WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

16 December – 22 December 2012

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 16 December to 22 December 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 16 - 22 December 2012	86	50	47	51	44
% change from previous week*	72	-1	-38	-34	-13
12/13 financial YTD	58	58	66	65	49
% change from 11/12 financial YTD **	97	86	136	84	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 Friday 21 December 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*	3%	57	1%	56	2%	60	1%
Calendar Year 2014	55	2%	57*	0%	53	1%	57	0%
Calendar Year 2015	51	0%	52	0%	48	0%	53	0%
Three year average	55	1%	55	1%	52	1%	57	0%

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

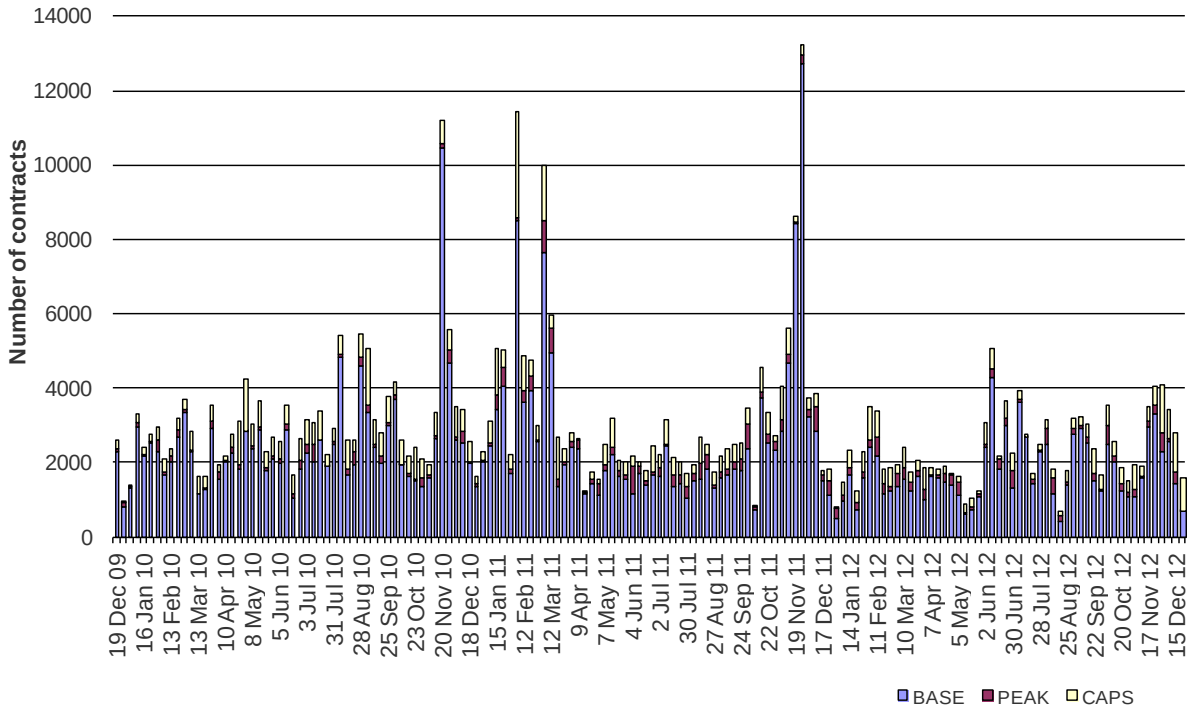
Figure 3: $300 cap contract prices ($/MWh)

	QLD		NSW		VIC		SA	
Q1 2013 (% change)	14*	29%	9*	13%	14*	20%	15*	8%
2013 (% change)	6	15%	5	6%	5	12%	7	4%

