

15 – 21 November 2015

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 15 to 21 November 2015. There were three occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$70/MWh and above \$250/MWh, and 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 \$89/MWh and above \$250/MWh.

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

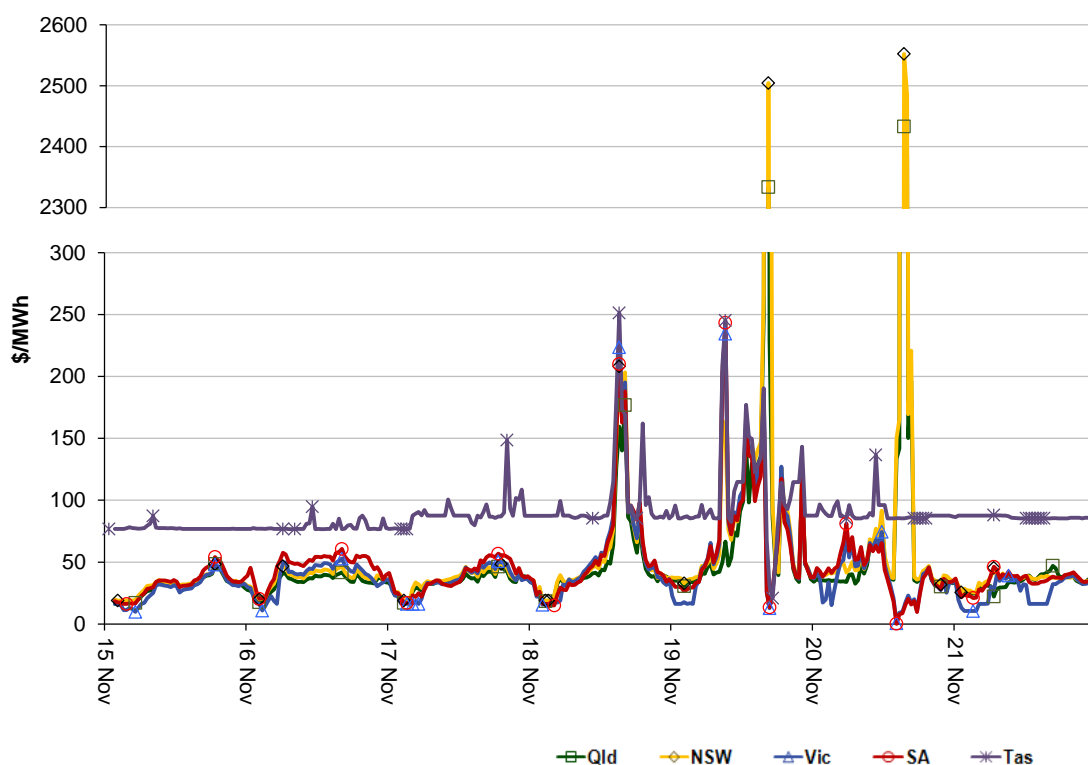


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

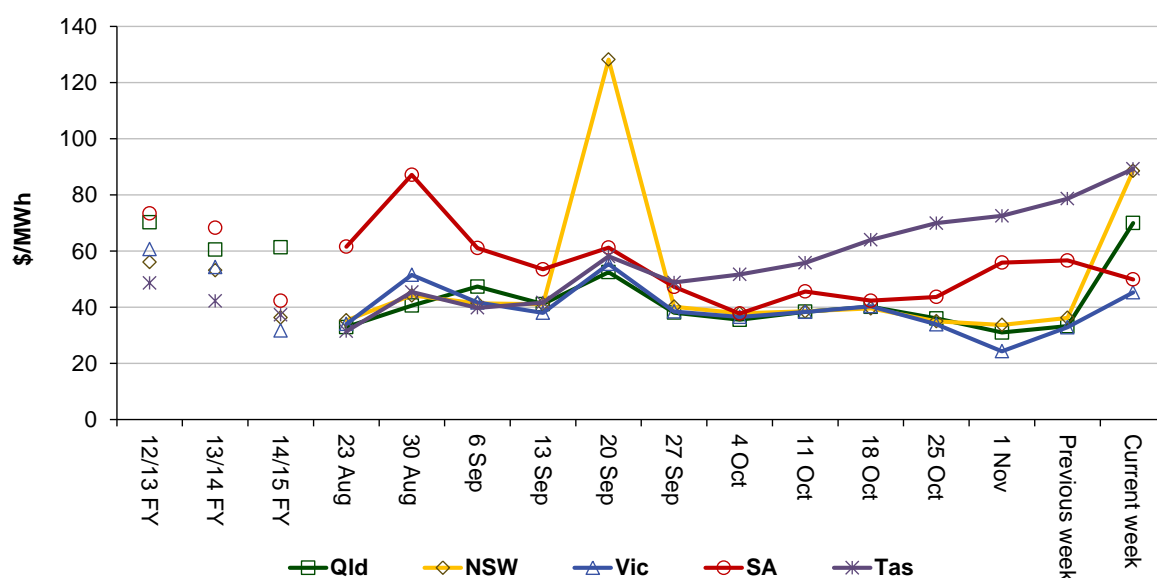


Table 1: Volume weighted average spot prices by region (\$/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	70	89	45	50	89
14-15 financial YTD	32	38	34	42	36
15-16 financial YTD	44	45	38	62	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 192 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2014 of 71 counts and the average in 2013 of 97. 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

