

# WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY  
REGULATOR

31 October – 6 November 2010

## Summary

Weekly average spot prices ranged from \$14/MWh in Queensland to \$22/MWh in New South Wales and South Australia.

On Tuesday 2 November between 1.30 am and 8.30 am, there were four negative spot prices in Queensland. The lowest price was \$-1000/MWh for the 8 am trading interval. The reasons for these negative prices are described in Appendix A.

On Saturday 6 November at 5.30 am, the spot price in South Australia fell to \$-6/MWh as a result of high wind generation (800 MW) and low demand.

## Spot market prices

Figure 1 sets out the volume weighted average prices for the week 31 October to 6 November 2010 and the 10-11 financial year 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 31 Oct - 6 Nov 2010	14	22	18	22	18
% change from previous week*	-26	1	-7	-2	-9
10/11 financial YTD	21	28	25	27	35
% change from 09/10 financial YTD **	-25	-8	-3	-10	42

\*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.

Longer term market trends are attached in Appendix B<sup>1</sup>.

## Financial markets

Figures 2 to 9 show futures contract<sup>2</sup> prices traded on the Sydney Futures Exchange (SFE) as at close of trade on Monday 8 November 2010. Figure 2 shows the base futures contract prices for the next three calendar years, and the three year average. Also shown are percentage changes<sup>3</sup> compared to the previous week.

<sup>1</sup> 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](http://www.aer.gov.au) -> Monitoring, reporting and enforcement -> Electricity market reports -> Long-term analysis.

<sup>2</sup> Futures contracts traded on the SFE are listed by d-cyphaTrade ([www.d-cyphatrade.com.au](http://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.

<sup>3</sup> Calculated on prices prior to rounding.

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

	QLD		NSW		VIC		SA	
Calendar Year 2011	30*	0%	40*	0%	35*	-1%	41	0%
Calendar Year 2012	34*	0%	44*	0%	38	-1%	44*	-2%
Calendar Year 2013	48	0%	55	0%	52	0%	69	0%
Three year average	37	0%	46	0%	41	0%	51	0%

Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)  
 \* denotes trades in the product.

Figure 3 shows the \$300 cap contract price for the first quarter of 2011 and the 2011 calendar year and the percentage change<sup>4</sup> from the previous week.

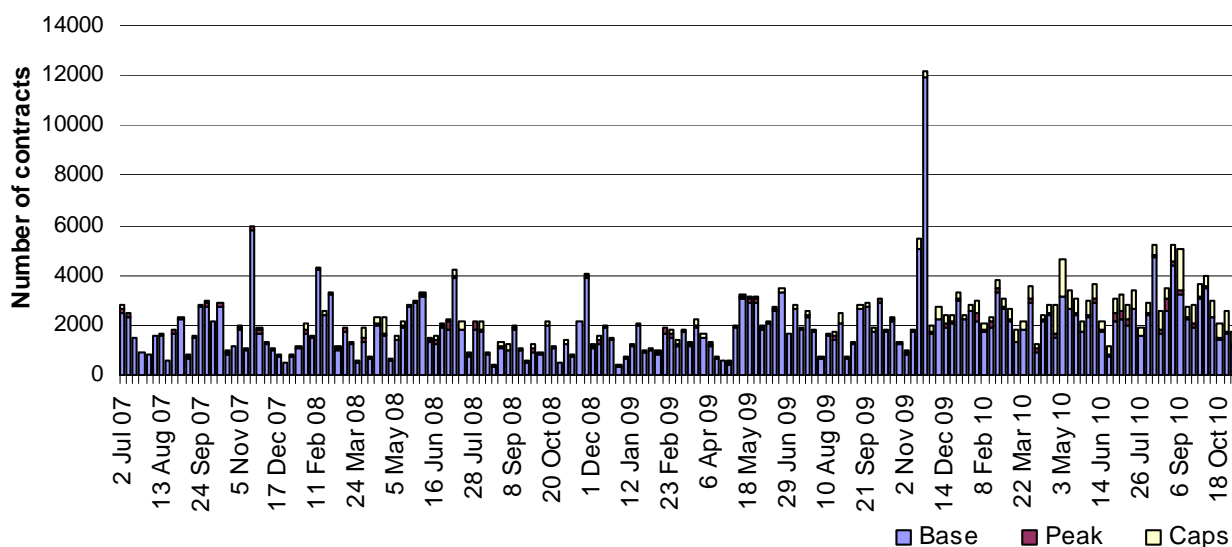
**Figure 3: \$300 cap contract prices (\$/MWh)**