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

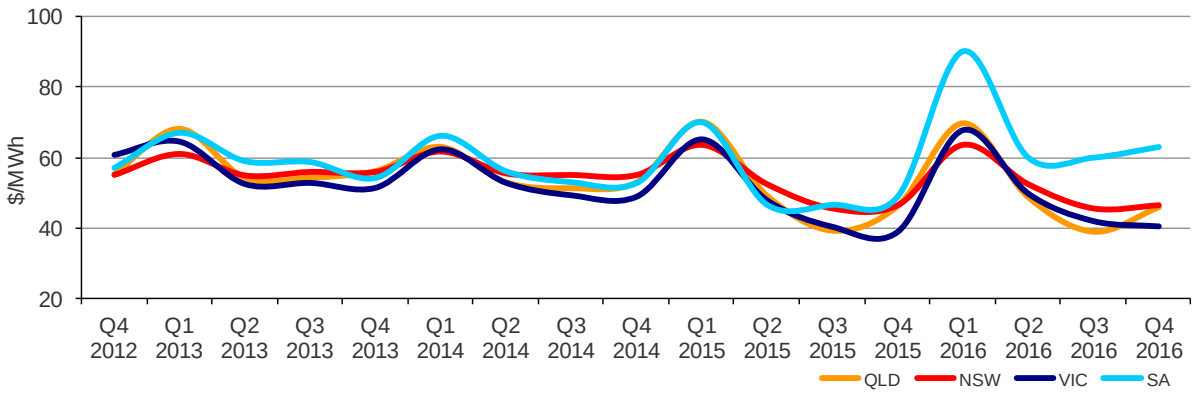
Figure 4: Number of exchange traded contracts per week



Source: d-cyphaTrade 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

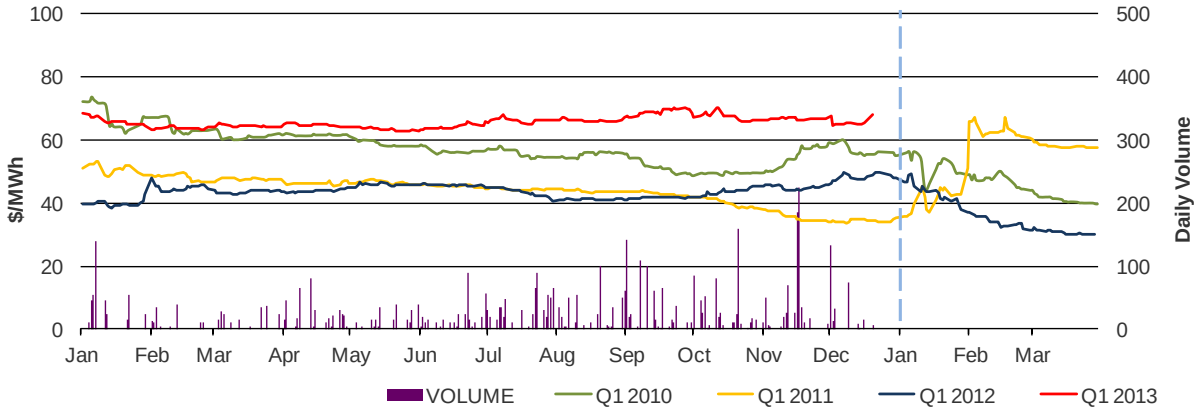


Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

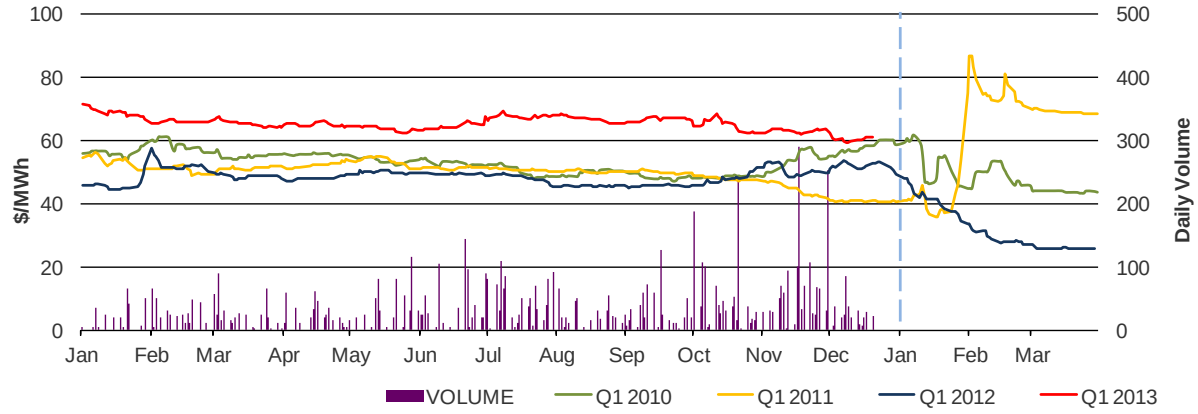
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



