WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

29 May - 4 June 2011

Summary

Weekly average spot prices ranged from $24/MWh in Queensland to $44/MWh in South Australia.

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 29 May to 4 June and the 10/11 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 29 May - 4 June 2011	24	27	40	44	36
% change from previous week*	-17	-12	15	17	-18
10/11 financial YTD	34	44	29	43	31
% change from 09/10 financial YTD **	-10	-18	-32	-50	3

*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 is below $-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 Sydney Futures Exchange (SFE) as at close of trade on Monday 6 June 2011. 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.

[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 -> Monitoring, reporting and enforcement -> Electricity market reports -> Long-term analysis.

[2] Futures contracts traded on the SFE 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 2012	41	3%	46	2%	41	4%	44	0%
Calendar Year 2013	46	0%	50	0%	46	0%	67	0%
Calendar Year 2014	56	0%	59	0%	60	0%	69	0%
Three year average	48	1%	52	1%	49	1%	60	0%

Source: d-cyphaTrade www.d-cyphatrade.com.au
there were no trades this week

Figure 3 shows the $300 cap contract price for Q1 2012 and calendar year 2012 and the percentage change[4] from the previous week.

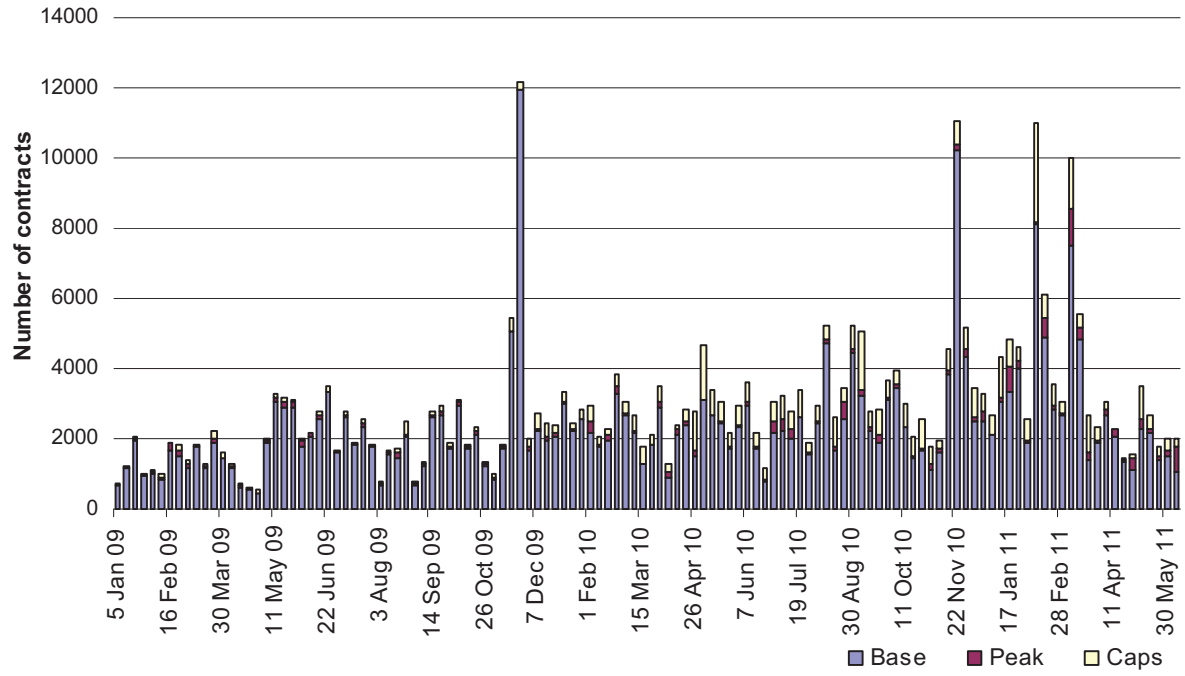
Figure 3: $300 cap contract prices ($/MWh)

