

WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY
REGULATOR

3 March – 9 March 2013

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 3 March to 9 March and the 12/13 financial year to date (YTD) across the NEM. It compares these prices with price outcomes from the previous week and year to date respectively.

Figure 1: Volume weighted average spot price by region (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Average price for 3 Mar - 9 March 2013	61	54	67	80	57
% change from previous week*	-9	-2	25	41	15
12-13 financial YTD	73	56	63	65	49
% change from 11-12 financial YTD**	140	89	134	98	53

*The percentage change between last week's average spot price and the average price for the previous week. Calculated on VWA prices prior to rounding.

**The percentage change between the average spot price for the current financial year and the average spot price for the previous financial year. Percentage changes are calculated on VWA prices prior to rounding.

Further information is provided in Appendix A when the spot price exceeds three times the weekly average and is above \$250/MWh or less than -\$100/MWh. Longer term market trends are attached in Appendix B.¹

Financial markets

Figures 2 to 9 show futures contract² prices traded on the Australian Securities Exchange (ASX) as at close of trade on Friday 8 March 2013. Figure 2 shows the base futures contract prices for the next three calendar years, and the average over these three years. Also shown are percentage changes³ from the previous week.

¹ Monitoring the performance of the wholesale market is a key part of the AER's role and an overview of the market's performance in the long term is provided on the AER website. Long-term statistics can be found there on, amongst other things, demand, spot prices, contract prices and frequency control ancillary services prices. To access this information go to www.aer.gov.au -> Australian energy industry -> Performance of the energy sector

² Futures contracts traded on the ASX are listed by d-cyphaTrade (www.d-cyphatrade.com.au). A futures contract is typically for one MW of electrical energy per hour based on a fixed load profile. A base load profile is defined as the base load period from midnight to midnight Monday to Sunday over the duration of the contract quarter. A peak load profile is defined as the peak-period from 7 am to 10 pm Monday to Friday (excluding Public holidays) over the duration of the contract quarter.

³ Calculated on prices prior to rounding.

Figure 2: Base calendar year futures contract prices (\$/MWh)

	QLD		NSW		VIC		SA	
Calendar Year 2013	66	1%	56	1%	54	3%	57	1%
Calendar Year 2014	55	1%	55 (10)	0%	52	0%	57	0%
Calendar Year 2015	50	0%	49	0%	46	-1%	49	0%
Three year average	57	1%	53	0%	51	1%	54	0%

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

* a number in brackets denotes the number of trades in the product.

Figure 3 shows the \$300 cap contract price for Q1 2013 and calendar year 2013 and the percentage change⁴ from the previous week.

Figure 3: \$300 cap contract prices (\$/MWh)

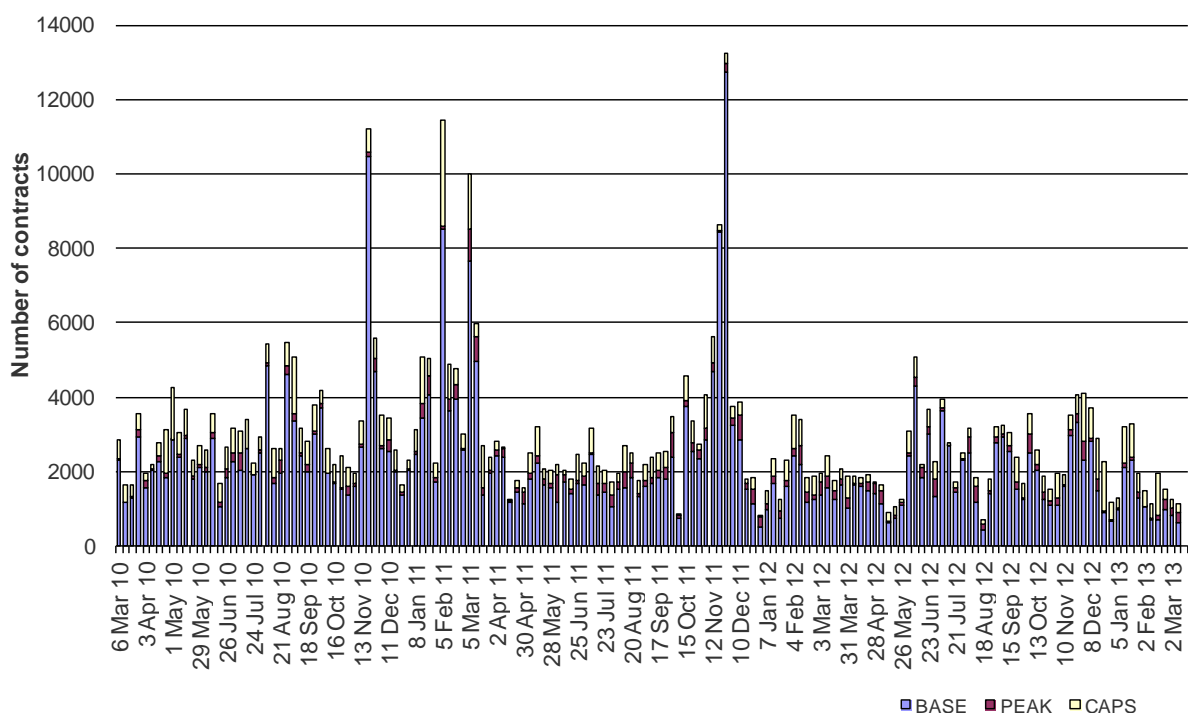
	QLD		NSW		VIC		SA	
Q1 2013	21	-3%	0 (5)	-33%	7 (71)	112%	9 (1)	79%
2013	8	-2%	3	-5%	4	35%	5	21%