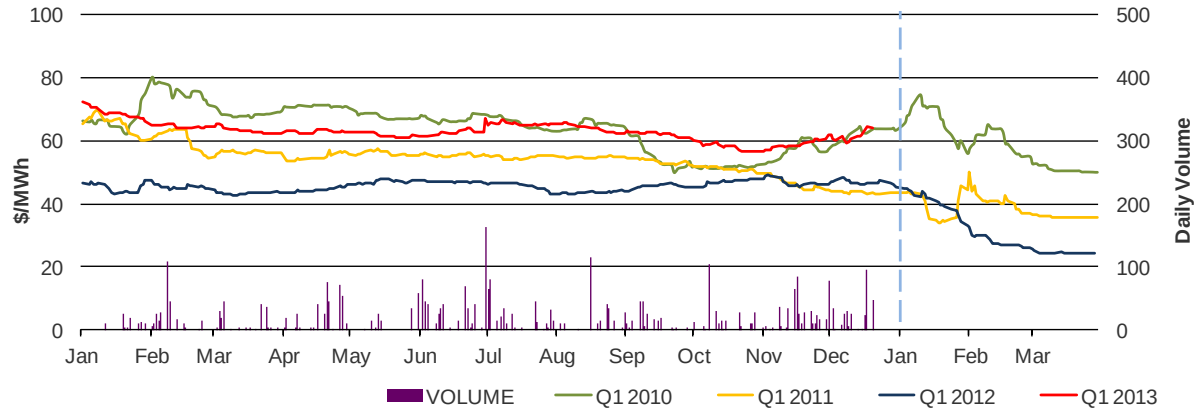
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



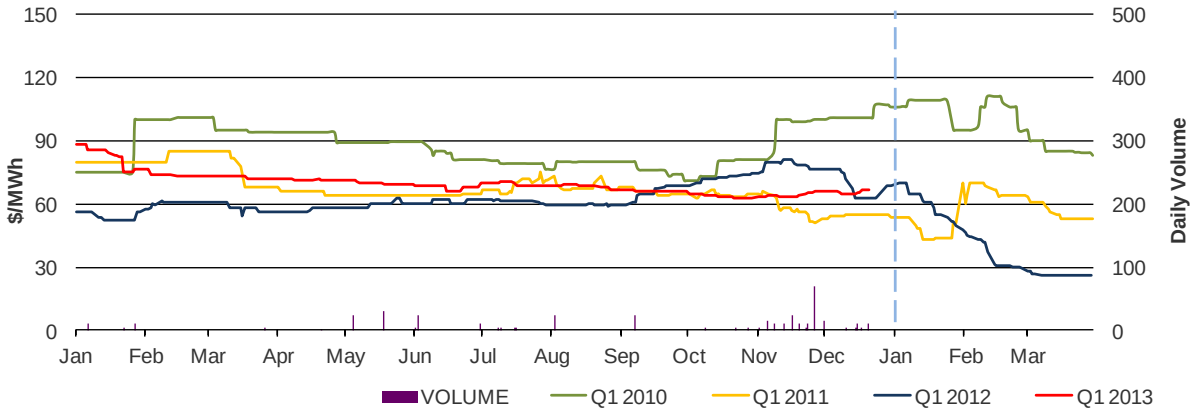
Source: d-cyphaTrade www.d-cyphatrade.com.au

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 41 trading intervals 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	8	25	0	9
% of total below forecast	26	25	0	8

[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 217 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	-217	158	-197	810
NSW	1	924	276	385
VIC	36	625	495	-665
SA	-176	30	-225	-330
TAS	-81	376	84	-24
TOTAL	-437	2113	433	176

