

WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY
REGULATOR

26 May – 1 June 2013

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for 26 May to 1 June 2013 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 26 May - 1 June 2013	62	52	61	125	46
% change from previous week*	5	-8	6	4	7
12-13 financial YTD	71	56	61	70	49
% change from 11-12 financial YTD**	139	87	121	119	48

*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 31 May 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.

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

	QLD		NSW		VIC		SA	
Calendar Year 2014*	54	1%	51	1%	48	1%	55	0%
Calendar Year 2015*	47	1%	45	0%	40	0%	47	0%
Calendar Year 2016*	51	0%	52	0%	47	-1%	63	0%
Three year average	51	1%	49	0%	45	0%	55	0%

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

*There were no trades.

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 3 shows the \$300 cap contract price for Q1 2014 and calendar year 2014 and the percentage change⁴ from the previous week.

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

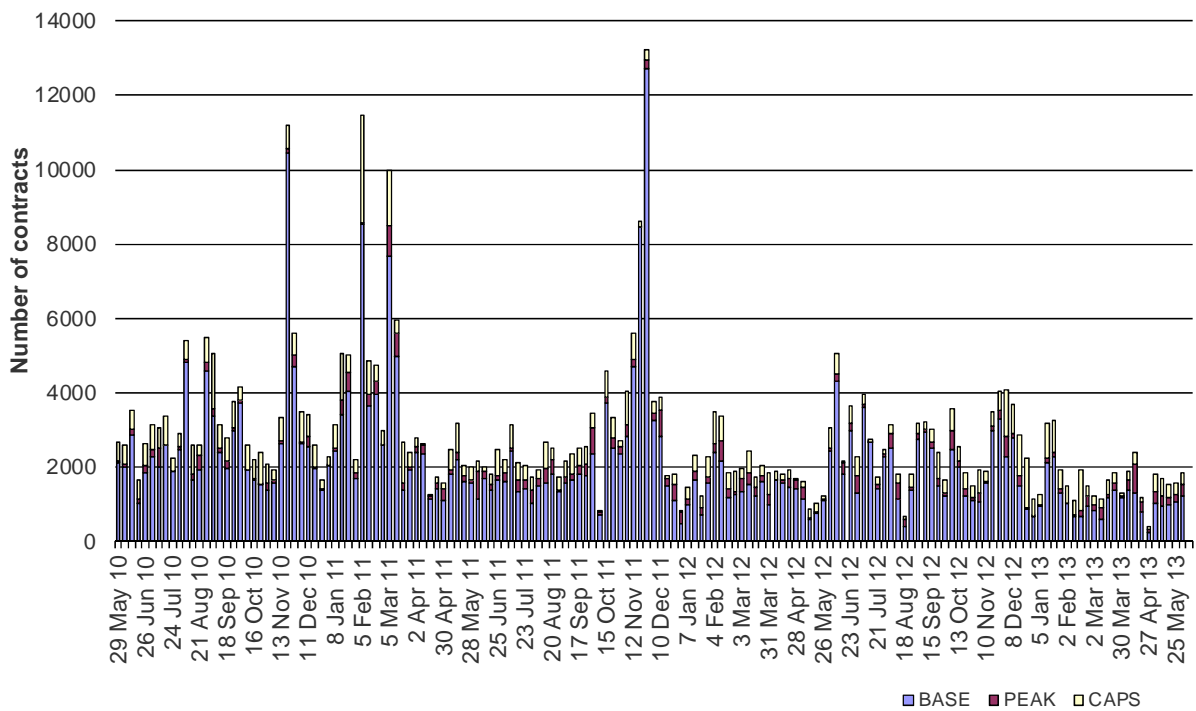
	QLD		NSW		VIC		SA	
Q1 2014	13	1%	8 (50)	1%	10 (115)	2%	16	0%
2014	6	1%	4	1%	4	1%	8	0%

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

A number in brackets denotes the number of trades in the product.

