

WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY
REGULATOR

17 – 23 February 2013

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 17 to 23 February 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 17 Feb - 23 Feb 2013	54	52	69	84	46
% change from previous week*	-17	-3	30	47	3
12-13 financial YTD	73	56	63	65	49
% change from 11-12 financial YTD**	142	88	134	95	54

*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 22 February 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 2013	65	-1%	55	0%	52	-2%	57	-1%
Calendar Year 2014	54 (20)	-2%	55 (20)	-2%	52	-1%	57	-2%
Calendar Year 2015	50 (15)	-3%	49	-3%	47	-2%	49	-2%
Three year average	57	-2%	53	-2%	51	-1%	54	-2%

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

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

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 2013 and calendar year 2013 and the percentage change⁴ from the previous week.

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

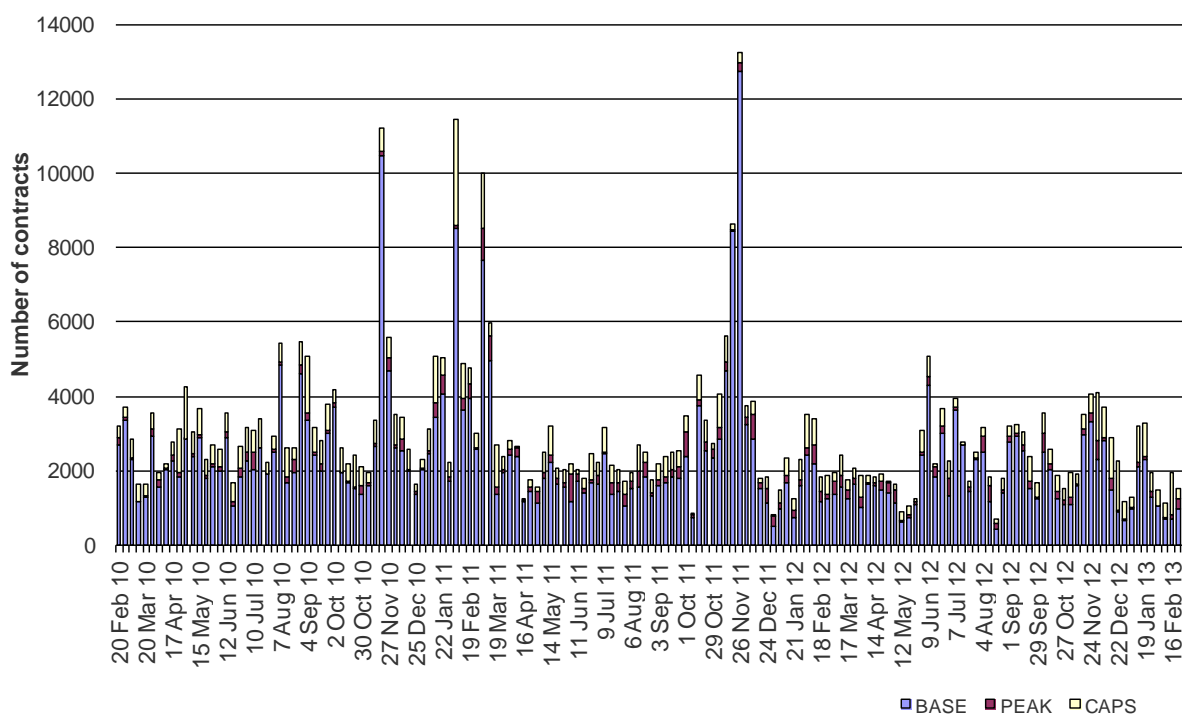
	QLD		NSW		VIC		SA	
Q1 2013	23	-10%	1 (28)	-50%	3 (2)	-54%	5 (2)	-32%
2013	8	-7%	3	-11%	3	-27%	4	-13%

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.

