

Electricity Report 8 – 14 March 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 8 to 14 March 2015.

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

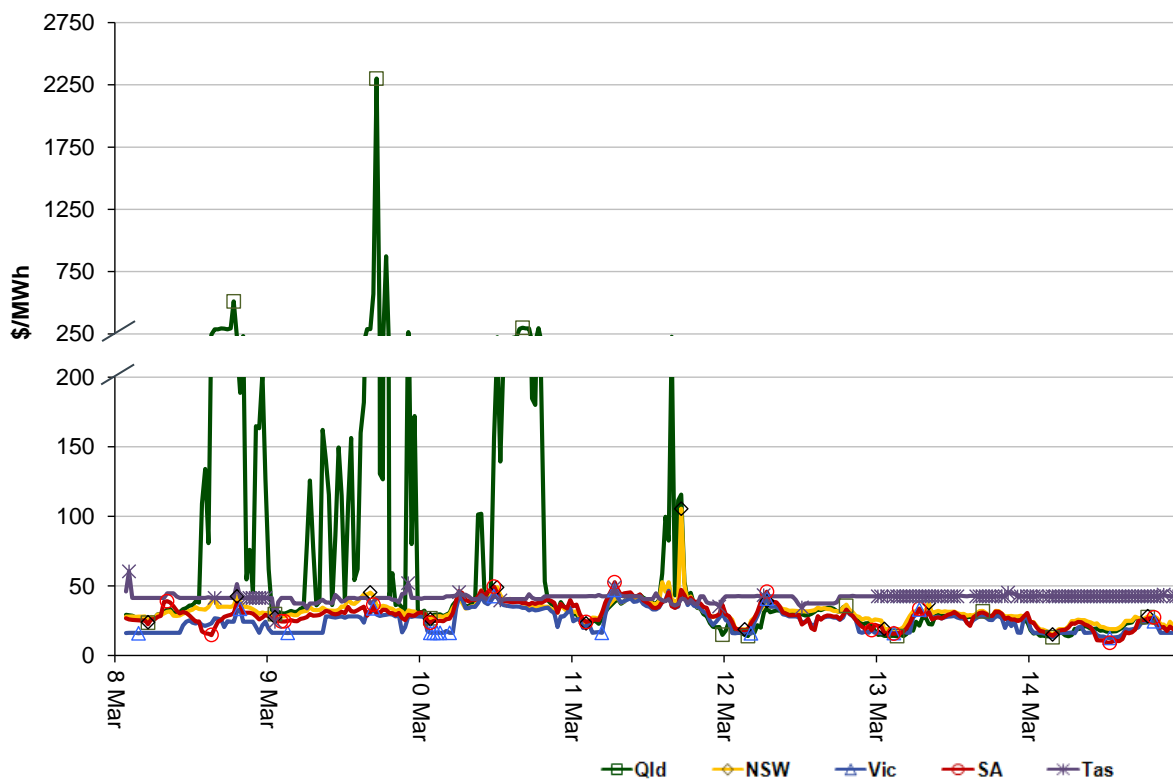


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

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

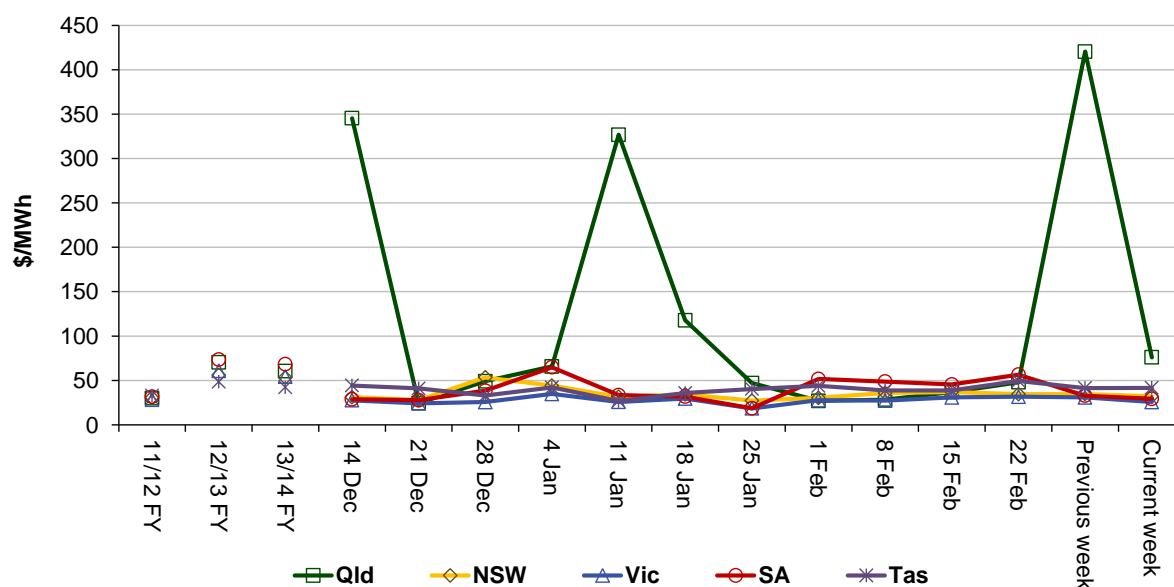


Table 1 : Volume weighted average spot prices by region (\$/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	76	32	26	29	42
13-14 financial YTD	61	53	54	68	42
14-15 financial YTD	71	36	32	41	38

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 107 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

