

# WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY  
REGULATOR

2 September – 8 September 2012

## Summary

Weekly average spot prices ranged from \$42/MWh in Tasmania to \$56/MWh in Queensland. Congestion around Gladstone in central Queensland and consequent rebidding led to volatile prices, counter-price flows and negative settlement residues across QNI throughout the week.

## Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 2 September to 8 September 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 2 - 8 September 2011	56	53	51	48	42
% change from previous week*	13	-2	1	-14	5
12/13 financial YTD	59	62	65	72	53
% change from 11/12 financial YTD **	106	102	114	104	71

\*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<sup>1</sup>.

## Financial markets

Figures 2 to 9 show futures contract<sup>2</sup> prices traded on the Australian Securities Exchange (ASX) as at close of trade on Monday 10 September 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<sup>3</sup> from 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) -> Australian energy industry -> Performance of the energy sector

<sup>2</sup> Futures contracts traded on the ASX 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 2013	58*	1%	60*	0%	55*	-1%	59	-1%
Calendar Year 2014	55*	1%	58*	0%	54	0%	55	0%
Calendar Year 2015	55	0%	52	0%	52	0%	69	0%
Three year average	56	1%	57	0%	54	0%	61	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 Q1 2013 and calendar year 2013 and the percentage change<sup>4</sup> from the previous week.

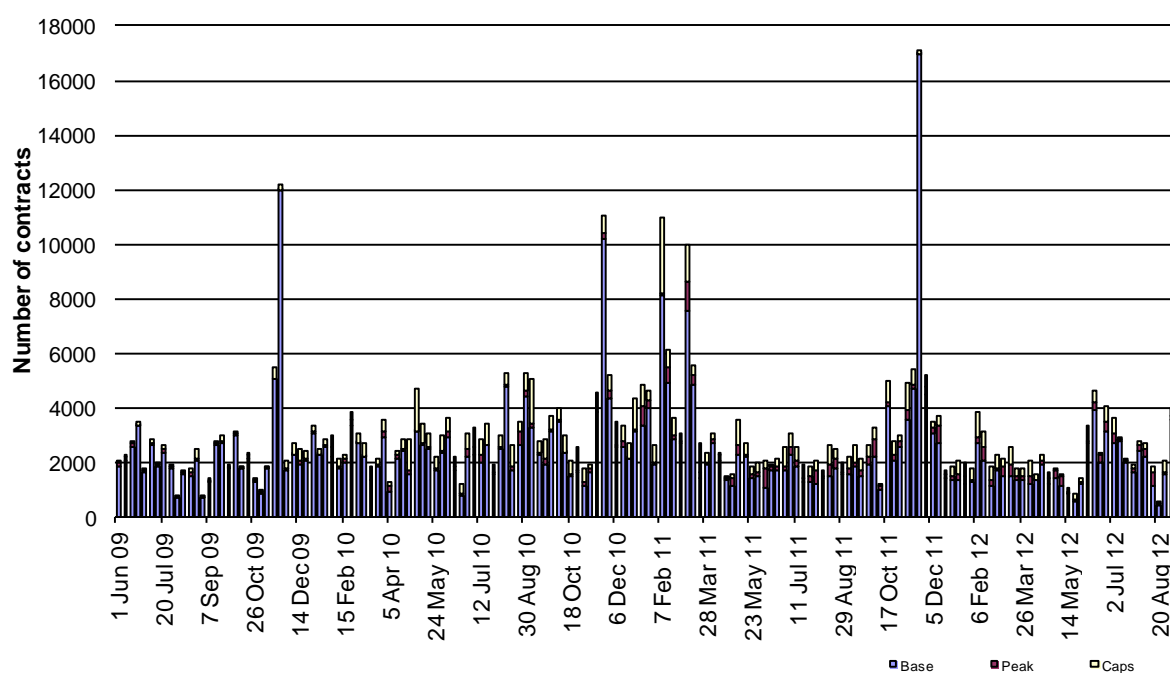
**Figure 3: \$300 cap contract prices (\$/MWh)**