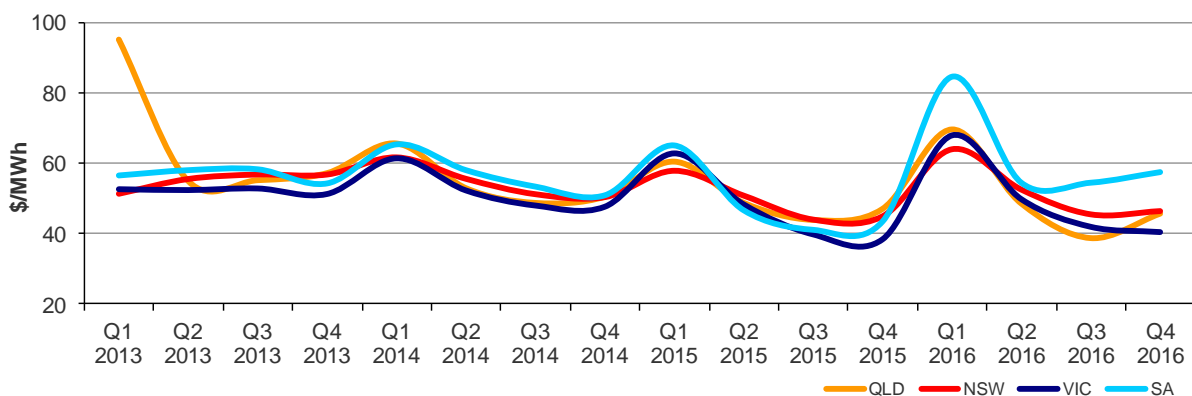
Figure 4: Number of exchange traded contracts per week



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 Q1 2013 – Q4 2016

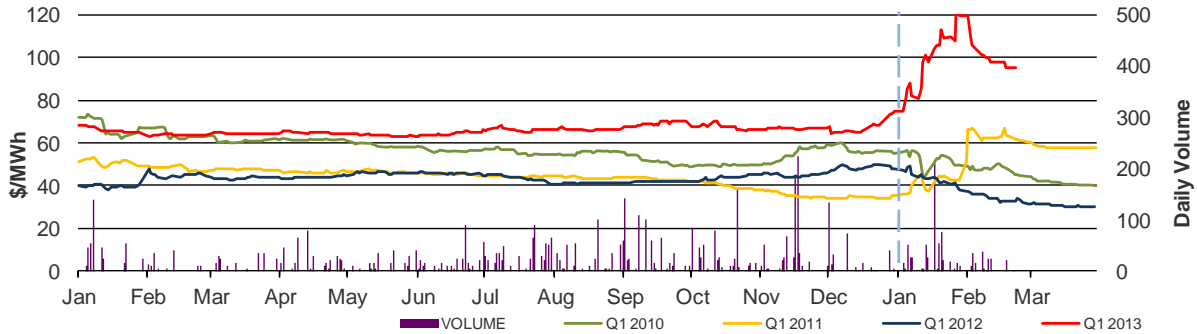


Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

⁴ Calculated on prices prior to rounding.

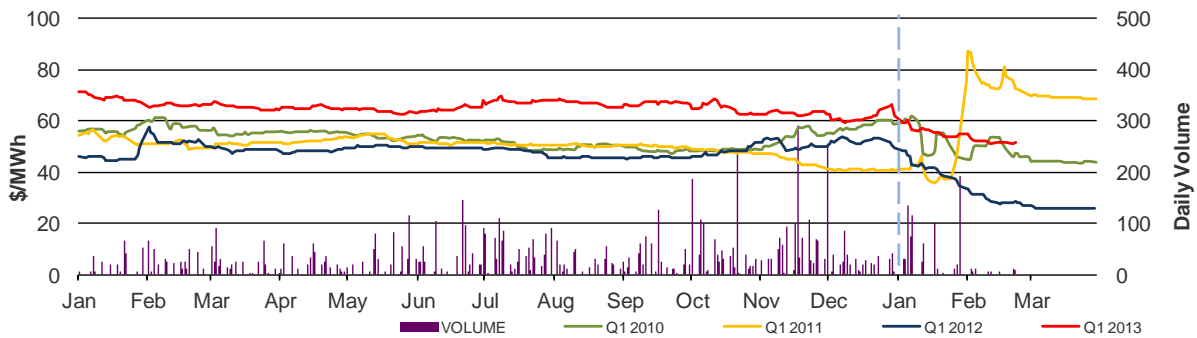
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