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

* a number in brackets denotes the number of trades in the product.

Figure 4 shows the weekly trading volumes for base, peak and cap contracts. The date represents the end of the trading week.

Figure 4: Number of exchange traded contracts per week

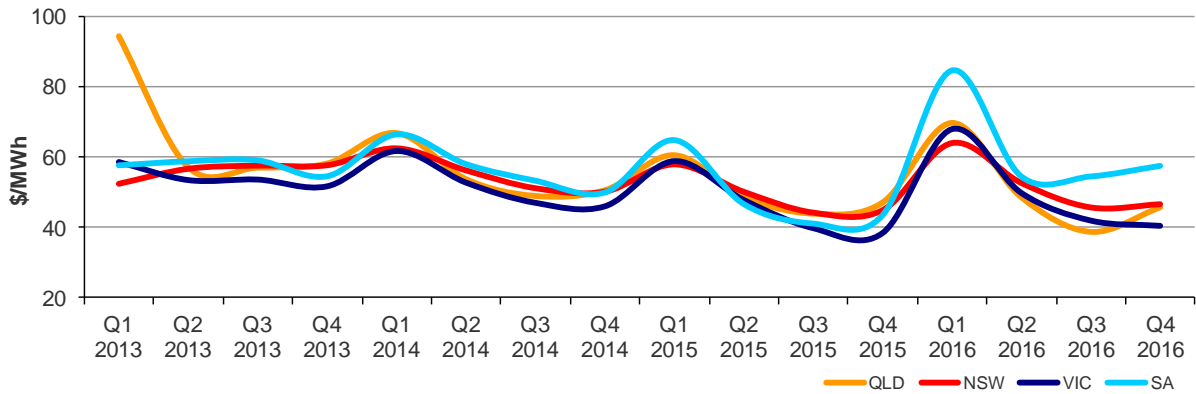


Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

⁴ Calculated on prices prior to rounding.

Figure 5 shows the prices for base contracts for each quarter for the next four years.

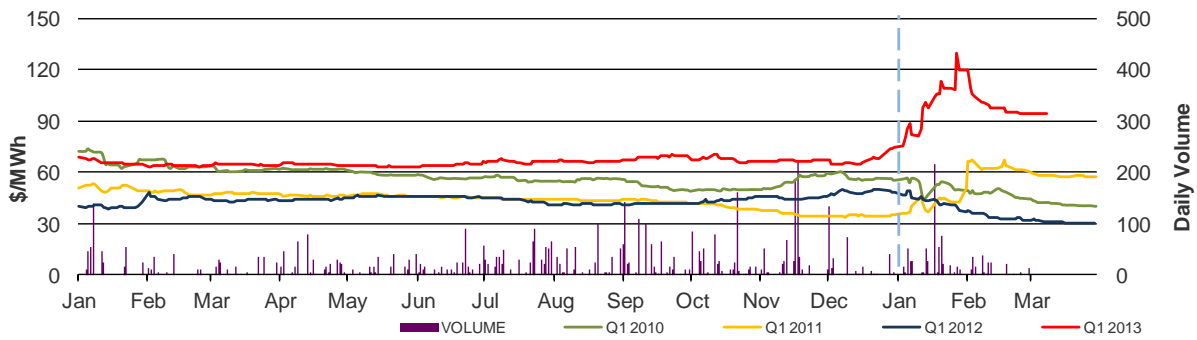
Figure 5: Quarterly base future prices Q1 2013 – Q4 2016



Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

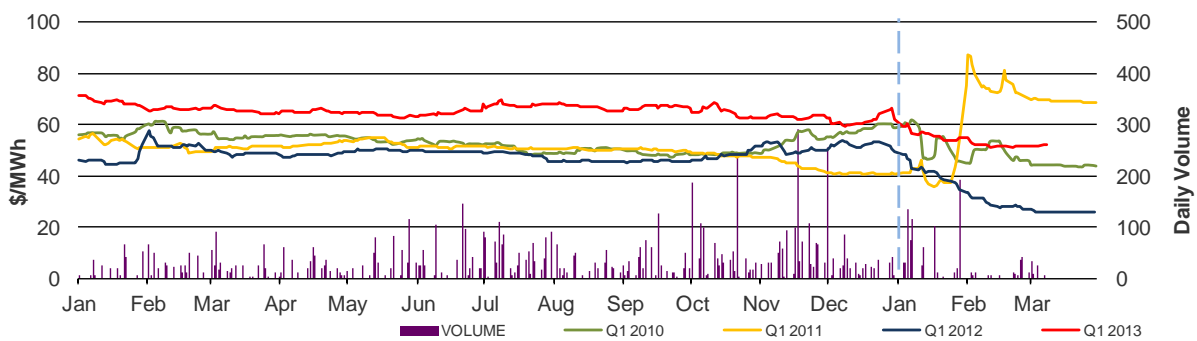
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

Figure 6: Queensland Q1 2010, 2011, 2012 and 2013



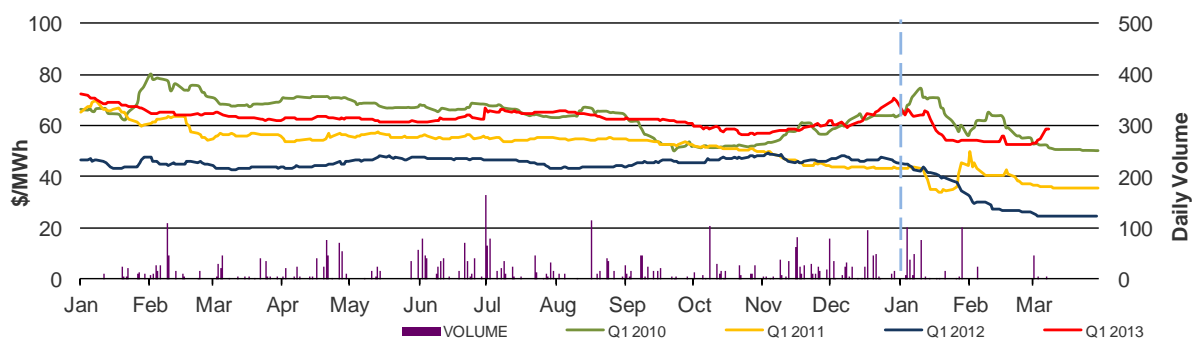
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

Figure 7: New South Wales Q1 2010, 2011, 2012 and 2013



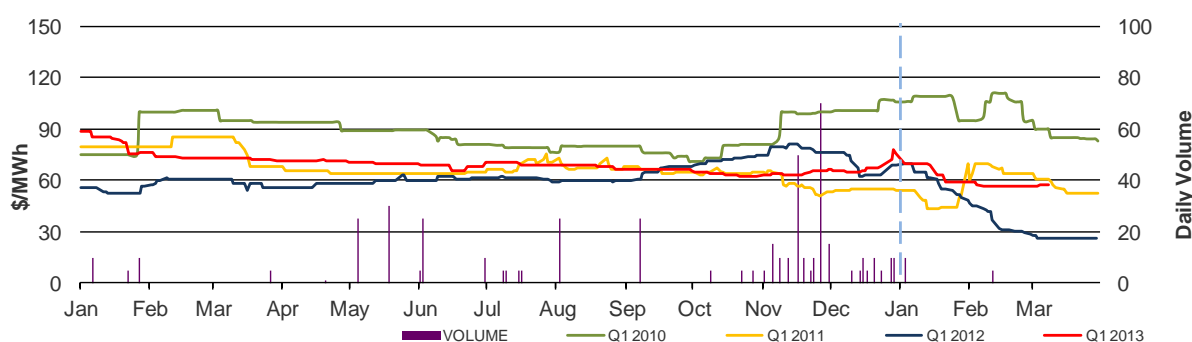
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