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

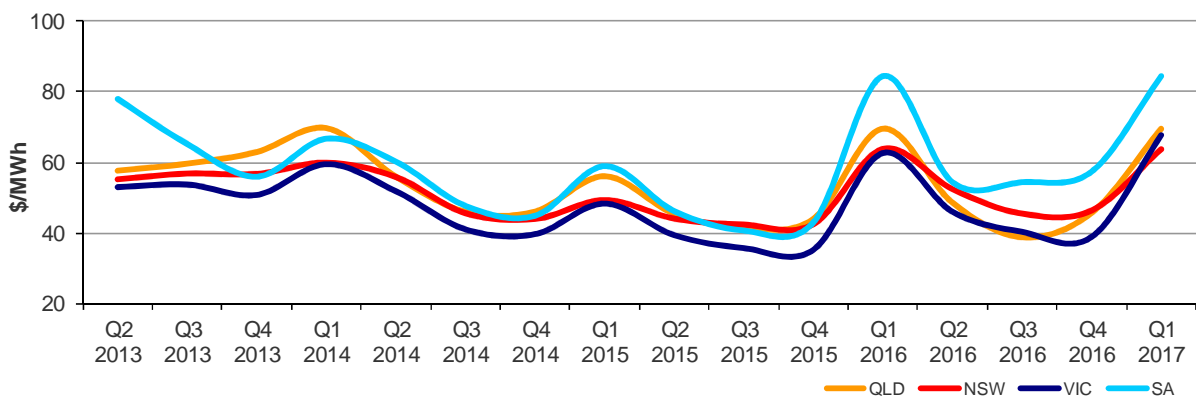
Figure 4: Number of exchange traded contracts per week



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

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

Figure 5: Quarterly base future prices Q2 2013 – Q1 2017

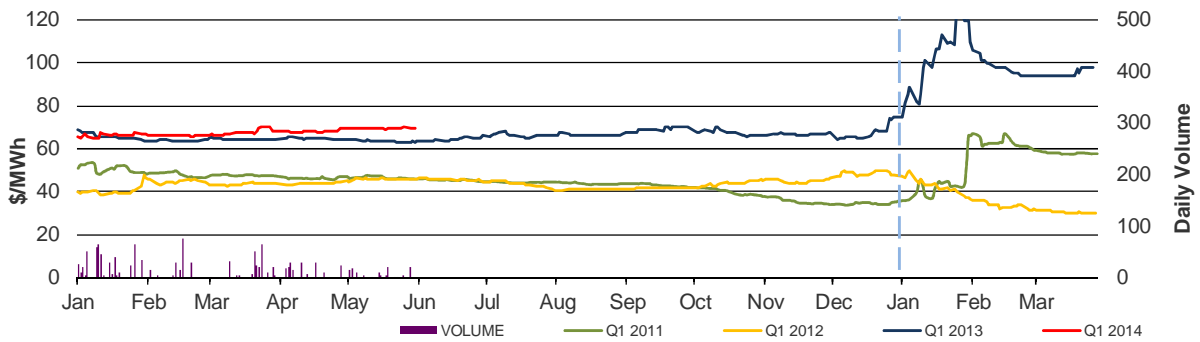


Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

⁴ Calculated on prices prior to rounding.

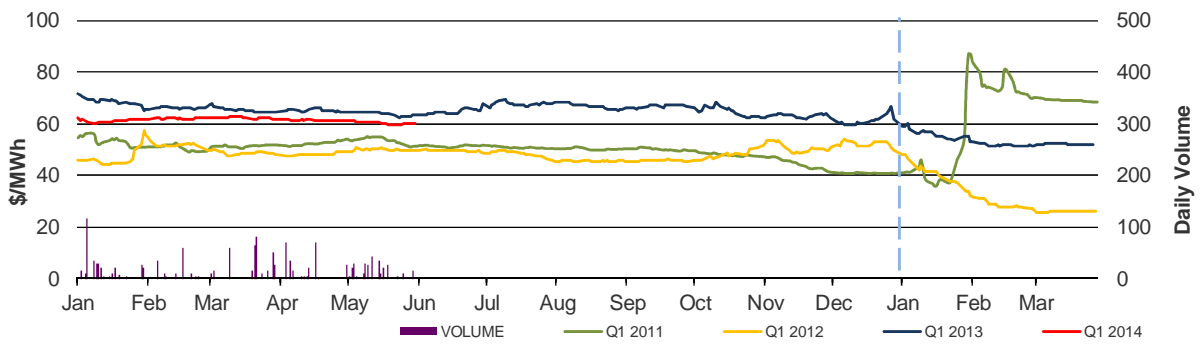
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2011, 2012, 2013 and 2014. Also shown is the daily volume of Q1 2014 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