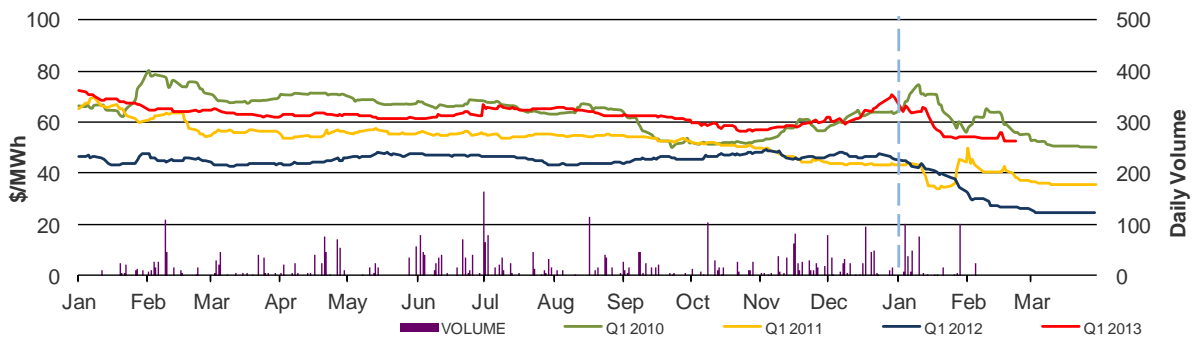
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

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



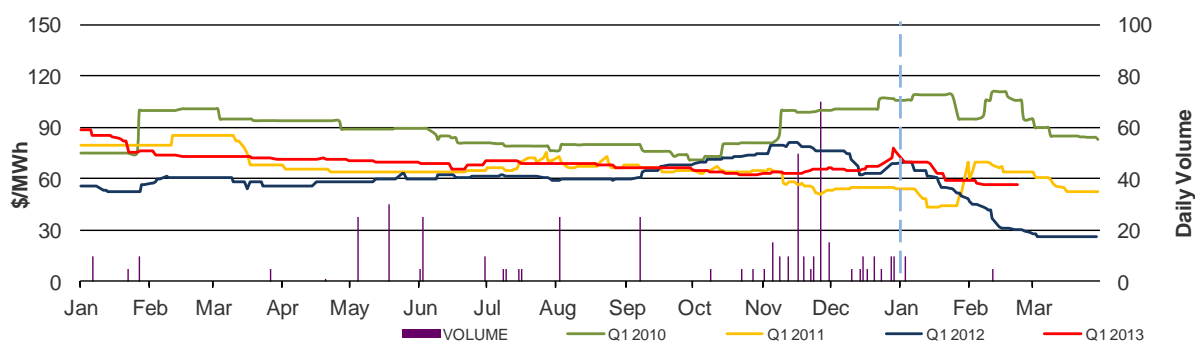
Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

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 38 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.

Figure 10: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	9	32	0	4
% of total below forecast	11	41	0	3

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 838 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.

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.

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	-838	234	-62	-78
NSW	698	91	1190	423
VIC	-164	251	-522	178
SA	24	-52	43	20
TAS	-12	-115	-88	-7
TOTAL	-292	409	561	536