	QLD		NSW		VIC		SA	
Q1 2013 (% change)	14	2%	12*	1%	12*	1%	18	-3%
2013 (% change)	6	1%	7	0%	5	1%	8	-2%

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**

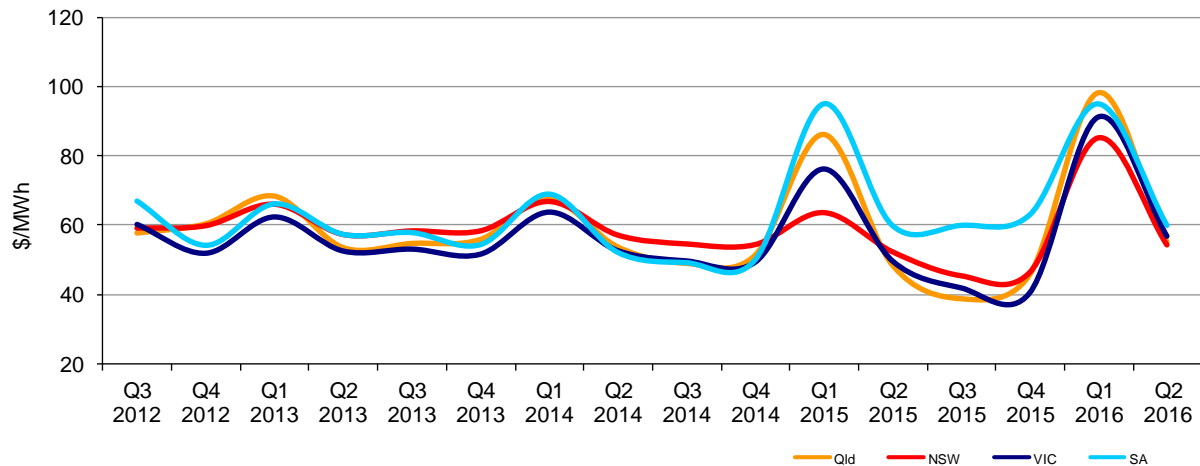


Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

<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.

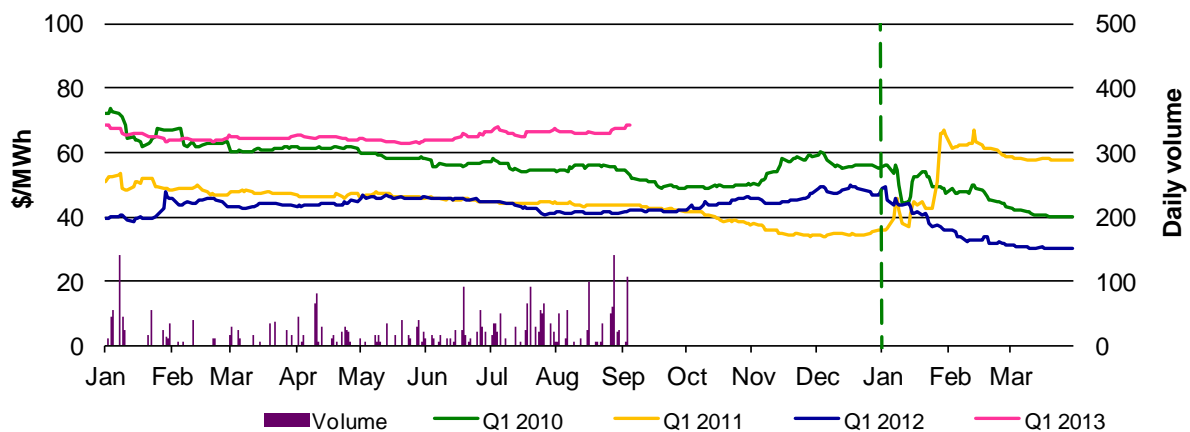
**Figure 5: Quarterly base future prices Q3 2012 – Q2 2016**