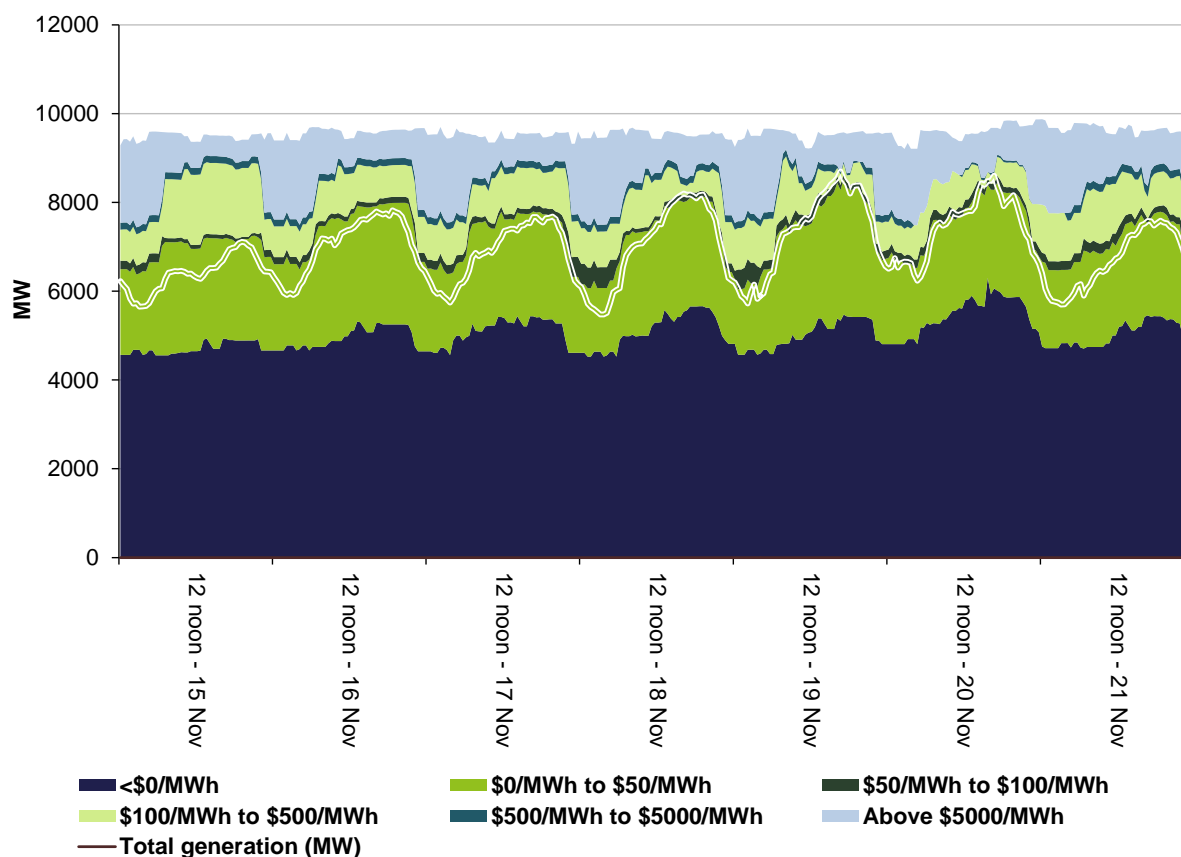
	Availability	Demand	Network	Combination
% of total above forecast	3	49	0	1
% of total below forecast	42	1	0	3

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



The red ellipses on Figure 4, following, highlight periods where high prices occurred in New South Wales. Demand on these days was high and, as can be seen from the figure, there was limited capacity available between low prices and prices greater than \$5000/MWh.