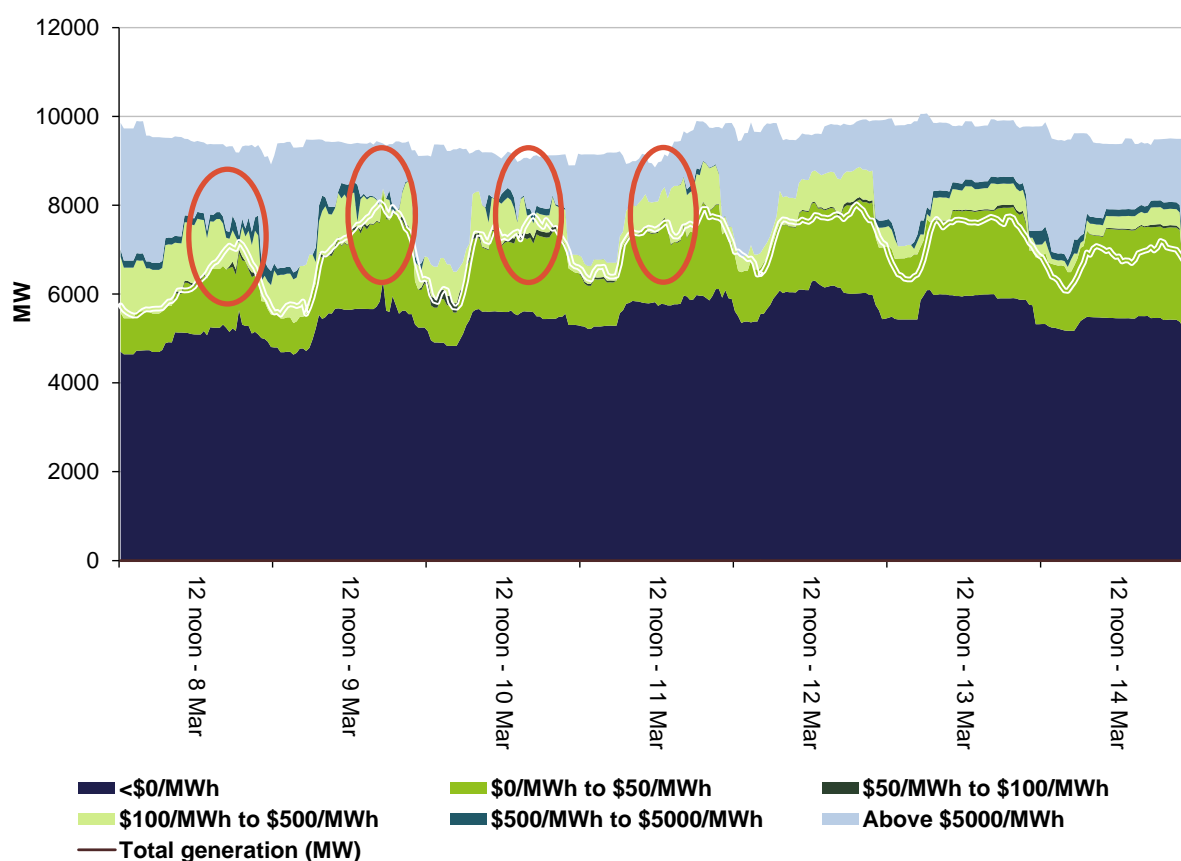
	Availability	Demand	Network	Combination
% of total above forecast	17	38	0	11
% of total below forecast	21	11	0	2

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 highlight rebidding from low to high prices which are detailed in the “Detailed market analysis of significant price events” section below.

Of note are the ellipses on the March 11 2015 highlighting in Queensland, New South Wales and Victoria. Prices increased in both Queensland and New South Wales in this period, not sufficiently however to trigger our reporting thresholds.