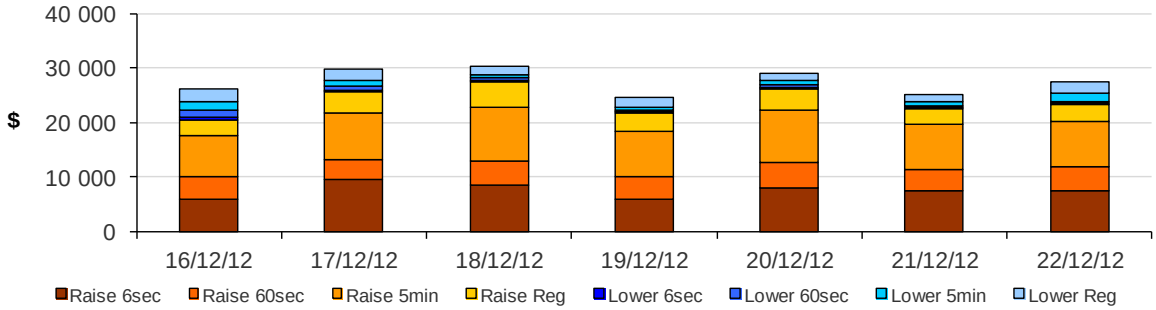
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $150 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $42 000 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
January 2012

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

AUSTRALIAN ENERGY REGULATOR

16 December – 22 December 2012

Queensland:

There were six occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $86/MWh and above $250/MWh.

Tuesday, 18 December

1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	289.75	109.57	57.47
Demand (MW)	8185	7990	8191
Available capacity (MW)	9925	9893	10 180
2 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	261.27	109.57	65.65
Demand (MW)	8220	7989	8246
Available capacity (MW)	9909	9927	10 180
3 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	289.00	109.57	79.20
Demand (MW)	8315	8070	8268
Available capacity (MW)	9731	10 001	10 185

Conditions at the time saw demand up to 245 MW higher than that forecast four hours ahead. Available capacity was up to 270 MW lower than that forecast 4 hours ahead.

Combined imports into Queensland were limited to around 200 MW (slightly greater than forecast) across both the Queensland to New South Wales and Directlink interconnectors. Imports were restricted to around zero across Directlink as a result of the outage of the Ballina to Lennox Head 66 kV line. Imports across QNI were limited to around 200 MW by the system normal constraint to manage voltage stability for loss of Kogan Creek power station.

With little capacity priced between $100/MWh and $300/MWh, rebidding of capacity into high price bands or increases in demand, had the potential to result in a significant increase in the spot price.

At 12.34 pm, effective from 12.45 pm until 2 pm, Stanwell Corporation rebid 390 MW of capacity at Stanwell units 2 to 4, from prices below $60/MWh to above $285/MWh (with 195 MW priced at close to the price cap). The reason given was “change in Qld market price compared to 0900 hr PD”.

At 1.52 pm, effective from 2.05 pm (for the 2.30 pm and 3 pm trading intervals), Stanwell Corporation rebid 230 MW of capacity at Stanwell and Tarong from prices below $70/MWh to above $275/MWh (with 60 MW priced at close to the price cap). The reason given was "change Qd RRP 5 min predispatch 1345 v 1350".

At 2.30 pm, effective from 2.40 pm, Arrow Energy's Braemar unit 7 tripped reducing available capacity from 165 MW to zero, 148 MW of which was priced below $60/MWh.

The dispatch price was around $290/MWh for 21 dispatch intervals between 1 pm and 3 pm.

There was no other significant rebidding

Wednesday, 19 December

8:30 AM	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	289.00	79.20	52.90
Demand (MW)	7022	7277	7069
Available capacity (MW)	9786	9845	9845

Conditions at the time saw demand 255 MW lower than that forecast four hours ahead.

At 7.07 am, effective from 7.15 am, Arrow Energy rebid 320 MW of capacity at Braemar from prices below $150/MWh to above $300/MWh. The reason given was "0705A change in 30min pd: Qld +200 sens inc @1330 sl"

At 7.36 am, effective from 7.45 am, Stanwell Corporation rebid 520 MW of capacity across Stanwell and Tarong power stations from prices below $80/MWh to above $285/MWh. The reason given was "0735A material change Qld rrp 5min pd 0720-0730". The price for each dispatch interval was set by the Stanwell or Tarong generators for the 8.30 am trading interval.

There was no other significant rebidding.