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

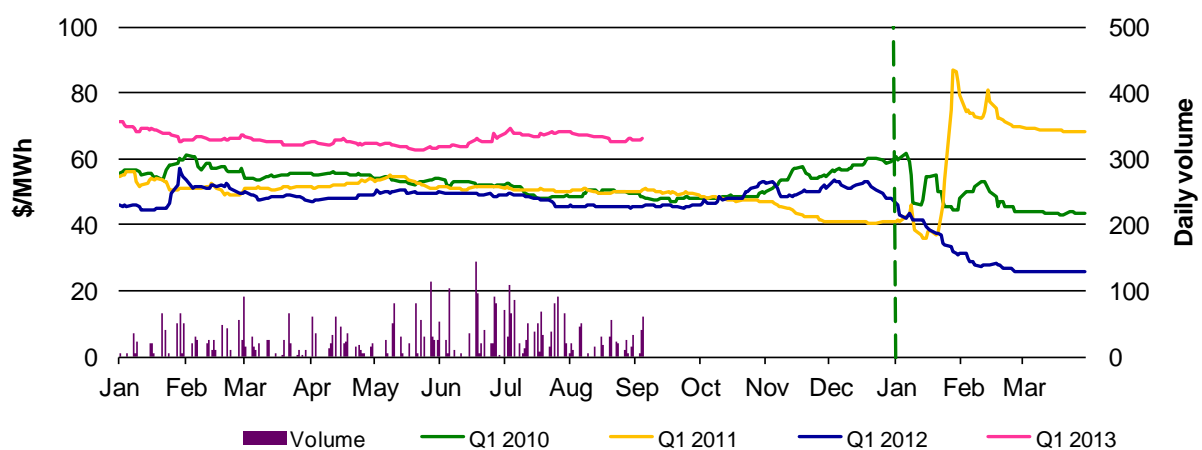
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



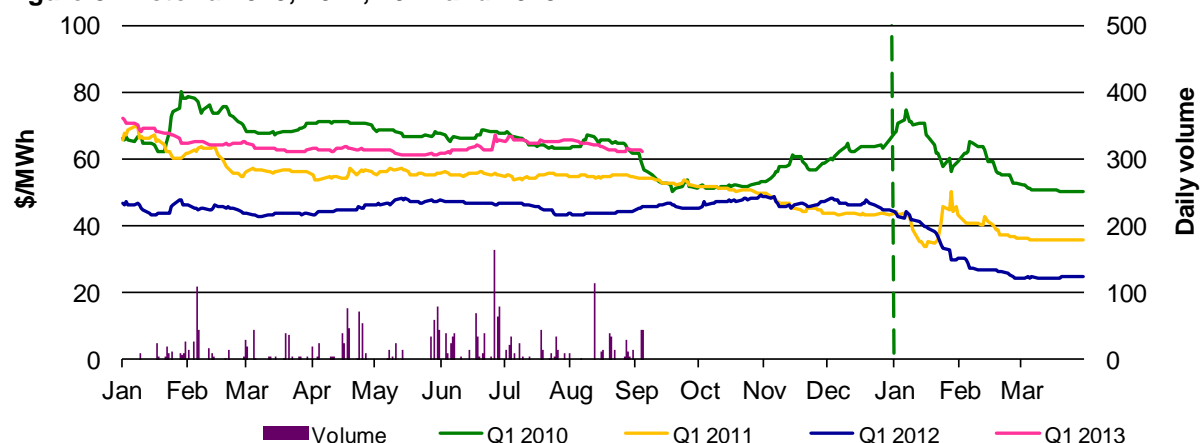
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