Figure 4 : New South Wales generation and bidding patterns

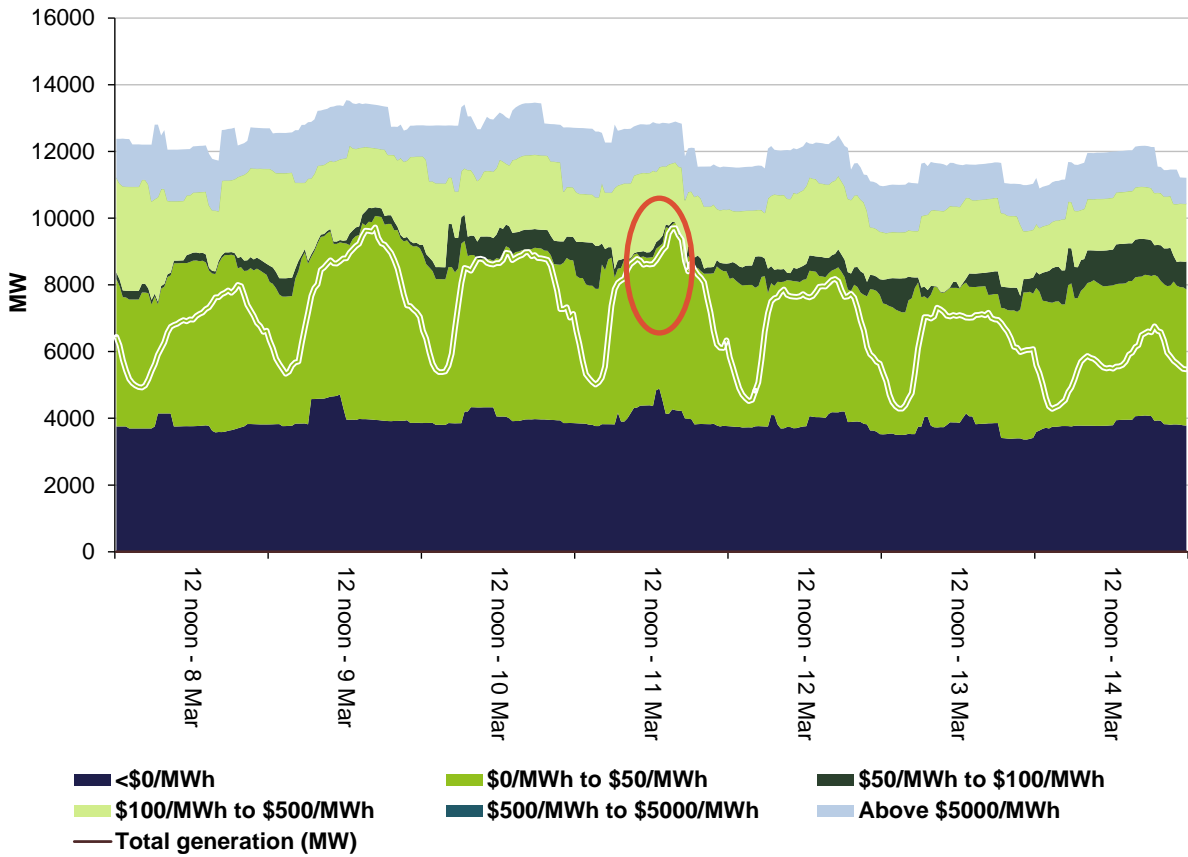


Figure 5 : Victoria generation and bidding patterns

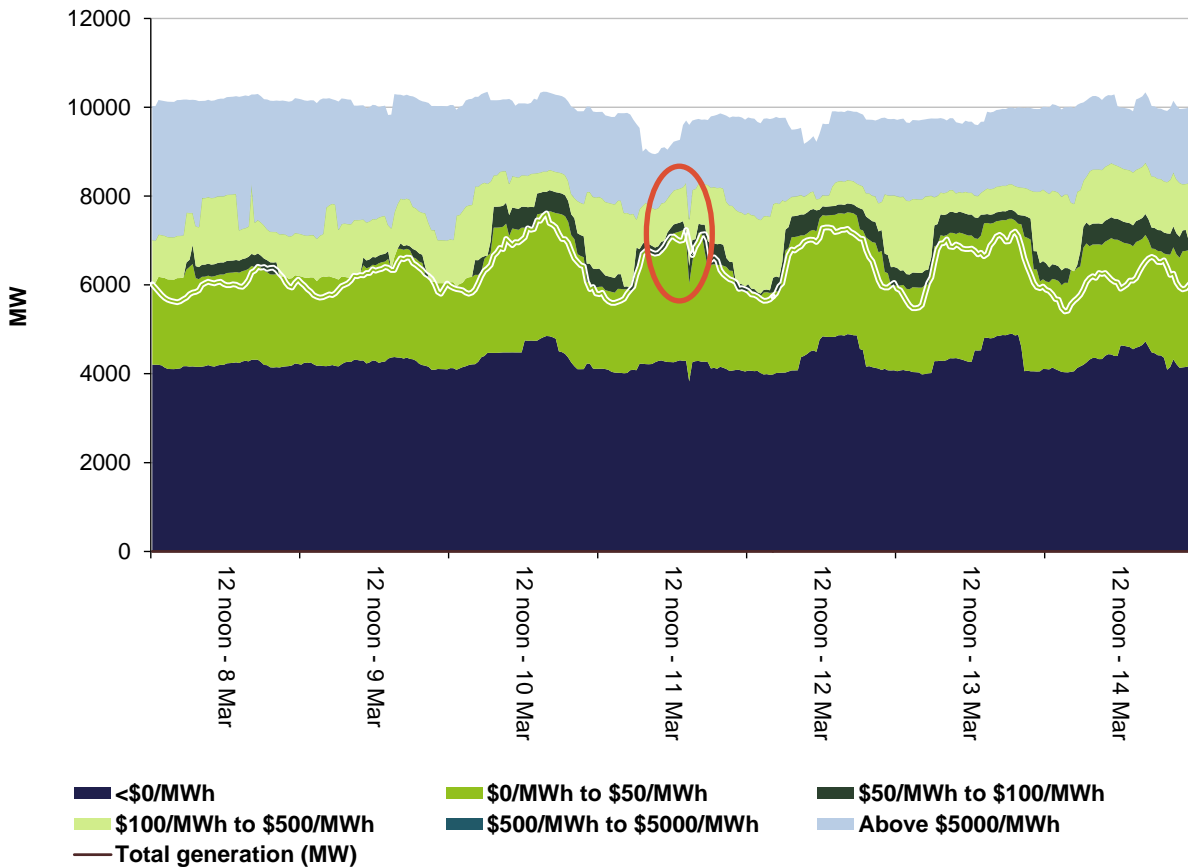


Figure 6: South Australia generation and bidding patterns

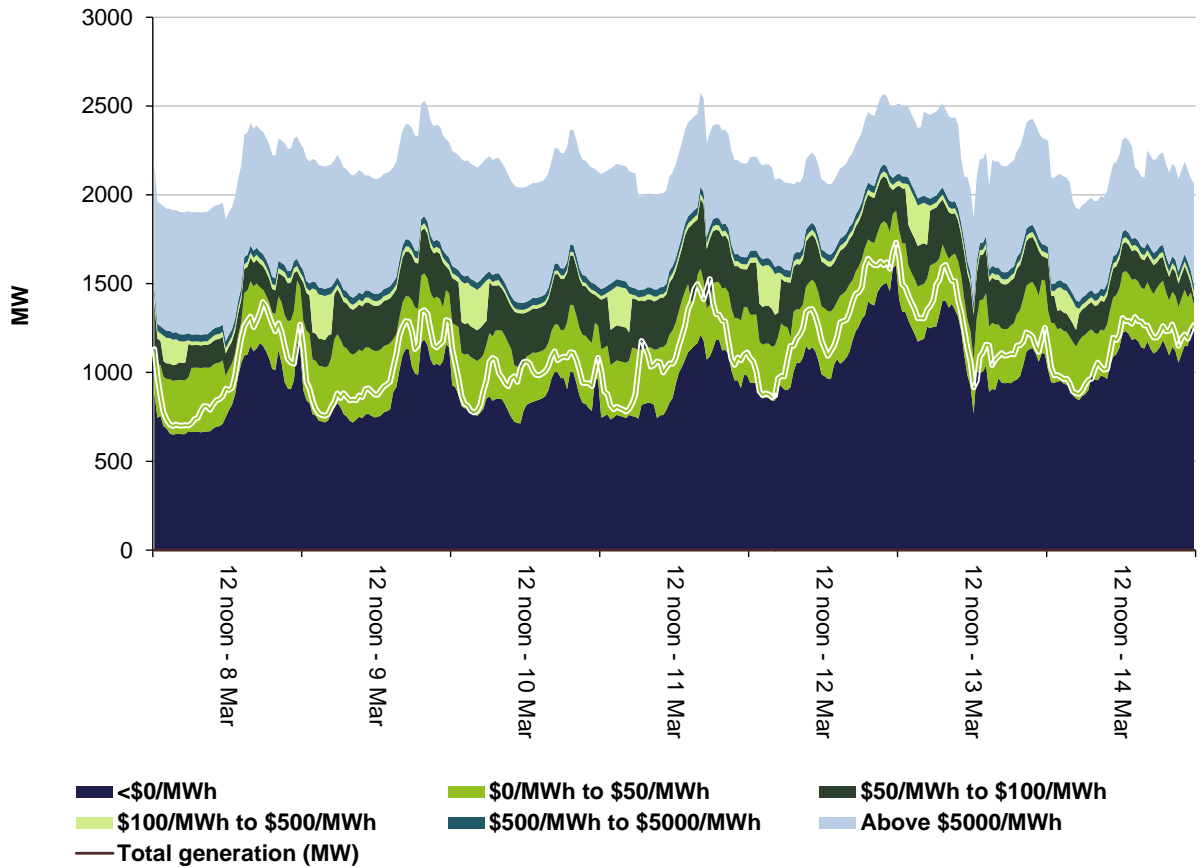