	QLD		NSW		VIC		SA	
Q1 2011 (% Change)	12*	0%	19*	1%	23*	-8%	31	0%
2011 (% Change)	6	0%	12	-2%	8	-1%	11	0%

Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://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**

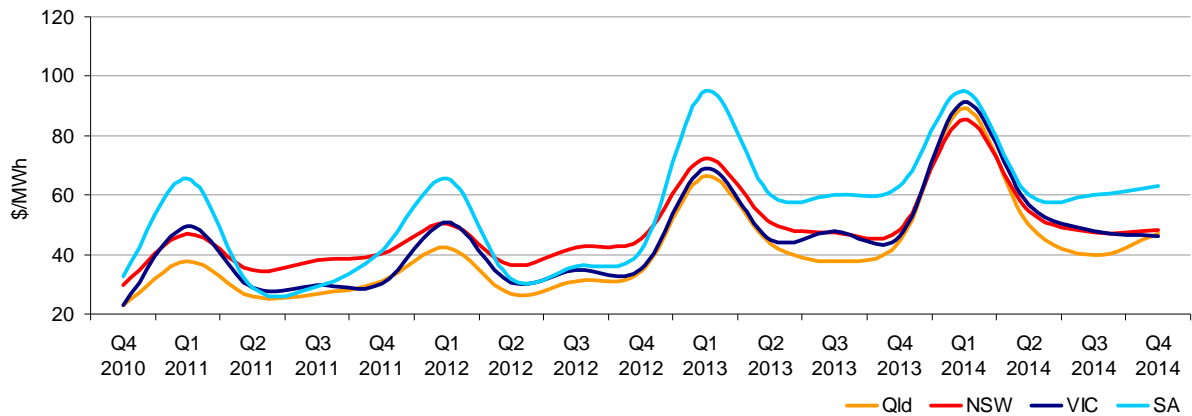


Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

<sup>4</sup> Calculated on prices prior to rounding.

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

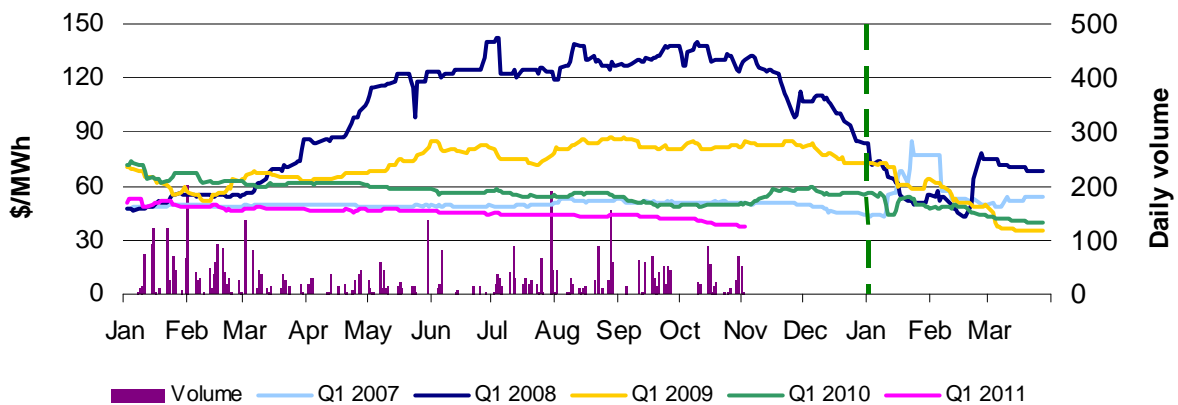
**Figure 5: Quarterly base future prices Q4 2010 – Q4 2014**



Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

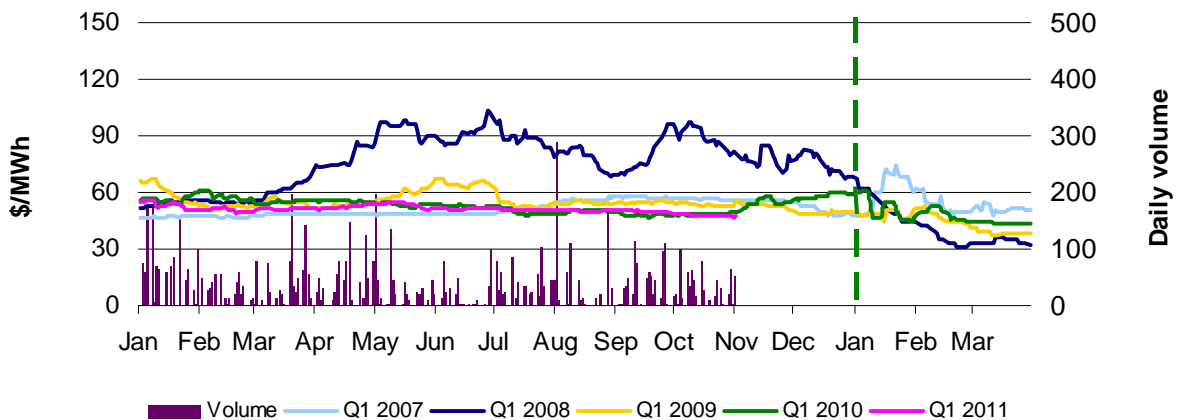
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009, 2010 and 2011. Also shown is the daily volume of Q1 2011 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.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



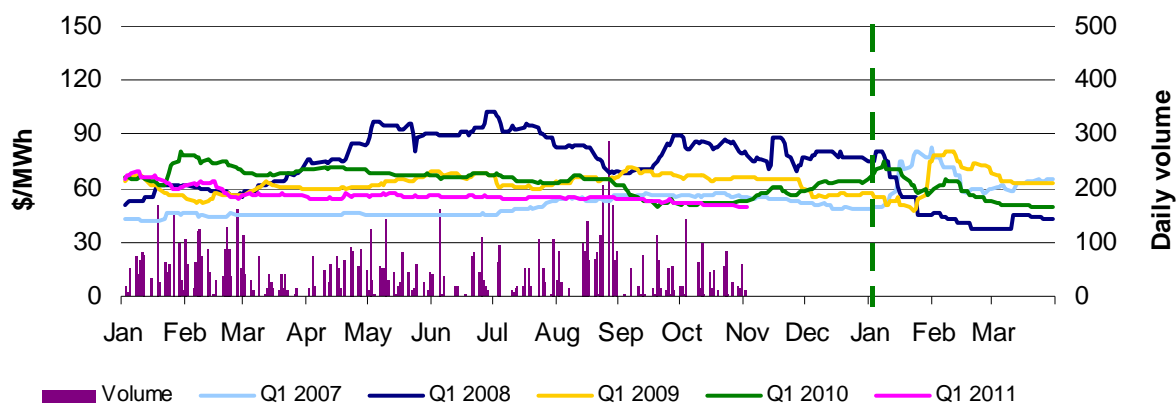
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