	QLD		NSW		VIC		SA	
Q1 2012 (% change)	17	0%	20	0%	17*	-3%	32	0%
2012 (% change)	8	0%	11	0%	7	-2%	12	0%

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

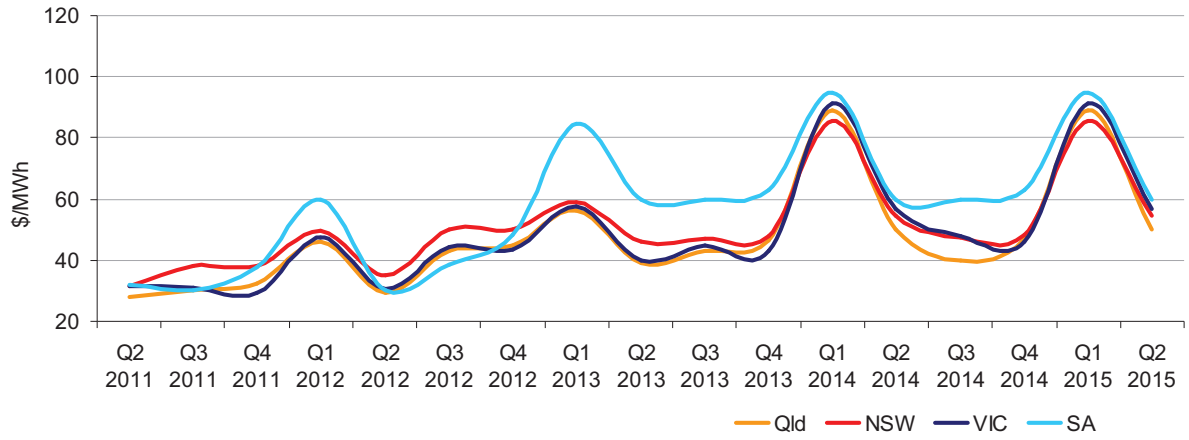


Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

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

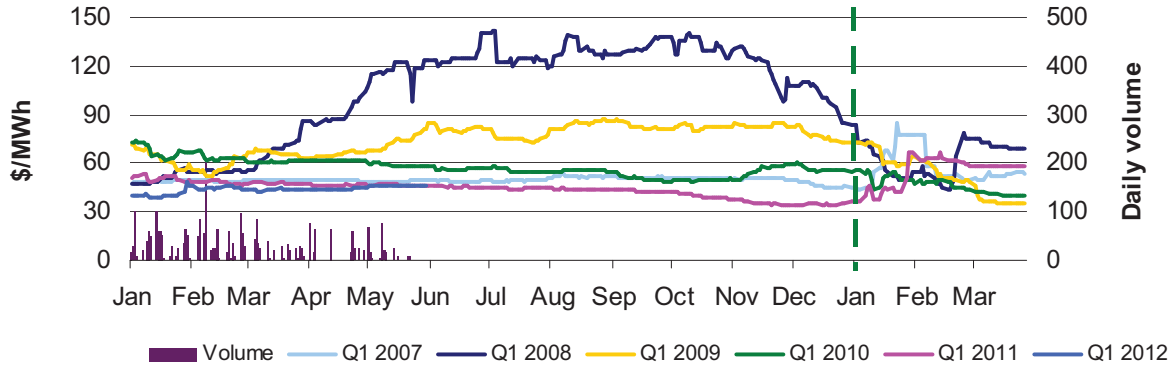
Figure 5: Quarterly base future prices Q2 2011 – Q2 2015