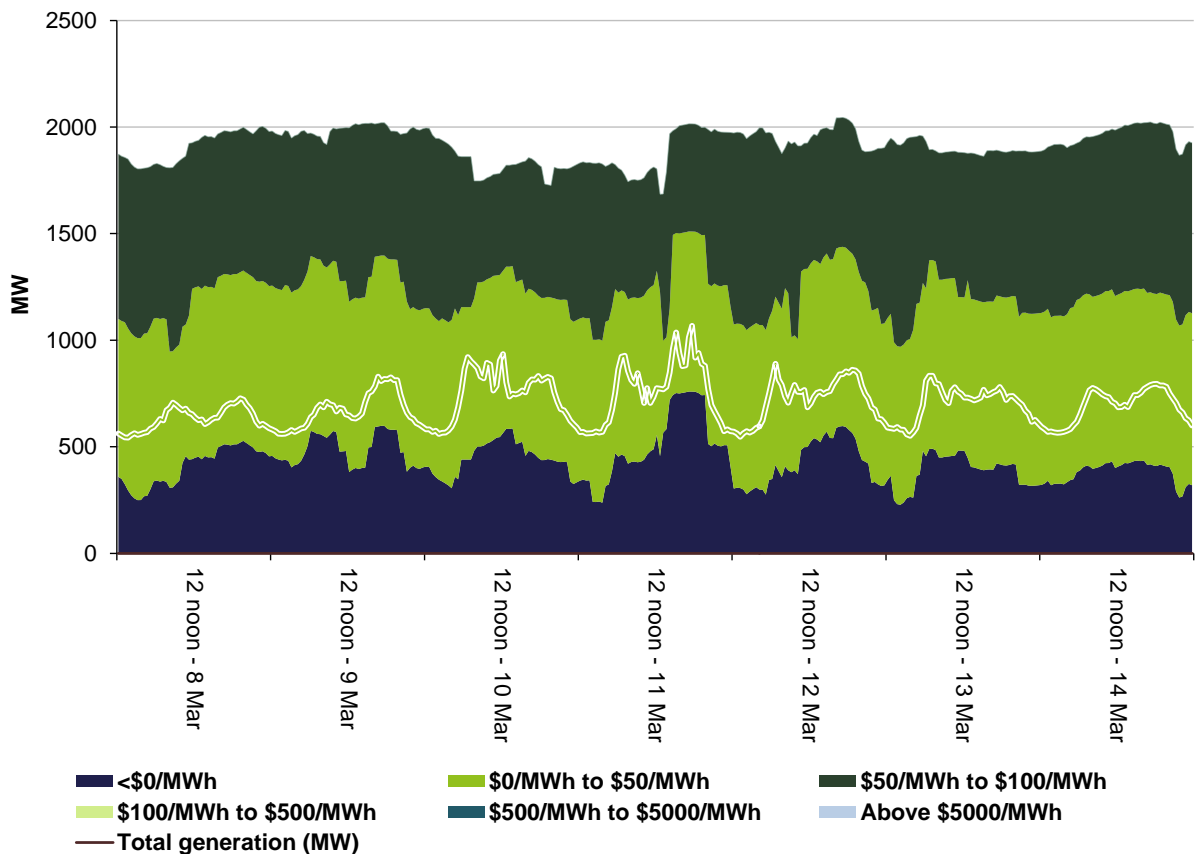


Figure 7: Tasmania generation and bidding patterns



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 \$265 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$98 500 or around 1.3 per cent of energy turnover in Tasmania.