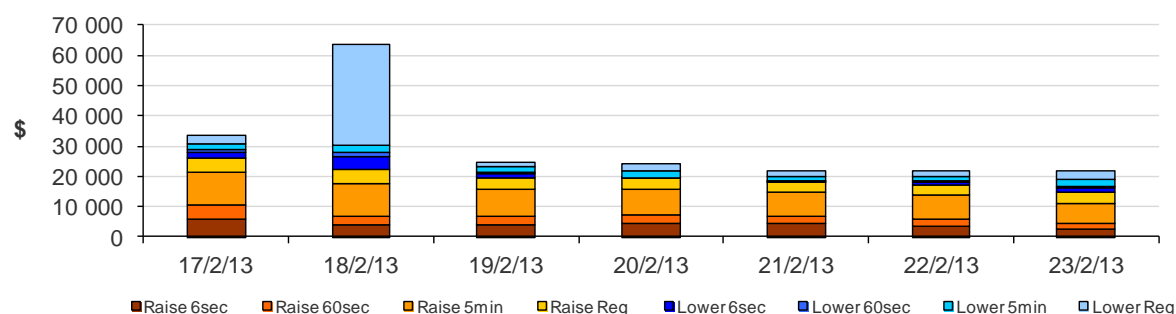
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$145 500 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$67 500 or less than 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



**Australian Energy Regulator
April 2013**

17 – 23 February 2013

Victoria:

There were three occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of \$69/MWh and above \$250/MWh.

Monday, 18 February

4 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	502.64	75.38	77.35
Demand (MW)	8910	8616	8342
Available capacity (MW)	10 198	10 308	10 374
4:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	957.53	95.87	77.17
Demand (MW)	8848	8681	8323
Available capacity (MW)	10 174	10 316	10 382
5 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1936.52	75.38	76.48
Demand (MW)	8896	8643	8226
Available capacity (MW)	10 177	10 318	10 373

Demand in Victoria and South Australia were at high levels due to hot weather in both regions, 37 and 41 degrees respectively. This led to demand levels in Victoria exceeding 9000 MW during the afternoon peak, while South Australia peaked just below 3000 MW. Conditions at the time saw demand in Victoria up to 294 MW higher than that forecast four hours ahead and 670 MW higher than that forecast 12 hours ahead. Available capacity was up to 140 MW below that forecast four hours ahead.

Imports into Victoria across the Victoria to New South Wales interconnector was limited to as little as 6 MW during the time of high prices (imports were forecast to be at around 450 MW one hour ahead). This was caused by a constraint used to avoid a voltage collapse on the loss of a Dederang to Murray 330kV line.

Over two rebids at 12.57 pm and 1.14 pm International Power rebid up to 275 MW of capacity at Hazelwood from prices below \$50/MW to above \$12 400/MWh. The reasons given were “vic price higher than pd: 7344 vs 6136 HHE 13:00” and “vic demand higher than pd: 8596 > 8524 HHE 13:30”.

At 3.33 pm, effective from 3.40 pm, Ecogen rebid 50 MW of capacity at Newport from prices below \$50/MWh to above \$12 400/MWh. The reason given was “band adj vic price above fcast”. The 5-minute price at 3.40 pm reached \$2300/MWh.

At 3.36 pm, effective from 3.45 pm, Snowy Hydro rebid 1500 MW of capacity at its Murray power station from price bands above \$48/MWh (270 MW of which was priced at the cap) down to the

floor. A number of later rebids extended this to subsequent trading intervals, effectively leading to the generator being almost fully dispatched for the majority of the high priced period. The effect of these rebids limited flows south from New South Wales.

At 3.47 pm, Snowy Hydro rebid 370 MW of capacity at its Laverton North and Valley Power stations from prices below \$2295/MWh to the price cap. The reason given was “Vic:5mpd price \$1,769.88 hgr thn 30mpd 16:05@15:32 SL”. At 4.14 pm, effective from 4.35 pm, Snowy Hydro extended their 3.47 pm rebid for the following trading interval, shifting a further 210 MW of capacity at Valley Power up to the price cap.

At 3.40 pm, demand in Victoria increased by around 100 MW in 5 minutes, with flows towards Victoria on Basslink at the limit of 570 MW, and other interconnectors also constrained. Flows on the Heywood interconnector towards Victoria were limited by a thermal constraint managing load on the 275/132 kV South East transformers, which constrained off wind generation at Lake Bonney 2. Wind generation in Victoria fell below 240 MW, while wind generation in South Australia remained below 380 MW throughout the high priced period. This saw the 5-minute price reach \$2300/MWh in Victoria and \$1837/MWh in South Australia.