Figure 4: New South Wales generation and bidding patterns

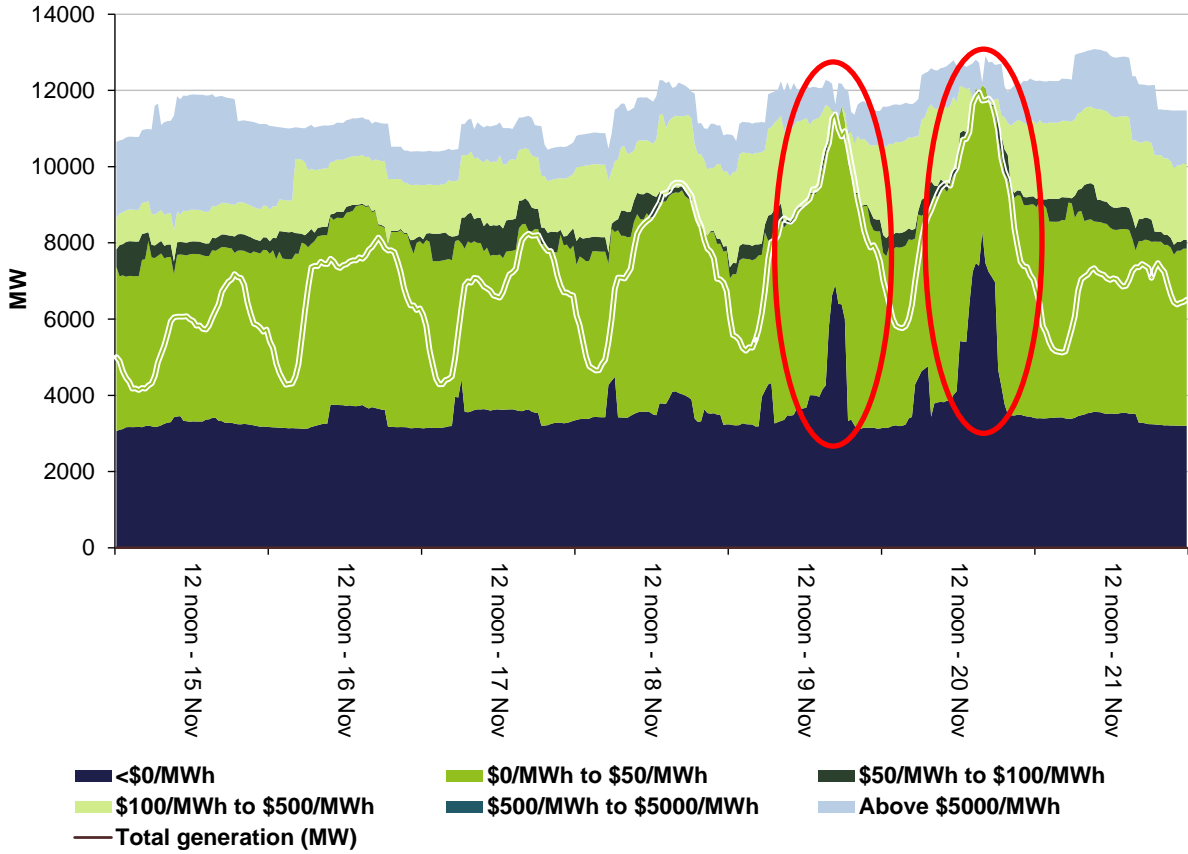


Figure 5: Victoria generation and bidding patterns