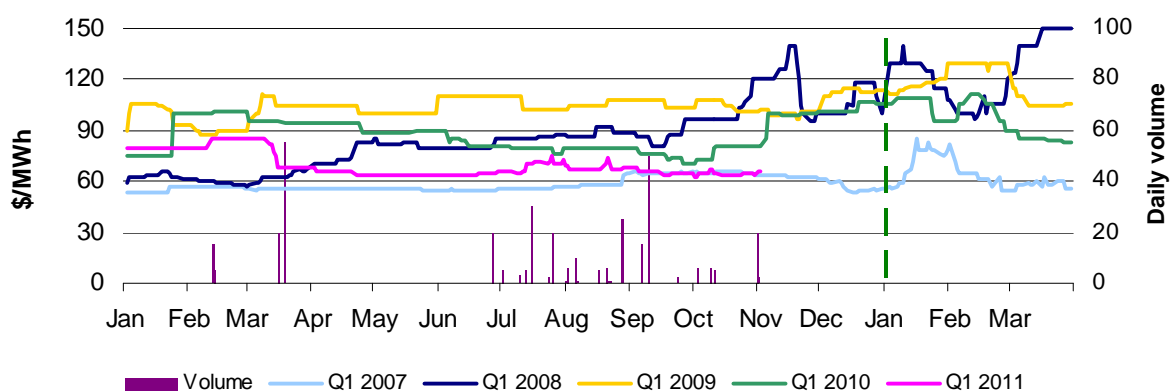
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://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 37 trading intervals throughout the week where actual prices varied significantly from forecasts<sup>5</sup>. This compares to the weekly average in 2009 of 103 counts. Reasons for these variances are summarised in Figure 10<sup>6</sup>.

**Figure 10: Reasons for variations between forecast and actual prices**

	Availability	Demand	Network	Combination
% of total above forecast	5	2	0	10
% of total below forecast	49	23	0	11

<sup>5</sup> 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.

<sup>6</sup> 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<sup>7</sup>. For example, in Queensland 59 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	-59	3	206	-137
NSW	-366	-36	399	-56
VIC	616	-273	337	-183
SA	-37	-51	10	21
TAS	22	55	-35	6
<b>TOTAL</b>	<b>176</b>	<b>-302</b>	<b>917</b>	<b>-349</b>

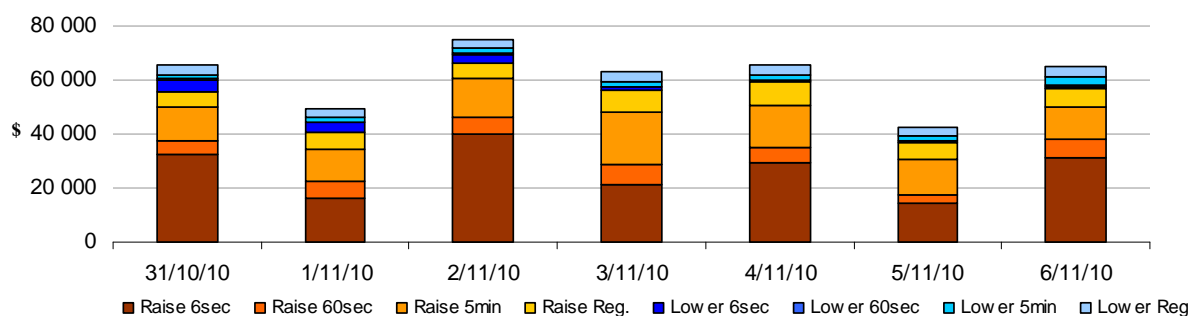
## Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$236 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$190 000 or close to six 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**



<sup>7</sup> A peak period is defined as between 7 am and 10 pm on weekdays, which aligns with the SFE contract definition.

## Detailed Market Analysis

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31 October – 6 November 2010

On Tuesday 2 November, spot prices in Queensland fell to below zero for four trading intervals.