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

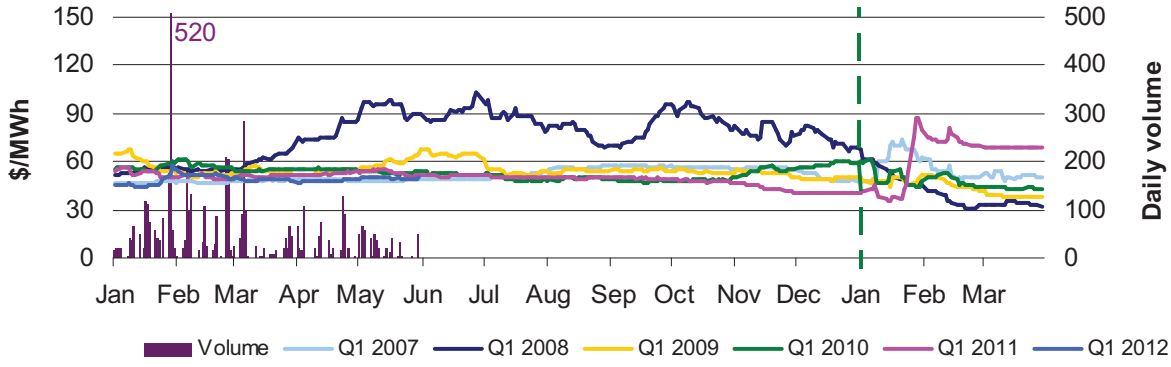
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009, 2010, 2011 and 2012. Also shown is the daily volume of Q1 2012 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased. To understand the diagrams, the dark-blue line in figure 6 demonstrates that throughout the middle of 2007, the market had an expectation of very high spot prices in the first quarter of 2008.

Figure 6: Queensland Q1 2007, 2008, 2009, 2010, 2011 and 2012



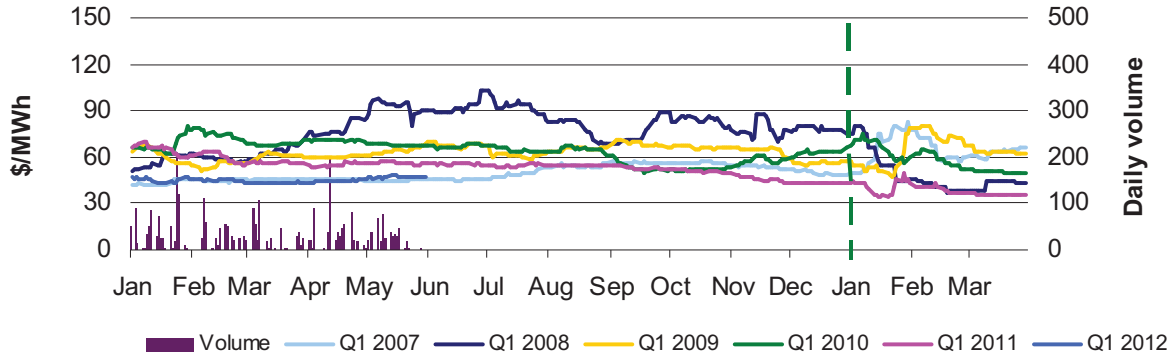
Source: d-cyphaTrade www.d-cyphatrade.com.au

Figure 7: New South Wales Q1 2007, 2008, 2009, 2010, 2011 and 2012



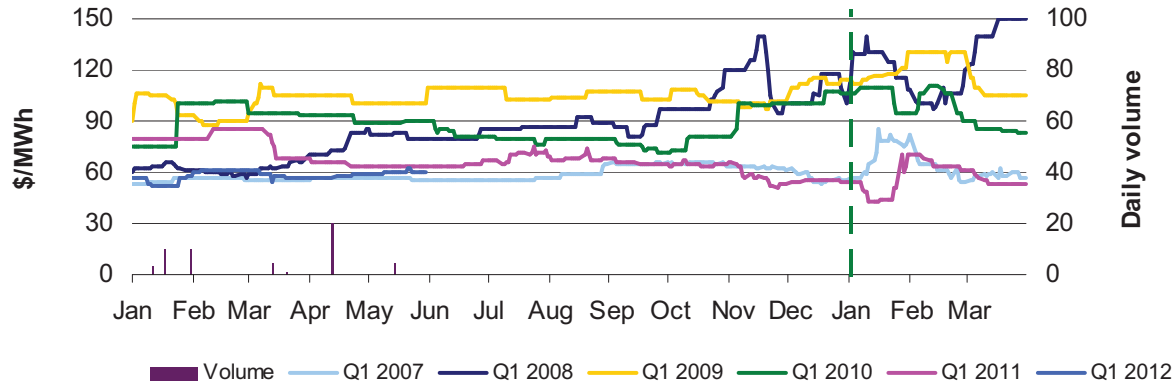
Source: d-cyphaTrade www.d-cyphatrade.com.au