Thursday, 20 December

3 PM	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	2234.40	57.47	55.30
Demand (MW)	7669	7771	7670
Available capacity (MW)	9988	10 170	10 088
7 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	2130.53	53.97	71.00
Demand (MW)	7461	7383	7380
Available capacity (MW)	9677	10 149	10 103

Conditions at the time saw demand close to that forecast but capacity lower than forecast.

3 PM trading interval:

At 2.43 pm, effective from 2.50 pm, Origin Energy reduced the availability of Darling Downs by 150 MW (all of which was priced below $50/MWh). The reason given was "1440P change in avail - revised GT1 rts sl".

At around 2.50 pm Stanwell Corporation's Tarong North unit tripped from 443 MW. The subsequent rebid, effective from 3 pm, reduced its capacity from 443 MW to zero (all priced below $50/MWh).

At 2.52 pm, effective from 3 pm, CS Energy rebid 340 MW of capacity at Gladstone from prices below $290/MWh (up to 230 MW of which was priced below $55/MWh) to close to the price cap. The reason given was "1451A interconnector constaint-QNI binding north-sl".

The reduction in low priced capacity saw the 5-minute price increase from $56/MWh at 2.50 pm to $290/MWh at 2.55 pm and the price cap at 3 pm. The price was set by Gladstone units as other cheaper units were either ramp rate limited or trapped in frequency control ancillary services (FCAS). Prices returned to below $100/MWh at 3.05 pm, when some units were no longer ramp rate limited.

7 PM trading interval:

At 6.53 pm, effective for the 7 pm dispatch interval only, CS Energy rebid 410 MW of capacity at Gladstone from prices below $290/MWh (265 MW of which was priced below $55/MWh) to the price cap. The reason given was "1852A interconnector constaint-QNI binding north-sl".

Low priced generation was either ramp rate limited or trapped in FCAS. As a result, high priced generation was dispatched. This resulted in the dispatch price increasing from $57/MWh at 6.55 pm to $12 500/MWh at 7 pm. Prices returned to below $58/MWh at 7.05 pm, when some of the units were no longer ramp rate limited.

There was no other significant rebidding.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis

16 December - 22 December 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 ($/MWh) YTD	58	58	66	65	49
2011-12 ($/MWh) YTD	29	31	28	36	30
Change*	97%	86%	136%	84%	62%
2011-12 ($/MWh)	30	31	28	32	33

Table 2: NEM turnover

Financial year	NEM Turnover** ($, billion)	Energy (TWh)
2012-13 (YTD)	5.589	93
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 ($/MWh) average ($/MWh)	QLD	NSW	VIC	SA	TAS	Turnover ($, billion)
August-12	55	58	57	65	48	0.971
September-12	53	53	55	56	40	0.812
October-12	53	58	52	52	44	0.848
November-12	55	58	94	72	51	1.045
December-12	67	51	59	61	49	0.684
Q4 2012 (QTD)	58	56	69	61	48	2.578
Q4 2011 (QTD)	30	32	25	34	30	1.322
Change*	93%	74%	174%	82%	59%	0.949

Table 4: ASX energy futures contract prices at end of 21 December 2013

	QLD		NSW		VIC		SA	
Q1 2013	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 14 Dec ($/MWh)	65	86	60	73	62	80	65	85
Price on 21 Dec ($/MWh)	69	91	62	78	65	88	67	85
Open Interest on 21 Dec ($/MWh)	1347	320	2173	676	1235	129	255	0
Traded in the last week (MW)	24	25	93	5	217	1	25	0
Traded since 1 Jan 12(MW)	5085	564	7736	1027	3782	208	421	0
Settled price for Q1 12 ($/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
October 12 with October 11						
MW Priced $20/MWh	-3085	-908	-2042	-48	98	-5985
MW Priced $20/MWh to $50/MWh	2830	-1652	857	-175	148	2008
November 12 with November 11						
MW Priced $20/MWh	-3407	78	-1859	-61	-283	-5533
MW Priced $20/MWh to $50/MWh	2797	-1617	452	-242	77	1467
December 12 with December 11 (MTD)						
MW Priced $20/MWh	-2901	417	-1729	-151	-301	-4665
MW Priced $20/MWh to $50/MWh	2655	-966	546	-243	-63	1929

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

** Estimated value