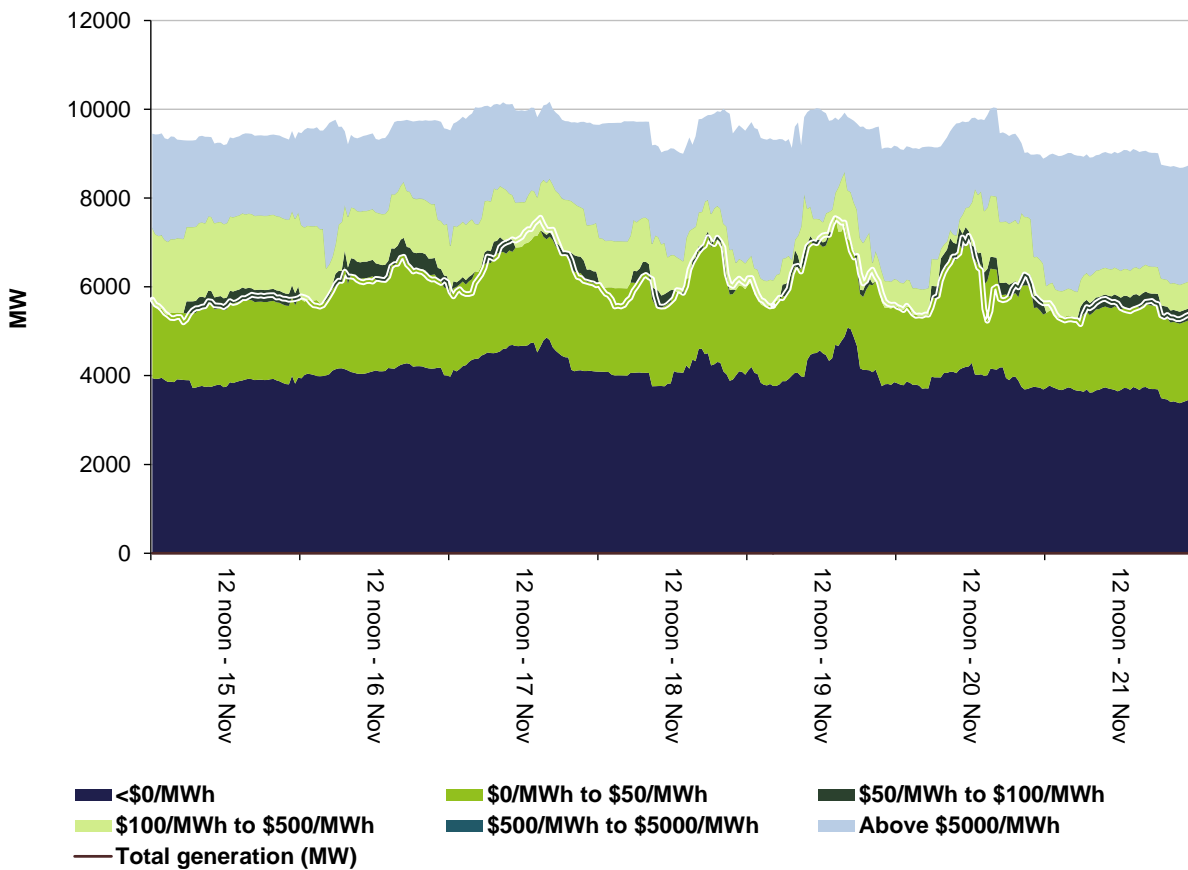


Figure 6: South Australia generation and bidding patterns

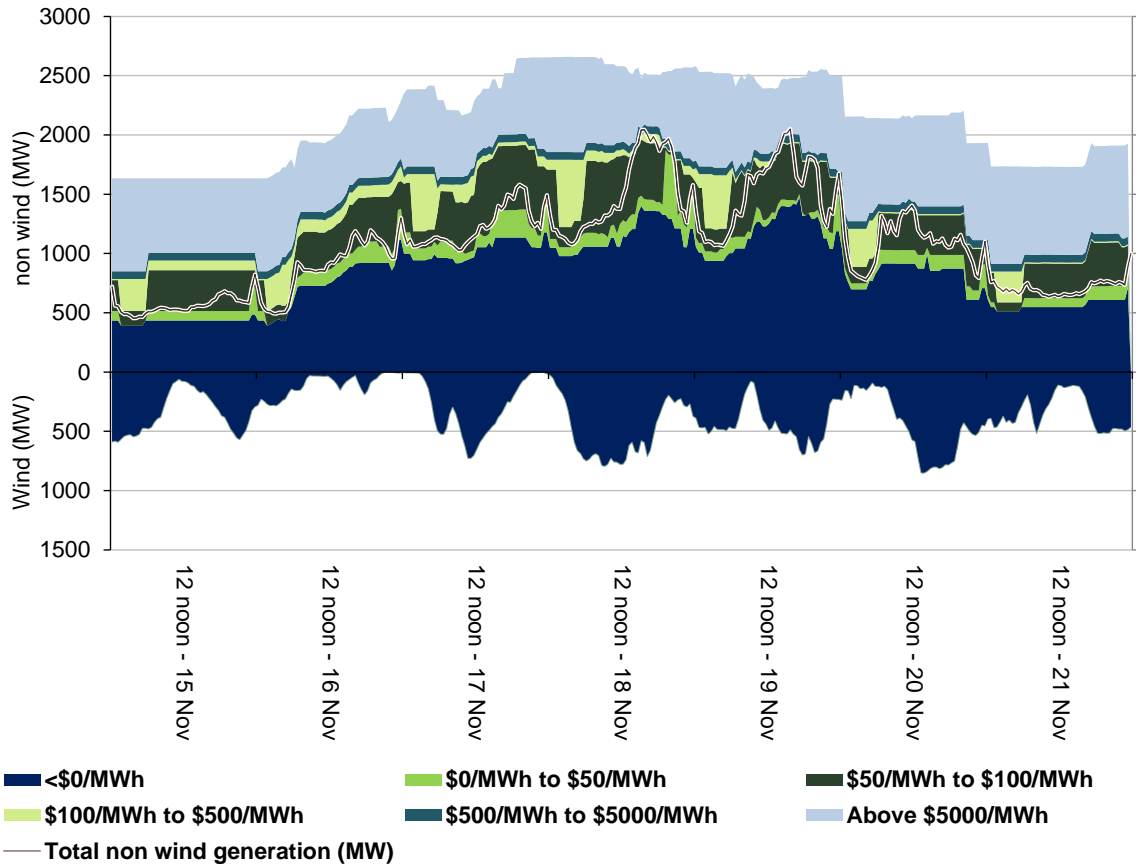
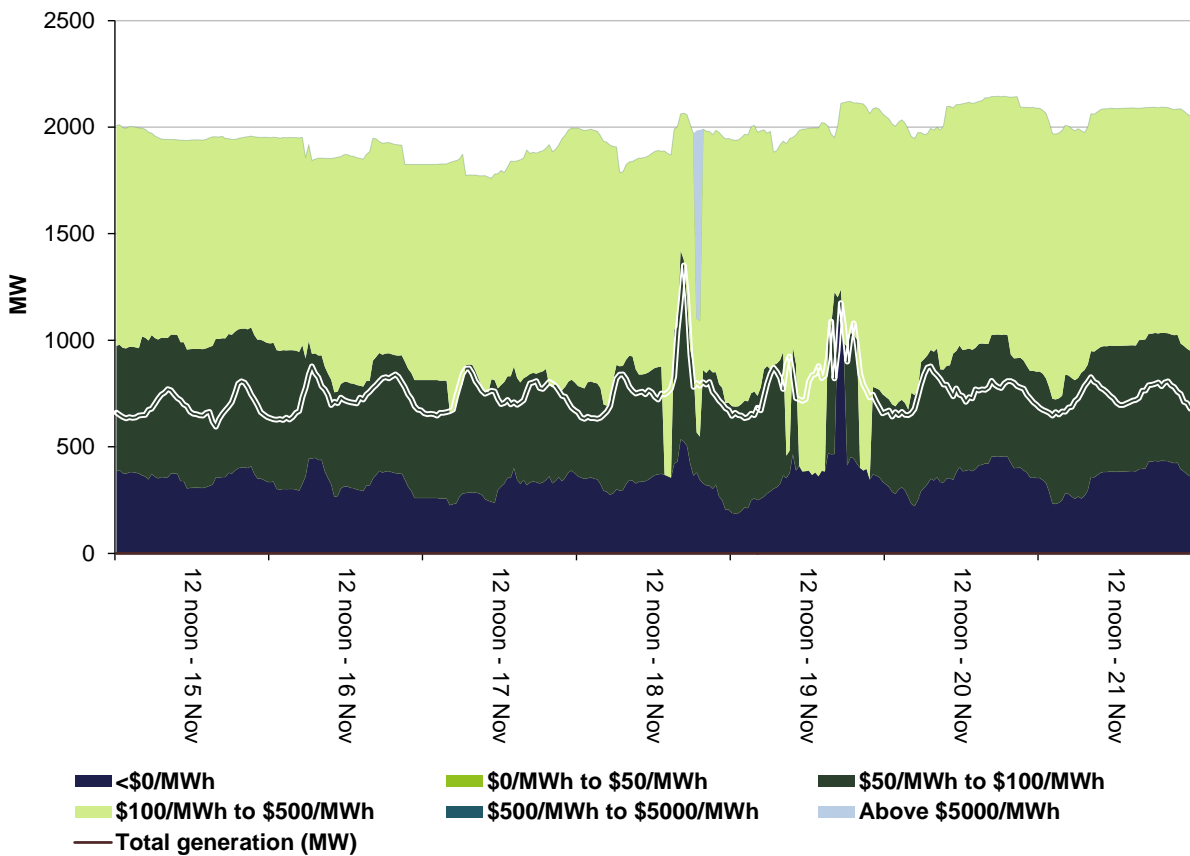


