WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

14 October – 20 October 2012

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 14 October to 20 October 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 14 October - 20 October 2012	50	59	49	50	45
% change from previous week*	-16	-8	-14	-10	-8
12/13 financial YTD	57	60	61	66	49
% change from 11/12 financial YTD **	100	98	108	75	62

*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 contract[2] prices traded on the Australian Securities Exchange (ASX) as at close of trade on Monday 22 October 2012. 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 changes[3] from the previous week.

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

	QLD		NSW		VIC		SA	
Calendar Year 2013	58*	-2%	59*	-2%	53	0%	57	0%
Calendar Year 2014	56*	-2%	58*	-1%	52	-1%	56	-1%
Calendar Year 2015	51	0%	52	0%	50	0%	68	0%
Three year average	55	-1%	56	-1%	52	0%	60	0%

Source: d-cyphaTrade www.d-cyphatrade.com.au
* denotes 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 change[4] from the previous week.

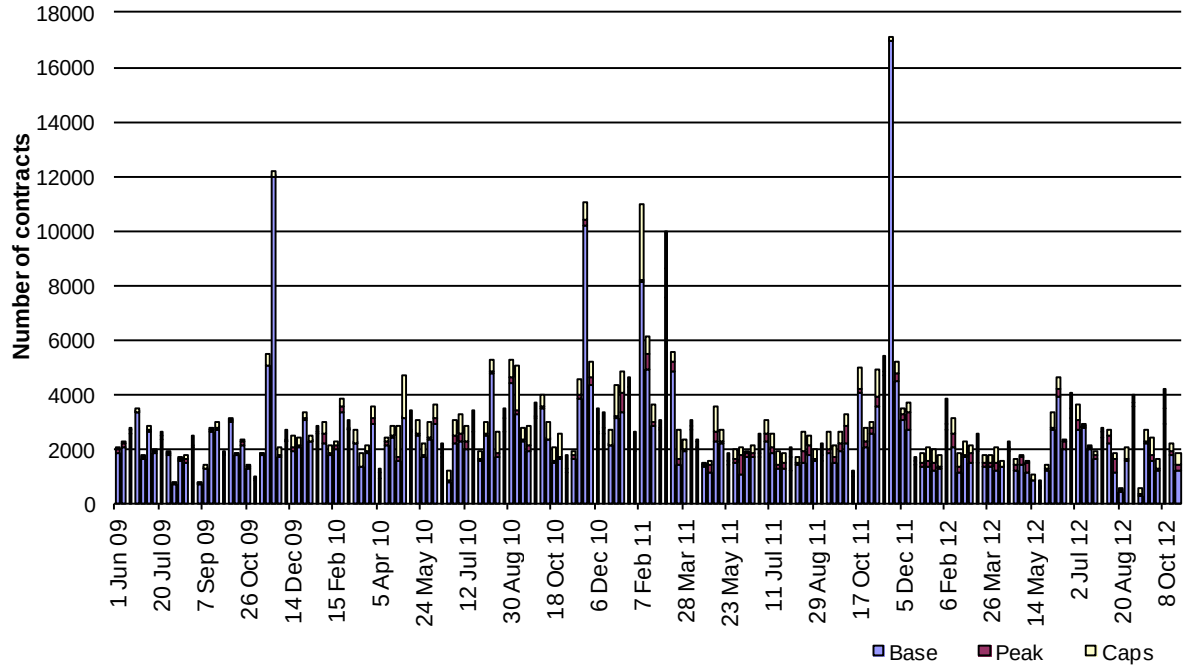
Figure 3: $300 cap contract prices ($/MWh)

	QLD		NSW		VIC		SA	
Q1 2013 (% change)	14*	-5%	11*	-12%	9*	-3%	15	-5%
2013 (% change)	6	-4%	6	-10%	4	-1%	7	-3%

Source: d-cyphaTrade www.d-cyphatrade.com.au
* denotes 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.