**Tuesday, 2 November**

<b>1:30 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-159	13	7
Demand (MW)	4799	4745	4745
Available capacity (MW)	10 587	10 592	10 687
<b>7:30 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-276	18	15
Demand (MW)	6137	6134	6135
Available capacity (MW)	10 841	10 855	10 832
<b>8:00 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-1000	20	16
Demand (MW)	6352	6368	6359
Available capacity (MW)	9956	10846	10832
<b>8:30 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-143	17	12
Demand (MW)	6423	6527	6528
Available capacity (MW)	9395	10 846	10 832

The 1.30 am price was driven by the dispatch price falling to the price floor for one dispatch interval at 1.10 am, as a result of low demand and a 100 MW reduction in export capability into New South Wales for one dispatch interval. The low price was not forecast.

## Appendix A

The remaining three prices were also not forecast and related to the planned outage of the Palmwoods to South Pine 275 kV line. This line was scheduled to be out of service from 8 am. From 7.20 am AEMO invoked ramping constraints to prepare for this outage. AEMO approved a request from Powerlink for the outage to proceed earlier than planned (from 7.38 am). Immediately following the approval, Powerlink took a 110 kV circuit in the vicinity out of service. This increased the market impact of the ramping constraints and the first outage. Powerlink did not advise AEMO of this second outage. AEMO is investigating this discrepancy.

The constraint managing the outage of the Palmwoods to South Pine 275 kV line affects almost all generation in Queensland while reducing flows from Queensland into New South Wales across QNI.

At 7.15 am the limit on QNI was 780 MW, into New South Wales. When the ramping constraints were invoked at 7.20 am, the limit changed to 4936 MW into Queensland and the constraints immediately violated. This very large step change in supply was unable to be satisfied due to generator ramp rate limitations, causing the constraints to violate immediately and the 5-minute dispatch price to fall to \$-1000/MWh from 7.35 am to 8 am, inclusive.

In response to the low and unforecast prices there was a reduction of 720 MW in available generation capacity in Queensland for the 8 am trading interval. Around 260 MW of this capacity was plant that received start signals, but was not willing to start. A further 460 MW of plant was shut down or reduced capacity.

In addition around 680 MW of available capacity was reduced because of plant issues. There was also around 1200 MW of capacity rebid from low prices into prices above \$11 000/MWh as a result of the constraint. All significant rebids are described below.

From 7.25 am CS Energy rebid 480 MW of available capacity across its portfolio from prices below \$126/MWh to above \$11 700/MWh. The reasons given all related to the constraints.

Over three rebids from 7.27 am to 7.37 am, effective from 7.35 am, ERM Power and Arrow shifted a total of 402 MW of available capacity across Braemar units five, six and from prices below \$135/MWh to above \$11 700/MWh. Braemar unit five (which was generating at the time) gave the reason "Change in PD:change MW distrib.". Braemar units six and seven (which were not generating) gave the reason "Avoid uneconomic start::change avail/MW distrib.".

At 7.28 am Origin Energy reduced the availability of Mount Stuart units one and three by 164 MW (they were not generating at the time but all received start signals). The reason given was "Avoid uneconomic start SL". A further two rebids by Origin Energy at 7.47 am and 7.53 am, effective immediately, shifted 130 MW of available generation at Darling Downs from prices below \$450/MWh to above \$11 000/MWh. The reason given was "Constraint management –Palmwoods to South Pine 808 ramp SL".

At 7.31 am, effective from 7.40 am, AGL Hydro reduced available capacity at Yabulu by 102 MW (the unit was not generating at the time but received a start signal). The reason given was "Unforecast network constraint::constr on out of merit order".

Over two rebids at 7.32 am and 7.37 am, effective immediately, Braemar Power Projects reduced the available capacity of Braemar units one and two by 56 MW each (all of which was priced close to the price floor). The reasons given were "Revised availability" and "Change in market conditions".