Figure 8: Victoria Q1 2007, 2008, 2009, 2010, 2011 and 2012



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

Figure 9: South Australia Q1 2007, 2008, 2009, 2010, 2011 and 2012



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 90 trading intervals throughout the week where actual prices varied significantly from forecasts[5]. This compares to the weekly average in 2010 of 57 counts and the average in 2009 of 103. 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	1	17	0	2
% of total below forecast	70	4	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 352 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	352	35	591	22
NSW	275	-277	-216	32
VIC	217	-272	33	64
SA	18	37	34	5
TAS	283	-120	178	77
TOTAL	1145	-597	620	200

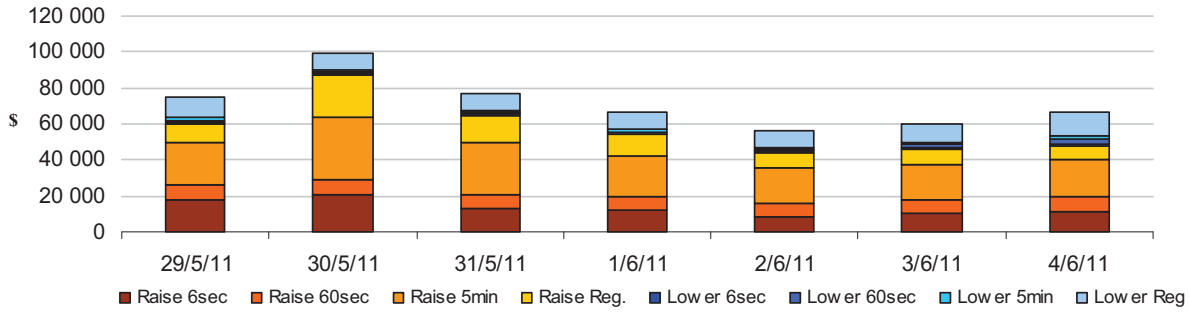
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $398 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $104 000 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



Australian Energy Regulator
July 2011

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

Detailed Market Analysis

AUSTRALIAN ENERGY REGULATOR

29 May - 4 June 2011

Victoria

There was one occasion where the spot price in Victoria was greater than three times the Victoria weekly average price of $40/MWh and above $250/MWh.

Monday, 30 May

1:30 PM	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	1813.84	47.86	47.86
Demand (MW)	6127	6865	6862
Available capacity (MW)	8298	8938	8938

Conditions at the time saw demand 738 MW and available capacity 640 MW below that forecast. Prices in Victoria were aligned with those in South Australia.

On the day, a planned outage of one of the Dederang to Murray transmission lines saw a constraint invoked on the Vic-NSW interconnector. This constraint bound from 7.45 am and as a result, import flows into Victoria from New South Wales were limited to less than 50 MW for a majority of the time.

At 12.57 pm, the loss of the fully loaded unit 3 at Loy Yang A Power Station saw a reduction in available capacity in Victoria of around 570 MW.

The constraint managing the network outage violated resulting in a five minute price at the price cap at 1.05 pm in Victoria and South Australia.

In response to the high prices, generators in Victoria and South Australia rebid around 5830 MW of capacity (5000 MW and 830 MW respectively) down to prices close to the price floor. Hydro Tasmania also rebid 936 MW of capacity into negative prices.