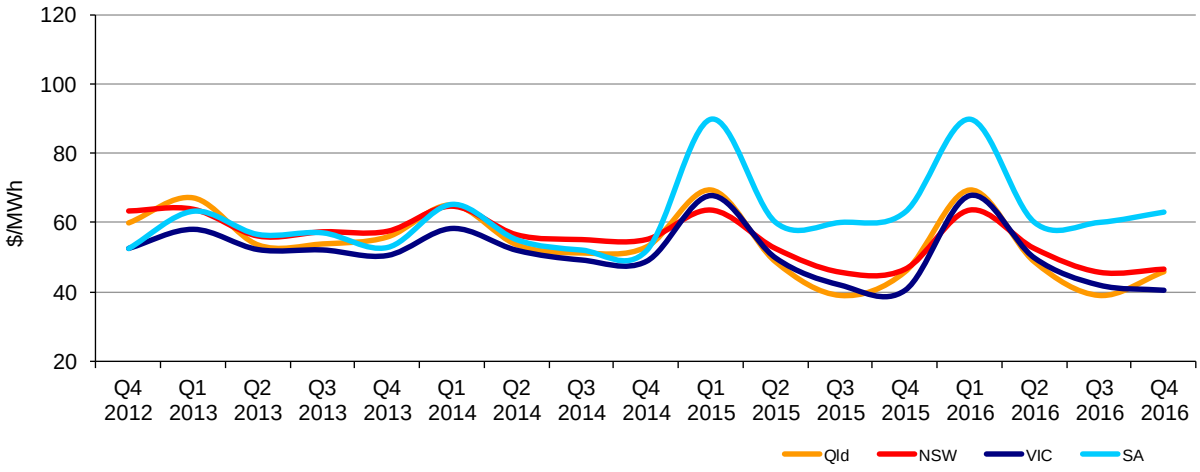
Figure 4: Number of exchange traded contracts per week



Source: d-cyphaTrade 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 Q4 2012 – Q4 2016

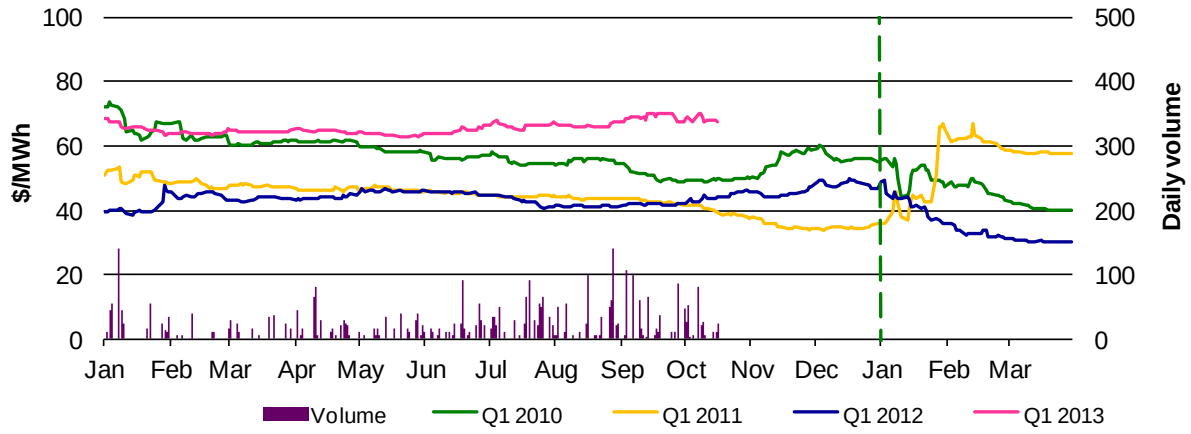


Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

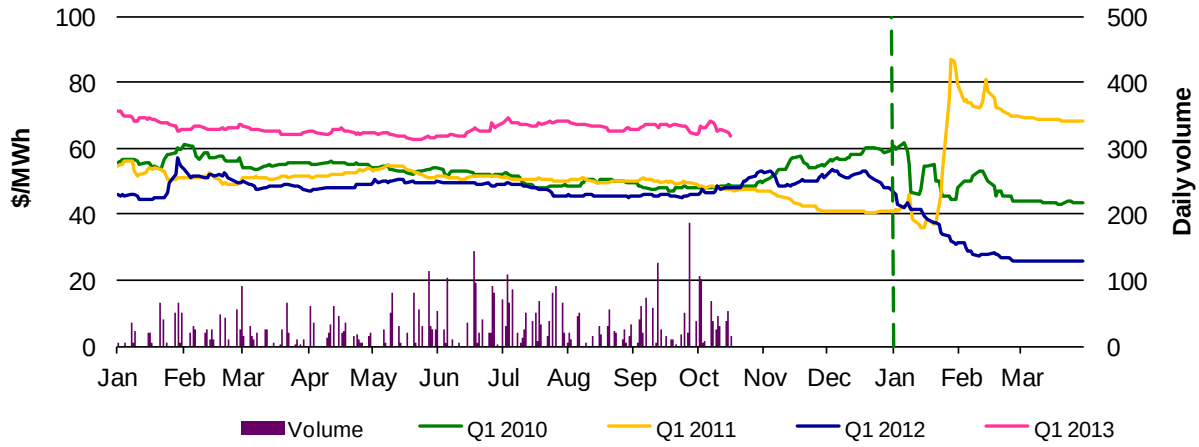
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