Figure 8: Victoria Q1 2010, 2011, 2012 and 2013



Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

Figure 9: South Australia Q1 2010, 2011, 2012 and 2013



Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

*The daily volume scale for South Australia is smaller than for other regions to reflect the lower liquidity in the market in South Australia.

Spot market forecasting 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 as participants react to changing market conditions. There were 97 trading intervals throughout the week where actual prices varied significantly from forecasts⁵. This compares to the weekly average in 2012 of 60 counts and the average in 2011 of 78. Reasons for these variances are summarised in Figure 10⁶.

⁵ A trading interval is counted as having a variation if the actual price differs significantly from the forecast price either four or 12 hours ahead.

⁶ 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.

Figure 10: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	8	36	2	4
% of total below forecast	32	5	3	10

The total may not equal 100% due to rounding

Demand and bidding patterns

The AER reviews demand, network limitations and generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figure 11 shows the weekly change in total available capacity at various price levels during peak periods⁷. For example, in Queensland 192 MW less capacity was offered at prices under \$20/MWh this week compared to the previous week. Also included is the change in average demand during peak periods, for comparison.

Figure 11: Changes in available generation and average demand compared to the previous week during peak periods

MW	<\$20/MWh	Between \$20 and \$50/MWh	Total availability	Change in average demand
QLD	-192	241	505	-299
NSW	-56	-84	-104	-424
VIC	600	-192	288	1127
SA	359	3	465	658
TAS	-21	69	-132	58
Total	690	37	1022	1120

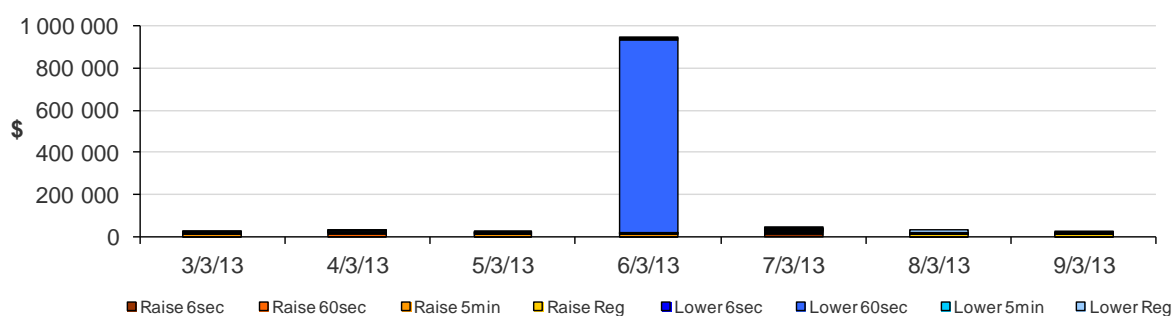
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$1.1 million or less than one per cent of energy turnover on the mainland. The majority of this cost occurred on 6 March 2013 when the price of local Lower 60 second services in South Australia exceeded \$1000/MW for an hour, reaching the price cap, for a total cost of around \$920 000. In accordance with clause 3.13.7 (e) of the National electricity Rules the AER will publish a report into this event.

The total cost of FCAS in Tasmania for the week was \$81 500 or less than one per cent of energy turnover in Tasmania.

Figure 12 shows the daily breakdown of cost for each service for the NEM.

Figure 12: Daily frequency control ancillary service cost



Australian Energy Regulator April 2013

⁷ A peak period is defined as between 7 am and 10 pm on weekdays.



3 March – 9 March 2013

Queensland:

There was one occasion where the spot price in Queensland was greater than three times the Queensland weekly average price of \$61/MWh and above \$250/MWh.