Figure 8: Daily frequency control ancillary service cost

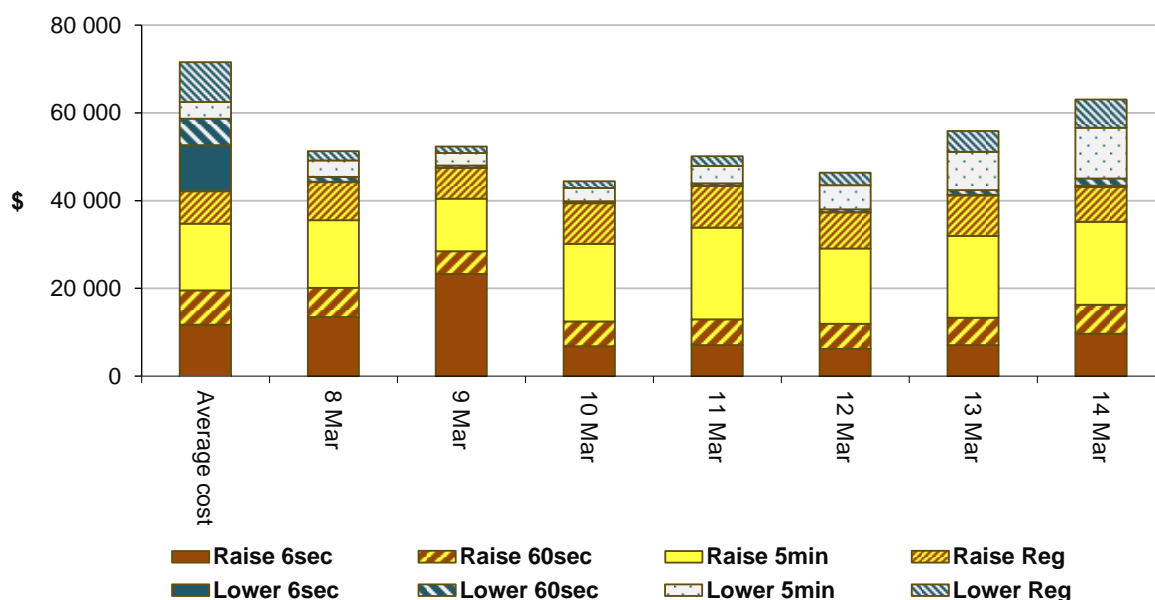


Figure 8 shows the daily breakdown of cost for each FCAS for the NEM, as well as the average cost since the beginning of the previous financial year.

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.

There were eighteen occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$76/MWh and above \$250/MWh.

The QNI interconnector was being limited to around 300 MW of flow into Queensland during the time of high prices due to a system normal constraint used to avoid voltage collapse on the loss of Kogan Creek power station. The Terranora interconnector was being forced into New South Wales by between 40 MW to 60 MW during the times of high prices due to its long term outage.

Sunday 8 March

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	286.00	39.25	286.00	6961	6753	6755	9373	9474	9564
4.30 pm	286.00	200.03	286.00	7058	6837	6817	9374	9455	9564
5 pm	293.58	286.00	286.00	7184	6918	6915	9363	9424	9543
5.30 pm	292.66	286.00	286.00	7213	6991	6988	9321	9422	9541
6 pm	286.00	295.93	286.00	7183	7078	7048	9327	9413	9511
6.30 pm	293.13	300.05	286.00	7198	7134	7118	9212	9374	9513
7 pm	510.92	300.99	302.01	7356	7223	7191	9171	9364	9519

Between 4.30 pm and 6.30 pm trading intervals the price was close to that forecast 4 and 12 hours ahead.

The 4 pm trading interval price was the same as that forecast 12 hours ahead. Rebidding by participants saw the forecast price fall to \$39/MWh four hours ahead. The actual price was higher than the four hour forecast price as demand was nearly 210 MW higher than that forecast four hours ahead.

The 7 pm trading interval price was around \$210/MWh higher than that forecast 4 and 12 hours ahead. At 6.41 pm, effective from 6.50 pm, Stanwell shifted 280 MW across Stanwell and Tarong from \$286/MWh to above \$13 000/MWh. The reason given was "1839 Qld 5 min PD price 1830 v 1835". This resulted in the dispatch price increasing from \$296/MWh at 6.45 pm to \$1501/MWh at 6.50 pm.

Monday 9 March

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	289.00	46.08	39.25	7948	7797	7781	9394	9393	9496
4.30 pm	289.00	59.49	45.67	8020	7837	7836	9397	9378	9531
5 pm	570.96	59.49	46.06	8136	7852	7886	9404	9373	9478
5.30 pm	2300.87	59.49	39.25	8004	7833	7857	9397	9371	9480

Conditions at the time saw demand up to 284 MW higher than that forecast four hours ahead. Available capacity was close to that forecast. We consider that the dominant reason for prices being higher than forecast is as a result of the demand forecast errors.