## Appendix A

Over two rebids at 7.36 am and 7.40 am, effective immediately, CS Energy reduced the available capacity of Callide B unit two by 170 MW and then 180 MW respectively (which shut the unit down). The reasons given were “Call\_B\_2 unit availability 3 mills I/S SL” and “Call\_B\_2 interconnector constraint unit taken offline SL”. At 7.50 am and 7.55 am CS Energy reduced the available capacity of Callide B unit by 20 MW and then 180 MW respectively (which shut the unit down). The reasons given were “Call\_B\_1 1 cw pumps i/s SL” and “Call\_B\_1 interconnector constraint unit taken out of servi SL”.

At 7.38 am Callide Power Trading reduced the availability of Callide unit three by 205 MW to 200 MW. The reason given was “High hopper levels/high DP”. At the same time Callide Power Trading rebid 100 MW of available capacity at Callide unit four from prices below \$72/MWh to above \$11 815/MWh. The reason given was “Initial offer A interregional constrain”.

At 7.39 am, effective from 7.50 am, Tarong Energy rebid 65 MW at each of Tarong units one and two from prices below \$285/MWh (a majority was below \$140/MWh) to above \$11 900/MWh. The reason given was “unforecast constraints binding”.

At 7.46 am, effective from, 7.55 am Stanwell Corporation reduced the available capacity of Gladstone units one and two by 130 MW each. The reason given was “Condenser backflush”. At 7.51 am, effective from 8 am Stanwell reduced the available capacity of Stanwell unit one by 50 MW. The reason given was “Mill limitations”.

At 7.48 am Millmerran Energy Traders reduced the available capacity of Millmerran unit two by 65 MW (all of which was priced below \$10/MWh). The reason given was “Avoid uneconomic dispatch fro QNI con@0720 – SL”.

After Powerlink had advised AEMO that the network had been reconfigured AEMO determined the outage constraint was no longer required. As a result at 8.05 am prices returned to previous levels.



# Detailed NEM Price and Demand Trends

for Weekly Market Analysis  
31 October - 6 November 2010



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

Financial year	QLD	NSW	VIC	SA	TAS
2010-11 (\$/MWh) YTD	21	28	25	27	35
2009-10 (\$/MWh) YTD	28	31	25	31	25
Change*	-25%	-8%	-3%	-10%	42%
2009-10 (\$/MWh)	37	52	42	82	30

**Table 2: NEM turnover**

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2010-11 (YTD)	\$1.878	73
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)
Jul-10	22	28	27	31	31	0.495
Aug-10	22	37	28	28	70	0.579
Sep-10	22	24	23	27	21	0.386
Oct-10	20	23	21	25	18	0.358
Nov-10 (MTD)	14	23	18	22	19	0.061
Q3 2010	22	30	26	29	41	1.697
Q3 2009	26	28	25	27	24	1.918
Change*	-16%	5%	4%	6%	72%	-11.51%

**Table 4: ASX energy futures contract prices at end of 8 November**

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2011								
Price on 01 Nov (\$/MW)	38	64	47	78	51	90	65	108
Price on 08 Nov (\$/MW)	38	62	47	77	50	89	66	111
Open interest on 08 Nov	1676	177	2543	294	2315	175	148	1
Traded in the last week (MW)	146	20	143	39	82	0	22	1
Traded since 1 Jan 10 (MW)	4837	185	7787	431	8828	362	342	1
Settled price for Q1 10(\$/MW)	40	65	44	68	50	89	83	160

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

Comparison:	QLD	NSW	VIC	SA	TAS	NEM
September 10 with September 09						
MW Priced <\$20/MWh	495	762	85	655	73	2069
MW Priced \$20 to \$50/MWh	344	-417	125	-167	299	186
October 10 with October 09						
MW Priced <\$20/MWh	499	679	527	481	686	2873
MW Priced \$20 to \$50/MWh	350	-128	-24	-98	-594	-494
November 10 with November 09 (MTD)						
MW Priced <\$20/MWh	102	229	1354	580	913	3177
MW Priced \$20 to \$50/MWh	534	70	-378	-150	-963	-888

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

\*\* Estimated value