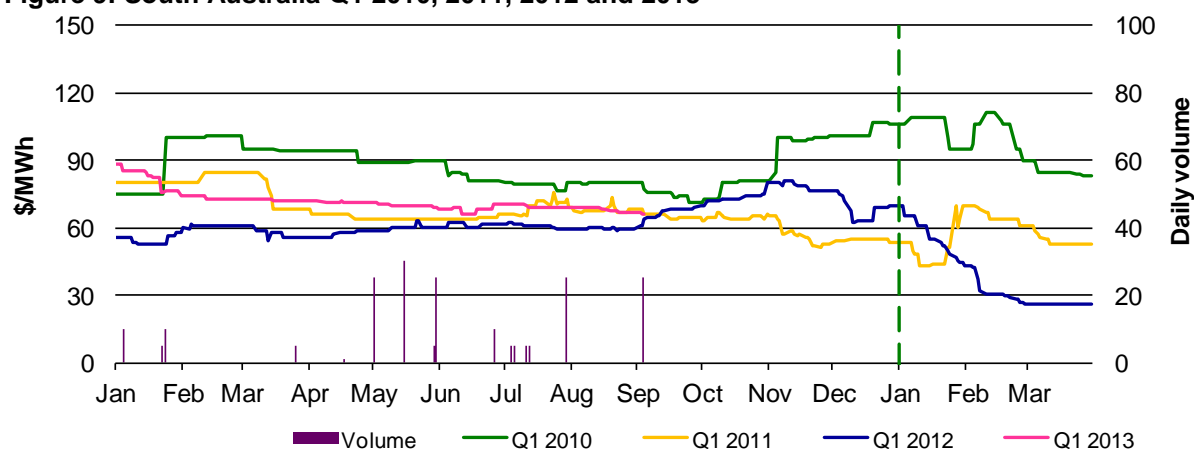
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



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

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



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 77 trading intervals throughout the week where actual prices varied significantly from forecasts<sup>5</sup>. 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<sup>6</sup>.

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

	Availability	Demand	Network	Combination
% of total above forecast	11	5	10	6
% of total below forecast	4	54	4	5

<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 57 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	-57	96	528	0
NSW	-309	-289	-1275	-412
VIC	-790	-108	-1316	-323
SA	19	-25	-115	-183
TAS	42	-140	-26	-24
<b>TOTAL</b>	<b>-1095</b>	<b>-466</b>	<b>-2204</b>	<b>-942</b>

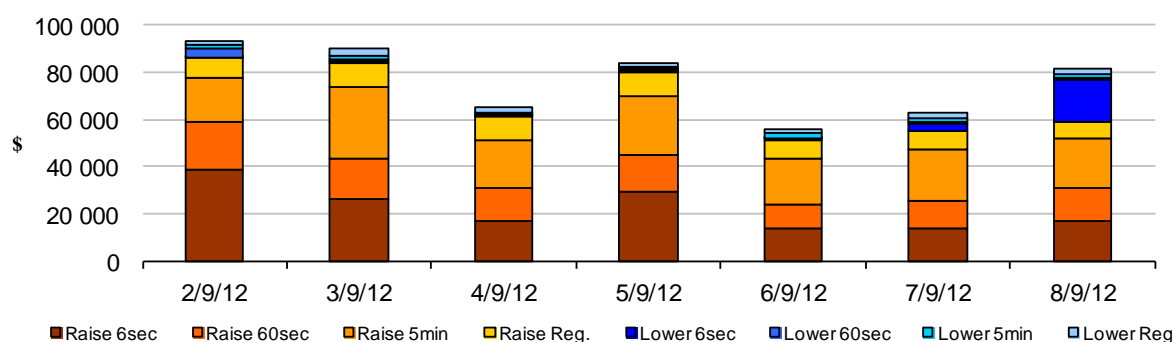
## Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$484 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$50 000 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 October 2012

<sup>7</sup> A peak period is defined as between 7 am and 10 pm on weekdays.