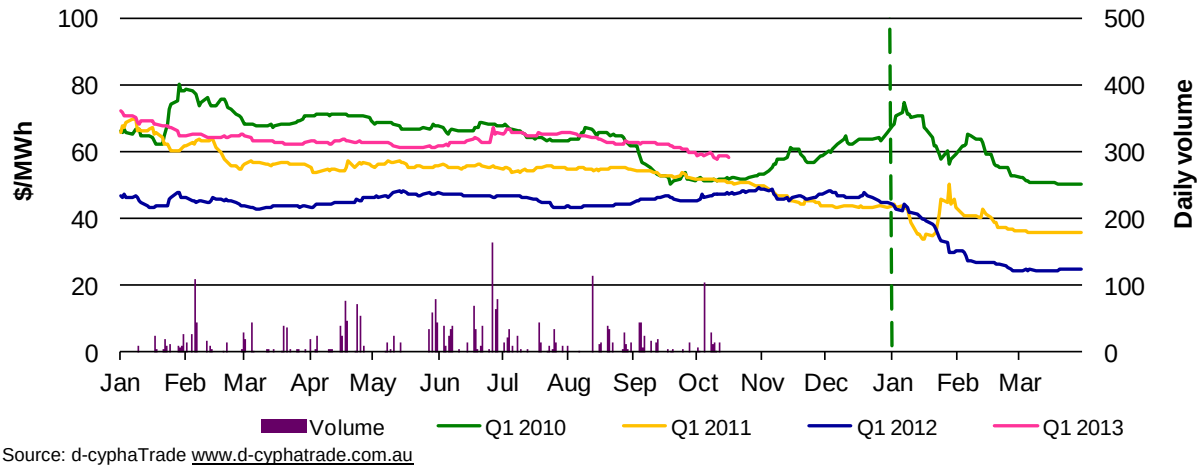
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



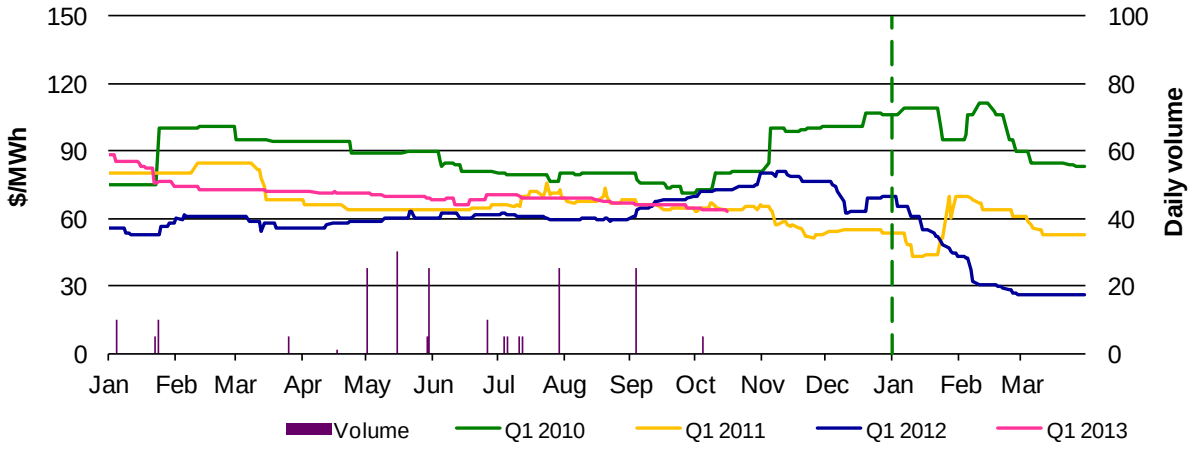
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



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

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



Source: d-cyphaTrade 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 17 trading interval throughout the week where actual prices varied significantly from forecasts[5]. This compares to the weekly average in 2011 of 78 counts and the average in 2010 of 57. Reasons for these variances are summarised in Figure 10[6].

