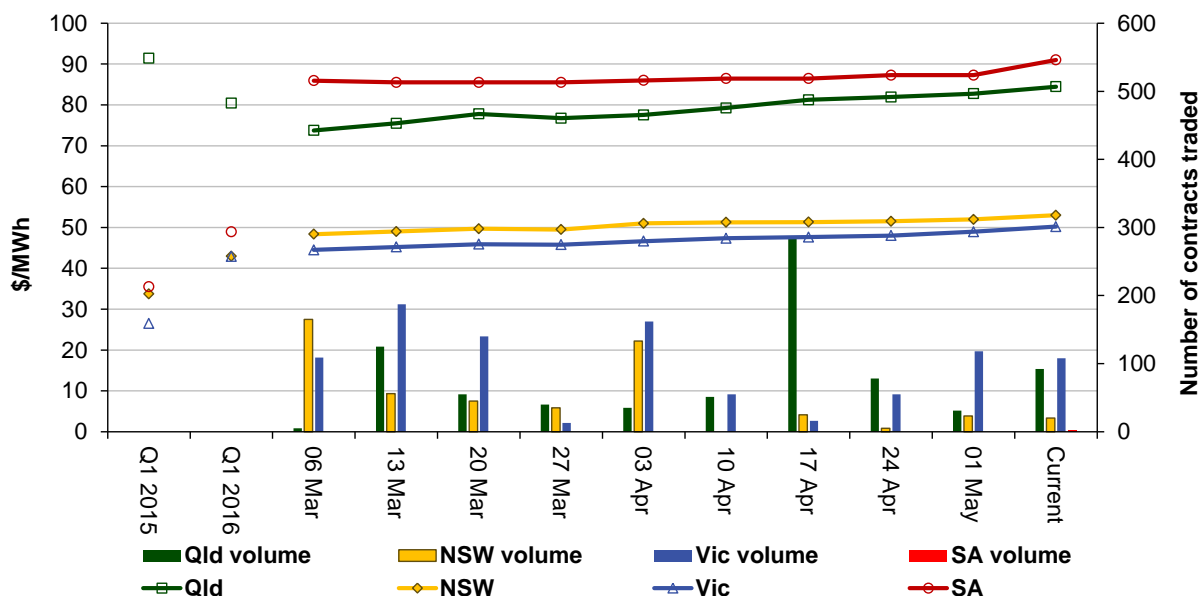
Figure 9: Quarterly base future prices Q2 2016 – Q1 2020



Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional Quarter 1 2017 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 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 2017 base contracts over the past 10 weeks (and the past 2 years)



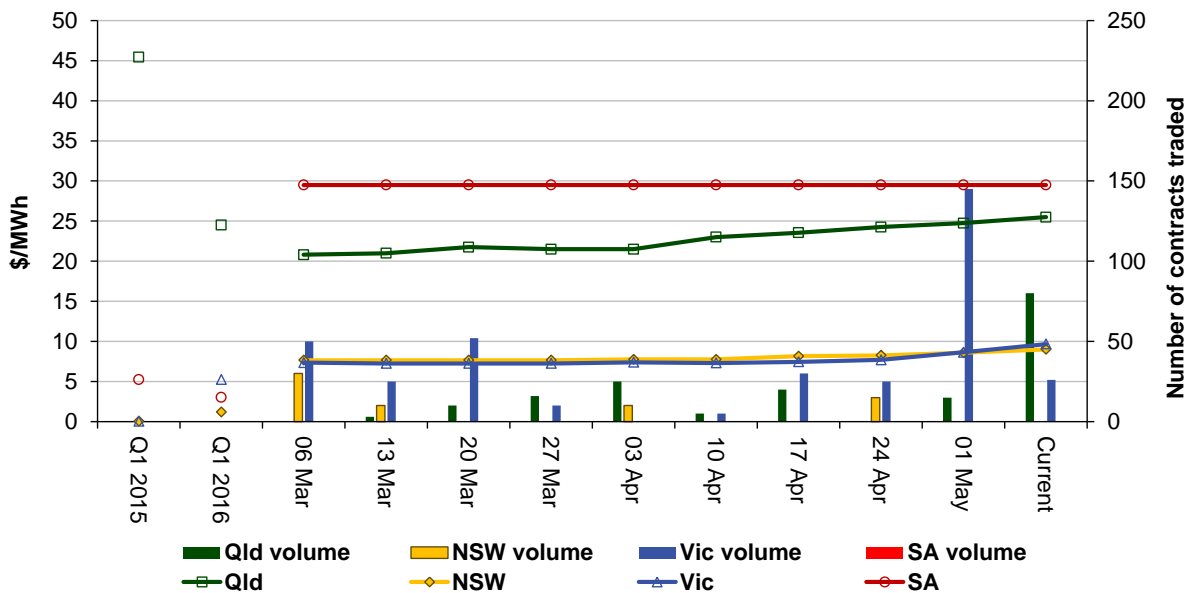
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

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 2017 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown.

Figure 11: Price of Q1 2017 cap contracts over the past 10 weeks (and the past 2 years)



Source. ASXEnergy.com.au

Australian Energy Regulator
May 2016