Table 5 : Rebids for 4 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.02 pm	3.35 pm	CS Energy	Wivenhoe	200	15	Price cap	1502A interconnector constraint-QNI binding north-SL
3.07 pm	3.15 pm	Stanwell	Tarong	200	<28	289	1507A QLD 5 min pd greater than 30 min pd for 1530
3.28 pm	3.35 pm	CS Energy	Gladstone	80	45	Price cap	1528A interconnector constraint-QNI binding north-SL

Table 6 : Rebids for 4.30 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.02 pm	3.35 pm	CS Energy	Wivenhoe	200	15	Price cap	1502A interconnector constraint-QNI binding north-SL
3.07 pm	3.15 pm	Stanwell	Tarong	200	<28	289	1507A QLD 5 min pd greater than 30 min pd for 1530
3.40 pm	4.05 pm	CS Energy	Gladstone	-45	<45	N/A	1539P technical issues-high cw temps-SL
3.56 pm	4.05 pm	CS Energy	Gladstone	60	45	Price cap	1555A interconnector constraint-QNI binding north-SL

The above rebids saw the dispatch price at \$289/MWh from 3.20 pm until 4.45 pm, set by Stanwell's Tarong and Stanwell stations.

Table 7 : Rebids for 5 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.07 pm	3.15 pm	Stanwell	Tarong	200	<28	289	1507A QLD 5 min pd greater than 30 min pd for 1530
3.40 pm	4.05 pm	CS Energy	Gladstone	-45	<45	N/A	1539P technical issues-high cw temps-SL
3.58 pm	4.05 pm	CS Energy	Wivenhoe	200	15	Price cap	1557A interconnector constraint-QNI binding north-SL
4.14 pm	4.20 pm	Stanwell	Tarong	125	289	>13 100	1613A change in QLD demand PD 1530 VS PD 1630 hrs
4.17 pm	4.35 pm	CS Energy	Gladstone	60	45	Price cap	1616A interconnector constraint-QNI binding north-SL
4.37 pm	4.45 pm	Ergon Energy	Barcaldine	-34	-952	N/A	16:40 P: failed plant start
4.44 pm	4.55 pm	Stanwell	Stanwell	120	289	13 499	1643A change in 5 min PD QLD price DI 1640 VS 1645 hrs

The price went from \$289/MWh at 4.45 pm to \$458/MWh at 4.50 pm demand increased by 39 MW. The price then increased to \$1501/MWh at 4.55 pm when Stanwell's rebid became effective. At 5 pm the price fell to \$599/MWh when demand decreased by 45 MW.

Table 8 : Rebids for 5.30 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.58 pm	4.05 pm	CS Energy	Wivenhoe	200	15	Price cap	1557A interconnector constraint-QNI binding north-SL
4.14 pm	4.20 pm	Stanwell	Tarong	125	289	>13 100	1613A change in QLD demand PD 1530 VS PD 1630 hrs
4.44 pm	4.55 pm	Stanwell	Stanwell	120	289	13 499	1643A change in 5 min PD QLD price DI 1640 VS 1645 hrs
4.50 pm	5.05 pm	CS Energy	Gladstone	60	45	Price cap	1650A interconnector constraint-QNI binding north-SL
4.52 pm	5.05 pm	Ergon Energy	Barcaldine	-34	-952	N/A	16:50 P: plant fuel control failure

At 5.05 pm there was a 28 MW increase in demand and CS Energy and Ergon rebids became effective. Ergon's plant tripped from 34 MW as a result of the fuel failure. With low-priced capacity either fully dispatched, ramp rate limited or trapped in FCAS the price went

from \$599/MWh at 5 pm to \$13 100/MWh at 5.05 pm. At 5.10 pm there was an 89 MW decrease in demand and the dispatch price fell to \$289/MWh.

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
7 pm	872.87	39.20	39.25	8053	7755	7793	9374	9408	9465

Conditions at the time saw demand 298 MW higher than forecast four hours ahead. Available capacity was close to that forecast four hours ahead.

Table 10 : Rebids for 7 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.58 pm	6.05 pm	CS Energy	Wivenhoe	200	15	1400	1758A interconnector constraint-QNI binding north-SL
6.40 pm	6.50 pm	Stanwell	Stanwell, Tarong	440	<289	>13 100	1839A QLD 5 min PD price 1835 v 1840
6.45 pm	6.55 pm	Origin	Roma	56	-1	13 217	1842A constraint management - N^Q_NIL_B1 SL
6.48 pm	6.55 pm	ERM Power	Oakey	42	458	13 499	1848F material change in market conditions:: change MW distrib

At 6.50 pm demand increased by 59 MW and Stanwell's rebids became effective. With low-priced capacity either fully dispatched, ramp rate limited or trapped in FCAS the price went from \$289/MWh at 6.45 pm to \$1400/MWh at 6.50 pm and stayed at that price for the remainder of the trading interval.

Table 11 : 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 pm	263.40	34.22	35.06	6756	6587	6585	9242	9540	9467

At this time demand was around 170 MW higher than forecast four hours ahead and available capacity was around 300 MW less than forecast four hours ahead.