2 – 8 September 2012

**Queensland**

There were six occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$56/MWh and above \$250/MWh.

**Monday, 3 September**

<b>10 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	370.27	76.80	78.60
Demand (MW)	5830	6131	6077
Available capacity (MW)	9608	9775	9825
<b>Midday</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	335.86	53.88	62.42
Demand (MW)	5700	5925	5947
Available capacity (MW)	9760	9753	9808
<b>4:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	343.96	76.85	50.00
Demand (MW)	5962	5811	6070
Available capacity (MW)	9708	9903	10 271

Between 9.30 am and 4.30 pm, Queensland 5-minute prices were extremely volatile, fluctuating between \$1766/MWh and -\$1000/MWh. The 5-minute price exceeded \$150/MWh on nine occasions and fell below -\$100/MWh on eight occasions.

The volatile prices were driven by network congestion in central Queensland (on the 855 Calvale to Stanwell and 871 Calvale to Wurdong lines). The Q>>NIL\_855\_871 and Q>>NIL\_871\_855 constraints manage post contingent flows on the 855 and 871 lines. The constraints affect the majority of Queensland generation and the Queensland to New South Wales interconnector (QNI) (through its inclusion on the left hand side of the constraints).

At 9.38 am, effective from 9.45 am, CS Energy rebid 240 MW of available capacity at Gladstone from prices around \$290/MWh to close to the price cap. The reason given was “Intraconnector constraint-units constrained up-sl”.

The constraint and the subsequent rebidding saw the flow on QNI forced into New South Wales counter-price from 9.10 am, reaching 880 MW at 9.40 am, with the 5-minute price exceeding \$1450/MWh at 9.45 am and 9.50 am, before falling below -\$450/MWh at 9.55 am and 10 am.

At midday a 50 MVA reduction in the dynamic rating of the Calvale to Wurdong 275 kV line again caused the constraint to bind and volatile pricing (between \$1766/MWh and -\$1000/MWh) until 1.05 pm.

At 4.16 pm, effective from 4.25 pm, Stanwell rebid 423 MW of available capacity at Stanwell and Kareeya from prices below \$60/MW to the price cap. In the same rebid Stanwell shifted a total of 740 MW of available capacity at Tarong and Tarong North priced between \$35/MWh and \$55/MWh to the price floor. The reason given for the rebid was “1613P QLD actual RRP v 5 min PD 1615”.

At 4.21 pm, effective from 4.30 pm, CS Energy rebid 180 MW of capacity at Gladstone from prices below \$290/MWh to close to the price cap. The reason given was “1620A intraconnector constraint-units constrained up-SL”.

Between 9.30 am and 4.30 pm around \$504 000 of negative settlement residues accrued.

There was no other significant rebidding.

### **Thursday, 6 September**

<b>9:30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	431.08	47.45	46.00
Demand (MW)	5931	6127	6004
Available capacity (MW)	10 123	10 287	10 297

Events on the day were similar to 3 September (discussed above). Between 6.30 am and 7.05 am there was a 170 MVA reduction in the ratings of the Calvale to Wurdong 855 line, causing the Q>>NIL\_855\_871 constraint to bind.

At 9.02 am, effective from 9.10 am to 9.30 am, CS Energy rebid 440 MW of capacity at Gladstone from prices around \$50/MWh (200 MW) and \$290/MWh (240 MW) to close to the price cap. The reason given was “Interconnector- 855\_871 binding-sl”.

At 9.19 am, effective from 9.30 am, Stanwell rebid a total of 1300 MW of capacity at Tarong and Tarong North from prices between \$22/MWh and \$44/MWh to close to the price floor. The reason given was “Transmission constraint 855-871”.

At 9.30 am the dynamic rating of the Calvale to Wurdong line reduced to 765 MVA. The dispatch price reached \$1451/MWh with a Gladstone unit contributing to setting the price.