The largest individual rebid was by Snowy Hydro at Murray (effective at 1.10 pm), which shifted all 1575 MW of its capacity from prices above $25/MWh to close to the price floor. The reason given was “13:00 A Vic price $12500 hghr than prv 5min”. The rebid also reduced the ramp down rate to the minimum allowed of 3/MW per minute. The ramp up rate remained at 200/MW per minute, which saw the dispatch of the unit increase from 580 MW at 1 pm to 1575 MW at 1.10 pm.

This increase in output at Murray, (which is located in the Victorian region) could not flow south because of the Dederang to Murray line outage. This forced flows counter-price into New South Wales. The total cost of the resulting negative settlement residues was around $872 000.

The resulting exports to New South Wales reduced the dispatch of generators in New South Wales and Queensland. This caused the five minute price to fall to the price floor in both regions at 1.10 pm.

At around 1.10 pm there was an apparent demand side response in Victoria of around 700 MW that saw demand fall from 6613 MW at 1.10 pm to 5855 MW by 1.25 pm. Combined with the rebidding into low prices, this saw the price in Victoria and South Australia fall to less than $50/MWh.

At 1.23 pm, effective from 1.30 pm, Hydro Tasmania rebid 1060 MW of capacity from -$1/MWh to close to the price floor. The reason given was "1320A Price different from forecast". This led to five minute prices at or close to the price floor at 1.25 pm and 1.30 pm in Victoria and South Australia and at 1.30 pm in Tasmania.

Prices returned to normal levels from 1.40 pm following the restoration of load in Victoria and rebidding of generation back into higher price bands in Victoria and South Australia.

There was no other significant rebidding.

South Australia:

There was one occasion where the spot price in South Australia was greater than three times the South Australia weekly average price of $44/MWh and above $250/MWh.

Monday, 30 May

1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1762.15	48.38	49.24
Demand (MW)	1745	1801	1830
Available capacity (MW)	2473	2518	2483

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

Prices in South Australia reflected conditions in Victoria.

Tasmania:

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

Monday, 30 May

1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-159	47	47
Demand (MW)	1321	1367	1355
Available capacity (MW)	2040	2090	2032

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

Prices in Tasmania reflected conditions in Victoria.

New South Wales:

There were two occasions where the spot price in New South Wales was less than -$100/MWh.

Monday, 30 May

1:30 PM	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	-147	26	26
Demand (MW)	10479	9929	9881
Available capacity (MW)	14060	14110	14256

Conditions at the time saw demand more than 550 MW higher than that forecast with available capacity close to forecast.

Pricing outcomes in New South Wales were driven by the events in Victoria.

There was no significant rebidding.

Tuesday, 31 May

11:00 AM	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	-147	30	30
Demand (MW)	10267	10594	10601
Available capacity (MW)	13338	13711	13777

Conditions at the time saw demand and available capacity well below that forecast. Prices in New South Wales were aligned with those in Queensland.

The continuation of the planned network outage of one of the Dederang to Murray transmission lines in Victoria resulted in constraints binding on the Vic-NSW interconnector for the majority of the day and similar outcomes to the previous day.

At 7.55 am the five minute price in Victoria, South Australia and Tasmania increased to around $300/MWh. In response, Snowy Hydro rebid 1550 MW of capacity at Murray, from prices above $25/MWh to close to the price floor (effective from 8 am). The reason given was “07:45:A:unforecast price spike in Vic”. The rebid also reduced the ramp down rate to the minimum allowed of 3 MW per minute. The ramp up rate remained at 200 MW per minute, which saw the dispatch of the unit increase from 580 MW at 7.55 am to 1550 MW at 8 am.

This increase in output at Murray, (which is located in the Victorian region) could not flow south because of the Dederang to Murray line outage. This forced flows counter-price into New South Wales and the price in New South Wales and Queensland to fall to zero.