Table 12 : Rebids for 10.30 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
8.09 pm	8.20 pm	CS Energy	Callide B	-45	17	N/A	2009P mill limit-SL

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
9.33 pm	9.40 pm	CS Energy	Gladstone	-135	Price cap	N/A	2133P condenser backflush-SL
9.47 pm	9.55 pm	CS Energy	Callide B	-70	17	N/A	2146P emissions limit-SL
9.57 pm	10.05 pm	Stanwell	Barron Gorge, Kareeya, Tarong	197	<20	>13 499	2156A QLD 5 min PD price 2150 v 2155
10.02 pm	10.10 pm	CS Energy	Wivenhoe	200	299	Price cap	2201A interconnector constraint-change in QNI flow-SL
10.13 pm	10.20 pm	Alinta	Braemar A	158	<199	1401	2212A Barron1 stopped@22:12
10.22 pm	10.30 pm	Alinta	Braemar A	96	<199	Price cap	2222A 5PD \$35.86 v 30PD \$299@22:22

With low-priced capacity either fully dispatched, ramp rate limited or trapped in FCAS the price went from \$36/MWh at 10.25 pm to \$1401/MWh at 10.30 pm, when Alinta's rebid became effective.

Tuesday 10 March

Table 13 : 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	290.67	95.49	289.00	7729	7811	7936	9059	9282	9611
4.30 pm	299.00	95.49	289.00	7832	7814	7981	9065	9264	9613
5 pm	294.00	95.49	289.00	7870	7869	8022	9073	9259	9613
5.30 pm	294.00	39.35	289.00	7801	7792	7985	9122	9260	9614

Conditions at the time saw demand close to that forecast four hours ahead and up to 207 MW lower than forecast 12 hours ahead. Available capacity was up to 223 MW lower than forecast four hours ahead.

Table 14 : Rebids for 4 pm to 5.30 pm

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.55 pm	2.35 pm	CS Energy	Wivenhoe	200	15	1400	1354A interconnector constraint-QNI binding or potential to bind

Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.31 pm	2.40 pm	Stanwell	Kareeya, Tarong	200	<27	289	1425A QNI no longer binding DI1425
3.04 pm	3.35 pm	CS Energy	Callide B	-80	17	N/A	1503P mill rts-delayed-SL
3.10 pm	3.20 pm	CS Energy	Wivenhoe	200	1400	299	1507P technical issues-wiv2 in sync cond in lieu of wiv1-SL
3.51 pm	4 pm	Stanwell	Stanwell, Tarong	395	289	>1400	1550A QLD demand 5 min PD greater than 30 min PD
4.08 pm	4.35 pm	CS Energy	Wivenhoe	200	15	299	1607A interconnector constraint-QNI binding or potential to bind
4.52 pm	5 pm	Millmerran	Millmerran	190	7	Price cap	16:52 A change in 5min PD RRP - SL

At 3.15 pm, coinciding with the start of afternoon demand pick up, the price went to \$289/MWh (from \$86/MWh at 3.10 pm) and remained around \$300/MWh until 5.40 pm.

Table 15 : 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 pm	295.67	39.25	289.00	7803	7705	7951	9129	9085	9326

Conditions at the time saw demand and available capacity higher than forecast four hours ahead but lower than that forecast 12 hours ahead and spot price outcomes reflect this.

Table 16 : Rebids for 7 pm

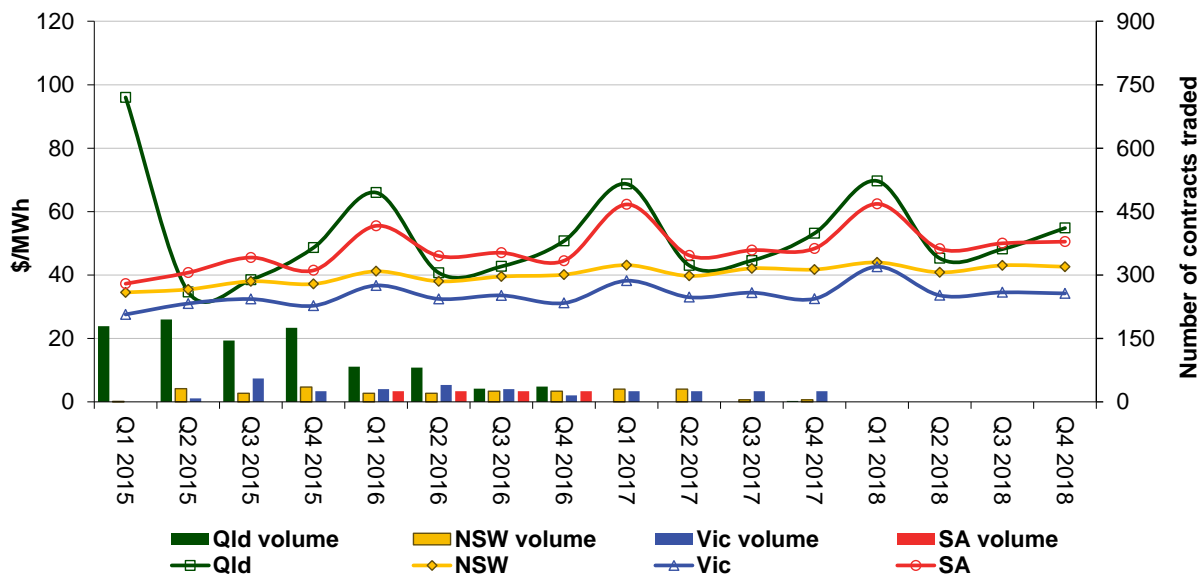
Time in	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.51 pm	4 pm	Stanwell	Stanwell, Tarong	395	289	>1400	1550A QLD demand 5 min PD greater than 30 min PD
5.26 pm	5.30 pm	CS Energy	Wivenhoe	200	15	299	1726A interconnector constraint-QNI binding or potential to bind
6.14 pm	6.25 pm	Stanwell	Tarong	50	Price floor	Price cap	1813P ash conveyor

The dispatch price was around \$300/MWh for the entire trading interval driven by the rebids and evening peak demand.