Figure 7: Tasmania generation and bidding patterns



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.

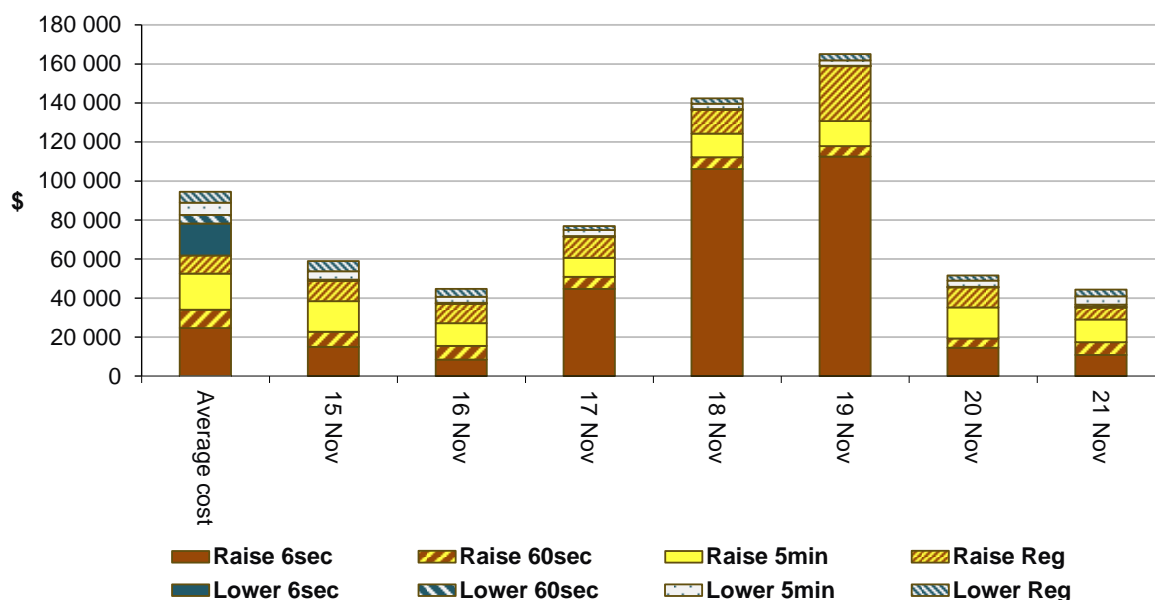
The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$255 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$328 500 or less than 2 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

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.

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 \$89/MWh and above \$250/MWh.