Figure 6: Queensland Q1 2011, 2012, 2013 and 2014



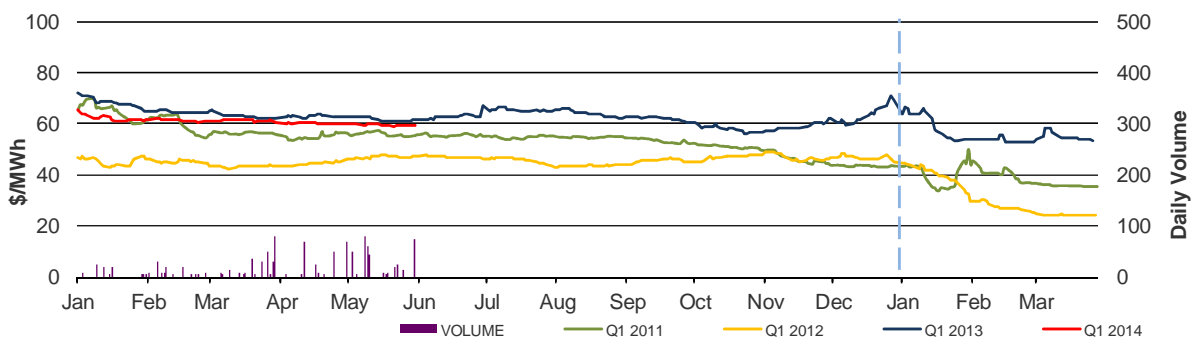
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

Figure 7: New South Wales Q1 2011, 2012, 2013 and 2014



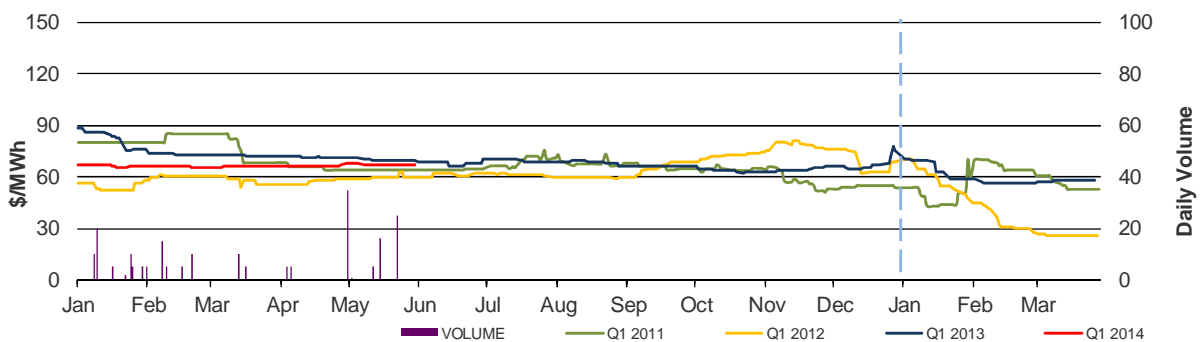
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

Figure 8: Victoria Q1 2011, 2012, 2013 and 2014



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

Figure 9: South Australia Q1 2011, 2012, 2013 and 2014



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 158 trading intervals throughout the week where actual prices varied significantly from forecasts.⁵ 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.