Figure 10: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	0	0	29	0
% of total below forecast	14	51	0	6

[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.

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 periods[7]. For example, in Queensland 448 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

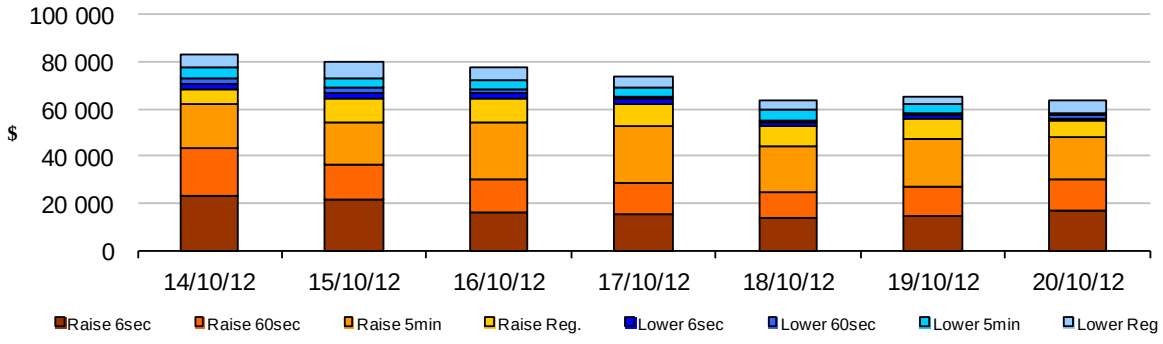
MW	<$20/MWh	Between $20 and $50/MWh	Total availability	Change in average demand
QLD	-364	1037	521	51
NSW	363	-126	375	-99
VIC	-62	258	39	-274
SA	-104	100	-124	-91
TAS	-189	112	-19	-22
TOTAL	-356	1381	792	-435

Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $433 000 or less than one per cent of energy turnover on the mainland. The total cost of FCAS in Tasmania for the week was $74 000 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
November 2012

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

14 – 20 October 2012

New South Wales:

There were eight occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $59/MWh and above $250/MWh.

Tuesday, 16 October

3:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	254.06	56.11	71.58
Demand (MW)	8884	8937	9310
Available capacity (MW)	10 829	10 947	11 412
4:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	277.89	58.01	72.22
Demand (MW)	8942	9067	9324
Available capacity (MW)	10 770	10 960	11 429
5 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	272.96	58.16	72.46
Demand (MW)	8925	9108	9268
Available capacity (MW)	10 811	10 965	11 426
5:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	259.67	55.72	57.24
Demand (MW)	8745	8998	9105
Available capacity (MW)	10 860	10 967	11 426

Conditions at the time saw demand and available capacity close to that forecast four hours ahead. Constraints to manage the planned outages of the 330 kV Dapto to Marulan (8 line) and 330 kV Liddell to Tomago (82 line) in New South Wales were invoked at 5.05 am.

At 1.58 pm, effective from 2.05 pm to 5 pm, Macquarie Generation rebid a total of 660 MW of capacity at Liddell and Bayswater from prices below $65/MWh to above $11 450/MWh. The reason given was "1354A significant change in NSW gen output". After this rebid the forecast price for 3.30 pm to 5 pm increased from around $60/MWh to $290/MWh.

Following the increase in the forecast price, Snowy Hydro and then Origin Energy rebid over 3100 MW, the total capacity of generation in southern New South Wales, to prices near the price floor:

- Over 8 rebids between 2.12 pm and 3.49 pm a total of 2520 MW of capacity at Tumut, Upper Tumut and Guthega was shifted by Snowy Hydro from prices above zero (the majority of which was above $70/MWh) to close to the price floor. This resulted in the start up of the Tumut generator, which was generating 1800 MW by 4 pm. The reasons given included "Manage 8 line constraint binding", "NSW: act price $222.46 hgr thn 5mpd 15:05@14:56" and "Manage 5/30 settlement risk SL". The rebid at 2.46 pm also reduced the ramp down rate of the three stations to the minimum allowed of 3 MW/min. The rebids were effective immediately.
- Following the very large rebids into negative prices by Snowy, forecasts showed a significant reduction in the output of all four Uranquinty units that were generating at full output. Origin Energy rebid 240 MW and 664 MW of capacity at Shoalhaven and Uranquinty, respectively, from prices above $47/MWh to close to the price floor. This resulted in the start up of the offline Shoalhaven generator, which was generating 240 MW by 3.30 pm. The rebids were effective from 3.05 pm and 3.10 pm and the reason given was "Constraint management – N>>N-X_DTMN_LDTM_02 SL", which refers to one of the constraints to manage the dual planned network outages.