Thursday, 19 November

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	268.26	289.00	289.00	11 462	10 748	10 755	12 242	12 189	12 307
4.30 pm	2504.34	289.33	289.00	11 571	10 712	10 698	12 181	12 135	12 265
5 pm	763.44	289.00	289.00	11 697	10 726	10 673	11 691	12 060	12 189

Demand was materially (970 MW) higher than forecast four hours ahead. Available capacity was close to forecast at 4 pm and 4.30 pm, but was below forecast for the 5 pm trading interval. Much of that decrease in available capacity was due to Snowy Hydro rebidding 492 MW at Colongra from the price cap. This had no effect on the price.

The 4 pm trading interval price was as forecast.

From 4.10 pm a constraint managing the outage of the Dapto to Kangaroo Valley line saw a flow of around 700 MW forced from New South Wales into Victoria across the Vic-NSW interconnector. This constraint also constrained down low-priced generation in Southern New South Wales.

For the 4.30 pm trading interval prices were aligned with those in Queensland. Consequently rebidding in Queensland had an impact on the New South Wales price. See the Queensland section below for further details.

Table 4: Rebids for the 4.30 pm and 5 pm trading interval

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
4.13 pm	4.20 pm	EnergyAustralia	Tallawarra	105	26	13 111	16:12 A BAND ADJ FOR MAT CHANGE IN NSW PRICE SL
4..20 pm	4.30 pm	AGL Energy	Liddell	-10	300	N/A	1610~P~010 UNEXPECTED/PLANT LIMITS~HIGH LIMIT ADVISED BY OPS
4.33 pm	4.40 pm	Snowy Hydro	Tumut	-10	-1000	N/A	16:31:P PLANT OUTAGE: LOSS OF DYNAMIC CAPABILITY
4.32 pm	4.40 pm	Origin Energy	Shoalhaven	80	-1000	13 800	1630A ENSURE UNIT STOP SL

The rebids in Table 4 and Table 6 which effectively pushed mid and low priced capacity up close to the market price cap and low-priced generation being constrained down saw the dispatch price increase to the price cap at 4.30 pm, \$1714/MWh at 4.40 pm and \$1690/MWh at 4.50 pm

Friday, 20 November

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	2552.20	52.26	61.87	12 525	12 212	11 842	12 724	13 076	12 740
4 pm	2484.74	105.97	106.71	12 602	12 309	11 929	12 183	13 065	12 725

Conditions at the time saw demand around 300 MW higher than forecast four hours ahead. It was the highest demand since January 2013 with temperatures around 43 degrees. Available capacity was around 872 MW below forecast. 656 MW of this was Colongra being withdrawn from the market, priced at the price cap, for the 4 pm trading interval.

The continued outage of the Dapto to Kangaroo Valley line saw flow forced out of New South Wales into Victoria across the Vic-NSW interconnector at around 100 MW. It also constrained down low-priced generation in Southern New South Wales.

Prices were aligned with those in Queensland. Consequently rebidding in Queensland had an impact on the New South Wales price. See the Queensland section below for further details.

Table 6: Rebids for the 3.30 pm and 4 pm trading intervals

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
12.27 pm		AGL Energy	Liddell	-40	0	N/A	1225~P~010 UNEXPECTED/PLANT LIMITS~108 LOAD/RAMP VARIATION DURING RTS
12.59 pm		Energy Australia	Mt Piper	-40	38	N/A	12:56 P ADJ AVAIL DUE TO FEEDER ISSUE
1.08 pm		AGL Energy	Liddell	-80	-1000	N/A	1305~P~010 UNEXPECTED/PLANT LIMITS~108 LOAD VARIATION DURING RTS
2.47 pm		EnergyAustralia	Tallawarra	-45	>-999	N/A	14:44 P ADJ AVAIL DUE TO AMBIENT CONDITIONS
2.55 pm	3.05 pm	EnergyAustralia	Tallawarra	-15	-999	N/A	14:55 P AVAIL ADJ DUE TO COOLING WATER SYSTEM ISSUE SL
2.58 pm	3.05 pm	Snowy Hydro	Guthega	-33	-1000	N/A	14:58:P UPDATE AVAIL FOR CHANGE TO OUTAGE PLAN/PLANT CONDITIONS

There was a steep supply curve in New South Wales with up to 70 MW of capacity priced between \$50/MWh and \$12 500/MWh. Small changes in demand or rebidding could lead to high prices. At 3.30pm the dispatch price rose to the price cap following a 42 MW increase in demand and rebidding in Queensland. Low-price generation being constrained down and rebidding in Queensland saw the dispatch price rise to the price cap for the 3.50 pm dispatch interval.

Queensland

There were three occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$70/MWh and above \$250/MWh.

Thursday, 19 November

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
4.30 pm	2333.76	277.31	277.07	7589	7631	7683	9542	9513	9562

Conditions at the time saw demand and available capacity close to forecast. Prices were aligned with those in New South Wales.