Saturday, 9 March

10:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2008.96	63.17	54.03
Demand (MW)	5445	5556	5588
Available capacity (MW)	10 257	10 345	10 350

At around 10.10 pm both Millmerran Power Station units tripped from a combined output of around 850 MW. There was no rebid to reflect this reduction in availability until 10.55 pm, which is why this is not apparent from the actual available capacity in the table above.

This large and sudden reduction in availability (which was all priced at close to the price floor) combined with low priced generation either ramp rate limited or offline saw high priced generation set the 5 minute price at \$11 500/MWh at 10.15 pm.

Victoria:

There was one occasion where the spot price in Victoria was greater than three times the Victoria weekly average price of \$66/MWh and above \$250/MWh.

Friday, 8 March

3:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	804.14	71.33	67.47
Demand (MW)	8749	8016	7876
Available capacity (MW)	9579	9977	10 074

Demand in Victoria and South Australia were at high levels due to hot weather in both regions (around 35 degrees). Demand in Victoria was around 740 MW higher than forecast four hours ahead and 870 MW higher than forecast 12 hours ahead. Available capacity was around 400 MW lower than forecast four hours ahead.

From around midday a constraint managing loss of a Murray to Dederang line (by reducing imports from New South Wales and output from Murray) started to bind. At 12.20 pm, effective from 12.30 pm, Snowy Hydro rebid 1376 MW of capacity at Murray from prices between \$48/MWh and \$152/MWh to the price floor. The reason given was "12:19 A mng unfcst bind N>>V_DBUSS_1 in 5PD". This saw imports into Victoria fall from 460 MW to 45 MW in predispatch for the 3.30 pm trading interval.

At 3.08 pm, effective from 3.15 pm, EnergyAustralia reduced the capacity of Yallourn Power Station by 502 MW to 960 MW. The reason given was “15:07 P edit capacity across station for industrial action SL”.

Low priced generation in both Victoria and South Australia was either ramp rate limited or trapped in FCAS. Flow was being forced out of Victoria into New South Wales interconnector, counter-price, and imports across Basslink were at its limit. As a result, at 3.15 pm the 5 minute price in Victoria and South Australia spiked from less than \$100/MWh to \$4491/MWh and \$4247/MWh, respectively.

South Australia:

There were three spot prices in South Australia greater than three times the weekly average price of \$80/MWh and above \$250/MWh, and a further three spot prices below \$-100/MWh.

Wednesday, 6 March

1:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	-289.43	70.80	70.80
Demand (MW)	2396	2232	2223
Available capacity (MW)	3012	3168	3173
2:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1620.25	70.80	70.80
Demand (MW)	2476	2367	2277
Available capacity (MW)	2911	3168	3145
3:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2058.84	80.80	70.85
Demand (MW)	2441	2374	2299
Available capacity (MW)	3098	3025	3109
4:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	-188.76	80.80	80.80
Demand (MW)	2563	2465	2360
Available capacity (MW)	3110	2997	3086
5:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	-286.10	80.80	80.80
Demand (MW)	2558	2449	2349
Available capacity (MW)	3078	2993	3085

Conditions at the time saw demand and available capacity close to that forecast.

On 20 February 2013 a new system normal constraint (S>>V_NIL_NOTI_NOTI_3) became active, it was designed to manage the overload on a Torrens Island to New Osborne 66 kV line for the trip of either of the Torrens Island to New Osborne 66 kV No 3 or No 4 lines. This constraint affects all South Australian generators, except Quarantine unit 5, and both interconnectors into South Australia. At times leading up to this day, this constraint caused volatile pricing outcomes in the forecast timeframe. On 6 March the combined impact of the constraint and offer prices for the Quarantine unit led to volatile actual five-minute price outcomes – ranging from the price floor to the price cap.

During the morning the Heywood M2 transformer tripped limiting imports into South Australia across the Heywood interconnector to around 220 MW.

At 12.46 pm, effective from 12.55 pm, Origin Energy rebid 115 MW of available capacity at Quarantine unit 5 from prices above zero to the price floor. The reason given was “constraint management – S>>V_NIL_NOTI_NOTI_3 SL”.

At 12.55 pm and 1 pm the five-minute dispatch price fell to the price floor. The price returned to previous levels from 1.05 pm to 1.30 pm, but fell again to the price floor from 1.35 pm to 1.45 pm. All of the negative prices were set by Quarantine unit 5.