Figure 10: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	2	11	1	4
% of total below forecast	39	30	0	13

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 70 MW more 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	70	-161	190	-58
NSW	388	-163	994	-132
VIC	-71	-82	153	-175
SA	81	-9	61	20
TAS	5	-394	29	-66
TOTAL	473	-809	1427	-411

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.

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

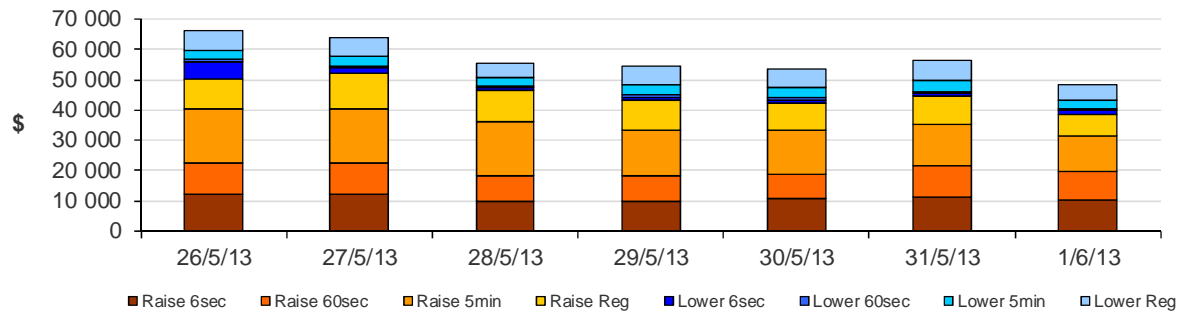
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$301 500 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$97 500 or around one per cent of energy turnover in Tasmania.

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

Figure 12: Daily frequency control ancillary service cost





26 May - 1 June 2013

Victoria:

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

Tuesday, 28 May

6:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1426.21	90.36	90.20
Demand (MW)	7193	7074	7207
Available capacity (MW)	9155	9361	9339

Conditions at the time saw demand 119 MW greater than that forecast four hours ahead and available capacity around 200 MW less than that forecast.

Over a number of rebids from 2.30 pm, AGL reduced the available capacity at Loy Yang A by 80 MW and at McKay by 55 MW, the majority of which was priced below \$100/MWh. The reasons given were "Reduction in avail cap:: Feed pump capacity", "Reduction in avail cap:: coal quality issues", and for the McKay hydro unit "Reduction in avail cap :: outage schedule change 55 MW".

At 5.40 pm, Torrens Island units were setting the price in both Victoria and South Australia at around \$300/MWh. At 5.45 pm, the sudden 100 MW increase in Victorian demand (from 7173 MW at 5.40 pm to 7277 MW at 5.45 pm⁸) could not be met by low priced generators in South Australia and Victoria. Torrens Island units became either ramp up rate limited or trapped in frequency control ancillary services (FCAS). At the time there was an outage of the Dederang DBUSS line control scheme and the N>>V_DBUSS_1 constraint was invoked to manage the line flow on one of the Murray-Dederang 330kV lines, for the trip of the other 330 kV line. The demand increase saw greater flows on the Murray-Dederang lines that saw the right hand side value of the constraint reduce by around 20. At 5.45 pm the price in Victoria and South Australia reached \$8091/MWh and \$8877/MWh respectively.

At 5.50 pm, prices in both South Australia and Victoria reduced to below \$50/MWh, due to participants rebidding of capacity into low price bands.

There was no other significant rebidding.

⁸ increased by around 640 MW over 35 minutes (from 6638 MW at 5.10 pm to 7277 MW at 5.45 pm).

Queensland:

There was one occasion where the spot price in Queensland was greater than three times the Queensland weekly average price of \$62/MWh and above \$250/MWh.

Thursday, 30 May

6:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2121.52	91.35	155.08
Demand (MW)	6740	6919	6854
Available capacity (MW)	9574	9867	9872

Conditions at the time saw available capacity 290 MW less than that forecast four hours ahead.