Table 8: Rebids the 4.30 pm trading interval

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.29 pm		QGC	Condamine	42	-987	11 531	1:29 PM P CHANGE IN PLANT CAPABILITIES SL
4.23 pm	4.30 pm	Millmerran	Millmerran	25	85	13 800	16:22 A RRP ABOVE PD 16:10 QLD
4.24 pm	4.30 pm	Callide	Callide C	23	-1000	13 800	1623A 1610 RRP 600, ABOVE PD

The dispatch price rose to \$12 900/MWh at 4.30 pm following the above rebidding. See the New South Wales analysis for further details.

Friday, 20 November

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
3.30 pm	2432.89	49.51	57.67	7260	7710	7666	9611	9842	9872
4.00 pm	2387.01	99.55	99.55	7349	7767	7789	9595	9807	9887

Conditions at the time saw demand up to 450 MW lower than forecast four hours ahead, available capacity was below forecast.

Table 10: Rebids the 3.30 pm and 4 pm trading interval

Submitted time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.03 pm		Origin Energy	Darling Downs	80	-1	13 800	1302A CONSTRAINT MANAGEMENT - N>>N-DTKV_E SL
2.28 pm		Millmerran	Millmerran	50	7	13 800	14:28 A CHANGE IN 5MIN PD DISPATCH GEN - SL
2.31 pm		Callide	Callide C	46	<18	13 800	1430A CHANGE IN 5MIN PD RRP - SL
2.39 pm		CS Energy	Wivenhoe	160	0	298	1438A DISPATCH PRICE LOWER THAN 30MIN FORECAST-SL
3.19 pm	3.30 pm	Stanwell	Barron	-25	-1	N/A	1519P BG 1 TEST TRIP
3.22 pm*	3.30 pm	CS Energy	Wivenhoe	250	298	13 800	1520A QNI INTERCONNECTOR CLOSE TO BINDING-UNIT PARTIAL TARGET-SL
3.42 pm**	3.50 pm	CS Energy	Wivenhoe	250	298	13 800	1541A QNI INTERCONNECTOR CLOSE TO BINDING-UNIT PARTIAL TARGET-SL

* for the 3.30 pm trading interval only.** for the 4 pm trading interval only

The dispatch price reached \$13 293/MWh at 3.30 pm, following the rebid by CS energy of Wivenhoe at 3.22 pm.

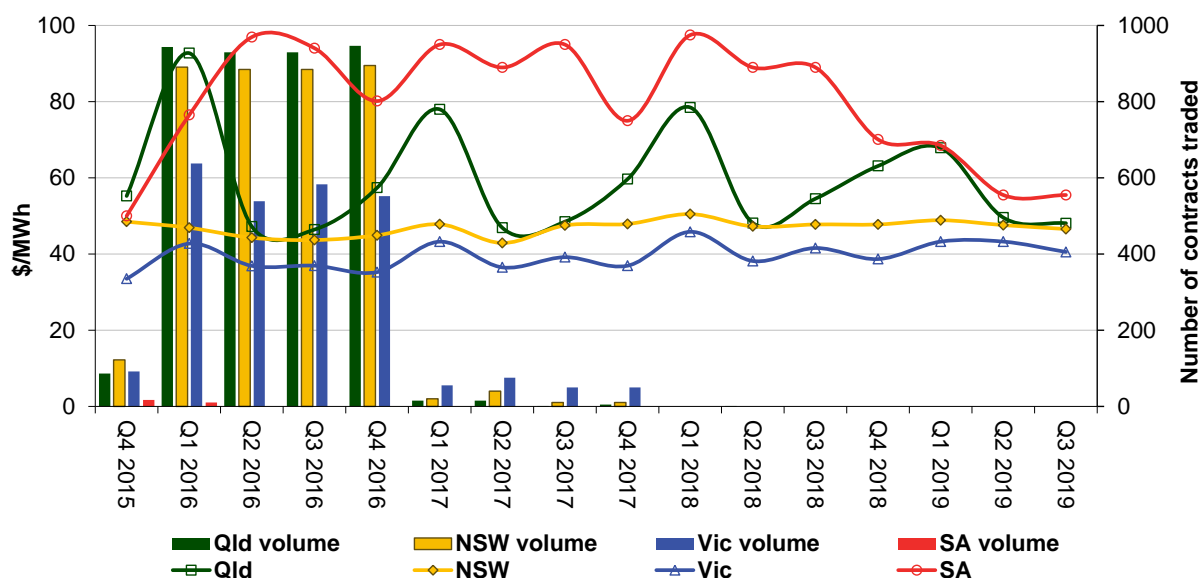
The dispatch price reached \$13 356/MWh at 3.50 pm, following the rebid by CS energy of Wivenhoe at 3.42 pm.

Financial markets

The high volume of trades in Figure 9, 10, and 11 are due to options on calendar year base load expiring on Thursday 19 November.

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.