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.

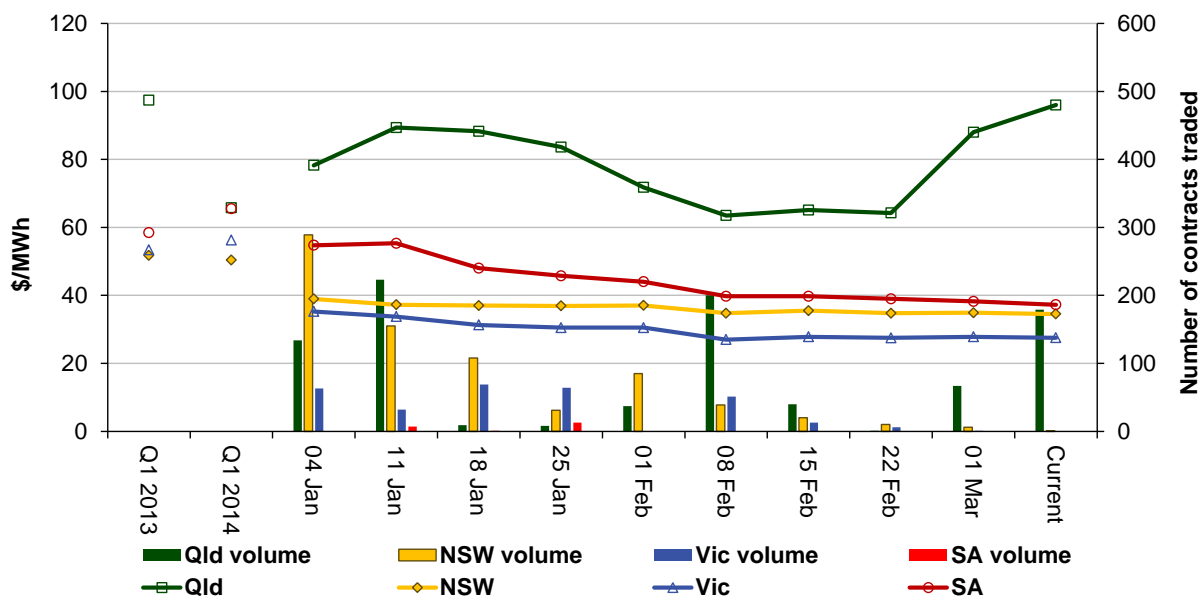
Figure 9 : Quarterly base future prices Q1 2015 – Q4 2018



Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional Quarter 1 2015 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2013 and quarter 1 2014 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 2015 base contracts over the past 10 weeks (and the past 2 years)



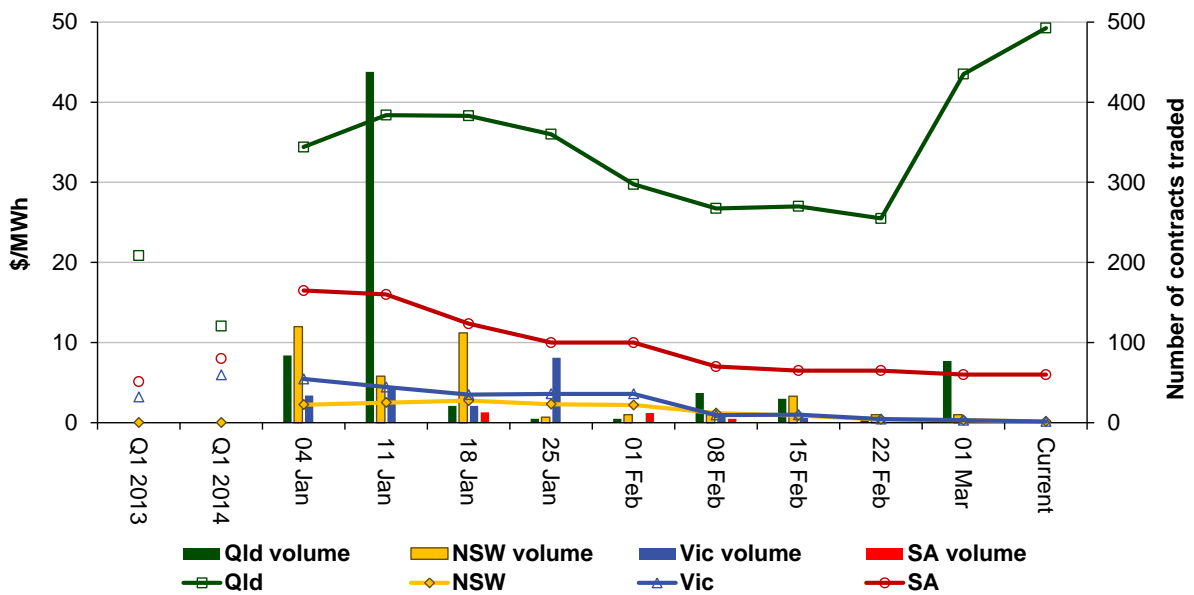
Note: Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for yearly periods 1 and 2 years prior to the current year.

Source: ASXEnergy.com.au

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

Figure 11 : Price of Q1 2015 cap contracts over the past 10 weeks (and the past 2 years) shows how the price for each regional Quarter 1 2015 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2013 and quarter 1 2014 prices are also shown.

Figure 11 : Price of Q1 2015 cap contracts over the past 10 weeks (and the past 2 years)



Source: ASXEnergy.com.au

Australian Energy Regulator

March 2015