At 2.50 pm the constraint managing the planned outages bound[8]. The large negative rebids for the Snowy and Origin generators saw the output from their generators increase by 1200 MW and 200 MW respectively. As a result the flow across the Victoria to New South Wales interconnector changed from imports of 706 MW into New South Wales to forced counter-price exports by 3.10 pm, reaching 875 MW into Victoria by 3.25 pm.

At 3.50 pm a constraint used by AEMO to manage the counter price flows commenced reducing flows into Victoria, with flows reaching zero by 4.20 pm. This required the output from a number of generators south of the constraint to reduce:

- Tumut (Snowy), which commenced generating at 2.10 pm and reached 1800 MW at 3.30 pm, reduced from 1797 MW to 1760 MW (at 3 MW per min)
- Upper Tumut (Snowy) reduced from 652 MW to 577 MW (at 3 MW per min)
- Guthega (Snowy) reduced from 53 MW to zero (at 3 MW per min)
- Uranquinty (Origin) reduced from 664 MW to 461 MW
- Shoalhaven (Origin), which commenced generating at 3.10 pm and reached 240 MW at 3.25 pm, reduced from 244 MW to 202 MW. At 4.05 pm Origin rebid to reduce the ramp down rate to zero, which meant that its dispatch could not be reduced. The rebid was effective immediately. The reason given was "techni rest - avoid dispatch below min load ROC"
- The Woodlawn and Gunning wind farms reduced from 10 MW and 53 MW respectively to zero.

At 4.33 pm, effective from 5.05 pm, Macquarie Generation extended its earlier rebid by shifting 750 MW from prices below $55/MWh to above $11 450/MWh. The reason given was "1631A TL82 outage extended".

There were 27 5-minute prices above $250/MWh between 3 pm and 5.30 pm and around $90 000 of negative settlement residues across the New South Wales to Victoria interconnector accrued over the period.

[8] The constraint also had a minor impact on flows from Queensland to New South Wales, reducing imports into New South Wales

Detailed NEM Price and Demand Trends

for Weekly Market Analysis
14 October - 20 October 2012

AUSTRALIAN ENERGY REGULATOR

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

Financial year	QLD	NSW	VIC	SA	TAS
2012-13 ($/MWh) YTD	57	60	61	66	49
2011-12 ($/MWh) YTD	28	30	29	38	30
Change*	100%	98%	108%	75%	62%
2011-12 ($/MWh)	30	31	28	32	33

Table 2: NEM turnover

Financial year	NEM Turnover** ($, billion)	Energy (TWh)
2012-13 (YTD)	$3.567	60
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)
June-12	35	37	38	31	35	0.619
July-12	65	68	76	83	60	1.228
August-12	55	58	57	65	48	0.971
September-12	46	51	48	49	38	0.971
October-12 (MTD)	54	59	52	52	44	0.555
Q4 2012 (QTD)	54	59	52	52	44	0.555
Q4 2011 (QTD)	28	29	27	41	31	0.305
Change*	95%	102%	95%	26%	44%	82.36%

Table 4: ASX energy futures contract prices at end of 22 October 2012

	QLD		NSW		VIC		SA	
Q1 2013	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 15 Oct ($/MWh)	69	96	67	87	58	78	64	90
Price on 22 Oct ($/MWh)	67	94	64	84	58	76	63	88
Open interest on 22 Oct	1165	257	1594	457	1316	92	159	0
Traded in the last week (MW)	52	5	181	5	17	0	0	0
Traded since 1 Jan 12 (MW)	3885	437	5589	519	2905	155	201	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
August 12 with August 11						
MW Priced <$20/MWh	-3009	-1064	-1217	-133	-170	-5594
MW Priced $20 to $50/MWh	2583	-1047	714	-458	177	1969
September 12 with September 11						
MW Priced <$20/MWh	-2600	-525	-1694	13	-126	-4932
MW Priced $20 to $50/MWh	2307	-1266	823	-316	111	1658
October 12 with October 11 (MTD)						
MW Priced <$20/MWh	-3202	-1062	-1765	-52	206	-5875
MW Priced $20 to $50/MWh	2804	-1697	890	-205	-40	1752

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