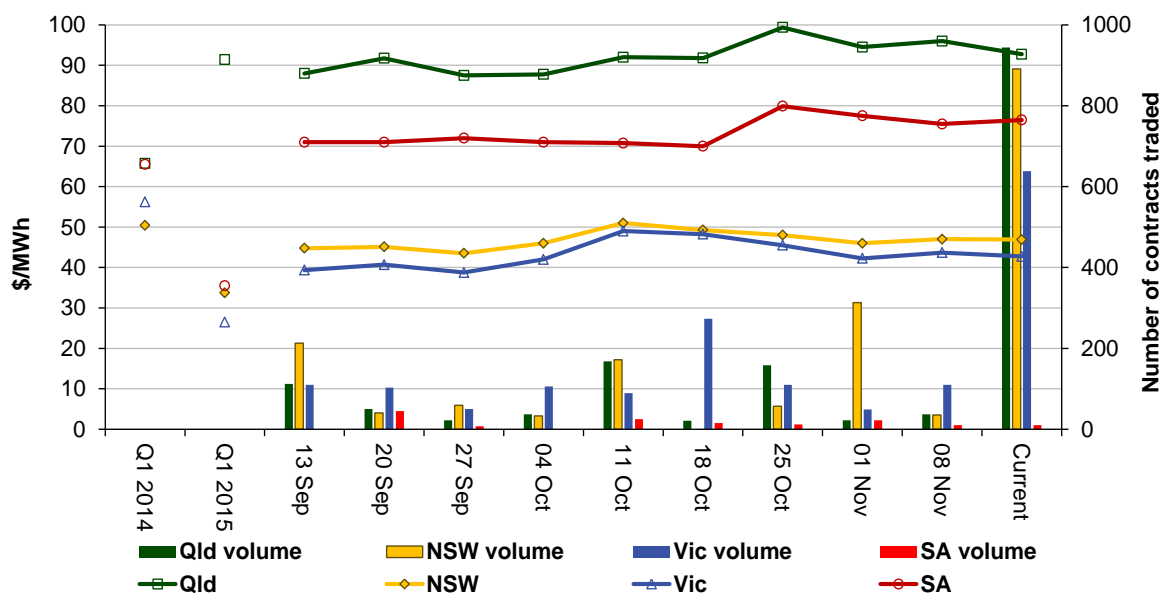
Figure 9: Quarterly base future prices Q4 2015 – Q3 2019



Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional Quarter 1 2016 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2014 and quarter 1 2015 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 2016 base contracts over the past 10 weeks (and the past 2 years)



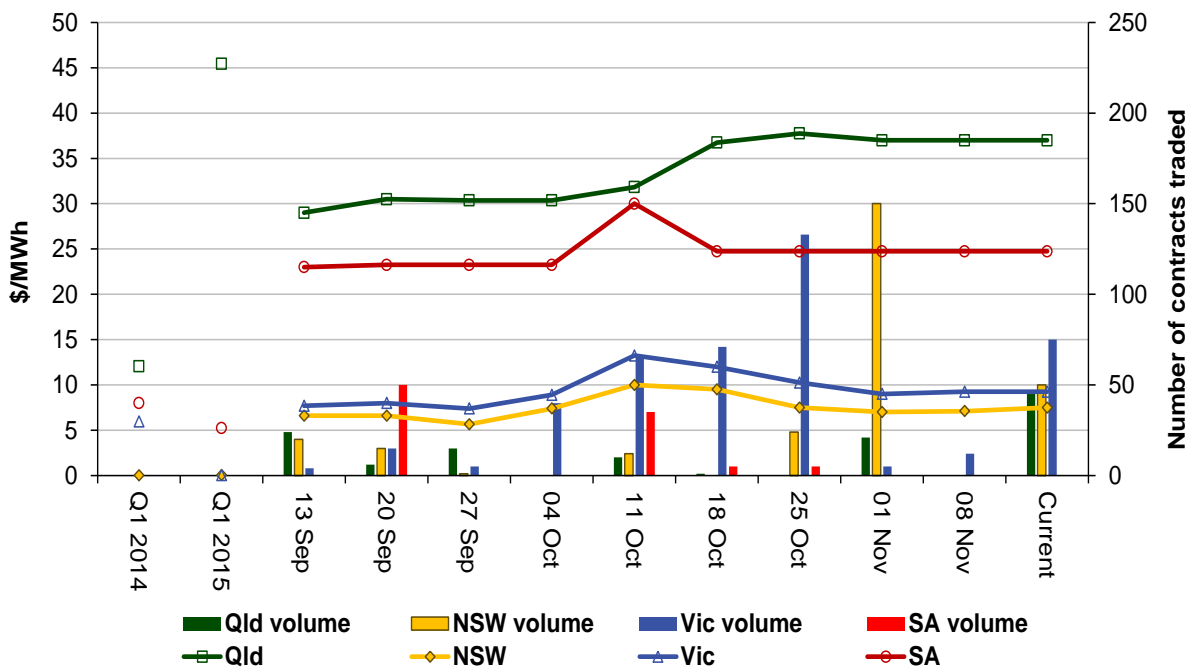
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for yearly periods 1 and 2 years prior to the current year.

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 2016 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2014 and quarter 1 2015 prices are also shown.

Figure 11: Price of Q1 2016 cap contracts over the past 10 weeks (and the past 2 years)



Source: ASXEnergy.com.au

Australian Energy Regulator
December 2015