At 4.24 pm, effective from 5.05 pm, Millmerran Energy Trader, rebid 100 MW of capacity at the Millmerran Power station, from prices close to the price floor to above \$12 300/MWh. The reason given was "16:15 A decrease in Q sensitivity 2013053024 compared to 2013053025".

At 4.28 pm, also effective from 5.05 pm, Callide Power Trading rebid 50 MW of capacity at Callide C from prices below \$55/MWh to above \$12 200/MWh. The reason given was "1627A decrease in Q sensitiv 2013053024 compared to 2013053025".

Between 5.30 pm and 5.35 pm the demand increased by 150 MW. At the same time as a result of an increase in metered flow across QNI, the import limit from New South Wales reduced from 155 MW at 5.30 pm to 102 MW at 5.35 pm (around 90 MW less than that forecast 1 hour ahead). This combined increase in demand and reduction in import limit could not be met by low priced generators in Queensland as they were ramp rate limited, trapped in frequency control ancillary services or were fast start plants that required more than one dispatch interval to synchronise. The 5-minute price increased from \$64/MWh at 5.30 pm to \$12 500/MWh at 5.35 pm.

There was no other significant rebidding.

South Australia:

There were five occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$125/MWh and above \$250/MWh.

Tuesday, 28 May

6:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1601.98	199.99	299.80
Demand (MW)	1724	1760	1802
Available capacity (MW)	2038	2033	2036

This event is discussed in the Victorian section.

Friday, 31 May

12:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1895.98	55.33	55.82
Demand (MW)	1586	1446	1419
Available capacity (MW)	2389	2570	2557

Conditions at the time saw demand 140 MW greater than that forecast four hours ahead and available capacity around 180 MW less than forecast⁹. At 9.13 am, effective from the 10 am trading interval, AGL rebid to shut down Torrens Island A unit 2, from 120 MW (85 MW of which was priced less than \$95/MWh). The reason given was “chg in fuel availability :: otway gas plant”.

At 12.05 pm, while interconnector flows to the region were at their limit, a constraint managing post contingent load on a Heywood 275/500kV transformer reduced imports from Victoria by 50 MW below that forecast. The reduction in limit was a result of increased metered flows across the interconnector. At 12.10 pm, with the import limit still below forecast there was a 20 MW increase in demand and a 37 MW decrease in wind generation.

Limited ramp rate capability again saw high priced generation dispatched for one dispatch interval and the 5-minute price increasing from \$91/MWh at 12.05 pm to \$11 090/MWh at 12.10 pm. Prices reduced to below \$60/MWh at 12.15 pm due to a number of rebids by participants and an apparent demand side response.

There was no other significant rebidding.

Friday, 31 May

8:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2090.31	84.43	90.80
Demand (MW)	1641	1821	1655
Available capacity (MW)	2281	2571	2503

9:00 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	423.16	57.42	72.00
Demand (MW)	1578	1747	1622
Available capacity (MW)	1767	2594	2509

9:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2217.93	72.00	58.24
Demand (MW)	1505	1716	1590
Available capacity (MW)	1655	2583	2511

⁹ One of the Northern Power Station units, (both had been offline since late April), returned to service on the day.

Conditions at the time saw available capacity up to 928 MW less than that forecast four hours ahead.

At 8.15 pm, Osborne unit tripped from 189 MW due to “steam host water issues”. All of this capacity was priced below \$50/MWh. This saw a significant increase in imports across the Heywood interconnector. At 8.15 pm a constraint managing post contingent load on a Heywood 275/500kV transformer reduced imports from Victoria by around 40 MW. The reduction in limit was a result of the increased metered flows across the interconnector (reaching 623 MW at 8.15 pm compared to the limit of 410 MW when Osborne tripped) was unable to be met and the constraint violated. The step increase in dispatch of South Australian generation saw the five minute price in South Australia increase from \$91/MWh at 8.10 pm, to \$12 195/MWh at 8.15 pm.