Around \$131 000 of negative settlement residues accrued during the 9.30 am trading interval as a result of counter price flows into New South Wales.

At 9.35 am a constraint used to manage the accrual of negative settlement residues was invoked and started binding, restricting flows from Queensland to New South Wales. This combined with the Tarong rebid and the Gladstone rebid no longer being effective saw the dispatch price fall to -\$817/MWh at 9.35 am.

## Saturday, 8 September

<b>1:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	252.42	45.83	46.84
Demand (MW)	5029	5282	5242
Available capacity (MW)	9431	9524	9549
<b>2:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	408.36	72.75	73.53
Demand (MW)	5034	5197	5262
Available capacity (MW)	9344	9603	9628

Events on the day were similar to 3 September (discussed above). Between 12.55 pm and 1.05 pm the dynamic line ratings of both the Calvale to Wurdong 855 and the Calvale to Stanwell 871 lines were reduced by 84 MVA and 76 MVA, respectively, causing the Q>>NIL\_855\_871 constraint to bind. This saw the 5 minute price increase from \$36/MWh at 12.55 pm to \$1649/MWh at 1.05 pm and forced flow of 920 MW into New South Wales, counter-price.

At 1.30 pm the rating on both lines began increasing. Between 2 pm and 2.05 pm the dynamic line ratings of both lines were again reduced, by 46 MVA and 47 MVA respectively. This saw the 5 minute price increase from \$61/MWh at 2 pm to \$1676/MWh at 2.05 pm and forced flow of 661 MW into New South Wales, counter-price.

At 2.10 pm generation was either trapped in FCAS, ramp rate limited or being constrained on and negative priced offers set the 5-minute price at -\$811/MWh.

At 2.12 pm, effective from 2.20 pm, CS Energy rebid 240 MW of available capacity at Gladstone from around \$300/MWh to close to the price cap. The reason given was “Intraconnector constraint-units constrained up-sl”. This saw the 5 minute price increase from \$62/MWh at 2.15 pm to \$1523/MWh at 2.20 pm.

Around \$218 000 of negative settlement residues accrued during the 1.30 pm and 2.30 pm trading intervals.

There was no other significant rebidding.



# Detailed NEM Price and Demand Trends

for Weekly Market Analysis  
2 September - 8 September 2012



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

Financial year	QLD	NSW	VIC	SA	TAS
2012-13 (\$/MWh) YTD	59	62	65	72	53
2011-12 (\$/MWh) YTD	29	31	30	35	31
Change*	106%	102%	114%	104%	71%
2011-12 (\$/MWh)	30	31	28	32	33

**Table 2: NEM turnover**

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2012-13 (YTD)	\$2.416	39
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)
May-12	26	29	27	30	33	0.434
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 (MTD)	56	53	51	50	43	0.217
Q3 2012 (QTD)	59	62	65	72	53	2.416
Q3 2011 (QTD)	29	31	30	35	31	1.212
Change*	106%	102%	114%	104%	71%	99.37%

**Table 4: ASX energy futures contract prices at end of 10 September 2012**

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2013								
Price on 03 Sep (\$/MWh)	67	90	66	85	63	84	67	106
Price on 10 Sep (\$/MWh)	69	94	66	86	62	83	66	101
Open interest on 10 Sep	1053	173	1404	415	1257	78	159	0
Traded in the last week (MW)	158	25	152	10	110	0	25	0
Traded since 1 Jan 12 (MW)	3156	297	4396	419	2612	134	196	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
July 12 with July 11						
MW Priced <\$20/MWh	-3838	-1796	-1613	-170	-211	-7628
MW Priced \$20 to \$50/MWh	2427	-1157	516	-497	110	1399
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 (MTD)						
MW Priced <\$20/MWh	-2236	-766	-2288	-149	-236	-5675
MW Priced \$20 to \$50/MWh	2361	-868	826	-381	429	2366

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

\*\* Estimated value