Further five minute prices of up to $500/MWh in Victoria, South Australia and Tasmania occurred at 8.05 am and 8.10 am. From 8.15 am a constraint was invoked by AEMO in response to negative settlement residues across the Vic-NSW interconnector. This constraint

was effective until 1.55 pm. The total cost of negative settlement residues on the day was $232 000.

Between 8.20 am and 1.35 pm, the Uranquinty generators were constrained on (out of merit order) five times by a constraint to manage the outage of the Dederang to Murray transmission lines in Victoria. In response to the (out of merit order) start signals, on each occasion Origin rebid the Uranquinty generators out of service. The reason given was "Avoid unecon run constrained on n>>v-ddms_a binding –sl".

Snowy Hydro's Tumut Stations (located in New South Wales) also received increases in dispatch targets (out of merit order) from the action of a constraint to manage the outage of the Dederang to Murray transmission lines in Victoria.

As a result of these units being constrained on, other low priced generators in New South Wales and Queensland received targets to reduce output at their ramp rates. This led to a number of low or negative five minute prices, including at 10.40 am, when the price in New South Wales reached -$993.56 and in Queensland, the price went to the price floor for one dispatch interval.

Queensland:

There were two occasions where the spot price in Queensland was less than -$100/MWh.

Monday, 30 May

1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-147	25	25
Demand (MW)	6106	6099	6158
Available capacity (MW)	10557	10722	10547

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

Pricing outcomes in Queensland were driven by the events in Victoria.

Tuesday, 31 May

11:00 AM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-149	25	24
Demand (MW)	6117	6204	6204
Available capacity (MW)	10634	10705	10705

Conditions at the time saw demand and available capacity slightly below forecast.

Prices in Queensland were aligned with those in New South Wales.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis
29 May - 4 June 2011

AUSTRALIAN ENERGY REGULATOR

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

Financial year	QLD	NSW	VIC	SA	TAS
2010-11 ($/MWh) YTD	34	44	29	43	31
2009-10 ($/MWh) YTD	38	54	43	86	30
Change*	-10%	-18%	-32%	-50%	3%
2009-10 ($/MWh)	37	52	42	82	30

Table 2: NEM turnover

Financial year	NEM Turnover** ($, billion)	Energy (TWh)
2010-11 (YTD)	$7.015	188
2009-10	$9.643	206
2008-09	$9.413	208

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)
Feb-11	123	190	48	33	29	1.794
Mar-11	28	27	26	23	26	0.414
Apr-11	25	27	26	28	27	0.374
May-11	28	30	35	35	39	0.499
Jun-11 (MTD)	24	26	30	34	33	0.057
Q1 2011	65	90	41	83	27	3.484
Q1 2010	46	52	67	134	27	3.014
Change*	41%	74%	-38%	-38%	2%	15.57%

Table 4: ASX energy futures contract prices at end of 6 June

	QLD		NSW		VIC		SA	
Q1 2012	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 30 May ($/MW)	46	75	50	82	47	79	60	100
Price on 06 Jun ($/MW)	46	75	50	82	47	79	60	100
Open interest on 06 Jun	1138	88	1305	275	1373	105	87	0
Traded in the last week (MW)	0	0	55	90	5	0	0	0
Traded since 1 Jan 11 (MW)	3111	81	4972	360	2861	51	78	0
Settled price for Q1 11($/MW)	57	96	68	118	35	51	53	93

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

Comparison:	QLD	NSW	VIC	SA	TAS	NEM
April 11 with April 10						
MW Priced <$20/MWh	-1035	-451	-384	272	-6	-1604
MW Priced $20 to $50/MWh	339	521	323	183	91	1457
May 11 with May 10						
MW Priced <$20/MWh	-1468	-82	-475	288	-126	-1862
MW Priced $20 to $50/MWh	493	952	626	88	52	2210
June 11 with June 10 (MTD)						
MW Priced <$20/MWh	-1024	509	-1047	138	-170	-1594
MW Priced $20 to $50/MWh	700	259	1,187	-6	207	2348

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