At around 8.20 pm, a switchboard fault saw both AGL’s Torrens Island B units 2 and 3 trip from a combined total of 400 MW, all of which was priced at the floor. AGL rebid Torrens Island B unit 2 unavailable for 1 hour (scheduled to return to service at 9.05 pm), and unit 3 for an hour and a half, (returning to service at 9.35 pm). At around 8.50 pm the remaining Torrens Island B unit 1 tripped from 200 MW, all of which was priced at the price floor.

At 8.50 pm a constraint managing post contingent load on a Heywood 275/500kV transformer reduced imports from Victoria by around 50 MW. The reduction in limit was a result of increased metered flows across the interconnector (reaching 512 MW at 8.50 pm compared to the limit of 410 MW). This, combined with the reduction in output from Torrens Island, saw a step increase in the dispatch of South Australian generation. The five minute price increased from \$57/MWh at 8.45 pm to \$2260/MWh at 8.50 pm, for one dispatch interval.

As a result of the existing offer in the market systems for AGL’s Torrens Island B unit 2, the unit received dispatch targets of 25 MW for the 9.05 pm and 9.10 pm dispatch intervals. Over two rebids at 9.05 pm and 9.06 pm, effective from 9.15 pm and 9.35 pm respectively, AGL rebid B unit 2 and 3 not available for the remainder of the day.

At 9.15 pm the Heywood transformer constraint reduced the import limit from Victoria by around 40 MW as a result of increased metered flows across the interconnector (reaching 501 MW at 9.15 pm compared to the limit of 419 MW). This, combined with the rebid reduction in availability at Torrens Island, saw a step increase in dispatch of South Australian generation. The 5-minute price increased from \$56/MWh at 9.05 pm to \$12 899/MWh by 9.15 pm.

There was no other significant rebidding.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis

26 May - 1 June 2013

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

Financial year	QLD	NSW	VIC	SA	TAS
2012-13 (\$/MWh) YTD	71	56	61	70	49
2011-12 (\$/MWh) YTD	30	30	27	32	33
Change*	139%	87%	121%	119%	48%
2011-12 (\$/MWh)	30	31	28	32	33

Table 2: NEM turnover

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2012-13 YTD	10.958	178
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)
January-13	170	51	60	68	57	1.489
February-13	60	53	56	63	46	0.855
March-13	76	53	55	62	50	0.986
April-13	56	55	51	80	45	0.836
May-13	59	56	56	116	45	0.982
Q2 2013 QTD	58	55	54	99	45	1.818
Q2 2012 QTD	28	32	30	30	34	0.980
Change*	107%	75%	79%	228%	32%	0.854

Table 4: ASX energy futures contract prices at end of 31 May 2013

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2014								
Price on 24 May (\$/MWh)	70	89	60	72	59	77	67	92
Price on 31 May (\$/MWh)	70	89	60	72	60	77	67	92
Open Interest on 31 May (\$/MWh)	806	145	1314	265	787	265	128	35
Traded in the last week (MW)	25	50	25	0	90	10	0	0
Traded since 1 Jan 13 (MW)	1234	116	1384	480	1160	325	204	35
Settled price for Q1 13 (\$/MWh)	97	110	52	54	53	62	58	69

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

Comparison:	QLD	NSW	VIC	SA	TAS	NEM
March 13 with March 12						
MW Priced \$20/MWh	-4598	-1294	-810	99	-386	-6989
MW Priced \$20/MWh to \$50/MWh	2509	-548	1060	-290	353	3084
April 13 with April 12						
MW Priced \$20/MWh	-4017	-164	-415	-348	-316	-5259
MW Priced \$20/MWh to \$50/MWh	2269	-1179	951	-513	284	1811
May 13 with May 12						
MW Priced \$20/MWh	-4007	-399	-985	-453	-277	-6121
MW Priced \$20/MWh to \$50/MWh	2294	-1499	255	-603	293	740

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

** Estimated value