At 4.30 pm, demand in Victoria increased by 230 MW in 5 minutes and a number of generating units in Victoria and South Australia were ramp constrained or trapped/stranded in FCAS. This saw the 5-minute price reach \$4516/MWh in Victoria and \$4542/MWh in South Australia and \$12 334/MWh in Victoria and \$12 195/MWh in South Australia for the following dispatch interval.

By 5 pm, the 5-minute price fell to the price floor in Victoria, -\$955/MWh in South Australia and -\$894/MWh in Tasmania as a result of participants rebidding capacity to the price floor (following the earlier price spikes). Participants in Victoria rebid 2850 MW, South Australia rebid 1500 MW and Tasmania rebid 1400 MW of capacity to close the floor.

There was no other significant rebidding.

South Australia:

There were four occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$84/MWh and above \$250/MWh.

Sunday, 17 February

5 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2127.38	80.80	70.85
Demand (MW)	2656	2547	2363
Available capacity (MW)	2916	3123	3133

Conditions at the time saw demand up to 109 MW higher than that forecast four hours ahead and 293 MW higher than that forecast 12 hours ahead (the highest demand on a Sunday since January 2011). There was only around 70 MW of wind generation.

At 4.51 pm, effective from 5 pm, Alinta Energy rebid a total of 137 MW of capacity at its Northern power station from prices below \$78/MW to above \$11 500/MWh. The reason given was “1648A nps1 nps2 sa dispatch price @ 74.30 vs \$175.28@16:51”. With other generation either trapped in FCAS, ramp rate limited or offline, Northern unit two set the 5-minute price at \$12 000/MWh at 5 pm.

Prices return to previous levels at 5.05 pm when generation that was offline received a start target and an apparent demand side response saw demand fall by around 150 MW over the following dispatch intervals.

Monday, 18 February

4 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	409.25	80.89	80.89
Demand (MW)	2749	2770	2685
Available capacity (MW)	3402	3358	3361
4:30 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	966.64	103.78	81.23
Demand (MW)	2822	2806	2711
Available capacity (MW)	3358	3359	3355
5 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1910.60	80.89	80.87
Demand (MW)	2768	2778	2680
Available capacity (MW)	3363	3356	3350

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

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

Tasmania:

There was one occasion where the spot price in Tasmania was below -\$100/MWh.

Monday, 18 February

5 PM	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	-129.28	53.22	44.09
Demand (MW)	1145	1102	1121
Available capacity (MW)	2399	2399	2433

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

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
17 February - 23 February 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*	142%	88%	134%	95%	54%
2011-12 (\$/MWh)	30	31	28	32	33

Table 2: NEM turnover

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2012-13 YTD	7.960	127
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)
October-12	53	58	52	52	44	0.848
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 MTD	58	52	56	64	45	0.685
Q1 2013 QTD	124	52	58	66	52	2.174
Q1 2012 QTD	34	26	26	28	38	0.859
Change*	267%	96%	127%	137%	35%	1.531

Table 4: ASX energy futures contract prices at end of 22 February 2013

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2013								
Price on 15 Feb (\$/MWh)	98	117	52	56	56	70	57	74
Price on 22 Feb (\$/MWh)	95	112	51	55	53	65	57	74
Open Interest on 22 Feb (\$/MWh)	1550	369	2473	692	1245	178	275	0
Traded in the last week (MW)	22	0	17	0	0	0	0	0
Traded since 1 Jan 12 (MW)	5942	676	8713	1069	4243	292	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
December 12 with December 11						
MW Priced \$20/MWh	-2990	273	-1725	-115	-219	-4777
MW Priced \$20/MWh to \$50/MWh	2632	-867	605	-235	33	2168
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 MTD						
MW Priced \$20/MWh	-3525	-1530	-939	-114	-419	-6527
MW Priced \$20/MWh to \$50/MWh	2115	63	637	-372	430	2873

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

** Estimated value