At 1.32 pm, effective from 1.40 pm, Alinta Energy rebid 153 MW of capacity at Northern from prices below \$102/MWh to above \$11 565/MWh. The reason given was “1335A SA dispatch price at - \$1000@13:32”. At 1.37 pm 15 MW of capacity rebid above was shifted to the price floor.

At 1.36 pm, effective from 1.45 pm, International Power rebid 137 MW of capacity at Pelican Point from prices below \$300/MWh to above \$12 500/MWh. The reason given was “1336A respond to - \$1,000 SA prices”.

The 5 minute price increased from \$-1000/MWh at 1.45 pm to \$12 600/MWh at 1.50 pm, (set by Pelican point). In response to the high price Alinta Energy rebid 138 MW of capacity at Northern to the price floor which saw the price at 1.55 pm fall to \$66/MWh.

At 3.05 pm there was a change in the rating of the Heywood M1 transformer from 370 MVA to 250 MVA. This saw the import limit into South Australia across Heywood reduce from 250 MW to 42 MW. This resulted in the constraint violating and the price spiked to \$12 199/MWh.

The constraint continued to bind in the afternoon causing negative 5 minutes prices at 4.15 pm, 4.25 pm, 4.35 pm and 4.40 pm (three of these at the price floor and set by Quarantine unit 5).

AEMO notified the following day (through AEMO Communication 1358) of a new constraint formulation for the New Osborne to Torrens Island lines, which was in place from 8 March 2013.

Friday, 8 March

3:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	675.60	92.79	80.85
Demand (MW)	2538	2518	2464
Available capacity (MW)	3298	3188	3230

This event coincided with the high price event in Victoria, which is explained in the Victorian section.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis

3 March - 9 March 2013

**Table 1: Financial year to date spot market volume weighted average price**

Financial year	QLD	NSW	VIC	SA	TAS
2012-13 (\$/MWh) YTD	73	56	63	65	49
2011-12 (\$/MWh) YTD	30	30	27	33	32
Change*	140%	89%	134%	98%	53%
2011-12 (\$/MWh)	30	31	28	32	33

Table 2: NEM turnover

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2012-13 YTD	8.421	135
2011-12	5.987	199
2010-11	7.445	204

Table 3: Recent monthly and quarterly spot market volume weighted average price and turnover

Volume weighted average (\$/MWh)	QLD	NSW	VIC	SA	TAS	Turnover (\$, billion)
November-12	55	58	94	72	51	1.045
December-12	62	50	55	57	47	0.881
January-13	170	51	60	68	57	1.489
February-13	60	53	56	63	46	0.855
March-13 MTD	60	54	63	74	54	0.291
Q1 2013 QTD	112	52	59	67	52	2.635
Q1 2012 QTD	33	26	26	28	38	1.087
Change*	238%	100%	130%	142%	36%	1.424

Table 4: ASX energy futures contract prices at end of 8 Mar 2013

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2013								
Price on 1 Mar (\$/MWh)	94	109	52	55	53	63	57	72
Price on 8 Mar (\$/MWh)	94	109	52	55	59	71	58	72
Open Interest on 8 Mar (\$/MWh)	1536	341	2461	691	1265	178	275	0
Traded in the last week (MW)	0	0	38	1	10	0	0	0
Traded since 1 Jan 12 (MW)	5961	705	8876	1070	4298	293	486	0
Settled price for Q1 12 (\$/MWh)	30	37	26	28	25	29	26	30

Table 5: Changes to availability of low priced generation capacity offered to the market

Comparison:	QLD	NSW	VIC	SA	TAS	NEM
January 13 with January 12						
MW Priced \$20/MWh	-2772	-2217	-1360	-41	-235	-6625
MW Priced \$20/MWh to \$50/MWh	1812	1269	1255	-346	339	4330
February 13 with February 12						
MW Priced \$20/MWh	-3691	-1475	-1023	-157	-399	-6745
MW Priced \$20/MWh to \$50/MWh	2240	47	635	-421	389	2891
March 13 with March 12 MTD						
MW Priced \$20/MWh	-4716	-2171	-1327	223	-319	-8310
MW Priced \$20/MWh to \$50/MWh	2996	-553	1081	-295	654	3884

*Note: These percentage changes are calculated on VWA prices prior to rounding

** Estimated value